



LOMBARDINI  
GEOLOGICAL  
SERVICES LLC

MOUNTAINVIEW GROUP LLC TRAVEL CENTER  
Critical Aquifer Recharge Area  
-Hydrogeologic Assessment-

**KITTITAS CO CDS  
RECEIVED  
02/18/2026**

West Sparks Road,  
Easton, WA 98925  
December 13th, 2025

Shawn Lombardini LHG RG PG  
PRINCIPAL HYDROGEOLOGIST



LOMBARDINI  
GEOLOGICAL  
SERVICES LLC

## TABLE OF CONTENTS

1.0	<i>BACKGROUND</i>
2.0	<i>SCOPE OF WORK</i>
3.0	<i>SITE CONDITIONS</i>
4.0	<i>SURFICIAL GEOLOGIC SETTING</i>
5.0	<i>HYDROGEOLOGICAL SETTING</i>
6.0	<i>GROUNDWATER RECHARGE</i>
7.0	<i>WELLHEAD PROTECTION AREA</i>
8.0	<i>CONCEPTUAL SITE MODEL</i>
9.0	<i>KITTITAS COUNTY CODE 17A.03 – CRITICAL AQUIFER RECHARGE AREA</i>
10.0	<i>CONCLUSIONS</i>
11.0	<i>SUMMARY</i>
12.0	<i>LIMITATIONS</i>
13.0	<i>REFERENCES</i>

## FIGURES

<i>FIGURE 1:</i>	<i>SITE MAP</i>
<i>FIGURE 2:</i>	<i>GEOLOGIC CROSS SECTION A-A'</i>

## TABLES

<i>TABLE 1:</i>	<i>ENGLISH WELL LOG</i>
-----------------	-------------------------

## APPENDIX

*SITE PHOTOGRAPHS & SUPPORTING DOCUMENTS*



LOMBARDINI  
GEOLOGICAL  
SERVICES LLC

December 13<sup>th</sup>, 2025

Majestic Group LLC  
26304 230<sup>th</sup> Road Place SE  
Covington, WA 98042

Project: Proposed Development  
Mountainview Group LLC Travel Center  
West Sparks Road  
Easton, WA 98925  
Kittitas County Parcel #778834

Dear Majestic Group LLC:

Lombardini Geological Services, LLC (LGS) has conducted a Site specific hydrogeologic review of the proposed Site development of the property, and prepared this Hydrogeological Assessment pursuant of the Kittitas County Code Chapter 17A.03 Critical Aquifer Recharge Areas (CARAs) Hydrogeologic Assessment.

Specifically;  
[§ 17A.01.080 Critical areas reports.](#)

Minimum report contents. At a minimum, the report shall contain the following:

- [a.](#) The name and contact information of the applicant and a description of the proposal;
- [b.](#) The site plan for the proposed development, including a map drawn to scale depicting critical areas, buffers and/or setbacks, the proposed development, and any areas to be cleared or altered;
- [c.](#) The names and qualifications of the persons preparing the report;
- [d.](#) Documentation of any fieldwork performed on the site;
- [e.](#) Documentation that consultation, when deemed appropriate, was initiated with agencies of expertise;
- [f.](#) Field identification and characterization of all critical areas and buffers on and adjacent to the proposed development;
- [g.](#) A statement specifying the accuracy of the report, and all assumptions made and relied upon;
- [h.](#) A discussion of the performance standards applicable to the critical area and proposed development;
- [i.](#) A mitigation plan in accordance with KCC § [17A.01.100](#) if mitigation is required; and
- [j.](#) Any additional report information required for the critical area as specified in KCC § 17A.01.80 through KCC § [17A.01.100](#).  
(Ord. 2021-016, 2021; [Ord. 2025-006](#), 7/1/2025)

[§ 17A.03.050 Reporting.](#)

Contents. The hydrogeological assessment shall include the general critical areas report requirements of KCC § [17A.01.080](#) in addition to the following:

- [a.](#) Geologic setting and soils information for the site and surrounding area;



- b. Water quality data, including pH, temperature, dissolved oxygen, conductivity, nitrates, and bacteria;
  - c. Location and depth of perched water tables;
  - d. Recharge potential of site (permeability/transmissivity);
  - e. Hydrologic budget;
  - f. Local groundwater flow, direction, and gradient;
  - g. Location, depth, and other water quality data on the three shallowest wells or springs located within 1,000 feet of the site;
  - h. Potential impacts to wellhead protection areas located within the site;
  - i. Surface water locations within 1,000 feet of the site;
  - j. Discussion of the effects of the proposed development on groundwater quality and quantity;
  - k. Recommendations on appropriate mitigation, if any, to assure that there shall be no measurable exceedance of minimum state groundwater quality standards or measurable reduction in available quantity of groundwater;
  - l. Emergency management plan; and
  - m. Containment release detection.
- (Ord. 2021-016, 2021; [Ord. 2025-006](#), 7/1/2025)

The Hydrogeological Assessment herein shall include applicable hydrogeological principles and assessments to the Kittitas County Code in respect to the development of the Site, located at the above-referenced address in Easton, Washington (Site).

The hydrogeological assessment presented follows generally accepted hydrogeologic industry principles and standards. This report is exclusively for Majestic Group LLC's use only. It is at the discretion of Majestic Group LLC to distribute this report and plan to others as needed. This is in lieu of other warranties, expressed, or implied.

## ***1.0 BACKGROUND-***

The property is currently a single parcel that is undeveloped land per the Kittitas County GIS map page. The total land is 16.51 acres. The property only has trees, shrubs, and low growing vegetation. The trees are up to approximately 50' tall and appear to have been selectively clear cut in some areas.

The general topography of the parcel is approximately 10' below West Sparks Road and is on average approximately 2,218' NAVD88 in elevation on the preliminary Site drawing found in the appendix.

The property to the north is Easton State Airport, to the east a campground, to the west I-90 Washington Department of Transportation property, and Lake Easton, and to the south is a commercial/residential property. Generally, the vicinity use is small commercial operations and low density residential.

The property (Site) is Kittitas County parcel described as follows by the County Assessor;

West Sparks Road Easton, WA 98925; Parcel #778834- 16.51 acres, PTN SE1/4 SW1/4 E. OF I-90 & CO. RD, .16 RD@; SEC 2, TWP 20, RGE 13.



Figure 1- *Site Map*, Shows the Site parcel configuration. Figure 2 – *Geologic Cross Section A-A'*, identifies reasonably ascertainable, adjacent, observed well locations, pertinent to discussing the conceptual Site hydrogeological conditions. Multiple additional figures exist in the Appendix – *Supporting Documents* that were used to research conditions in support of the assessment.

The proposed development property is within two wellhead protection areas identified on the Department of Health SWAP MAP seen in the attachments. The closest well is the Lake Easton Resort well #1 AFL-866 approximately 800' south of the property, 1,000' time of travel, down gradient direction, and the second closest well Easton Water District Well #2, AFT-391, down gradient, approximately 1,800' southeast of the property. For the A third well identified is the Lake Easton State Park well #1, AHB-845, which is approximately 1,600' due south as well, down gradient direction, but the property is not within its wellhead protection area. These wellhead protection areas do intersect the property, however, the Underground Storage Tanks (USTs), and associated fueling canopies that are proposed, sit outside of the 1,000-foot time of travel and the 10-year Calculated Fixed Radius for the two first wells described, respectively. This Site is located within the "High Aquifer Susceptibility" polygon in a high-structural fill basin aquifer and extensive alluvial deposits with high well density.

## 2.0 SCOPE OF WORK-

The scope of LGS services was to evaluate the hydrogeologic conditions at the Site and provide a hydrogeologic assessment of the Site in respect to the protected wellhead/springs. LGS is providing an opinion if the project/Site development is protective of human health and the environment.

The following explains the scope in further detail;

- 1) Review existing Site features, available topographic maps, soil profile (USDA Soil Survey), geology & hydrogeology (USGS/DNR), local well logs (DOE), Local Department of Health well resource protection maps (DOH), and Wellhead Guidance Document (DOH), National Oceanic Atmospheric Administration (NOAA), Kittitas County Code 17A.03 Critical Aquifer Recharge Areas, and other pertinent documents for preparing the hydrogeological assessment.
- 2) Perform a Site visit to identify wells identified for the CARA (as accessible), surficial runoff potential, catch basins, adjacent creeks and other sensitive/critical area receptors within 1,000' of the Site, infiltration ponds, surficial topographical changes, and final site concept for development.
- 3) Evaluate groundwater flow directions, hydraulic conductivities/transmissivities of aquitards and aquifers pertinent to the Site, and background aquifer properties within the vicinity of the Site to prepare a conceptual Site hydrogeological model.
- 4) Preparing this Hydrogeological Assessment to adequately justify the development being protective of human health and the environment per Kittitas County Code 17A.03 Critical Aquifer Recharge Areas for development within critical aquifer recharge area capture zones.



### **3.0 SITE CONDITIONS-**

During the Site visit it was observed that the access is from Silver Ridge Ranch Road, east of the property. The provided preliminary Site development map shows the entrance on the west side of the property from West Sparks Road. The topography was generally flat with no major topographical changes within approximately ¼ mile. Roads maintained a generally fair asphaltic condition and no notable features were observed that would have any impact on the subsurface aquifers being evaluated. Based on the Site development map there is approximately 9' of relief from east to west, elevation 2,222' NAVD88 to 2,213' NAVD88 respectively.

LGS drove to the wellheads being evaluated and has presented their condition in the Appendix, *Supporting Documents – Site Photographic Record*.

### **4.0 SURFICIAL GEOLOGIC SETTING-**

Site surficial geology was reviewed using USDA Soil Web survey. The Soil Web Survey describes the soils as Kladnick ashy sandy loam, 0-3 percent slopes at the property. These soils produce terraces landforms. The parent materials are described as glacial outwash with a mantle of volcanic ash deposits. The survey states the restrictive layer is more than 80" and water table is more than 80". The soils are well drained.

A Site USGS surficial geologic review showed the Site being located on Jes, Jurassic, Shuksan Greenschist. The Shuksan Greenschist deposit is described as; "Phyllitic greenschist. This is the Shuksan Greenschist of the Easton Metamorphic Suite, unit KES of Tabor and Others". The Geologic map of Easton, Kittitas County, Washington; *Cheney, E.S. 1999* shows that this Site is located on this deposit. LGS notes that this map lacks the alluvial deposit from the recent glaciation that resides from the last 20,000 YBP period.

During the Site visit it appeared that the elevation ranged approximately 9' from east to west. No geological outcrops were observed during the site visit. LGS estimates the thickness of the alluvium to be up to 80' thick based on the proximal boring logs reviewed in this area as a part of this project. The hydrogeology is further described in the next section.

### **5.0 HYDROGEOLOGIC SETTING-**

LGS reviewed 7 Department of Ecology well logs within reasonable proximity to the Site (up to 1/2 mile) to establish the common hydrogeologic properties and geology that define different depths of domestic drinking water aquifers within a reasonable proximity to the Site.

It appears that a confined aquifer exists in proximity of the Site. The literature describes one distinct aquifer, USGS Aquifer "UNC" also known as the Roslyn Basin. This is likely the same observable aquifer that ranges from 40-160' deep, beneath the glacial till or clay with boulders. This was observed within the well log research and the review of the Hydrogeologic Framework and Groundwater/Surface-Water Interactions of the Upper Yakima River Basin, Kittitas County, Central Washington, *USGS, 2014*.

LGS identifies the UNC aquifer as mostly confined and is within the unconsolidated alpine and general glacial drifts known to the area that are above basement plutonic/metamorphic complexes. The wells identified a soil matrix in the screened intervals of sand and gravels with empirical hydraulic conductivity of 10-10,000 FT/D. (Heath 1983). The range of pump testing the reviewed well logs was from 15-250GPM



in the aquifer.

The review of differing local depths of wells near the Site for production wells, were used to identify wells in the area, for assessment of this Site’s conceptual Site model described below. These well logs are compared to the report Hydrogeologic Framework and Groundwater/Surface-Water Interactions of the Upper Yakima River Basin, Kittitas County, Central Washington, *USGS, 2014*.

The Site’s subsurface soil matrix/lithological contacts are estimated due to the limited amount well logs at or adjacent to the Site. See cross section found in the USGS geologic map.

This table below correlates the well-log interpretation for the confined aquifer with published sources such as Hydrogeologic Framework literature. The Double K Ranch well was the most easterly well, the “English” well is approximately the same elevation as the Site (next parcel east) so it was used for estimating the confined aquifer, and inferred below to the depth of the cross sections terminating at the most westerly well, Easton State Park Well #1.

***Table 1***

Interval (ft)	Elevation NAVD88 EST. (English)	Unit	Description – “English”, approximate surface elevation of 2,222’ NAVD88.
0-6	2,222’-2,216’	Topsoil Qag	Weathered alpine outwash Gravel and sand
6-45	2,216’-2,177’	Qagt	Sandy Clay, Hardpan, Gravel, and boulders. Glacial Till likely. (Undocumented by public sources, LGS is using Qagt for Quaternary alpine glacial till)
45-66	2,177’-2,156’	Qaga	Loose sand and gravel, likely pre-glacial advance outwash. (Undocumented by public sources, LGS is using Qaga for Quaternary alpine glacial advance, confined aquifer, or semi confined)

\*This table is only an estimate, it is for concept.

It is estimated that the theoretical hydraulic conductivity of the Qaga aquifer has a range of 10 Ft/Day to 10,000 Ft/Day .This is horizontal hydraulic conductivity which is often greater than the vertical values due to the orientation of grains to be parallel to the surface limiting the vertical flow.

With the geological structure provided in the table above the estimated time for a constituent of concern that hypothetically could be released at the Site, to reach each wellhead would take; Lake Easton Resort well #1 AFL-866 approximately 800’ south of the property, down gradient direction approximately 4-5 years LGS is estimating, assuming some unconfined aquifer exists below I-90, and the second closest well Easton Water District Well #2, AFT-391, down gradient, approximately 1,800’ southeast of the property,



which is the 10 year time of travel capture zone.

This conceptual model and reviewed wells, adjacent to the Site, are shown in Figure 2, *Geologic Cross Section A-A'* beneath the Site. It is inferred that the same geology with similar hydraulic conductivity properties exists continuously adjacent to the Site.

The static groundwater elevation is on average approximately 33'-48' below surface grade.

The gradient of the aquifer is calculated to be approximately 0.0027 FT/FT to the southeast, in the same flow direction as the Yakima River. Hydrogeologic Framework and Groundwater/Surface-Water Interactions of the Upper Yakima River Basin, Kittitas County, Central Washington, *USGS, 2014- Figure 22- Potentiometric surface and generalized flow directions.*

## **6.0 GROUNDWATER RECHARGE-**

Groundwater recharge of primary regional aquifers (mostly unconfined water tables) is produced from infiltrating rainwater recharge from the regional lakes, contacts of the adjacent high topographical relief mountains, and peripheral watersheds that contribute to the Yakima River valley.

## **7.0 WELLHEAD PROTECTION AREA-**

The Site is located within two wellhead protection areas identified on the Department of Health SWAP MAP seen in the attachments. The closest well is the Lake Easton Resort well #1 AFL-866 approximately 800' south of the property, down gradient direction, and the second closest well Easton Water District Well #2, AFT-391, down gradient, approximately 1,800' southeast of the property. See Appendix, *Supporting Documents.*

## **8.0 CONCEPTUAL SITE MODEL -**

The Site hydrogeology is within the surficial aquifer assumed to be minimal if at all present, very thin Alpine Glacial Outwash Deposits, followed by an undocumented glacial till/hardpan, and then below that a confined or semi confined aquifer, "UNC" LGS believes, where the majority of the wells in the area are screened up to approximately 80' below the surface, and the furthest east well Double K Ranch at ~170', which may be its own aquifer outside of the identified 40'-80' wells. The basement rock is the Shuksan Greenschist, Jes, as seen in cross section and on the surficial geologic map and cross section, projected and called the Ainsley canyon Anticline. The conceptual Site Model shows that the primary aquifer of concern is the Aquifer "UNC" which the Site rests 40'-80' below the surface. Very near the surface it was observed in multiple well logs an undocumented glacial till, clay, hardpan with boulders was present in massive form, to approximately 40-50 feet below the surface. It would be anticipated that this would exist at the Site and create a protective layer preventing the vertical migration of potential constituents of concern. LGS believes that intent of the High-Risk designation by Kittitas County identifies that the narrow canyon watershed is restrictive and releases of fuel, in this case, could have high potential to find pathways into the relatively shallow confined aquifer "UNC", if a release were to occur. With the geological structure provided in the table above the estimated time for a constituent of concern that hypothetically could be released at the Site, to reach each wellhead would take; Lake Easton Resort well #1 AFL-866 approximately 800' south of the property, down gradient direction approximately LGS is estimating 4-5 years, assuming



some unconfined aquifer exists below I-90, and the second closest well Easton Water District Well #2, AFT-391, down gradient, approximately 1,800' southeast of the property, which is the 10 year time of travel capture zone.

## ***9.0 KITTITAS COUNTY CODE 17A.03 CRITICAL AQUIFER RECHARGE AREA***

### ***9.1 A. GEOLOGIC SETTING AND SOILS INFORMATION FOR THE SITE AND SURROUNDING AREA.***

The geologic setting is identified in Section 4.0 and Geologic map of Easton area, Kittitas County, Washington; *Cheney, E.S. 1999*, Geologic map of the Snoqualmie Pass 30 X 60 minute quadrangle, Washington. *Tabor, R.W., Frizzell, V.A., Booth, D.B., and Waitt, R.B., 2000*, and Hydrogeologic Framework and Groundwater/Surface-Water Interactions of the Upper Yakima River Basin, Kittitas County, Central Washington, *USGS, 2014* included in the Attachments.

The Qag, alpine glacial deposits, chiefly of sand and gravel matrix. Clay and hardpan was identified in multiple well logs and LGS speculates the origin of "Hardpan" which typically is translated to glacial till. Since this is not mapped, on the geological maps available in plan or cross section view, LGS has used a common nomenclature for till and advance sequences, for the till LGS is using Qagt. LGS believes it is more glacial till vs a lacustrine source because of the boulders present, this is just one of many possible interpretations. The identified well depths are up to approximately 80' deep and are beneath the protective clay and hardpan layer, in sands and gravels, aquifer ranging from 40'-80' below the surface, generally.

The estimated contacts inferred at the Site are seen in Table 1 above and in Figure 2. *Geological Cross Section A-A'*.

### ***9.2 B. WATER QUALITY DATA, INCLUDING PH, TEMPERATURE, DISSOLVED OXYGEN, CONDUCTIVITY, NITRATES, AND BACTERIA;***

LGS did not sample any of the identified wells for these constituents however has reviewed the Sentry Data available from the Department of Health links from the SWAP Map. The closest well is the Lake Easton Resort well #1 AFL-866 approximately 800' south of the property, down gradient direction, has had exceedances in total coliform, and the second closest well Easton Water District Well #2, AFT-391, down gradient, approximately 1,800' southeast of the property, has had exceedances in iron, manganese, and has been present for total coliform. For the third well identified is the Lake Easton State Park well #1, AHB-845, which is approximately 1,600' due south as well, down gradient direction, but the property is not within its wellhead protection area, and has been present for total coliform. Please see the DOH sentry data printouts in the appendix.

### ***9.3 C. LOCATION AND DEPTH OF PERCHED WATER TABLES;***

Water tables are likely perched upon the identified glacial till just below the surface.



**9.4 D. RECHARGE POTENTIAL OF SITE (PERMEABILITY/TRANSMISSIVITY);**

The shallow low permeability clay/hardpan identified in multiple adjacent well log reports, creates a barrier near the surface, which LGS estimates would be present at the Site, that would be protective of the confined or semi-confined aquifer below.

**9.5 E. HYDROLOGIC BUDGET;**

The surficial water would drain into the unconfined aquifer, run along the till or confining layer identified, and reach likely to a local rivers and surface waters like Lake Easton primarily. At the margins of the till, adjacent to the hillside, non conformity contacts, the surface water could potentially enter into the “UNC” or alpine glacial advance deposits beneath the glacial till.

**9.6 F. LOCAL GROUNDWATER FLOW, DIRECTION, AND GRADIENT;**

The gradient is measured from Figure 22 USGS at 0.0027 FT/FT to the east-southeast.

**9.7 G. LOCATION, DEPTH, AND OTHER WATER QUALITY DATA ON THE THREE SHALLOWEST WELLS OR SPRINGS LOCATED WITHIN 1,000 FEET OF THE SITE;**

The only well within 1,000’ is the Lake Easton Resort Well #1 AFL-866 approximately 800’ south of the property, down gradient direction, has had exceedances in total coliform.

**9.8 H. POTENTIAL IMPACTS TO WELLHEAD PROTECTION AREAS LOCATED WITHIN THE SITE;**

The proximal wells discussed above have a low risk of impacts, based on groundwater gradient, flow direction, and the shallow glacial till.. In LGS’s opinion, the general susceptibility of the wellheads themselves outside the surface seals, shallow depth pose a low risk, additionally based a “hardpan” soils being present in the adjacent wells, the overall risk in the broad aquifer, is low for constituents of concern and potential for impacts to human health and the environment if a hypothetical release were to occur.

**9.9 I. SURFACE WATER LOCATIONS WITHIN 1,000 FEET OF THE SITE;**

Lake Easton is within 825’ of the closest corner of the property, cross gradient.

**9.10 J. DISCUSSION OF THE EFFECTS OF THE PROPOSED DEVELOPMENT ON GROUNDWATER QUALITY AND QUANTITY;**

The development of forest to a developed commercial truck stop will not change the aquifers water quality with the appropriate BMPs in place. This would include oil-water separators and regulated fueling apparatus, leak detection in tanks and fueling product lines, including annual decay and inspections of tanks and lines. Stormwater will be infiltrated on Site and will continue to broadly infiltrate in the same location.

**9.11 K. RECOMMENDATIONS ON APPROPRIATE MITIGATION, IF ANY, TO ASSURE THAT THERE SHALL BE NO MEASURABLE EXCEEDANCE OF MINIMUM STATE GROUNDWATER QUALITY STANDARDS OR MEASURABLE REDUCTION IN AVAILABLE QUANTITY OF GROUNDWATER;**

Using appropriate regulated BMPs will be paramount in assuring water quality infiltration into the aquifer.

**9.12 L. EMERGENCY MANAGEMENT PLAN; AND**

The state regulated fueling tanks will have the appropriate protocol for emergency management.



LOMBARDINI  
GEOLOGICAL  
SERVICES LLC

### **9.13 M. CONTAINMENT RELEASE DETECTION.**

Underground storage tanks require dual tanks with interstitial space monitoring for internal tank breach via electronic monitoring, Veeder-Root systems for example, or similar, in LGS's experience. Lines and USTs are annually physically tested for pressure decay and general inspection to meet state regulatory guidelines.

### **10.0 CONCLUSIONS-**

LGS concludes that, using institutional/engineered controls of the storage of fuels, containment for potential spills, storm drainage, per Kittitas County Code 17A.03 Critical Aquifer Recharge Areas (with all Best Management Practices), the low permeability of the "hardpan" directly present adjacent to the Site, one well being down gradient on hardpan, 1,000' time of travel, one well in a 10-year capture zone, a lack of unconfined aquifer transport, the tanks themselves on the Site not in either of these capture zones, groundwater flow direction to the east-southeast, there is a low risk, in the opinion of LGS to impact the three wells in review, the Roslyn Valley UNC aquifer, and any potable water sources, which LGS considers the important receptor to human health and the environment.

### **11.0 SUMMARY-**

Based on a review of the "English" well log, proximal well logs, regional geological maps, Geologic map of Easton area, Kittitas County, Washington; *Cheney, E.S. 1999*, Geologic map of the Snoqualmie Pass 30 X 60 minute quadrangle, Washington. *Tabor, R.W., Frizzell, V.A., Booth, D.B., and Waite, R.B., 2000*, and Hydrogeologic Framework and Groundwater/Surface-Water Interactions of the Upper Yakima River Basin, Kittitas County, Central Washington, *USGS, 2014*, Kittitas County Code 17A.03 Critical Aquifer Recharge Areas, and general principles of hydrogeologic theory, LGS has determined, in our opinion, *-that proposed Site development, as long as proper BMPs are utilized, has a low risk of contamination entering into Aquifer "UNC", which is protective of human health and the environment.*

### **12.0 LIMITATIONS-**

LGS has prepared this report for the use of Majestic Group LLC and their authorized agents. LGS's interpretations regarding subsurface conditions rely on information gathered from well logs which have limitations. One of the limitations is the actual location, the other is the accuracy of the descriptions which LGS has interpreted based on experience. The interpretations are not to be a warranty of subsurface conditions. No subsurface explorations were completed for this project.

Within the limitations of the scope and budget, LGS's services have been completed in accordance with generally accepted practices of hydrogeology when this report was prepared. No other conditions, expressed or implied, should be understood.

### **13.0 REFERENCES-**

#### Text Resources;

Geologic map of Easton area, Kittitas County, Washington; *Cheney, E.S. 1999*

Geologic map of the Snoqualmie Pass 30 X 60 minute quadrangle, Washington. *Tabor, R.W., Frizzell, V.A.,*



LOMBARDINI  
GEOLOGICAL  
SERVICES LLC

*Booth, D.B., and Waitt, R.B., 2000*

Hydrogeologic Framework and Groundwater/Surface-Water Interactions of the Upper Yakima River Basin, Kittitas County, Central Washington, *USGS, 2014*

Kittitas County Code 17A.03 Critical Aquifer Recharge Area

Freeze, R. Allan, and John A. Cherry. 1979. Groundwater. Englewood Cliffs, N.J.: Prentice-Hall. Harvard (18th ed.)

Website Resources; *Accessed 12/03/2025 through 12/13/2025*

<https://ecode360.com/45422641#45422658>

<https://ngmdb.usgs.gov/mapview/?center=-121.181,47.239&zoom=14>

<https://fortress.wa.gov/doh/swap/index.html>

<https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx>



LOMBARDINI  
GEOLOGICAL  
SERVICES LLC

LGS appreciates the opportunity to assist you with this project. Please contact LGS if you have any questions regarding this report.

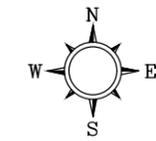
Regards,

Shawn Lombardini LHG, RG, PG  
Principal Hydrogeologist  
December 13, 2025



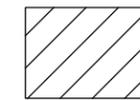
Shawn Lombardini

FILENAME 25-105-2104.DWG  
 DRAWN BY ICD 12/13/2025  
 CHECKED BY SL 12/13/2025  
 APPROVED BY SL 12/13/2025  
 PROJECT NUMBER 25-129



LEGEND

ENGLISH 65' WELL



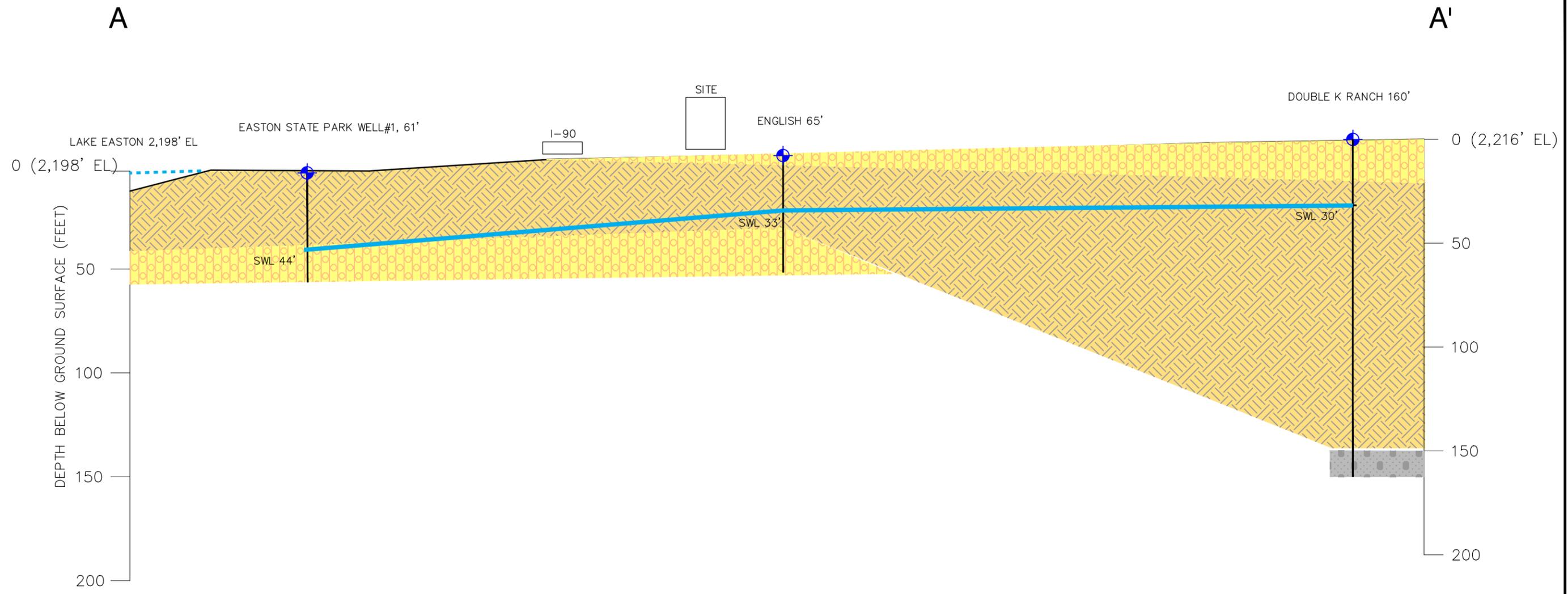
SITE



FIGURE 1  
 SITE MAP & GEOLOGIC CROSS SECTION A-A'

MOUNTAINVIEW GROUP LLC TRAVEL CENTER  
 WEST SPARKS ROAD  
 EASTON, WA 98925

PROJECT NUMBER 25-129  
 APPROVED BY 12/13/2025  
 CHECKED BY 12/13/2025  
 DRAWN BY 12/13/2025  
 FILENAME 25-105-XSECTIONS.DWG



LEGEND

- MW-1 - WELL, SOIL BORING, SOIL SAMPLING
- GROUNDWATER LEVEL AT TIME OF DRILLING
- SCREENED INTERVAL
- MAXIMUM DEPTH EXPLORED
- SOIL CONTACT
- POORLY GRADED GRAVEL/WELL GRADED GRAVEL 10-1,000 FT/D K
- CLAY WITH BOULDERS, GLACIAL TILL - 0.0001-1FT/D K
- CLAY WITH QUARTZ - 0.01-50FT/D K

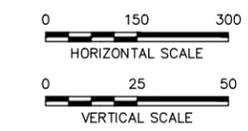


FIGURE 2  
 GEOLOGIC CROSS SECTION A-A'

MOUNTAINVIEW GROUP LLC TRAVEL CENTER  
 WEST SPARKS ROAD  
 EASTON, WA 98925



LOMBARDINI  
GEOLOGICAL  
SERVICES LLC

## SITE PHOTOGRAPHIC RECORD

MOUNTAINVIEW GROUP LLC TRAVEL CENTER

WEST SPARKS ROAD, EASTON, WA 98925

LGS Project #25-129

December 13, 2025



Photo #1: *Center of Site looking west.*



Photo #2: *Entrance to Site from north looking east.*



Photo #3: *Lake Easton Resort well house.*



Photo #4: *Easton Water District Well#2, AFT-391*



Photo 5: *Large diameter upper surface casing. Easton Water District Well #2.*

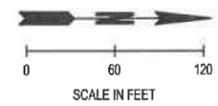


Photo #6: *Easton Water District Well #1, AFT-392*

**CALL BEFORE YOU DIG**

THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR THE LOCATION AND PROTECTION OF ALL EXISTING UTILITIES. THE CONTRACTOR SHALL VERIFY ALL UTILITY LOCATIONS PRIOR TO CONSTRUCTION BY CALLING THE UNDERGROUND LOCATE LINE AT 811 OR (800)-424-5555 A MINIMUM OF 48 HOURS PRIOR TO ANY EXCAVATION.

SEC. 2, T20N., R13E., W.M.



**LEGEND**

- PROPERTY LINE
- - - EXISTING CHANNELIZATION
- (X) STALL COUNT
- ▬ CEMENT CONCRETE CURB & GUTTER
- ▨ PROPOSED BUILDING
- ▨ CEMENT CONCRETE SIDEWALK
- - - XX - EXISTING CONTOURS (MAJOR/MINOR)
- - - XX - PROPOSED CONTOURS (MAJOR/MINOR)

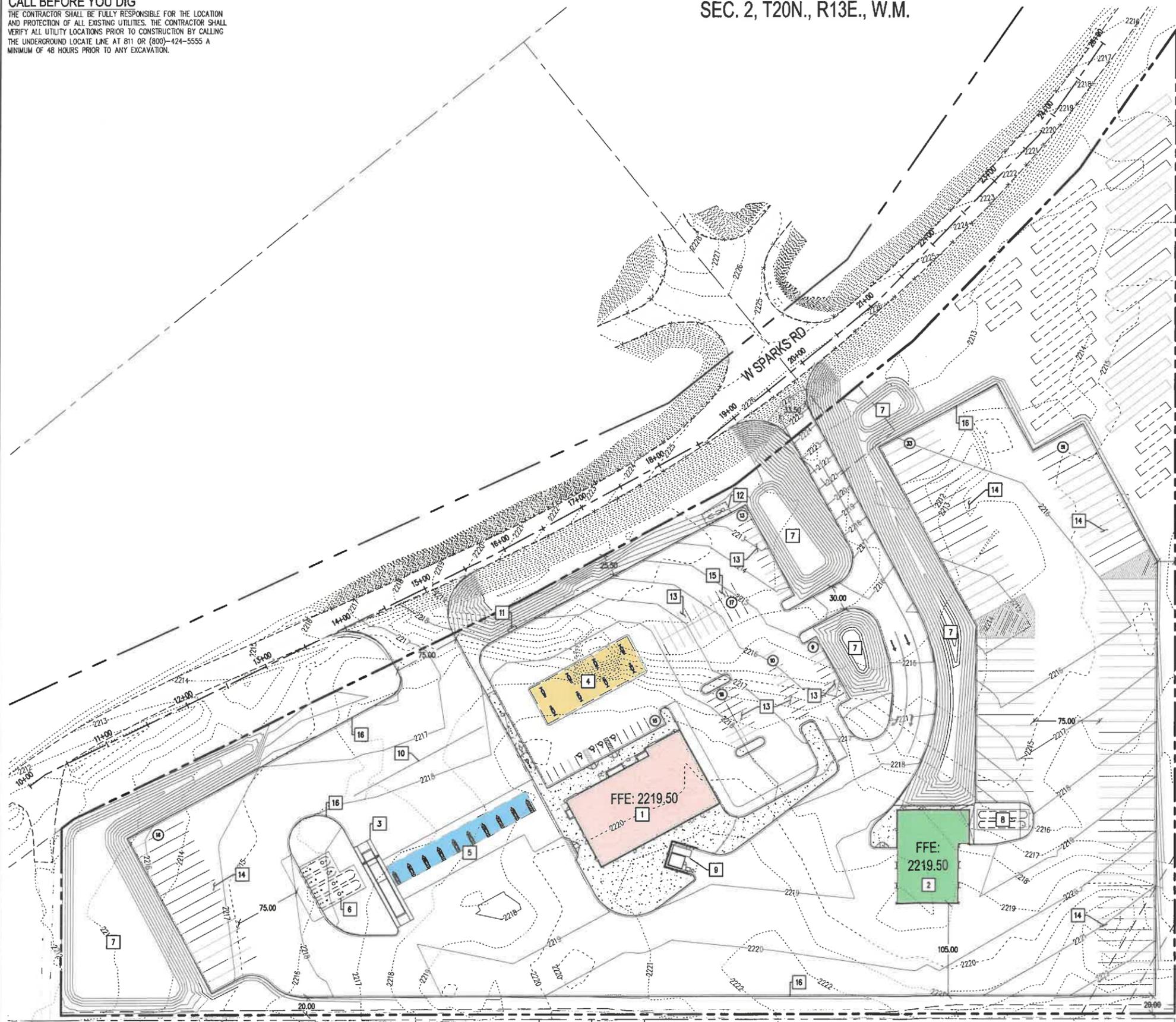
**CONSTRUCTION NOTES**

1. CONVENIENCE STORE AND QUICK SERVICE RESTAURANT
2. VEHICLE MAINTENANCE BUILDING
3. PLATFORM SCALE
4. AUTO CANOPY
5. TRUCK CANOPY
6. UNDERGROUND FUEL STORAGE TANKS
7. STORMWATER BASIN
8. UNDERGROUND STORAGE TANKS
9. TRASH ENCLOSURE
10. STOP BAR
11. RV SEWER DUMP STATION
12. PROPANE TANK
13. AUTO PARKING STALL: 9' x 20' (TYP.)
14. TRUCK PARKING STALL: 12.5' x 65' (TYP.)
15. RV PARKING STALL: 9' x 40' (TYP.)
16. CEMENT CONCRETE CURB & GUTTER

**LAND USES**

KEY	USE	USE AREA (APPROX. SF)
Green	VEHICLE MAINTENANCE	7700
Blue	DIESEL FUELING CANOPY	4500
Yellow	GAS FUELING CANOPY	5700
Pink	C-STORE AND RESTAURANT	8325
Light Pink	C-STORE RESTAURANT	5000

File: 01\_2023\_12.13.23.dwg - User: dphillips  
 K:\PROJECTS\GAS\MOUNTVIEW GROUP, LLC\22-000880 EASTON WA, ERT 70 TRUCK STOP (CAD)\22-000880 SP-01.dwg



BY	DATE

**SCJ ALLIANCE**  
 CONSULTING SERVICES  
 8730 TALLON LANE, SUITE 200, LACEY, WA 98516  
 P: 360.352.1465 F: 360.352.1509  
 SCJALLIANCE.COM

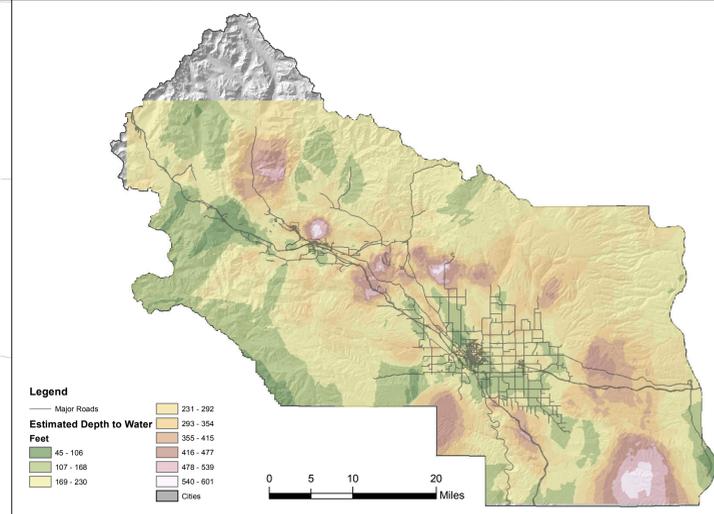
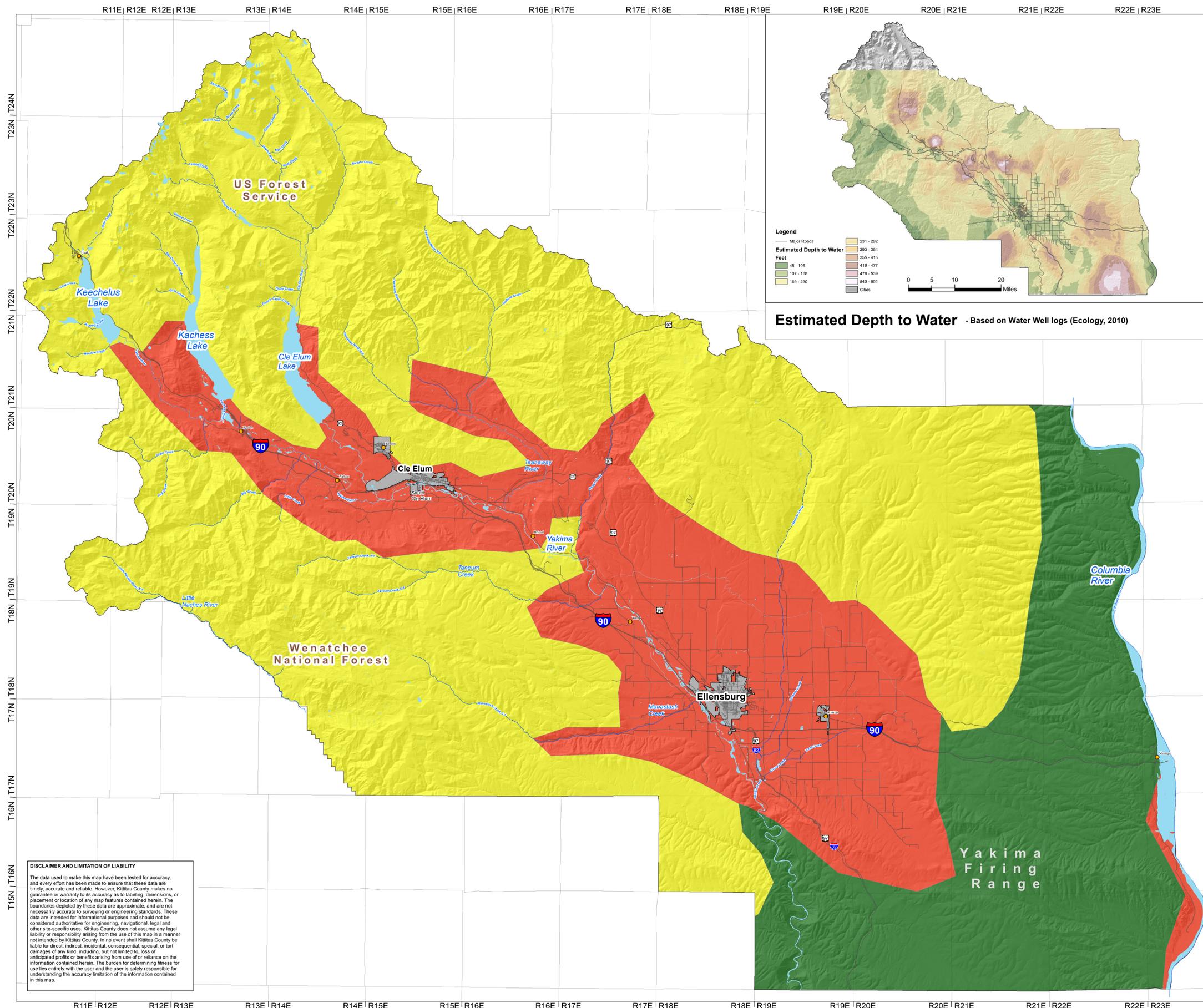
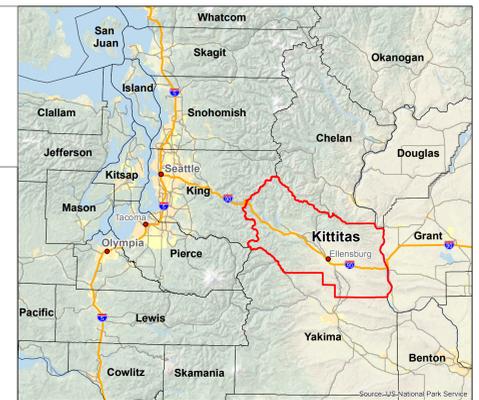
**PRELIMINARY SITE PLAN**  
 MOUNTVIEW GROUP LLC TRAVEL CENTER  
 WEST SPARKS ROAD  
 EASTON, WASHINGTON

**PRELIMINARY**

DESIGNER: D. PHILLIPS  
 DRAWN BY: K. GANS  
 APPROVED BY: D. PHILLIPS  
 DATE: FEBRUARY 2023  
 JOB NO: 22-000880  
 DRAWING FILE NO: 22-000880 SP-01  
 DRAWING NO: SP-01  
 SHEET NO: 1 OF 1



# KITTITAS COUNTY CRITICAL AREAS ORDINANCE - CRITICAL AQUIFER RECHARGE AREAS



## Legend

- Aquifer Susceptibility**
- High
  - Medium
  - Low
- Streams
- Waterbodies
- Major Roads
- Cities

### CRITICAL AQUIFER RECHARGE AREAS DATA SOURCES:

This map is very preliminary and should be used for planning purposes only. Aquifer susceptibility was mapped in support of Kittitas County's Critical Areas update. Aquifer susceptibility was estimated using Washington Department of Land and Natural Resources surficial geology (2010), Ecology well data (2010) and NRCS soils (2003) information as well as data from USGS on aquifers (2003) and PRISM precipitation data (2000). The methods used were generally consistent with the Department of Ecology's "Guidelines for Establishing Critical Aquifer Recharge Areas" (Cook, 2002).

High = structural fill basin aquifer + more extensive alluvial deposits + higher shallow well density.

Medium = Few shallow wells + bedrock aquifer + >15"/year precipitation based on PRISM.

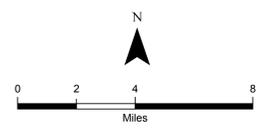
Low = Low well density + bedrock aquifer + <15"/year precipitation based on PRISM.

The estimated depth to water surface was created using interpolation methods in ArcGIS. We used the Ecology wells (well depth field) to create the surface layer.

Coordinate System: State Plane NAD1983 (F1)  
Washington South FIPS 4602

NOTE: Map data shown here are the property of the sources listed below. Inaccuracies may exist, and ESA implies no warranties or guarantees regarding any aspect of data depiction.

Data Sources: DNR, 2010, NRCS, 2003; Ecology, 2010, PRISM, 2000, ESRI, 2010, Kittitas County, 2012.



## Kittitas County Critical Areas Ordinance Critical Aquifer Recharge Areas

Kittitas County, Washington  
December 2013

**DISCLAIMER AND LIMITATION OF LIABILITY**  
The data used to make this map have been tested for accuracy, and every effort has been made to ensure that these data are timely, accurate and reliable. However, Kittitas County makes no guarantee or warranty to its accuracy as to labeling, dimensions, or placement or location of any map features contained herein. The boundaries depicted by these data are approximate, and are not necessarily accurate to surveying or engineering standards. These data are intended for informational purposes and should not be considered authoritative for engineering, navigational, legal and other site-specific uses. Kittitas County does not assume any legal liability or responsibility arising from the use of this map in a manner not intended by Kittitas County. In no event shall Kittitas County be liable for direct, indirect, incidental, consequential, special, or tort damages of any kind, including, but not limited to, loss of anticipated profits or benefits arising from use of or reliance on the information contained herein. The burden for determining fitness for use lies entirely with the user and the user is solely responsible for understanding the accuracy limitation of the information contained in this map.



Search Tasks

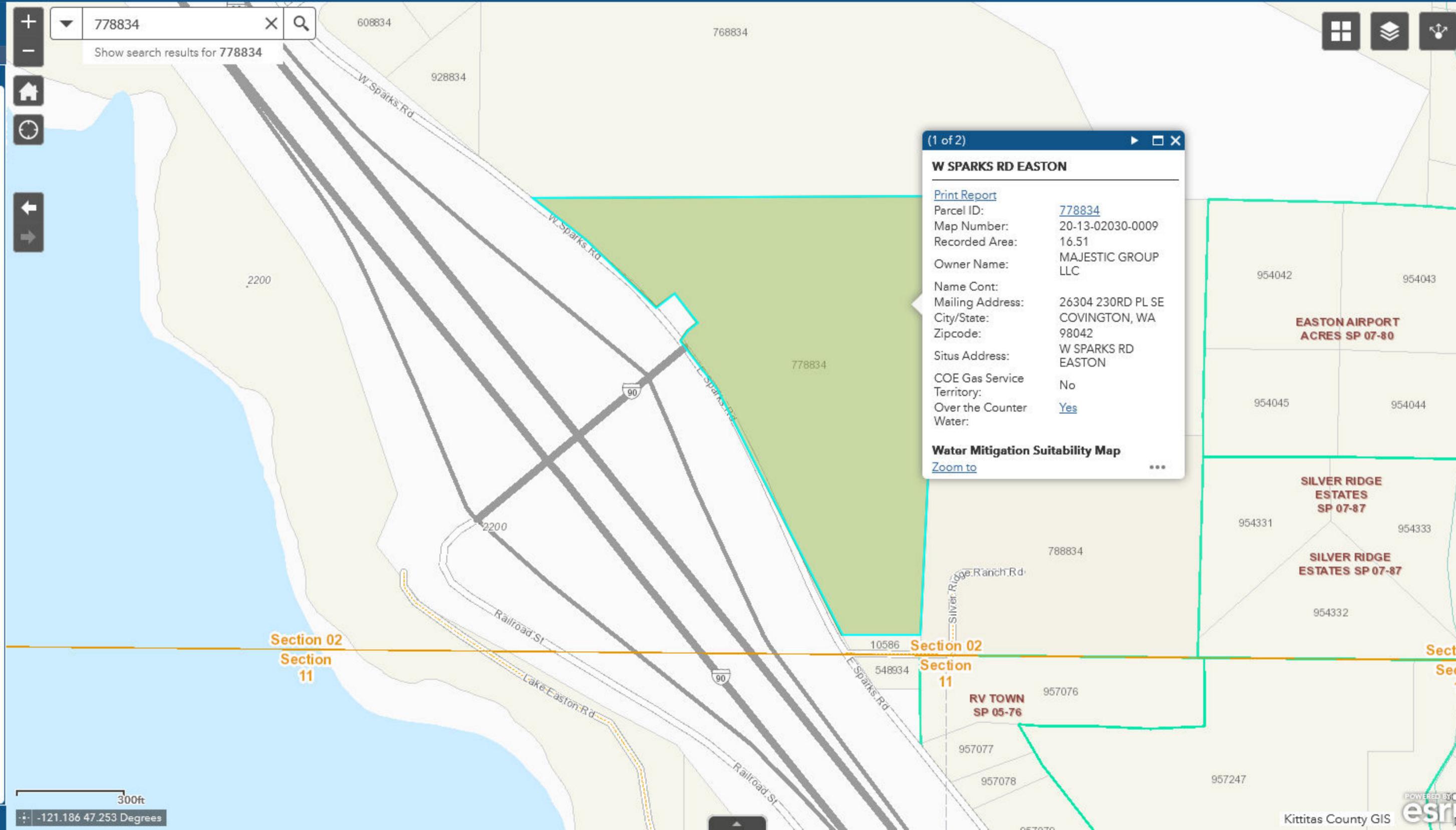
Tasks	Results
Property Info _Query result	...

Displayed features: 1/1

**W SPARKS RD EASTON**

[Print Report](#)

Parcel ID:	778834
Map Number:	20-13-02030-0009
Recorded Area:	16.51
Owner Name:	MAJESTIC GROUP LLC
Name Cont:	
Mailing Address:	26304 230RD PL SE
City/State:	COVINGTON, WA
Zipcode:	98042
Situs Address:	W SPARKS RD EASTON
COE Gas Service Territory:	No
Over the Counter Water:	<a href="#">Yes</a>



(1 of 2)

**W SPARKS RD EASTON**

[Print Report](#)

Parcel ID:	778834
Map Number:	20-13-02030-0009
Recorded Area:	16.51
Owner Name:	MAJESTIC GROUP LLC
Name Cont:	
Mailing Address:	26304 230RD PL SE
City/State:	COVINGTON, WA
Zipcode:	98042
Situs Address:	W SPARKS RD EASTON
COE Gas Service Territory:	No
Over the Counter Water:	<a href="#">Yes</a>

**Water Mitigation Suitability Map**

[Zoom to](#)



778834 Show search results for 778834

Search Tasks

Tasks Results

Property Info \_Query result

Displayed features: 1/1

W SPARKS RD EASTON

[Print Report](#)

Parcel ID: [778834](#)

Map Number: 20-13-02030-0009

Recorded Area: 16.51

Owner Name: MAJESTIC GROUP LLC

Name Cont:

Mailing Address: 26304 230RD PL SE

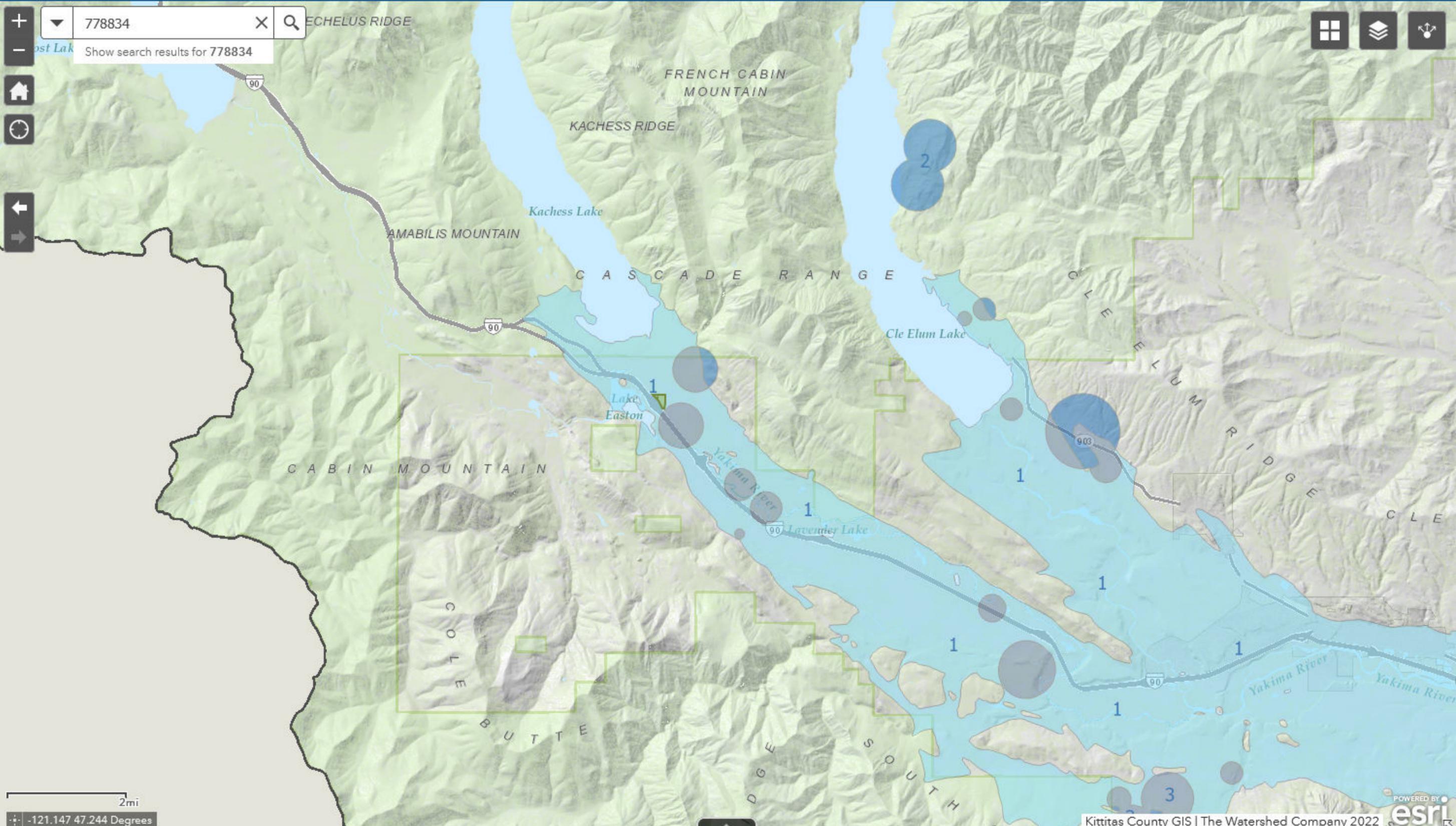
City/State: COVINGTON, WA

Zipcode: 98042

Situs Address: W SPARKS RD EASTON

COE Gas Service Territory: No

Over the Counter Water: [Yes](#)



2mi -121.147 47.244 Degrees

**Search Tasks**

Tasks Results

Property Info\_Query result

Displayed features: 1/1

**W SPARKS RD EASTON**

[Print Report](#)

Parcel ID: [778834](#)

Map Number: 20-13-02030-0009

Recorded Area: 16.51

Owner Name: MAJESTIC GROUP LLC

Name Cont:

Mailing Address: 26304 230RD PL SE

City/State: COVINGTON, WA

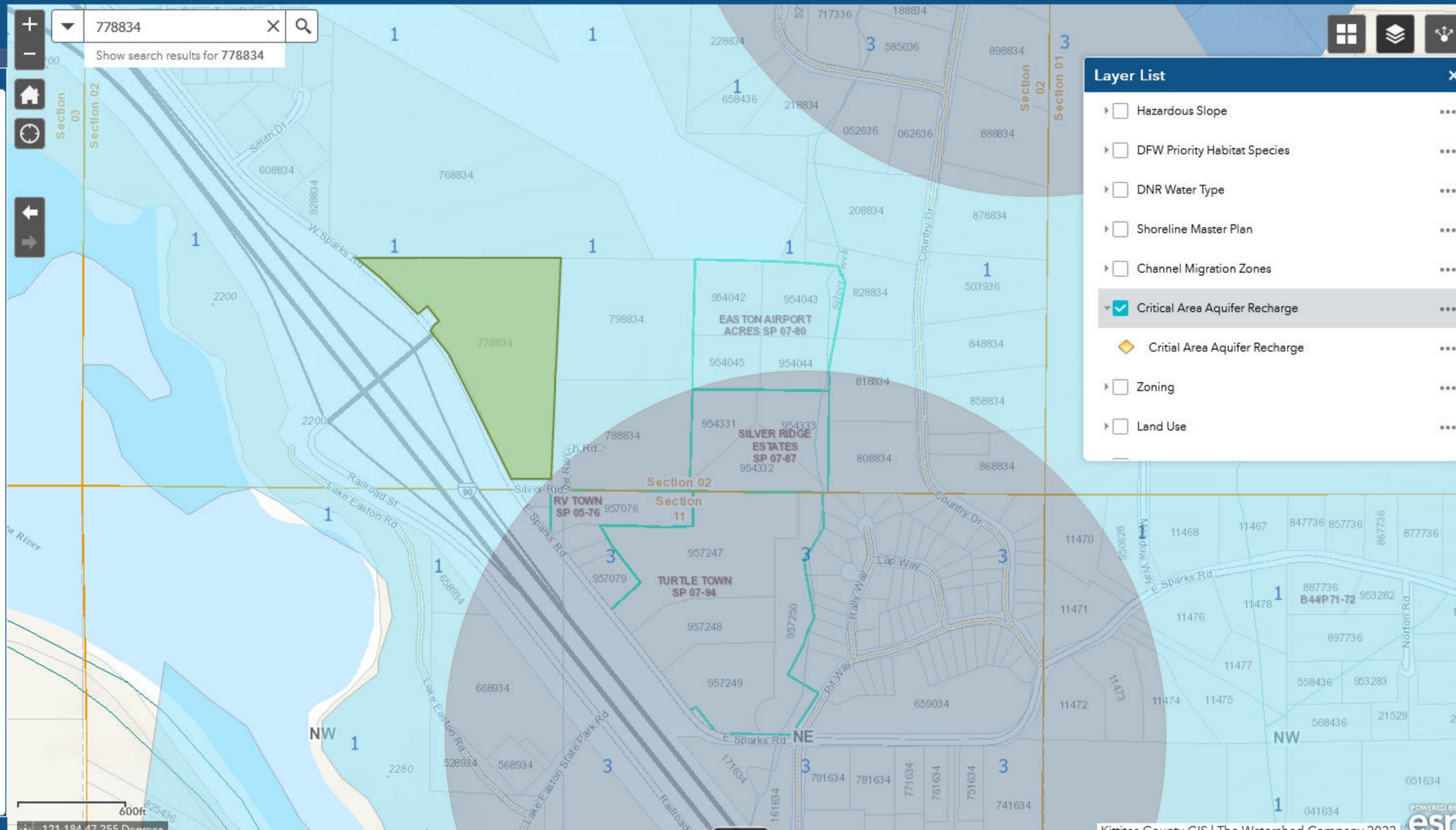
Zipcode: 98042

Situs Address: W SPARKS RD EASTON

COE Gas Service: No

Territory: [Yes](#)

Over the Counter Water: [Yes](#)



**Layer List**

- Hazardous Slope
- DFW Priority Habitat Species
- DNR Water Type
- Shoreline Master Plan
- Channel Migration Zones
- Critical Area Aquifer Recharge
- Critial Area Aquifer Recharge
- Zoning
- Land Use

600ft  
121.18447255 Degrees

Show search results for 778834

**Legend**

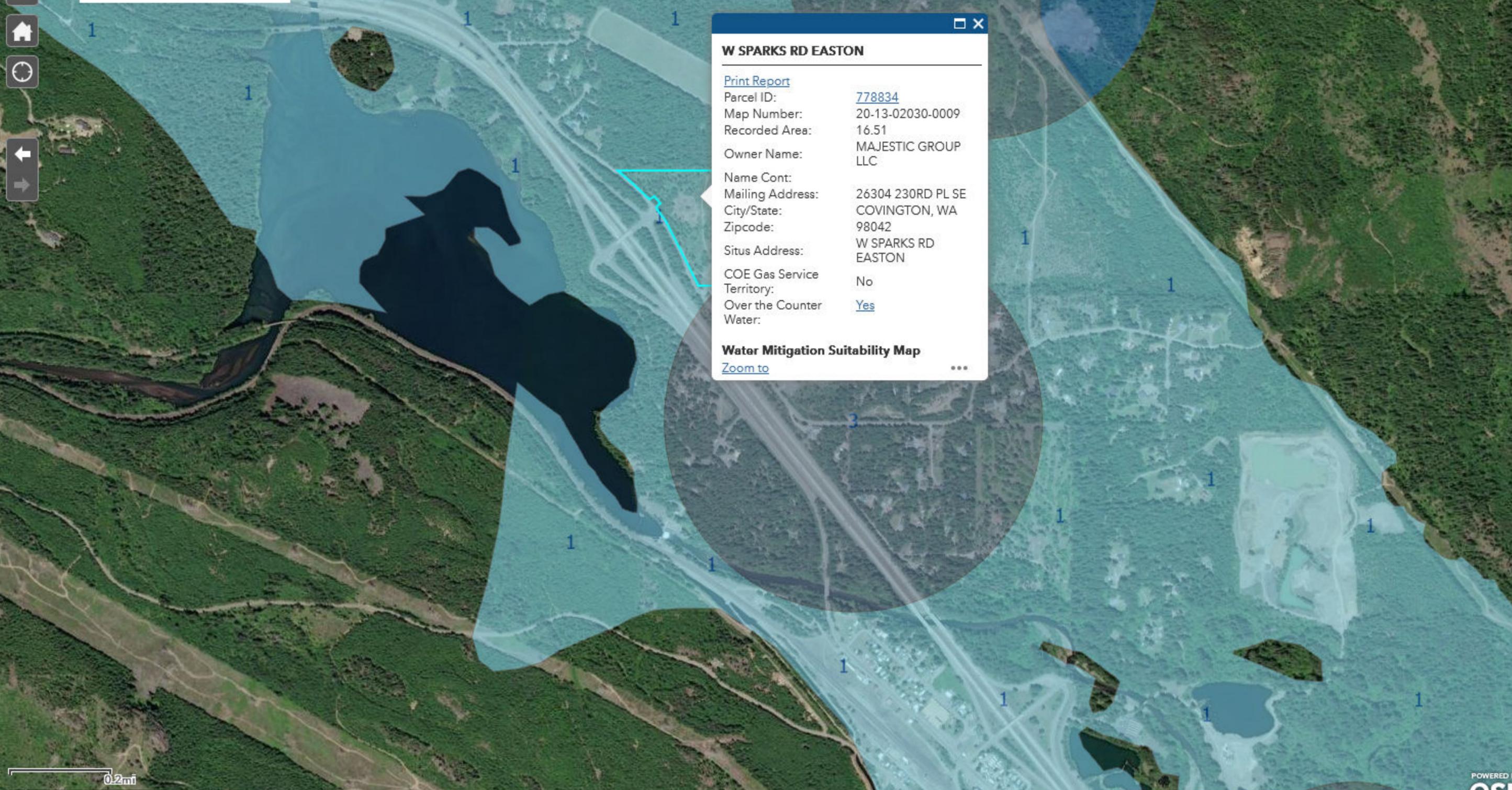
**Tax Parcels**

**Critical Area Aquifer Recharge**

Critical Area Aquifer Recharge

Code

- 1: Unconsolidated Deposit Within Kittitas and Roslyn Basins
- 2: Group A Wellhead Protection Areas
- 3: Both Group A and Unconsolidated Deposit



**W SPARKS RD EASTON**

[Print Report](#)

Parcel ID:	778834
Map Number:	20-13-02030-0009
Recorded Area:	16.51
Owner Name:	MAJESTIC GROUP LLC
Name Cont:	
Mailing Address:	26304 230RD PL SE
City/State:	COVINGTON, WA
Zipcode:	98042
Situs Address:	W SPARKS RD EASTON
COE Gas Service Territory:	No
Over the Counter Water:	<a href="#">Yes</a>

**Water Mitigation Suitability Map**

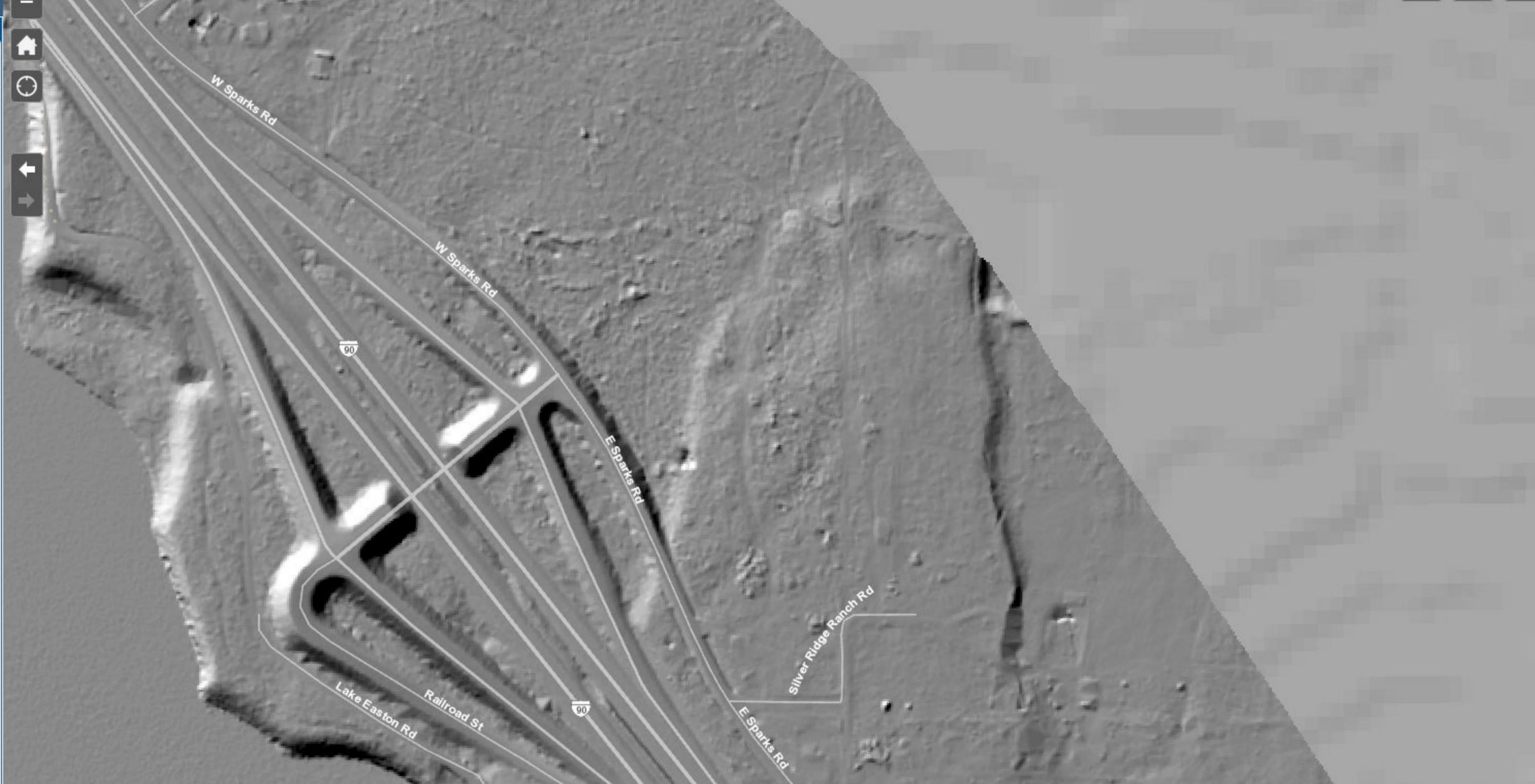
[Zoom to](#) ...



Search Tasks

Tasks	Results
Property Info	
Critical Areas Info	
Districts Info	

Address, Place, or XY

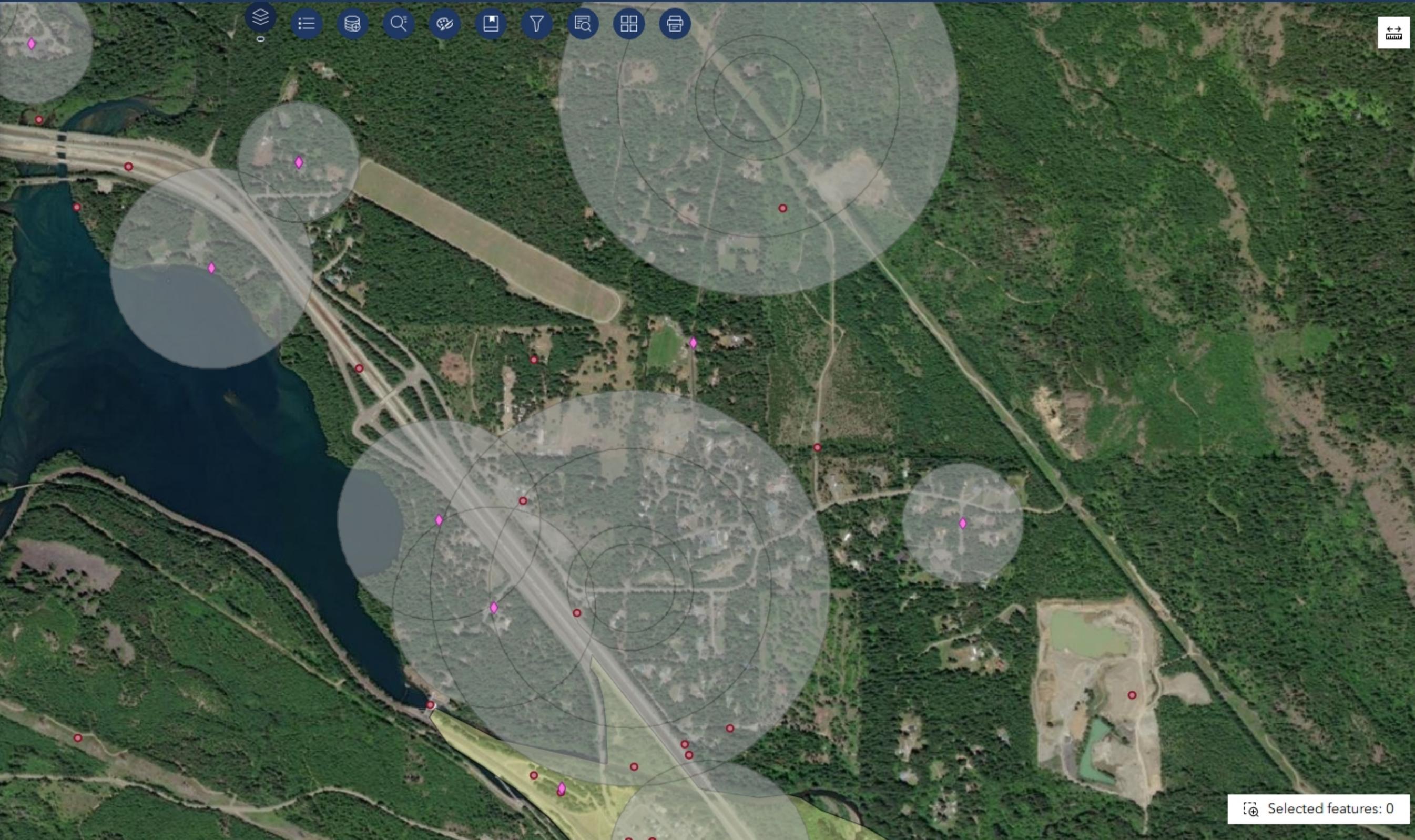


300ft

-121.186 47.251 Degrees

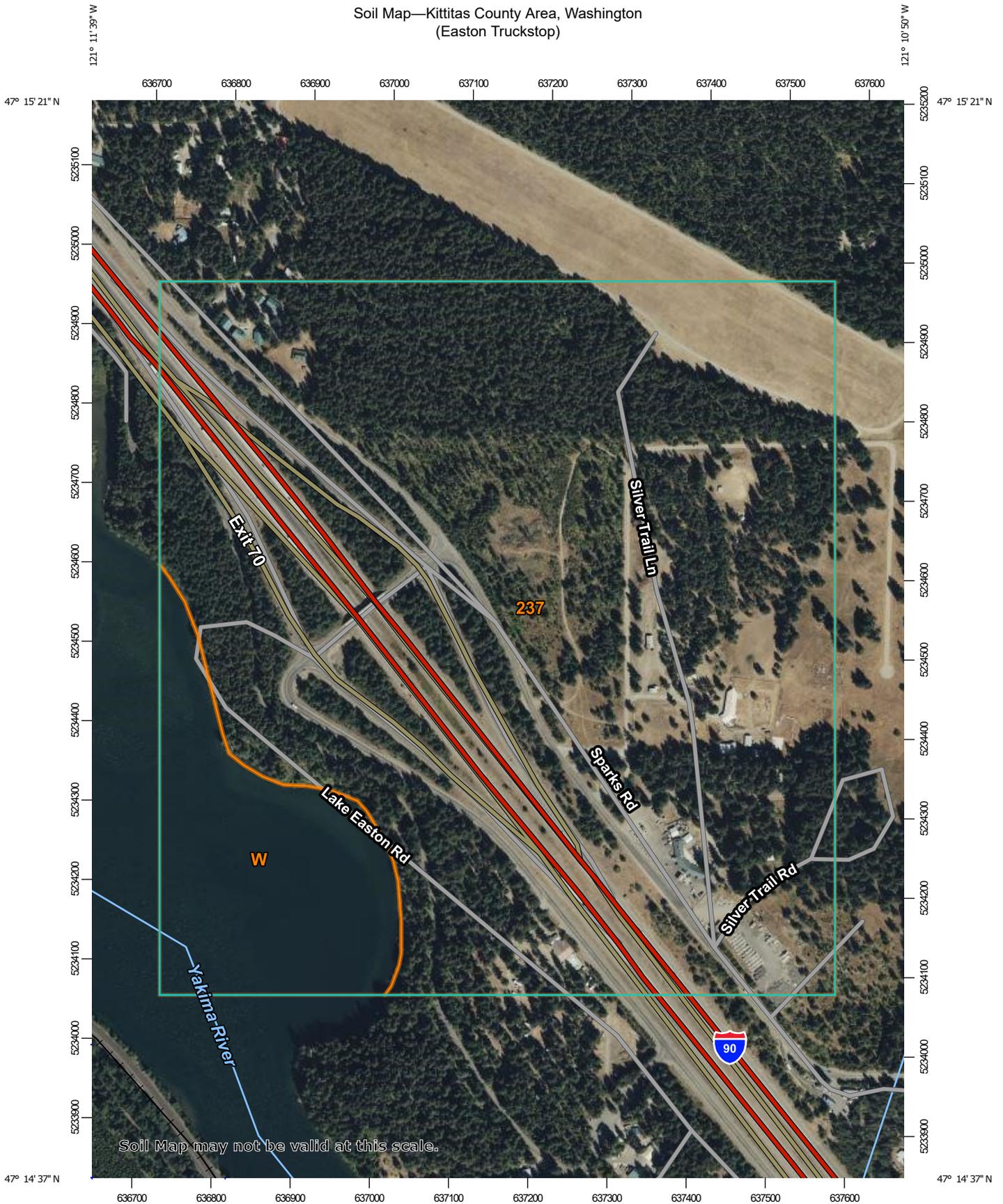
### Map Layers

- Drinking Water System Points
- Ecology Contaminants
- Wellhead Protection Areas
- Surface Water Protection Areas
- Drinking Water Service Areas
- County

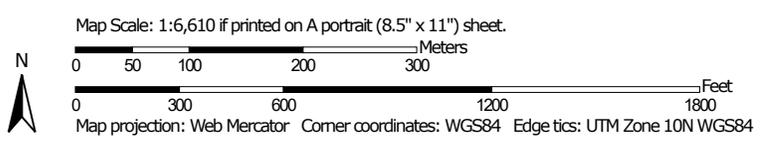


Selected features: 0

Soil Map—Kittitas County Area, Washington  
(Easton Truckstop)



Soil Map may not be valid at this scale.



Soil Map—Kittitas County Area, Washington  
(Easton Truckstop)

### MAP LEGEND

**Area of Interest (AOI)**

 Area of Interest (AOI)

**Soils**

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

**Special Point Features**

-  Blowout
-  Borrow Pit
-  Clay Spot
-  Closed Depression
-  Gravel Pit
-  Gravelly Spot
-  Landfill
-  Lava Flow
-  Marsh or swamp
-  Mine or Quarry
-  Miscellaneous Water
-  Perennial Water
-  Rock Outcrop
-  Saline Spot
-  Sandy Spot
-  Severely Eroded Spot
-  Sinkhole
-  Slide or Slip
-  Sodic Spot

-  Spoil Area
-  Stony Spot
-  Very Stony Spot
-  Wet Spot
-  Other
-  Special Line Features

**Water Features**

 Streams and Canals

**Transportation**

-  Rails
-  Interstate Highways
-  US Routes
-  Major Roads
-  Local Roads

**Background**

 Aerial Photography

### MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

**Warning:** Soil Map may not be valid at this scale.  
Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service  
Web Soil Survey URL:  
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Kittitas County Area, Washington  
Survey Area Data: Version 18, Aug 28, 2025

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 6, 2022—Sep 8, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

## Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
237	Kladnick ashy sandy loam, 0 to 3 percent slopes	167.0	87.8%
W	Water	23.1	12.2%
<b>Totals for Area of Interest</b>		<b>190.2</b>	<b>100.0%</b>

## Kittitas County Area, Washington

### 237—Kladnick ashy sandy loam, 0 to 3 percent slopes

#### Map Unit Setting

*National map unit symbol:* 2kvx  
*Elevation:* 2,000 to 3,000 feet  
*Mean annual precipitation:* 45 to 75 inches  
*Mean annual air temperature:* 43 to 45 degrees F  
*Frost-free period:* 90 to 120 days  
*Farmland classification:* Not prime farmland

#### Map Unit Composition

*Kladnick and similar soils:* 85 percent  
*Minor components:* 15 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Kladnick

##### Setting

*Landform:* Terraces  
*Down-slope shape:* Concave  
*Across-slope shape:* Concave  
*Parent material:* Glacial outwash with a mantle of volcanic ash

##### Typical profile

*Oe - 0 to 1 inches:* moderately decomposed plant material  
*H1 - 1 to 9 inches:* ashy sandy loam  
*H2 - 9 to 15 inches:* gravelly ashy sandy loam  
*H3 - 15 to 24 inches:* very gravelly sandy loam  
*H4 - 24 to 60 inches:* extremely gravelly sand

##### Properties and qualities

*Slope:* 0 to 3 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* High  
(1.98 to 5.95 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water supply, 0 to 60 inches:* Low (about 4.2 inches)

##### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6s  
*Hydrologic Soil Group:* A  
*Ecological site:* F006XD001WA - Frigid Moist Xeric Ashy Slopes  
(Grand fir Warm Moist Shrub/Herb)  
*Other vegetative classification:* grand fir/vine maple (CWS551)  
*Hydric soil rating:* No

### **Minor Components**

#### **Bertolotti**

*Percent of map unit: 5 percent*

*Hydric soil rating: No*

#### **Kachess**

*Percent of map unit: 5 percent*

*Hydric soil rating: No*

#### **Roslyn**

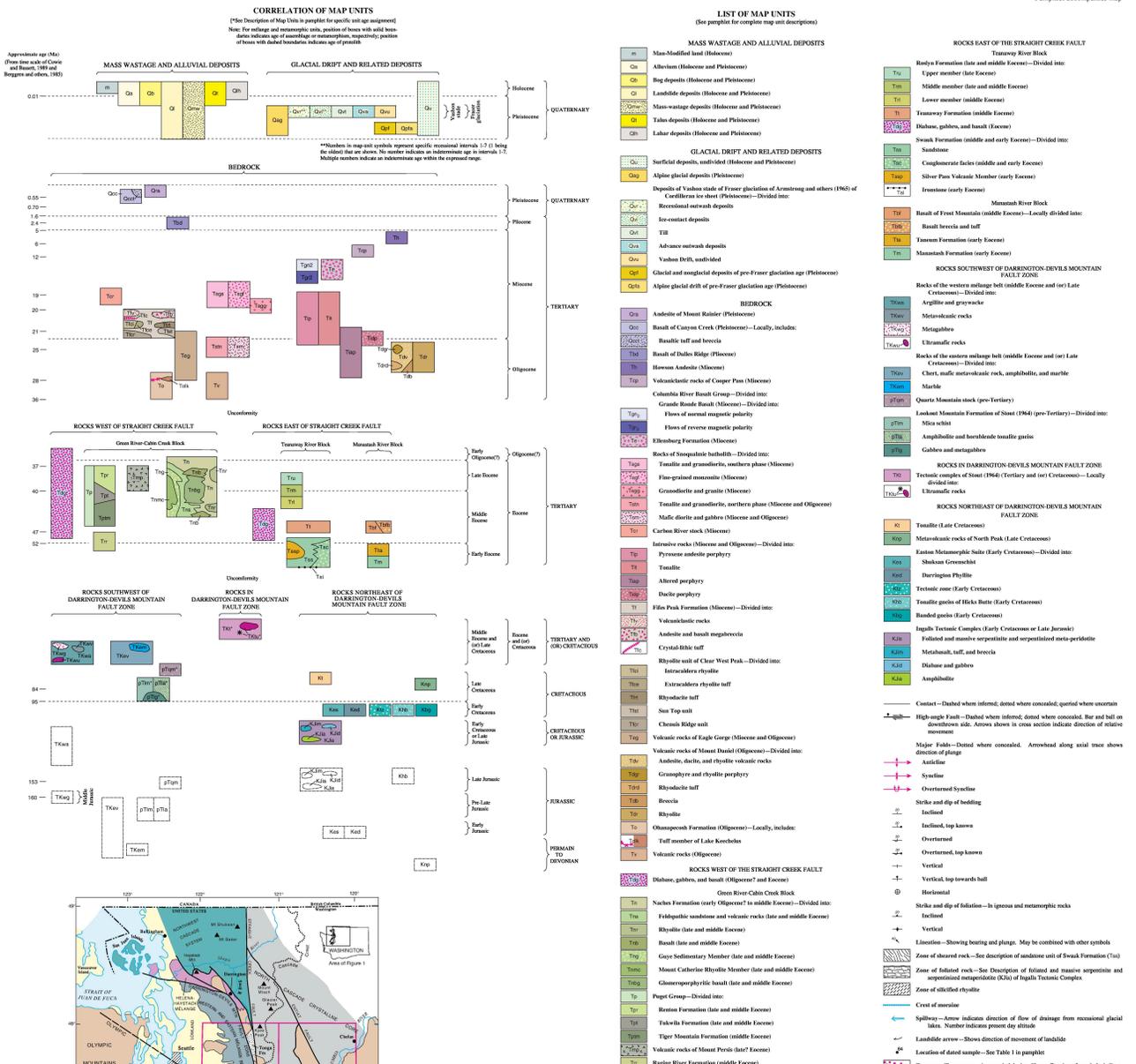
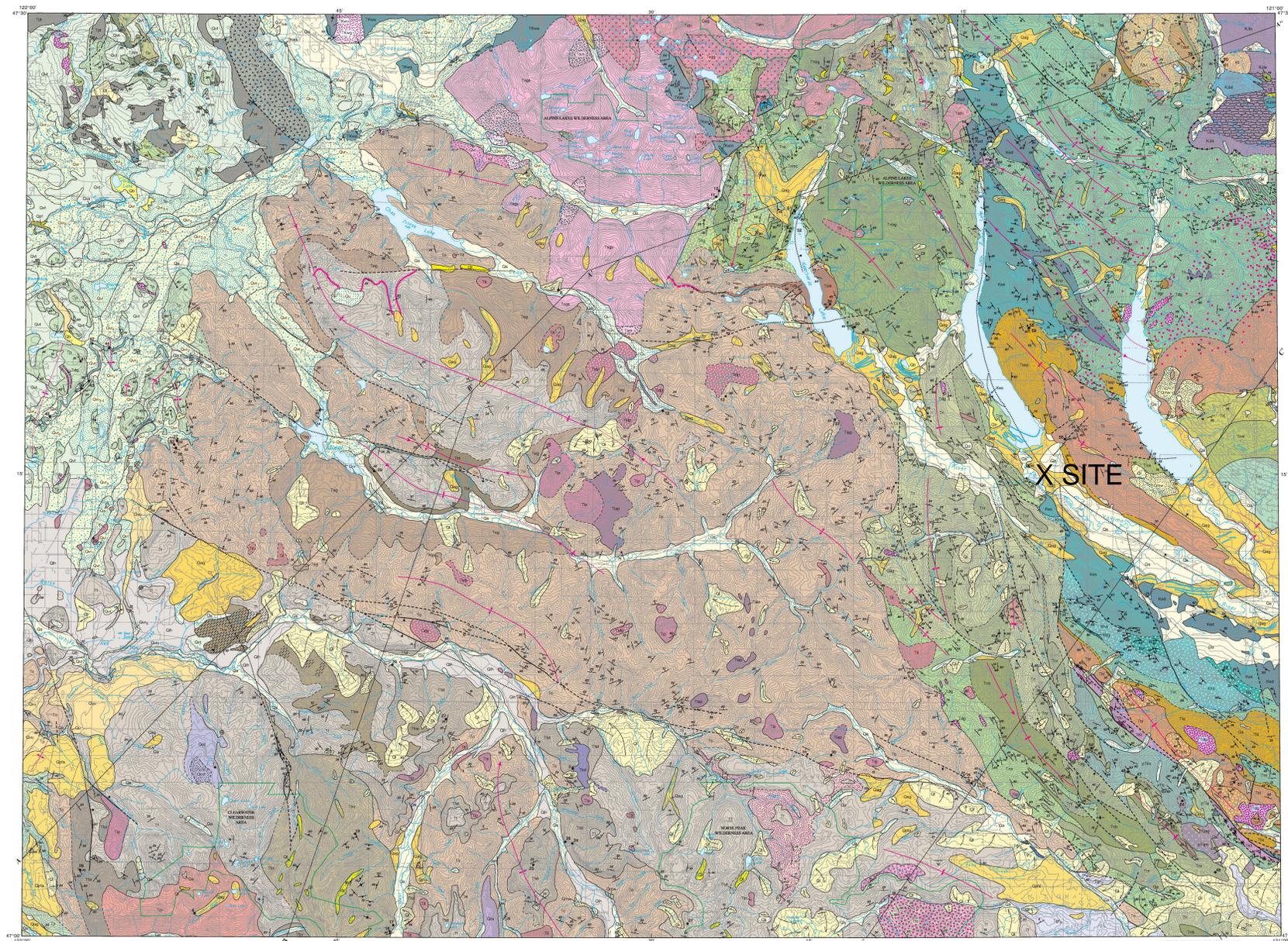
*Percent of map unit: 5 percent*

*Hydric soil rating: No*

## **Data Source Information**

Soil Survey Area: Kittitas County Area, Washington

Survey Area Data: Version 18, Aug 28, 2025



Geology mapped by V.A. Frizzell, Jr., R.W. Tabor, and R.B. Waitt, 1975-82; B. Anderson and E.A. Prather, 1976; J.F. Collins and R. Taylor, 1976; W. G. Davis, M. G. Clark, and K.L. Martin, 1977; E.L. Matheson and R.B. Waitt, 1978; D.B. Booth, 1978-82; E.F. Conroy, S.L. Sandberg, F. Brent, F.C. Moore, and B. Cook, 1981; C. Eddy, K.M. Ort, and T. Schaner, 1982. Digital database by R.W. Tabor. Edited by Dale Russell, Julia Thomas, and Jan Ziger. Digital cartography by Kathryn Hess with assistance from Tracy A. Longquist, Sara Booth, Susan Mayhall, and Kevin Chappuis. Manuscript approved for publication January 23, 1995.



Figure 1. Regional overview of geologic setting for Snoqualmie Pass quadrangle, Washington. Arc planets are not shown. Quadrangle T1 by 2' quadrangle is composed of the Snoqualmie River, Cleaver, Snoqualmie Pass, and Weasthale 1:50,000-scale quadrangles (shown in magenta).

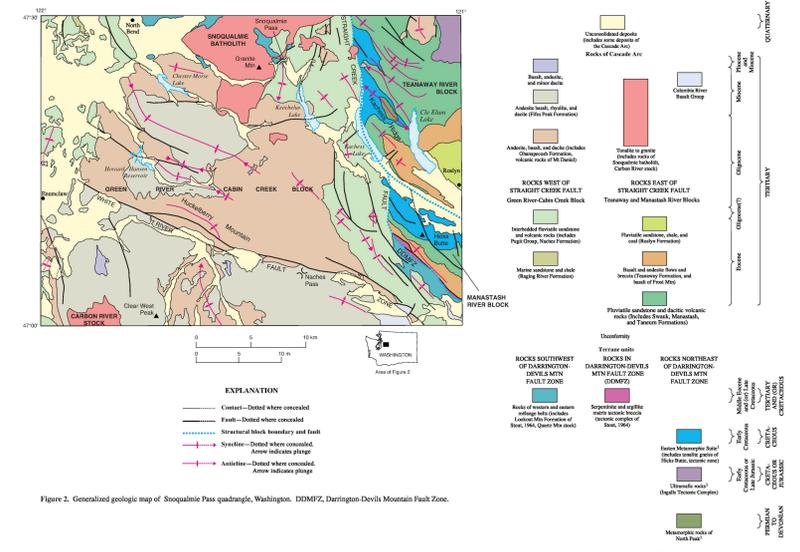
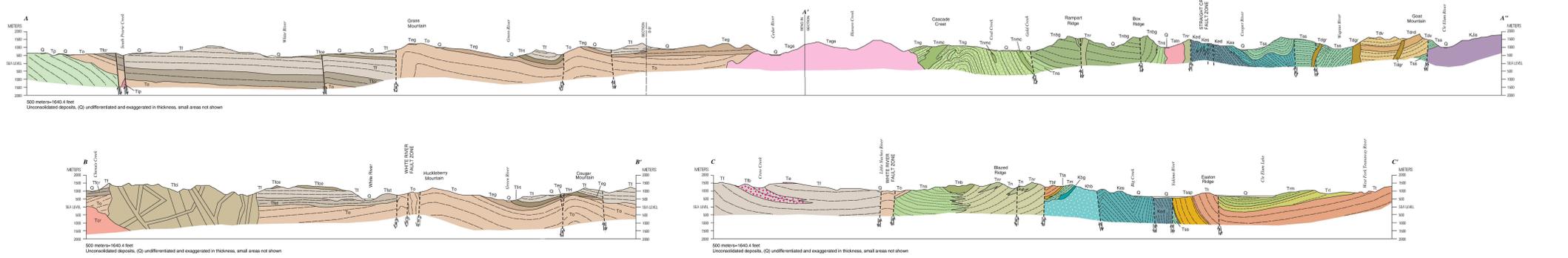


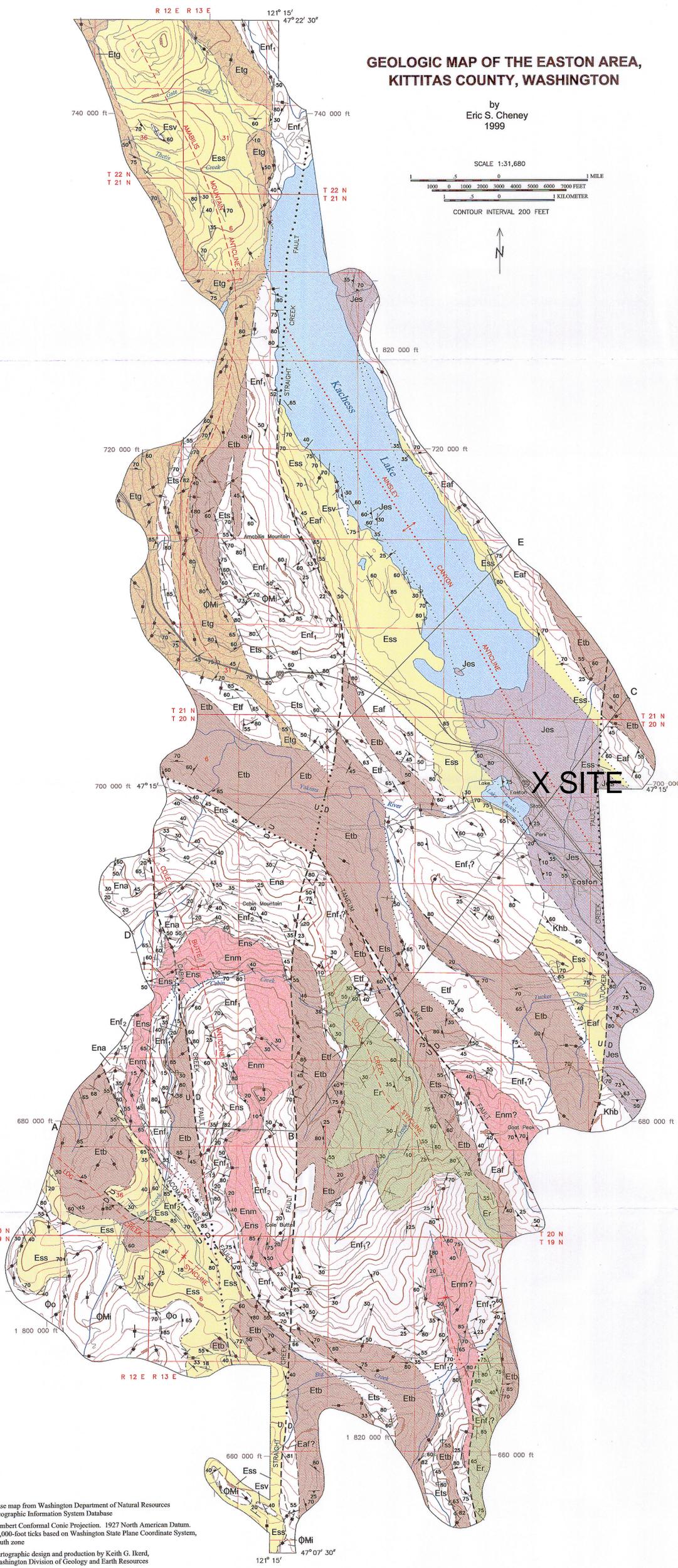
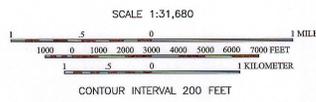
Figure 2. Generalized geologic map of Snoqualmie Pass quadrangle, Washington. DDMFZ, Darrington Devils Mountain Fault Zone.



**GEOLOGIC MAP OF THE SNOQUALMIE PASS 30x60 MINUTE QUADRANGLE, WASHINGTON**  
By R.W. Tabor, V.A. Frizzell, Jr., D.B. Booth, and R.B. Waitt  
2000

**GEOLOGIC MAP OF THE EASTON AREA,  
 KITTITAS COUNTY, WASHINGTON**

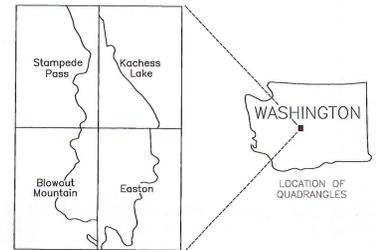
by  
 Eric S. Cheney  
 1999



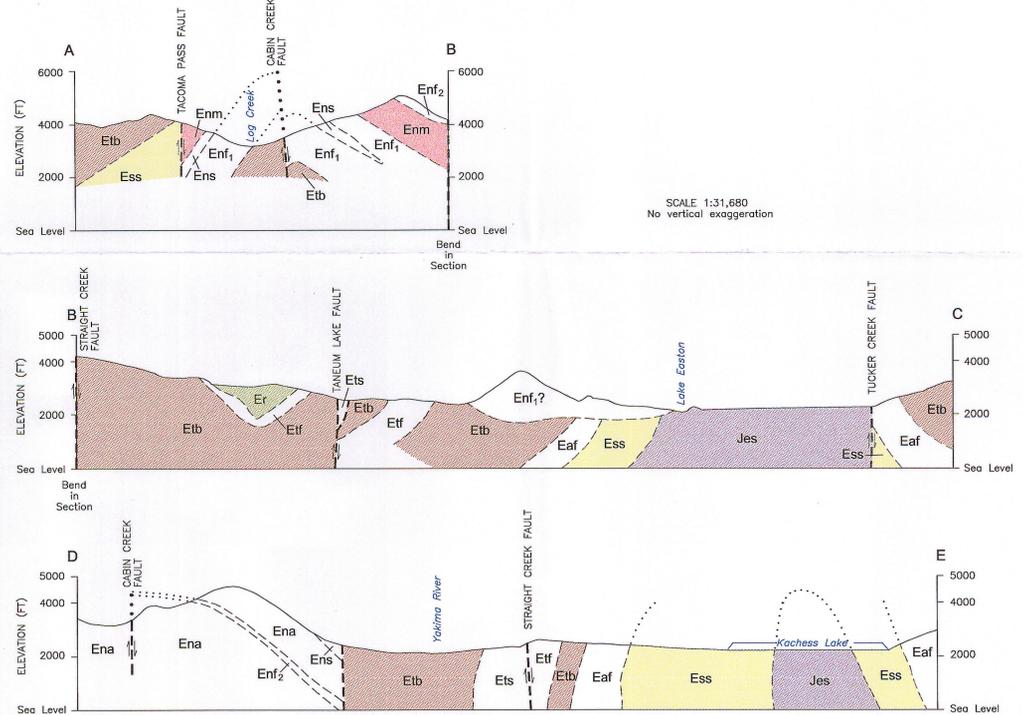
**EXPLANATION**

<b>Tertiary Intrusive Rocks</b>		<b>Contacts</b>	
$\Phi Mi$ Tonalitic intrusions (Oligocene to Miocene)		-----	Inferred; dotted where concealed
<b>Tertiary Sedimentary and Volcanic Rocks</b>		<b>Faults</b>	
$\Phi O$ Predominantly andesitic rock		-----	High-angle fault - inferred; dotted where concealed; U, upthrown block; D, downthrown block; half arrows in cross sections indicate direction of relative movement
Naches Formation (Eocene)		<b>Folds</b>	
En <sub>s</sub> Arkosic sandstone and black and olive siltstone		-----	Anticline - inferred; dotted where concealed
En <sub>a</sub> Andesitic volcanoclastic rock		-----	Syncline - inferred; dotted where concealed
En <sub>f2</sub> Felsic volcanic rock, locally contains felsic clasts		<b>Strike and dip of bedding</b>	
En <sub>m</sub> Andesitic volcanoclastic rock with felsic clasts		65	inclined
En <sub>f1</sub> Felsic volcanic rock, locally contains felsic clasts		+	vertical
<b>Roslyn Formation (Eocene)</b>		55	overturned
Er Arkosic sandstone and black to olive siltstone		<b>Strike and dip of joints</b>	
<b>Teanaway Formation (Eocene)</b>		50	inclined
Etf Felsic volcanoclastic rock in Etf and Etb		+	vertical
Ets Predominantly arkosic sandstone and siltstone in Etf and Etb		<b>Strike and dip of bedding</b>	
Etb Black, subophitic, commonly amygdaloidal basalt		70	inclined
Etg Glomeroporphyritic, commonly amygdaloidal basalt		+	vertical
<b>Taneum Formation (Eocene)</b>		<b>Strike and dip of cleavage</b>	
Eaf Predominantly felsic volcanic rock		80	inclined
<b>Swauk Formation (Eocene)</b>			
Ess Arkosic sandstone and black and olive siltstone			
Esv Andesitic volcanoclastic rock			
<b>Mesozoic Metamorphic Rocks</b>			
Khb Dioritic orthogneiss			
Jes Predominantly green phyllite			

Unconsolidated deposits are not shown, but contacts, faults, and folds, where dotted, are concealed beneath unconsolidated deposits.



**CROSS SECTIONS**



Base map from Washington Department of Natural Resources  
 Geographic Information System Database  
 Lambert Conformal Conic Projection, 1927 North American Datum,  
 10,000-foot ticks based on Washington State Plane Coordinate System,  
 South zone  
 Cartographic design and production by Keith G. Ikerd,  
 Washington Division of Geology and Earth Resources

Prepared in cooperation with the Washington State Department of Ecology and Kittitas County

# Hydrogeologic Framework and Groundwater/Surface-Water Interactions of the Upper Yakima River Basin, Kittitas County, Central Washington



Scientific Investigations Report 2014–5119

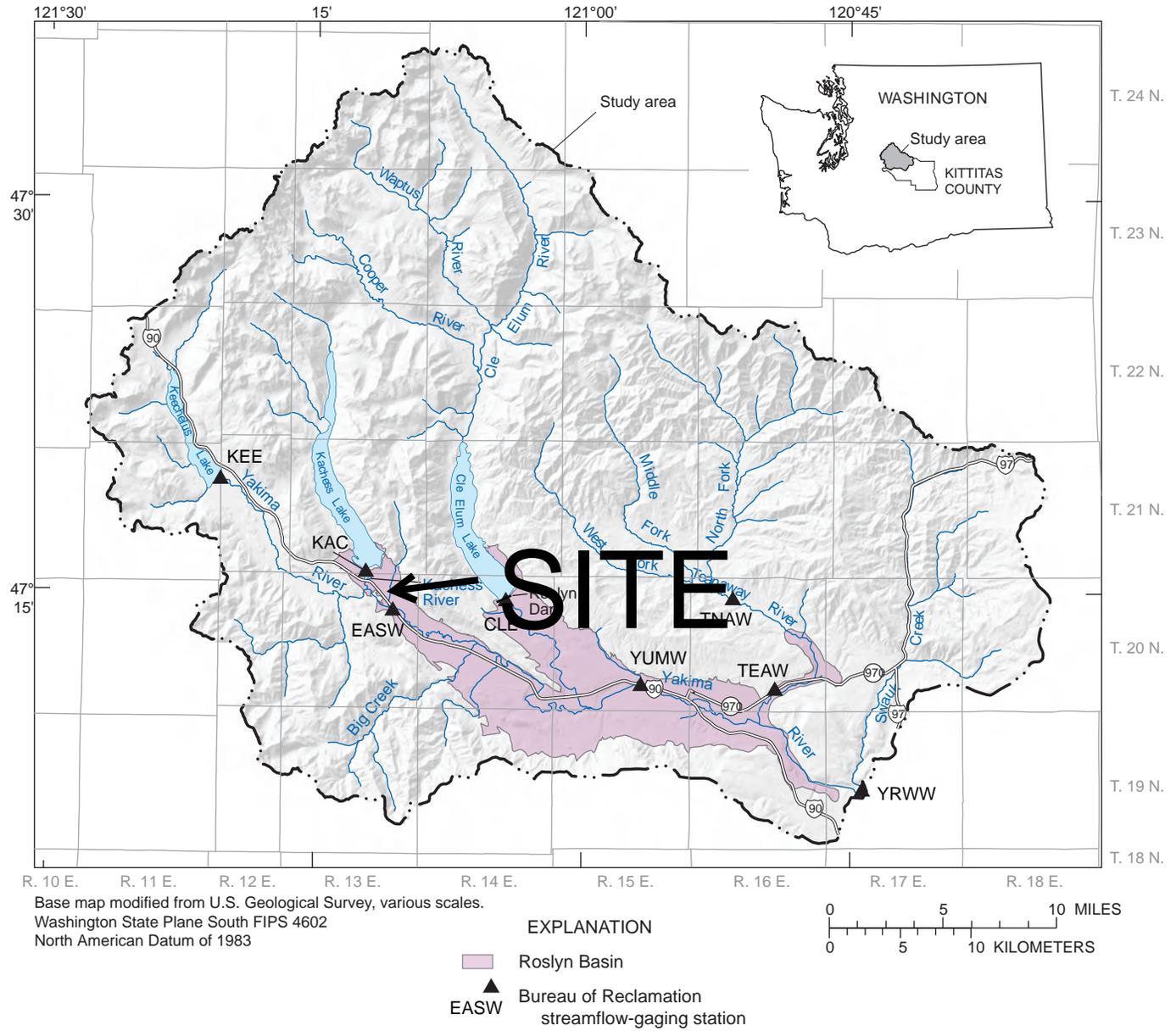


Figure 2. Upper Yakima River Basin, Kittitas County, central Washington. Abbreviations refer to streamflow-gaging stations as shown in [table 1](#)

## Methods of Investigation

A diverse suite of methods was used to compile and analyze the hydrogeologic, hydrologic, and geochemical data for this study. These methods were used to synthesize existing geologic and hydrogeologic data into a basin-wide hydrogeologic framework, characterize the geochemistry of groundwater and surface water, characterize groundwater and surface-water interactions, estimate groundwater use, and develop a water budget.

## Collection and Analysis of Hydrogeological Data

The surficial geology for the study area was compiled from previous maps developed by Dragovich and others (2002), Brown and Dragovich (2003), Cheney and Hayman (2007), and Haugerud and Tabor (2009). A geologic map of the upper Kittitas County study area was clipped from a larger map by Haugerud and Tabor (2009) and is included on plate 1. Additional lithostratigraphic information was obtained from drillers' logs from 271 project wells; 196 of these wells were

field-inventoried in April and May of 2011 (Fasser and Julich, 2011). The locations of the project wells used to describe the hydrogeology of the study area are shown on plates 1 and 2. Selected physical and hydrologic data for the project wells are included on [table 7](#) (at back of report).

The geologic units were grouped into six hydrogeologic units based on similar rock types, lithologic characteristics, and large-scale hydrologic properties. The hydrogeologic units described in this report include unconsolidated sediment (UNC), basalt (BAS), volcanic rocks (VOLC), sedimentary rocks (SED), metamorphic rocks (META), and intrusive rocks (INT) ([table 2](#)). The surficial extent of the units across the study area and their subsurface extent along four hydrogeologic sections are illustrated on plate 2. The open intervals of the wells are color coded based on the hydrogeologic unit that the wells are open to. Using the hydrogeologic unit map and information contained on drillers' logs for the project wells, four hydrogeologic sections were constructed to identify and correlate hydrogeologic units, primarily on the basis of rock type and stratigraphic position (*A–A'* through *D–D'*, pl. 2).

**Table 2.** Hydrogeologic units, well yields, and estimated hydraulic conductivity in upper Yakima River Basin, Kittitas County, central Washington.

[Abbreviations: min, minimum; max, maximum; gal/min, gallon per minute; ft/d, foot per day]

Hydrogeologic unit	Description of hydrogeologic units	Number of project wells open to unit	Well yield [min, median, max] {number of values} (gal/min)	Estimated hydraulic conductivity [min, median, max] {number of wells} (ft/d)
UNC	UNCONSOLIDATED SEDIMENT—Unconsolidated glacial and non-glacial deposits; includes alluvium, talus, landslide deposits, glaciolacustrine deposits, alpine glacial deposits, recessional outwash, outburst flood deposits.	67	[0, 25, 1,600] {53}	[4.4, 190, 1,600] {10}
BAS	Flood BASALT of the Grande Ronde and associated interbeds of the Ellensburg Formation.	9	[1, 17.5, 75] {8}	{0}
VOLC	VOLCANIC ROCKS—basalt, andesite, some rhyolite, breccias, tuffs of the Fifes Peak episode (Tcaf) and Ohanapecosh episode (Tcao). As well as basalt and rhyolite flows, breccia, and tuff intermixed with some sandstone and conglomerate; Teanaway Fm; Tev. This unit also includes dacite and andesite flows and pyroclastic rocks locally interbedded in the Swauk Fm; Silver Pass Volcanic Member of Swauk Fm.	18	[3, 18, 42] {14}	[0.02] {1}
SED	SEDIMENTARY ROCKS—sandstone and conglomerate with subordinate shale, coal; Roslyn Fm; Tes as well as stream-deposited sandstone and conglomerate; Swauk Fm; Tees.	113	[0, 10, 150] {94}	[1.6, 2.6, 3.6] {2}
META	METAMORPHIC ROCKS—black phyllite, typically with abundant quartz veinlets; Ked, Darrington Phyllite; fine grained greenschist and (or) blueschist derived mostly from ocean-floor basalt; Kes, Shuksan Greenschist.	20	[0, 3, 40] {17}	{0}
INT	INTRUSIVE ROCKS—peridotite and foliated and massive serpentinite; Ingalls terrane, Jis.	3	[0, 5, 60] {3}	{0}

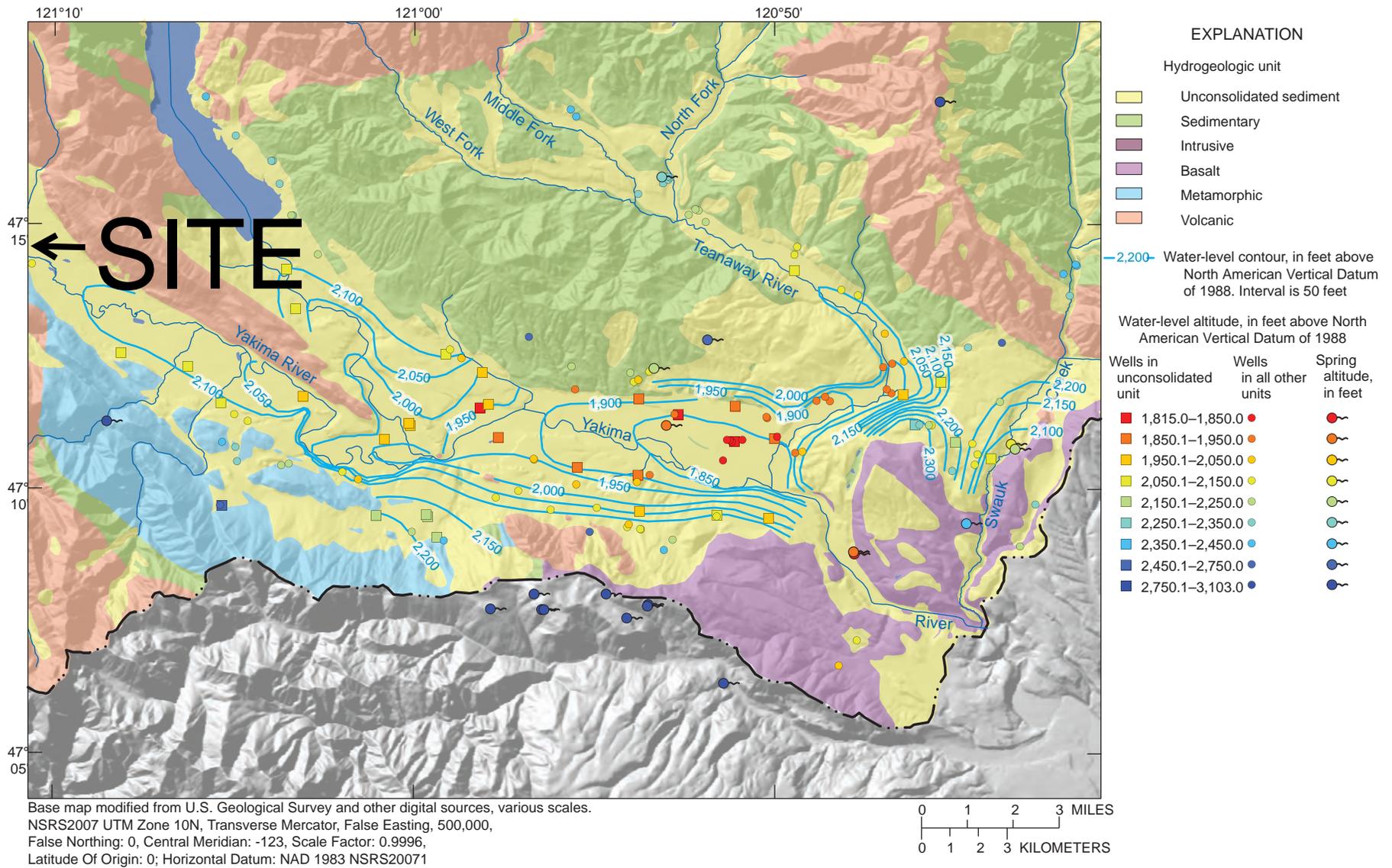
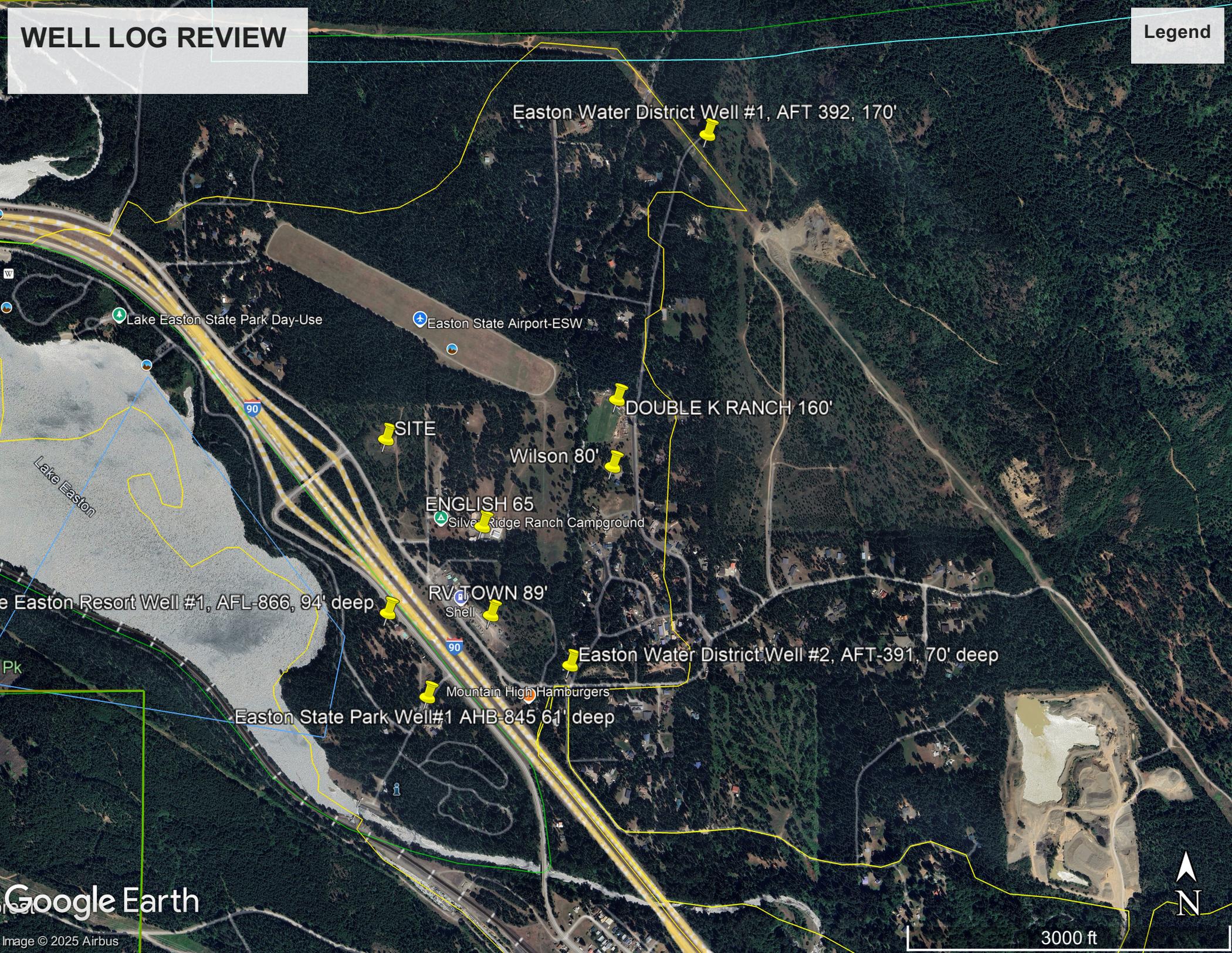


Figure 22. Potentiometric surface and generalized flow directions in hydrogeologic units, upper Yakima River Basin, Kittitas County, central Washington

# WELL LOG REVIEW

Legend



Easton Water District Well #1, AFT 392, 170'

Lake Easton State Park Day-Use

Easton State Airport-ESW

DOUBLE K RANCH 160'

SITE

Wilson 80'

ENGLISH 65

Silver Ridge Ranch Campground

Lake Easton

Easton Resort Well #1, AFL-866, 94' deep

RV TOWN 89'

Shell

Easton Water District Well #2, AFT-391, 70' deep

Mountain High Hamburgers

Easton State Park Well #1 AHB-845 61' deep



3000 ft



# WATER WELL REPORT

STATE OF WASHINGTON

Start Card No. 39153

UNIQUE WELL I D # \_\_\_\_\_

Water Right Permit No \_\_\_\_\_

(1) OWNER Name DOUBLE K RANCH Address EASTON

(2) LOCATION OF WELL County KITITAS NE 1/4 SE / Sec 20 T 20 N R 13 W

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

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

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

(5) DIMENSIONS Diameter of well 6 inches  
Drilled 160 feet Depth of completed well 160 ft

(6) CONSTRUCTION DETAILS  
Casing installed 6 Diam from 0 ft to 140 ft  
Welded  Liner installed  Threaded  Diam from \_\_\_\_\_ ft to \_\_\_\_\_ ft

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

Screens Yes  No   
Manufacturer's Name HOUSTON W S.  
Type CONTINUOUS WRAP Model No \_\_\_\_\_  
Diam 5" Slot size .060 from 150 ft to 155 ft  
Diam \_\_\_\_\_ Slot size \_\_\_\_\_ from \_\_\_\_\_ ft to \_\_\_\_\_ ft

Gravel packed Yes  No  Size of gravel \_\_\_\_\_  
Gravel placed from \_\_\_\_\_ ft to \_\_\_\_\_ ft

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

(7) PUMP Manufacturer's Name \_\_\_\_\_  
Type \_\_\_\_\_ HP \_\_\_\_\_

(8) WATER LEVELS Land surface elevation above mean sea level \_\_\_\_\_ ft  
Static level 30 ft below top of well Date 8/12/93  
Artesian pressure \_\_\_\_\_ lbs per square inch Date \_\_\_\_\_  
Artesian water is controlled by \_\_\_\_\_ (Cap valve etc.)

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

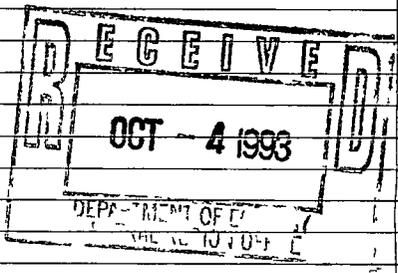
Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)  
Time Water Level Time Water Level Time Water Level

Date of test \_\_\_\_\_  
Bailer test \_\_\_\_\_ gal / min with \_\_\_\_\_ ft drawdown after \_\_\_\_\_ hrs  
Artest 15 gal / min with stem set at 140 ft for 2 hrs  
Artesian flow \_\_\_\_\_ g p m Date \_\_\_\_\_  
Temperature of water \_\_\_\_\_ Was a chemical analysis made? Yes  No

## (10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION

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

MATERIAL	FROM	TO
SOIL	0	5
GRAVEL, SAND	5	25
SAND, CLAY	25	30
GRAVEL, SAND TO SILT	30	65
CLAY, BLUE	65	75
SAND, BLUE, OCC CLAY	75	105
CLAY, BLUE	105	145
CLAY, BLUE, OCC QUARTZ	145	160



Work started 8/10 19 \_\_\_\_\_ Completed 8/12 1993

### WELL CONSTRUCTOR CERTIFICATION

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

NAME BACH DRILLING CO  
(PERSON FIRM OR CORPORATION) (TYPE OR PRINT)

Address RT 5 BOX 1010

(Signed) \_\_\_\_\_ License No 1775  
(WELL DRILLER)

Contractor's Registration No MIKE BAC. 133M4 Date 8/12 1993

(USE ADDITIONAL SHEETS IF NECESSARY)

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



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

STATE OF WASHINGTON  
 DEPARTMENT OF CONSERVATION  
 AND DEVELOPMENT

WELL LOG Easton St. Park No. A.6414

Date 9-24, 1962

Record by well driller

Source driller's record

Location: State of WASHINGTON

County Kittitas

Area

Map

1/4 sec. 3 T. 20 N., R. 13 E. Diagram of Section

Drilling Co. Ralph R. Charlton

Address Rt. 1, Okanogan, Wash.

Method of Drilling Date 1-9-62, 19

Owner U.S. Bureau of Reclamation

Address Yakima, Wash.

Land surface, datum ft. above below

20 13 31  
file number

CORRELATION	MATERIAL	THICKNESS (feet)	DEPTH (feet)
-------------	----------	------------------	--------------

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

	Glacier till	41	41
	Water gravel	20	61
	PUMP TEST:		
	Dim. 10"x61'		
	SWL: 44 ft.		
	DD: 30 ft.		
	Yield: 200 g.p.m.		
	Type & size of pump: 4" Turbine		
	" " " " motor: Wisconsin gas		
	CASING:		
	10" diam. from 0 to 61 ft.		
	Shoe at 61 ft.		
	PERFORATIONS:		
	per 1/4"x8" - 4 per foot from 41 to 61 ft.		

Turn up Sheet .....of.....sheets





# WELL LOG CHANGE FORM

**Instructions:** Record any change made to the well log record on this form. Append this form to the well log image. File with the original.

WCL Log ID (Required) \_\_\_\_\_ Well Log ID 114258

Regional Office:  CRO  ERO  NWRO  SWRO

Type of Well:  Water  Resource

Notice of Intent: \_\_\_\_\_ Ecology Well ID Tag No. \_\_\_\_\_

Property (Well) Owner's Name Easton (change name to Kittitas Co. W.D.#3)  
Well Street Address \_\_\_\_\_  
City \_\_\_\_\_ County Kittitas Zip Code \_\_\_\_\_

Location: SE 1/4-1/4 NE 1/4 Sec 2 Twn 20 R 13 (E or W (Circle One))

Lat./Long: (Required) Lat. Deg. \_\_\_\_\_ Lat. Min/Sec \_\_\_\_\_  
Long. Deg. \_\_\_\_\_ Long. Min/Sec \_\_\_\_\_  
Horizontal Collection Method Code \_\_\_\_\_

Tax Parcel No \_\_\_\_\_

Type of Work:  New Well  Reconditioned  Deepened  
Well Log Received Date 1/1/03  
Well Diameter \_\_\_\_\_ (in inches) Well Depth \_\_\_\_\_ (in feet) Well Completed Date 1/1/03

Driller's Ecology License No. \_\_\_\_\_  
Trainee's Ecology License No. \_\_\_\_\_

Reason/Source of Change (Required)  
Correcting '4-'4 - Section, Township, Range, and added  
accurate name of owner, per AL LANG AT EASTSIDE  
CONSULTANTS, Cle Elum (509) 674-7433

Signature of Well Log Tracker (Required) EG Date 1/2/03



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

**STATE OF WASHINGTON  
DEPARTMENT OF CONSERVATION  
AND DEVELOPMENT**

**WELL LOG** Well #1 No. A. 6250

Date 9-24, 1962

Record by well driller

Source driller's record

Location: State of WASHINGTON

County Kittitas

Area

Map

1/4 sec. 11 T 20 N., R. 13 E. WX

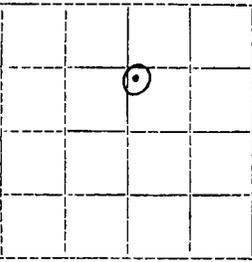


Diagram of Section

Drilling Co. Ralph W. Charlton

Address Rt. 1, Okanogan, Wash.

Method of Drilling Date 1-8, 1962

Owner State Parks & Recreation Comm.

Address Olympia, Washington

Land surface, datum ft. above/below

CORRE- LATION	MATERIAL	THICKNESS (feet)	DEPTH (feet)
------------------	----------	---------------------	-----------------

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

	Glacier till	42	42
	Water gravel	20	62
	PUMP TEST:		
	Dim. 10"x62'		
	SWL: 45 ft.		
	DD: 6 ft.		
	Yield: 250 g.p.m.		
	Type & size of pump: 4" Turbine		
	Type & size of engine: 22 h.p.		
	Wisconsin gas		
	CASING:		
	10" diam. from 0 to 62 ft.		
	Shoe - 65 ft.		
	PERFORATIONS:		
	1/4" x four per foot from	42 to	62 ft

Turn up Sheet ..... of ..... sheets

2013E11G



LevelType	LevelTypeName	Source	SrcDOEId	LabNum	SamNum
SamCollectDate	ResultQty	ResultColi	UOMCode	UOMName	AnalyteGroupCode
AnalyteGroupName	TestPanelCode	TestPanelName	AnalyteName		
P	Coliform Presence	01	112	26403	5/9/2024 12:00:00 AM
P	/100ml	Per 100 milliliters	MICRO	MICROBIOLOGICAL	COLI_AP
ABSENCE / PRESENCE TOTAL COLIFORM					
P	Coliform Presence	Distribution		291	38602 9/26/2025
12:00:00 AM	P	/100ml Per 100	milliliters	MICRO	
MICROBIOLOGICAL COLI_AP ABSENCE / PRESENCE TOTAL COLIFORM					
P	Coliform Presence	Distribution		291	38603 9/26/2025
12:00:00 AM	P	/100ml Per 100	milliliters	MICRO	
MICROBIOLOGICAL COLI_AP ABSENCE / PRESENCE TOTAL COLIFORM					
P	Coliform Presence	Distribution		291	38601 9/26/2025
12:00:00 AM	P	/100ml Per 100	milliliters	MICRO	
MICROBIOLOGICAL COLI_AP ABSENCE / PRESENCE TOTAL COLIFORM					
P	Coliform Presence	Distribution		291	35301 9/24/2025
12:00:00 AM	P	/100ml Per 100	milliliters	MICRO	
MICROBIOLOGICAL COLI_AP ABSENCE / PRESENCE TOTAL COLIFORM					
P	Coliform Presence	Distribution		291	09303 8/6/2025
12:00:00 AM	P	/100ml Per 100	milliliters	MICRO	
MICROBIOLOGICAL COLI_AP ABSENCE / PRESENCE TOTAL COLIFORM					
P	Coliform Presence	Distribution		291	09302 8/6/2025
12:00:00 AM	P	/100ml Per 100	milliliters	MICRO	
MICROBIOLOGICAL COLI_AP ABSENCE / PRESENCE TOTAL COLIFORM					
P	Coliform Presence	Distribution		291	09304 8/6/2025
12:00:00 AM	P	/100ml Per 100	milliliters	MICRO	
MICROBIOLOGICAL COLI_AP ABSENCE / PRESENCE TOTAL COLIFORM					
P	Coliform Presence	Distribution		291	09301 8/6/2025
12:00:00 AM	P	/100ml Per 100	milliliters	MICRO	
MICROBIOLOGICAL COLI_AP ABSENCE / PRESENCE TOTAL COLIFORM					
P	Coliform Presence	Distribution		291	05001 8/5/2025
12:00:00 AM	P	/100ml Per 100	milliliters	MICRO	
MICROBIOLOGICAL COLI_AP ABSENCE / PRESENCE TOTAL COLIFORM					
P	Coliform Presence	Distribution		291	12001 7/9/2025
12:00:00 AM	P	/100ml Per 100	milliliters	MICRO	
MICROBIOLOGICAL COLI_AP ABSENCE / PRESENCE TOTAL COLIFORM					
P	Coliform Presence	Distribution		112	26404 5/9/2024
12:00:00 AM	P	/100ml Per 100	milliliters	MICRO	
MICROBIOLOGICAL COLI_AP ABSENCE / PRESENCE TOTAL COLIFORM					
P	Coliform Presence	Distribution		112	15801 5/7/2024
12:00:00 AM	P	/100ml Per 100	milliliters	MICRO	
MICROBIOLOGICAL COLI_AP ABSENCE / PRESENCE TOTAL COLIFORM					

LevelType	LevelTypeName	Source	SrcDOEId	LabNum	SamNum	
SamCollectDate	ResultQty	ResultColi	UOMCode	UOMName	AnalyteGroupCode	
AnalyteGroupName	TestPanelCode	TestPanelName	AnalyteName			
P	Coliform Presence	Distribution		111	83481	12/3/2024
12:00:00 AM	P	/100ml Per 100	milliliters		MICRO	
MICROBIOLOGICAL	COLI_AP	ABSENCE / PRESENCE	TOTAL COLIFORM			
P	Coliform Presence	Distribution		111	40371	4/2/2024
12:00:00 AM	P	/100ml Per 100	milliliters		MICRO	
MICROBIOLOGICAL	COLI_AP	ABSENCE / PRESENCE	TOTAL COLIFORM			
P	Coliform Presence	Distribution		112	01701	1/2/2024
12:00:00 AM	P	/100ml Per 100	milliliters		MICRO	
MICROBIOLOGICAL	COLI_AP	ABSENCE / PRESENCE	TOTAL COLIFORM			
P	Coliform Presence	Distribution		064	01697	8/17/2000
12:00:00 AM	P	/100ml Per 100	milliliters		MICRO	
MICROBIOLOGICAL	COLI_AP	ABSENCE / PRESENCE	TOTAL COLIFORM			
P	Coliform Presence	Distribution		064	01655	8/14/2000
12:00:00 AM	P	/100ml Per 100	milliliters		MICRO	
MICROBIOLOGICAL	COLI_AP	ABSENCE / PRESENCE	TOTAL COLIFORM			
P	Coliform Presence	Distribution		064	71978	8/5/1997
12:00:00 AM	P	/100ml Per 100	milliliters		MICRO	
MICROBIOLOGICAL	COLI_AP	ABSENCE / PRESENCE	TOTAL COLIFORM			

LevelType	LevelTypeName	Source	SrcDOEId	LabNum	SamNum
SamCollectDate	ResultQty	ResultColi	UOMCode	UOMName	AnalyteGroupCode
AnalyteGroupName	TestPanelCode	TestPanelName	AnalyteName		
MCL2	Secondary MCL	01	39G024 081	41975	11/24/1996 12:00:00 AM
0.4900	mg/L	Milligrams per Liter	IOC	INORGANIC CONTAMINANTS	IOC
COMPLETE INORGANIC ANALYSIS IRON					
MCL2	Secondary MCL	01	39G024 051	09706	4/14/1987 12:00:00 AM
2.9200	mg/L	Milligrams per Liter	IOC	INORGANIC CONTAMINANTS	
ICHEM PRE II/V INORGANIC ANALYSIS IRON					
MCL2	Secondary MCL	01	39G024 051	09706	4/14/1987 12:00:00 AM
0.3650	mg/L	Milligrams per Liter	IOC	INORGANIC CONTAMINANTS	
ICHEM PRE II/V INORGANIC ANALYSIS MANGANESE					
MCL2	Secondary MCL	02	39G025 052	16559	7/21/1988 12:00:00 AM
0.3700	mg/L	Milligrams per Liter	IOC	INORGANIC CONTAMINANTS	
ICHEM PRE II/V INORGANIC ANALYSIS IRON					
MCL2	Secondary MCL	02	39G025 052	16559	7/21/1988 12:00:00 AM
0.9140	mg/L	Milligrams per Liter	IOC	INORGANIC CONTAMINANTS	
ICHEM PRE II/V INORGANIC ANALYSIS MANGANESE					
P	Coliform Presence	Distribution		151	27954 9/4/2018
12:00:00 AM	P	/100ml Per 100 milliliters			MICRO
MICROBIOLOGICAL COLI_AP ABSENCE / PRESENCE TOTAL COLIFORM					
P	Coliform Presence	Distribution		105	33960 11/2/2015
12:00:00 AM	P	/100ml Per 100 milliliters			MICRO
MICROBIOLOGICAL COLI_AP ABSENCE / PRESENCE TOTAL COLIFORM					
P	Coliform Presence	Distribution		151	18728 7/1/2015
12:00:00 AM	P	/100ml Per 100 milliliters			MICRO
MICROBIOLOGICAL COLI_AP ABSENCE / PRESENCE TOTAL COLIFORM					
P	Coliform Presence	Distribution		151	14725 6/1/2015
12:00:00 AM	P	/100ml Per 100 milliliters			MICRO
MICROBIOLOGICAL COLI_AP ABSENCE / PRESENCE TOTAL COLIFORM					
P	Coliform Presence	Distribution		075	03133 8/20/2001
12:00:00 AM	P	/100ml Per 100 milliliters			MICRO
MICROBIOLOGICAL COLI_AP ABSENCE / PRESENCE TOTAL COLIFORM					
P	Coliform Presence	Distribution		075	02763 6/13/2001
12:00:00 AM	P	/100ml Per 100 milliliters			MICRO
MICROBIOLOGICAL COLI_AP ABSENCE / PRESENCE TOTAL COLIFORM					
P	Coliform Presence	Distribution		075	02265 8/6/1998
12:00:00 AM	P	/100ml Per 100 milliliters			MICRO
MICROBIOLOGICAL COLI_AP ABSENCE / PRESENCE TOTAL COLIFORM					
MCL2	Secondary MCL	Distribution	052	06784	6/25/1981 12:00:00
AM	0.3700	mg/L	Milligrams per Liter	IOC	INORGANIC
CONTAMINANTS ICHEM PRE II/V INORGANIC ANALYSIS IRON					
MCL2	Secondary MCL	Distribution	052	06784	6/25/1981 12:00:00
AM	0.5800	mg/L	Milligrams per Liter	IOC	INORGANIC
CONTAMINANTS ICHEM PRE II/V INORGANIC ANALYSIS MANGANESE					