



## Skagit River Watershed Control Plan



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2024



## CERTIFICATE OF ENGINEER

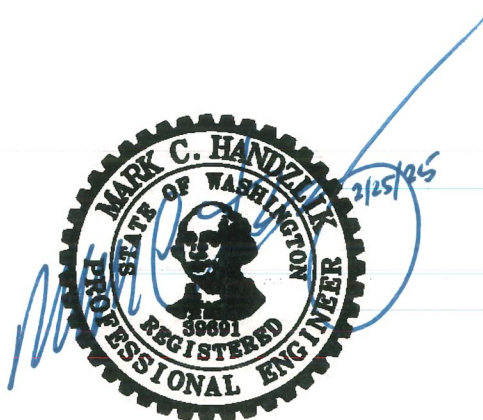
### PUBLIC UTILITY DISTRICT NO. 1 OF SKAGIT COUNTY

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#### Skagit River Watershed Control Plan

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The technical material and data contained in the report were prepared under the supervision and direction of the undersigned, whose seal as professional engineer licensed to practice as such, is affixed below.



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Engineering Manager

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## ACRONYMS AND ABBREVIATIONS

cfs	cubic feet per second
DOH	Washington State Department of Health
Ecology	Washington State Department of Ecology
°F	degrees Fahrenheit
FPA	Forest Practice Application
Judy System	Judy Reservoir Group A Water System
MCL	maximum contaminant level
MGD	million gallons per day
MOA	Memorandum of Agreement Regarding Utilization of Skagit River Basin Water Resources for Instream and Out of Stream Purposes
RCW	Revised Code of Washington
Plan	Skagit PUD’s Skagit River Watershed Control Plan (WCP)
Skagit PUD	Public Utility District No. 1 of Skagit County
Skagit River Instream Flow Rule	Skagit River Basin Instream Resources Protection Rule (Chapter 173-503 WAC)
SRD	Skagit River Diversion Pump Station
THM	trihalomethane
TOC	Total Organic Carbon
U.S.C.	U.S. Code
USGS	U.S. Geological Survey
WAC	Washington Administrative Code
Watershed	Skagit PUD’s Skagit River Watershed
WDFW	Washington State Department of Fish and Wildlife
WRIA	Water Resource Inventory Area
WTP	Water treatment plant

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## EXECUTIVE SUMMARY

The Skagit River Watershed is valuable to a variety of stakeholders. The Skagit River is one of the most diverse river systems in North America. Fish and wildlife associated with forests and streams in the Watershed are cherished by the public and local Native American tribes.

Water is an important product of the Watershed, used by the urban, residential, business, and agricultural sectors of the lower Skagit Valley. Public Utility District No. 1 of Skagit County (Skagit PUD) uses surface water from the Skagit River and four streams in the Cultus Mountains to supply potable water to the Judy Reservoir (DOH Public Water System Identification 79500E) Group A Water System (Judy System). Water is collected from these sources for storage in Judy Reservoir prior to processing by the Skagit PUD's water treatment plant. The Skagit PUD takes pride in meeting the potable water needs of Skagit County's residential and commercial customers since 1936 under the following overarching guidance:

The **Vision** of the Skagit PUD is to be an outstanding regional leader and innovative utility provider.

The **Mission** of the Skagit PUD is to provide its customers with high quality water services at an affordable price.

As the Skagit PUD pursues the Vision and advances the Mission, the following Core Values are to be demonstrated and maintained in balance:

- **Quality:** The Skagit PUD seeks to exceed customer expectations by providing exceptional service.
- **Environmental Stewardship:** The Skagit PUD acts to preserve the regional's natural resources.
- **Financial Prudence:** The Skagit PUDs strives to keep rates as low as possible while making wise capital investments and strategic business decisions.

The Judy System serves the cities of Mount Vernon, Burlington, and Sedro-Woolley and surrounding rural and suburban areas of Skagit County. To protect the source water for the Judy System, the Skagit PUD has implemented a vigorous watershed control program. In conjunction with the Cultus Mountain Watershed Management Plan, this Plan documents the Skagit PUD's watershed control program for the Judy System in accordance with requirements of the Washington State Department of Health (DOH) and Washington State Regulations (Chapter 246-290 WAC).

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# 1 INTRODUCTION

## 1.1 Background

Public Utility Skagit PUD No. 1 of Skagit County (Skagit PUD) provides drinking water to a large portion of Skagit County, Washington. The Skagit PUD is a municipal corporation of the State of Washington, established as a result of the general election of November 3, 1936. A public utility Skagit PUD's purpose is to provide efficient and reliable service to its local customers at the lowest possible cost. The Skagit PUD is authorized to acquire, construct, and operate water systems and to furnish water service to the inhabitants of the area and other persons.

The Skagit PUD operates the most extensive water system in Skagit County. The majority of the Skagit PUD's services are within the Judy Reservoir Group A Water System (Judy System), serving the cities of Mount Vernon, Burlington, and Sedro-Woolley as well as surrounding rural and suburban areas. The public water system ID (PwsID) for the Judy System assigned by DOH is 79500E. The Judy System provides an average of 9 million gallons per day (MGD) (based on 2019 records) of drinking water to over 85,000 people, through over 27,500 service connections. The Judy System has the largest service area in Skagit County.

Source water for the Judy System is diverted from the Skagit River and four streams originating in the Cultus Mountains of central Skagit County. In 2010, the Skagit PUD began operation of a newly constructed diversion and pump station along the banks of the Skagit River near Sedro-Woolley. The facility provides a secondary source of water to the Judy System and allows the Skagit PUD to adequately satisfy increasing demand for water from the system's service area.

The diverted surface water travels through underground pipelines to Judy Reservoir prior to processing by the Skagit PUD's multi-media direct filtration water treatment plant located adjacent to the reservoir. Judy Reservoir has allowed for the storage of source water since 1947. The existing storage capacity of 1.45 billion gallons enables the Skagit PUD to operate the treatment plant at full capacity during times when diversions from the streams and river fall below peak demand or are suspended due to minimum instream flow levels set by the Washington State Department of Ecology (Ecology).

## 1.2 Purpose

The Skagit PUD's watershed control program for the Judy System consists of the Cultus Mountain Watershed Management Plan and the Skagit River Watershed Control Plan.

The Skagit PUD's watershed control program is used to maintain a safe water supply and was most recently updated for inclusion in the Skagit PUD's 2024 Water System Plan Update.

The Skagit River Watershed Control Plan<sup>2</sup>, was previously sponsored by the City of Anacortes and Skagit PUD as partners. The Skagit River Watershed Control Plan was most recently updated by the City of Anacortes in 2004. This 2024 Plan describes Skagit PUD's efforts to protect source water entering Judy Reservoir from the Skagit River.

### 1.3 Watershed Control Program Requirements

The Safe Drinking Water Act of 1974, and later amendments, regulate the nation's public drinking water supplies and give states the primary enforcement responsibility<sup>1</sup>. Washington State Department of Health (DOH) regulates Washington State's public drinking water supplies to achieve protection and improvement of surface water sources by requiring<sup>2</sup>:

The purveyor to exercise surveillance over conditions and activities in the watershed affecting source water quality; and

- Development and implementation of a DOH-approved Watershed Control Program.

This Watershed Control Plan will be submitted to DOH for the purpose of meeting the requirement for a watershed control program. The watershed control program must contain the following elements: Watershed description

- Identification and inventory of activities and land uses detrimental to water quality
- Watershed management and control measures including documentation of ownership and relevant written agreements
- Monitoring of water quality and activities within the watershed
- System operations
- Watershed control program evaluation and updates every 6 years

### 1.4 Document Organization

This document is organized in a manner that generally follows Chapter 5 of the DOH Water System Planning Handbook (Source Water Protection), Washington Administrative Code (WAC) 246-290-135 (Source Water Protection), and WAC 246-290-668 (Watershed Control). Chapters 2 through 5 address the first five major elements identified by DOH (listed above). Chapter 6 provides an overall evaluation of the watershed control program, demonstrates improvement since submittal of the last watershed control program evaluation, and identifies recommendations for future improvements.

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<sup>1</sup> Chapter 246-290 Section 668 WAC

<sup>2</sup> Chapter 246-290 Section 135 WAC

## 2 WATERSHED DESCRIPTION

DOH guidance requires a description of the watershed’s location, boundaries, hydrology, critical areas, water system components, land ownership, and access. The identification of sources and activities that may adversely affect source water quality is also required. Chapter 2 details these features and includes a history of the Skagit River Watershed.

### 2.1 Watershed History

Table 2-1 provides a chronological summary of major events and milestones related to the development of the Judy Reservoir System for diversion of water from the Skagit River.

On November 3, 1936, Public Utility Skagit PUD No. 1 of Skagit County was formed by voters with an approval of 6,173 in favor to 4,971 against. In 1939 and 1940, the Skagit PUD purchased the private water systems that served Mount Vernon, Burlington, and Sedro-Woolley, and consolidated them into one large water system. These purchased water systems included diversions on the Skagit River, local springs, and streams in the Cultus Mountains south of Sedro-Woolley.

Water from Judy Reservoir is treated at the Skagit PUD’s water treatment plant (WTP) adjacent to Judy Reservoir and served by gravity through transmission pipelines to the Skagit PUD’s customers. Until 1990, source water was disinfected and delivered unfiltered to the distribution system. In March 1990, the Skagit PUD upgraded the WTP to include multi-media direct filtration.

Following the implementation of the Memorandum of Agreement Regarding Utilization of Skagit River Basin Water Resources for Instream and Out of Stream Purposes in 1996 (MOA), the Skagit PUD was able to begin plans for a new surface water diversion facility on the Skagit River. The MOA established agreement between the Skagit PUD, City of Anacortes, Skagit County, Upper Skagit Indian Tribe, Swinomish Indian Tribal Community, Sauk-Suiattle Indian Tribe, Ecology, and Washington State Department of Fish and Wildlife (WDFW) related to water rights and the protection of surface water flows to benefit fish and wildlife. The MOA included construction of a new diversion facility on the Skagit River and processing of new water rights that would allow the Judy System to provide adequate water supply to the area’s growing number of customers.

The Skagit River Basin Instream Resources Protection Rule (Skagit River Instream Flow Rule), established by Ecology in 2001 (Chapter 173-503 WAC), specifies the instream flows<sup>3</sup> for the Cultus Mountain streams and the Skagit River. In accordance with the MOA and the Skagit River Instream Flow Rule, the Skagit PUD’s diversions from the Cultus Mountain streams and a portion of diversions from the Skagit River are subject to instream flow rules.

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<sup>3</sup> The term “instream flow” is used to identify a specific stream flow needed to protect and preserve instream resources and values such as fish, wildlife, and recreation. An instream flow rule is, in essence, a water right for fish

Today, the Skagit PUD’s customer base has grown to approximately 85,000 people served through over 625 miles of pipeline. The majority of these customers are served by the Judy System, which provides retail water service to an area of approximately 142 square miles in Skagit County. Figure 2-1 shows the service area for the Judy System.

Table 2-1. History of the Skagit River Diversion

Year	History
1936	Public Utility Skagit PUD No. 1 of Skagit County formed by voters.
1939	Skagit PUD purchases water systems from People's Water and Gas Company including water systems for the Cities of Mount Vernon, Burlington, and Sedro Woolley. Surface water sources include Cultus Mountain diversions at Mundt Creek and Turner Creek.
1947	Construction of Judy Reservoir completed to allow storage of 450 million gallons. Spillway elevation is 435'.
1958	Construction of the existing intake structure at Gilligan Creek.
1965	Judy Reservoir dam elevations increased to 451' allowing for storage of 1.01 billion gallons.
1990	Construction of the existing pipeline from the Gilligan Creek intake to Judy Reservoir. Construction completed for a new 12 MGD multi-media direct filtration water treatment plant at Judy Reservoir.
1996	MOA executed between the Skagit PUD, City of Anacortes, Skagit County, Upper Skagit Indian Tribe, Swinomish Indian Tribal Community, Sauk-Suiattle Indian Tribe, Ecology, and WDFW to address utilization of Skagit River water resources for instream and out of stream purposes. The agreement allows for the future construction of a diversion facility on the Skagit River and facilitates processing of pending water right applications.
2001	Raising of Judy Reservoir dams allows for storage of 1.45 billion gallons of water and an increased spillway elevation of 465.1'. Skagit River Instream Flow Rule established by Ecology.
2007	Construction begins at the Skagit River Diversion Pump Station.
2010	Skagit River Diversion Pump Station begins to supply water to Judy Reservoir. Completed upgrade of water treatment plant allows for a peak capacity of 30 MGD.

## 2.2 Watershed Location and General Description

The Skagit River Watershed encompasses an extensive area and involves multiple jurisdictions. For the purpose of regulation at the local level, this definition creates an impractical implementation area that covers thousands of square miles and extends into Canada; it was therefore necessary to more narrowly define the area to be considered in this document.

The Skagit PUD Skagit River Watershed Program Area (Watershed) is defined for the purposes of this Plan as shown in Exhibit 1-1. The program area includes 14.95 square miles within the Skagit River Watershed located in western Skagit County (Exhibit 1-1). The program area is mostly contained within Water Resource Inventory Area 3, the Lower Skagit-Samish Basin<sup>4</sup>. Rolling foothills

and other instream resources. While an instream flow rule does not affect existing water rights, water rights issued after the rule adoption are junior to the instream flow and can only be exercised when the instream flow is being met.

<sup>4</sup> Washington Department of Ecology, 2003, Watershed Conditions, <http://www.ecy.wa.gov/programs/eap/wrias/index.html>

and floodplains characterize the terrain. Natural vegetation includes species such as western hemlock, western red cedar, red alder, and Douglas fir. Land use is dominated by forestry and agriculture. The municipalities of Concrete, Hamilton, Lyman, and Sedro-Woolley are located in the program area.

This area encompasses the 32-mile length of the Skagit River between River Miles 24.75 and 56.6, including 750 feet of riverbank on either side of the Skagit River and the corresponding portion of the 100- year flood zone. The program area begins at the Skagit PUD Skagit River Intake structure and ends at the point of confluence with the Baker River east of the Town of Concrete.

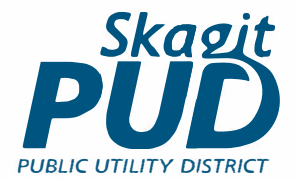
In 1978, the segment of the Skagit River from the pipeline crossing at Sedro-Woolley upstream to and including the mouth of Bacon Creek was designated as a Wild and Scenic River<sup>5</sup>. The Wild and Scenic designation indicates that human-induced contamination is minimal. However, the program area includes the segment from Sedro-Woolley upstream to Concrete due to the wastewater treatment facility and corresponding outfall to the Baker River located in Concrete. Several municipalities are located upstream from Concrete; however, these communities utilize septic systems and were assumed to pose no significant threat to water quality in the Skagit River.

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<sup>5</sup> National Park Service, 2003, Skagit Wild and Scenic River, Washington, <http://www.nps.gov/rivers/wsr-skagit.html>

# Figure 2.1 Skagit PUD's Skagit River Watershed Control Program Area and Vicinity

February 2025



- Program Area
- Skagit Watershed

Skagit Watershed derived from Skagit-Samish River Sub-basins data, Skagit County and does not include British Columbia.

Program Area defined as a 750 foot buffer of the Skagit River between the Skagit River Diversion and confluence of Baker River and Skagit River.

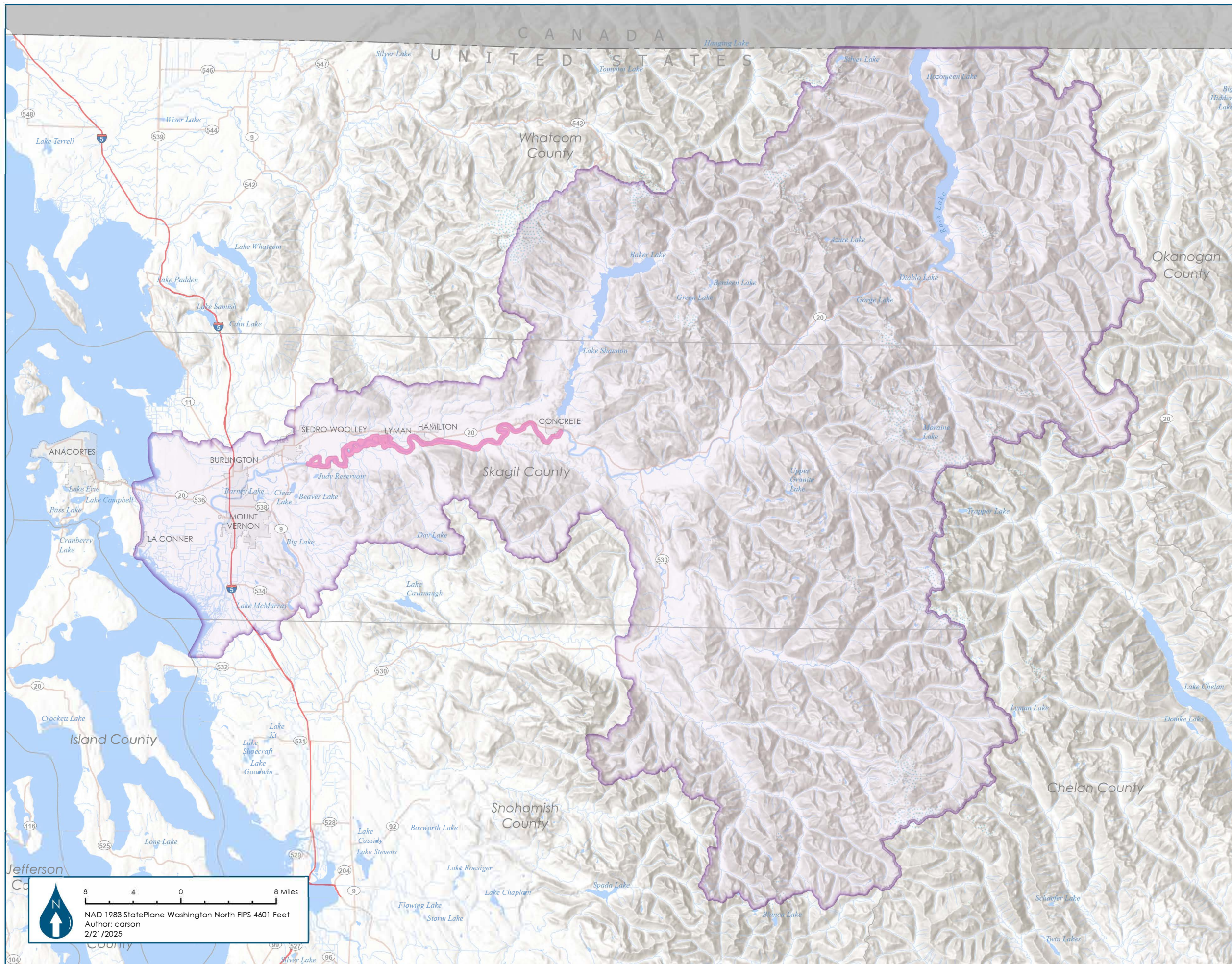
Hydrography Data Source:  
Washington State Department of Ecology



### Map Vicinity

This map was created from available public records and existing map sources, not from field surveys. While great care was taken in this process, maps from different sources rarely agree as to the precise location of geographic features. The relative positioning of map features to one another results from combining different map sources without field verification.

The PUD #1 of Skagit County disclaims any warranty of merchantability or warranty of fitness of this map for any particular purpose, either expressed or implied. No representation or warranty is made concerning the accuracy, currency, completeness or quality of data depicted on this map. Any user of this map assumes all responsibility for use thereof, and further agrees to hold the PUD #1 of Skagit County harmless from any damage, loss, or liability arising from the use of this map.



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## 2.3 Watershed Characteristics

### 2.3.1 Climate

The climate in the Watershed is temperate with cool and comparatively dry summers and mild, wet and cloudy winters. Typical rainfall and temperature data collected at climate stations located in Concrete and Sedro-Woolley are summarized in Table 2-2.

**Table 2-2. Average Rainfall and Temperature for Areas Near the Skagit PUD’s Skagit River Watershed**

	Mean Temperature (°F)												
	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Annual
Concrete, WA*	36.4	40.0	44.1	49.8	55.7	60.1	64.4	64.7	60.0	52.0	43.0	38.0	50.7
Sedro-Woolley, WA*	40.5	41.9	45.7	50.00	55.8	59.9	64.1	64.5	59.06	51.6	44.6	39.4	51.5
	Mean Maximum Temperature (°F)												
	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Annual
Concrete, WA*	41.7	47.2	53.0	60.2	66.8	70.8	76.7	76.9	71.1	60.7	49.0	42.9	59.7
Sedro-Woolley, WA*	46.5	49.0	53.6	58.7	65.1	69.3	75.1	75.7	69.9	59.9	50.7	44.8	59.9
	Mean Minimum Temperature (°F)												
	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Annual
Concrete, WA*	31.1	32.8	35.2	39.3	44.6	49.4	52.2	52.6	49.0	43.3	37.1	33.31	41.6
Sedro-Woolley, WA*	34.5	34.8	37.9	41.4	46.5	50.6	53.2	53.2	49.3	43.3	38.5	33.9	43.1
	Mean Precipitation (inches)												
	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Annual
Concrete, WA*	9.55	6.84	6.75	4.40	3.28	2.69	1.40	1.66	3.44	6.81	10.49	10.24	67.55
Sedro-Woolley, WA*	5.9	4.0	4.7	4.2	3.2	2.8	1.4	1.6	2.8	5.0	7.3	5.3	48.3
Judy Reservoir, WA**	6.6	4.6	5.3	4.7	3.7	3.0	1.4	1.7	2.9	5.7	7.9	6.0	53.5

\*Data from Western Regional Climate Center ([www.wrcc.dri.edu](http://www.wrcc.dri.edu))

Sedro Woolley 1990-2019; Concrete PPL FISH STN 1905-2012

\*\*Data from Public Utility District No. 1 of Skagit County

### 2.3.2 Terrain

The Skagit River Basin originates in Canada, encompasses a portion of the northern Cascade Mountains, including Mt. Baker, and extends down to the lowland broad outwash plain from Sedro-Woolley west. The program area is located within the Skagit River Basin and includes a portion of the low gradient outwash, with elevations 130 feet at Concrete just below the eastern boundary to foothills along the Skagit River’s banks near its confluence with the Baker River rising to 225 feet.

### 2.3.3 Instream Flows

As a signatory to the MOA in 1996, the Skagit PUD agreed to operate its source water collection in a manner that was protective of instream flows in the Skagit River and the Cultus Mountain Watershed. These instream flows were established in the Skagit River Instream Flow Rule. With the exception of diversions of up to 40.1 cubic feet per second (cfs) (27.52 MGD) from the Skagit River, diversions from the sources for the Judy System are subject to instream flow rules. The minimum instream flows for the Skagit River are listed in Table 2-3, a summary of the Skagit PUD’s water rights related to the Skagit River is provided in Table 2-4, and a copy of the MOA is located in Appendix A. A detailed description of the Skagit PUD’s water rights can be found in the Skagit PUD’s current Water System Plan<sup>6</sup>.

Stream flows in the Watershed generally follow the annual rainfall patterns with higher flows in the fall, winter, and spring months and very low flows during the summer. Therefore, Skagit PUD typically diverts stream flows from Cultus Mountain in the wet season (approximately October through May) and diverts water from the Skagit River in the dry months (approximately June April through October). By managing surface water diversions according to instream flow rules and existing water rights, source water from the creeks in the Cultus Mountain Watershed and the Skagit River is provided to Judy Reservoir throughout the calendar year.

**Table 2-3. Minimum Instream Flows for the Skagit River**

Dates	Skagit River*
January	10,000
February	10,000
March 1-15	10,000
March 16-31	10,000
April	12,000
May	12,000
June	12,000
July	10,000
August	10,000
September	10,000
October	13,000
November 1-15	13,000
November 16-31	11,000
December 1-15	11,000
December 16-31	10,000

**Table 2-4. Summary of Skagit PUD Water Rights Related to the Skagit River Watershed**

Source	Instantaneous Water Right (cfs)*	Instantaneous Water Rights Exempt from Instream Flows (cfs)*
Skagit River	55.39	40.1

<sup>6</sup> Skagit PUD, 2024, Public Utility Skagit PUD No. 1 of Skagit County 2024 Water System Plan

## 2.4 Water System Components

Water system components associated with the Watershed for Skagit PUD include Judy Reservoir and a surface water diversion and pump station facility on the Skagit River.

### 2.4.1 Judy Reservoir

Judy Reservoir was constructed in 1947. Its capacity has been increased by raising the surrounding dams in 1965 and 2001. The current capacity of the reservoir is approximately 1.45 billion gallons. The reservoir is formed by two earth-fill dams located in the Janicki Creek basin. Janicki Creek was diverted around the eastern edge of the reservoir during past construction activities and is separated from the reservoir by a man-made stream channel. The Skagit PUD's water treatment plant is located on the north side of Judy Reservoir. Water is pumped from the reservoir, processed at the treatment plant in compliance with DOH regulations, and flows through gravity pipelines to the distribution system. If water levels in the reservoir rise above an elevation of 465.1 feet, the excess water flows into Janicki Creek and eventually into the Skagit River.

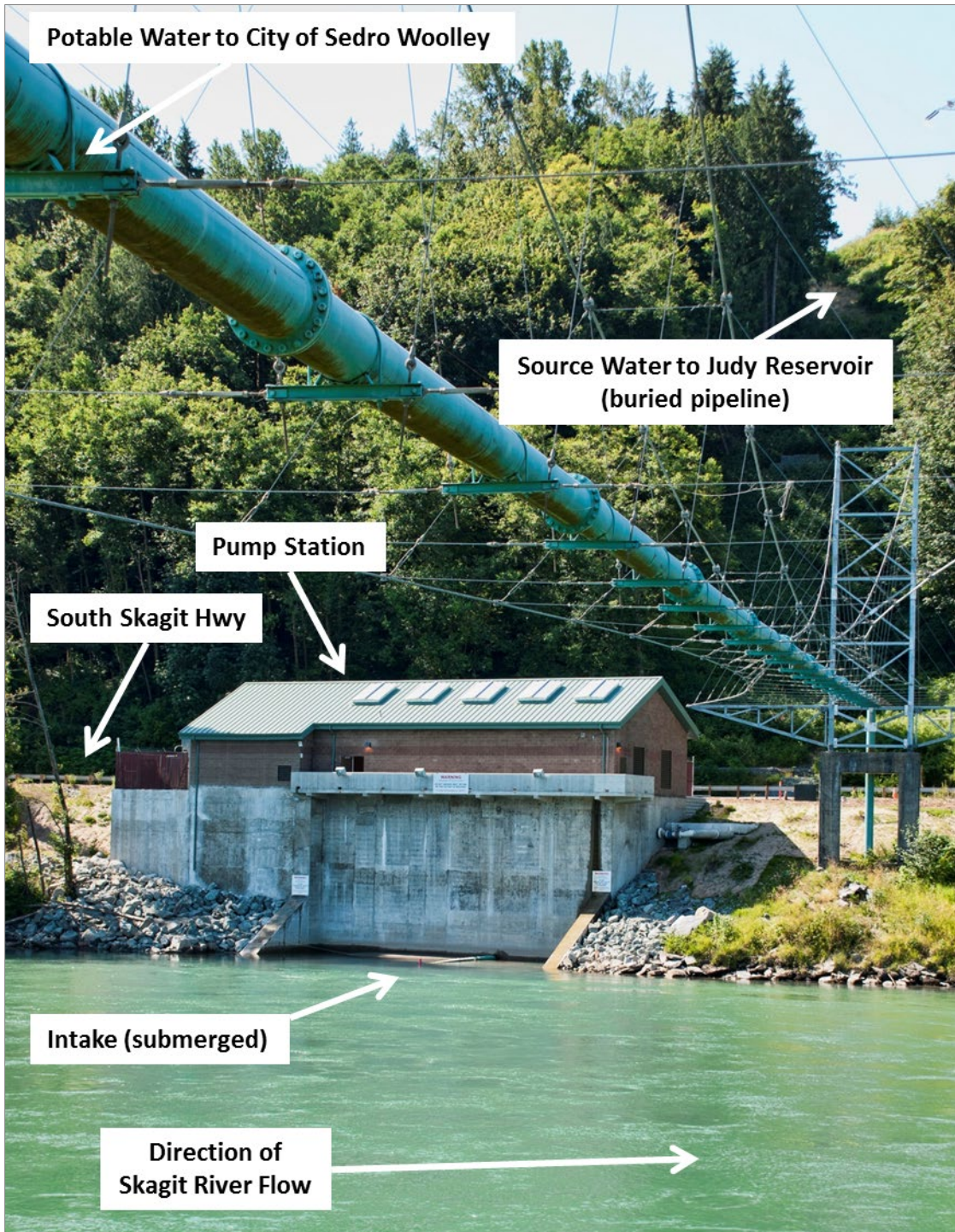
A portion of the suspended sediment and organic material carried by source water to Judy Reservoir settles and remains in the reservoir. While this removes a portion of these compounds from source water prior to the treatment process, a bathymetric survey is completed every six years to ensure adequate storage is maintained. Removal of sediment is conducted if and when it is deemed necessary.

### 2.4.2 Skagit River Diversion Pump Station (SRD)

Located 1 mile northwest of Judy Reservoir, the Skagit River Diversion Pump Station (SRD) is used to supply source water from the Skagit River to the Judy System. Commissioned in 2009, the facility uses five 900-horsepower electric pumps to transfer water from the Skagit River to Judy Reservoir through a 36-inch-diameter underground pipeline. The intake structure is constructed of concrete and the surrounding riverbanks are protected with large riprap.

SRD is used as an alternate and supplemental source of water to the Cultus Mountain streams. Flows are diverted from the streams to the maximum extent possible given the constraints of water rights and instream flows. If these flows are inadequate to achieve desired levels in Judy Reservoir, SRD is used to provide the necessary water volumes. In addition, SRD has the capability to provide the full cumulative water right of 35.8 MGD to Judy Reservoir if stream diversions are suspended due to emergency events such as storm damage. Sediment deposits from the Skagit River can accumulate inside of and on the top of the concrete intake structure at SRD. Periodic maintenance is required to remove these deposits and reduce operational difficulties related to the pump station.

Figure 2-2. Skagit River Diversion Pump Station (SRD)



## 2.5 Land Ownership and Use

The majority of land in the Watershed is privately owned; public lands are located primarily within the city limits of municipalities with the exception of Rasar State Park, which is east of Hamilton.

Land use in the program area is dominated by agriculture and the majority of the Watershed is zoned by Skagit County as such. Skagit County land use regulations zone the area surrounding Judy Reservoir as a Public Open Space Area of Regional-State Importance (dedicated for public purposes such as recreation, scenic amenities, and the protection of environmentally sensitive areas<sup>7</sup>). Other portions of the Watershed are zoned Rural Resource-Natural Resource Lands and Rural Reserve.

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<sup>7</sup> Skagit County Government ([www.skagitcounty.net](http://www.skagitcounty.net))

### **3 IDENTIFICATION OF CONDITIONS, ACTIVITIES, AND LAND USES DETRIMENTAL TO WATER**

A variety of contamination sources and activities within a watershed can affect source water quality. Impacts may result from physical, microbiological, and chemical sources of contamination. Increased levels of sediment and organic material can decrease efficiency of the water treatment process, damage infrastructure, contribute to long-term sediment maintenance issues at Judy Reservoir, and contribute to potentially harmful byproducts in drinking water. Toxins and viruses introduced to drinking water sources can be harmful to human consumption. Both naturally occurring characteristics of the watershed and human activities have the potential to cause or affect these types of contamination.

This chapter discusses the different sources of contamination that have the potential to occur in the Watershed and describes known site locations and circumstances that may adversely impact source water quality. The final section of the chapter defines critical areas where contaminants have the highest potential to degrade source water used by the Skagit PUD's WTP.

#### **3.1 Watershed Activities**

Numerous human activities and land uses have the potential to contaminate source water. The activities and land uses described below that can affect water quality are currently present or occurring within the Watershed.

These activities are listed in terms of decreasing potential to degrade source water quality in the Watershed:

- Agriculture and Livestock
- Public Transportation Routes
- Residential Land Uses

#### **3.2 Potential Contaminant Sources**

Sources of potential water supply source contamination within the program area are of paramount concern in the development and implementation of the WCP.

##### **3.2.1 Agriculture and Livestock**

As the dominant type of land use in the Watershed, certain activities commonly implemented by farms have the potential to degrade water quality. These activities include the following:

- Use of fertilizers, herbicides and pesticides
- Animal Feeding Operations
- Lagoons and Liquid Waste
- Irrigation / erosion of natural deposits

### **3.2.2 Public Transportation Routes**

Contaminants such as petroleum products can be carried by surface water runoff from public roadways. The presence of humans and animals along public transportation routes also has the potential to provide a source for bacterial and viral contamination of this type of runoff. Accidental spills of hazardous materials in transport also pose a threat to water quality.

### **3.2.3 Residential Land Uses**

Wastewater and septic systems used by residential owners have the potential to affect water quality. Household chemical storage and use can also result in the introduction of contaminants to a watershed. The majority of the residential parcels in the Watershed utilizes septic systems. However, the Town of Concrete has a wastewater treatment plant which is located approximately 350 feet from and discharges to the Baker River, which conveys into the Skagit River.

## 4 WATERSHED CONTROL MEASURES

This section describes the current watershed control measures used by the Skagit PUD to minimize or eliminate adverse impacts to source water quality. Watershed control in these areas can reduce the risk of damage to infrastructure and minimize delivery of sediment, organic material, and toxins to Judy Reservoir. The Skagit PUD's Engineering and Operations Departments work closely together to implement the watershed control measures. Implementation of the watershed control program is administered by the Environmental Compliance staff person. A portion of this staff position's time is spent monitoring activities in the Watershed, building relationships with Watershed landowners, pursuing long-term objectives of the watershed control program, and working with the Operations department to maintain infrastructure used to supply source water to Judy Reservoir.

### 4.1 Public Education

One way to minimize the risk of source supply contamination in the program area is to educate the public about this risk. Landowners and users within the program area are most likely to cause an accidental spill; they are most likely to be the first point of contact with emergency management agencies by reporting a spill; and they are most able to prevent accidents through conscientious management of potential sources of contamination.

The following public education strategies are recommended for use in the WCP:

- Include a notice explaining the purpose and goals of the WCP in the annual consumer confidence reports and monthly newsletter published Skagit PUD
- Give presentations at Skagit PUD Commission meetings to describe and explain the purpose of the WCP
- Coordinate public education efforts with community and non-governmental groups such as the Skagit Conservation District
- Make the WCP available on the Skagit PUD website
- Host school field trips and group tours of the Water Treatment Plant

These public education strategies are cost-effective ways to inform water consumers about the potential risks to their drinking water supply, ways they can minimize risks, what actions should be taken in the event of a spill, etc.

Care should be taken, in explanation of the WCP and the potential risk of contamination of public drinking water, not to alarm the public. Rather, emphasis should be placed on the proactive and precautionary intent of the WCP.

## 4.2 Water Quality Monitoring

Skagit PUD regularly monitors the water quality of the raw water prior to the processing at the Water Treatment Plant. Table 4-1 outlines the water quality parameters and the frequency at which they are tested.

**Table 4-1. Judy Reservoir Source Water Quality Monitoring Program**

Parameter	Monitoring Location	Frequency	Collection Responsibility	Analysis	Comments
<b>Judy Reservoir Source Water</b>					
Turbidity	WTP	Daily	WTP Operators	WTP WQ Lab	Raw water test
True Color	WTP	Daily	WTP Operators	WTP WQ Lab	Raw water test
Temperature	WTP	Daily	WTP Operators	WTP WQ Lab	Raw water test
pH	WTP	Daily	WTP Operators	WTP WQ Lab	Raw water test
Nitrate (NO <sub>3</sub> )	WTP	Annually	WQ Tech	WTP WQ Lab	Finished water test
Unregulated UCMR	WTP	Every 5 years	WQ Tech	Outside Lab	Finished water test
Chlorite (ClO <sub>2</sub> )	WTP	Monthly	WQ Tech	WTP WQ Lab	Finished water test
Disinfection Byproducts (DBP)	WTP	4 per year	WQ Tech	WTP WQ Lab	Finished water test
Total Organic Carbon (TOC)	WTP	Monthly	WQ Tech	Outside Lab	Raw water test
Fecal Coliform Bacteria	WTP	8 per month	WQ Tech	WTP WQ Lab	Raw water test
<i>Giardia</i>	WTP	Every 5 years	WTP Operators	Outside Lab	Raw water test.
<i>Cryptosporidium</i>	WTP	Every 5 years	WTP Operators	Outside Lab	Raw water test.
Heterotrophic bacteria	WTP	As needed	WTP Operators	WTP WQ Lab	Finished water test
Gross Alpha	WTP	Every 6 years	WQ Tech	Outside Lab	Finished water test
Gross Beta	WTP	Every 6 years	WQ Tech	Outside Lab	Finished water test
Radium-228	WTP	Every 6 years	WQ Tech	Outside Lab	Finished water test
Algae	Judy Reservoir	Weekly	WQ Tech	WTP WQ Lab	Raw water test
<b>Skagit River Diversion Source Water</b>					
Turbidity	All Diversions	Daily	WTP Operators	WTP WQ Lab	Weekly when not in use

Parameter	Monitoring Location	Frequency	Collection Responsibility	Analysis	Comments
True Color	All Diversions	Daily	WTP Operators	WTP WQ Lab	Weekly when not in use
pH	All Diversions	As needed	WTP Operators	WTP WQ Lab	
Total Organic Carbon (TOC)	Skagit River Diversion	Monthly-in use	WQ Tech	Outside Lab	
Total and Fecal Coliform Bacteria	Skagit River Diversion	Weekly-in use	WQ Tech	WTP WQ Lab	

## 4.3 System Operation and Emergency Provisions

### 4.3.1 System Operation

As mentioned previously, the system components of the Watershed include the Skagit River Diversion (and pump station), the underground source water pipelines, and a man-made reservoir. A modern multi-media direct filtration water treatment plant is located close to Judy Reservoir. Source water from the Watershed is processed by the WTP for delivery to the Skagit PUD’s distribution system. The Skagit PUD’s Water System Plan describes the water treatment and distribution process in detail.

### 4.3.2 Emergency Provisions

The diversion intake and underground source water pipelines related to the Watershed are located in mountainous terrain prone to landslides, storm damage, and other threats. The Skagit PUD’s Water System Plan includes a description of the current Emergency Response Program. This program includes procedures used to address natural and man-made disasters, water source contamination, and water supply shortages. In addition, approximately 3-5 months of source water can be stored in Judy Reservoir. This storage would provide an opportunity to repair damage to the diversion sites without a loss of source water to the Skagit PUD’s water system.

### 4.3.3 Notification from Owners

The Town of Concrete owns and operates a Wastewater Treatment Plant which was built in 2008 per Ecology requirements. It would be in Skagit PUD’s best interest to initiate discussion with Concrete Public Works to request notification should an illicit discharge occur from the Wastewater Treatment Plant (see Table 6-1)

## 5 WATER QUALITY TRENDS

As described in Chapter 4, the Skagit PUD has historically conducted an intensive water quality monitoring program for source water to the Judy System. Results from inorganic chemical analysis have been below the maximum contaminant levels (MCL) and fecal coliform levels have been historically below the maximum allowed by DOH.

Levels of turbidity and organic content vary throughout each year and can affect the Skagit PUD's ability to divert water from the Skagit River. Elevated levels of turbidity decrease the efficiency of the water treatment process and contribute to long-term sediment maintenance issues at Judy Reservoir. High organic levels can increase disinfection byproducts (BDPs) in treated water. The Skagit PUD regularly closes diversions due to elevated levels of these parameters.

A detailed discussion of the Skagit PUD's water quality monitoring program and water quality trends is included in the Skagit PUD's Water System Plan.

## 6 WATERSHED CONTROL PROGRAM EVALUATION

The Skagit PUD is required by DOH to conduct a Watershed Control Program Evaluation every 6 years and include the evaluation in the water system plan<sup>8</sup>. In accordance with these requirements, Chapter 6 describes the evaluation of the following components of the Skagit PUD's watershed control program:

- Watershed description and watershed control program
- Conditions and activities adversely affecting source water quality
- Monitoring program review and evaluation of recent sampling results
- Changes in the watershed since the last evaluation that may adversely affect source water quality
- Recommendations for improved watershed control

Chapters 1 through 5 of this Watershed Management Plan include written documentation of the Skagit River Watershed characteristics, conditions, watershed control measures, and water quality monitoring. The following sections fulfill the balance of the evaluation requirements by analyzing recent changes in the Watershed and identifying opportunities for improvement to the updated watershed control program.

### 6.1 Recent Changes in the Skagit River Watershed

Janicki Industries built a 188,000 square foot aerospace manufacturing and assembly facility in Hamilton. While most of the actual buildings and work yard associated with Janicki Industries Hamilton Campus is outside of the Watershed, the southern 150 ft of the main parcel itself is within the WCP boundary. It may be worthwhile to have a discussion with the company regarding the WCP (see Table 6-1).

### 6.2 Opportunities for Improved Watershed Control

This Watershed Management Plan documents the Skagit PUD's efforts to meet DOH requirements for a watershed control program. Looking to the future, the Skagit PUD has identified recommendations to continue improvement of watershed control. These recommendations are listed in Table 6-1.

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<sup>8</sup> Chapter 246-290 Section 668 WAC

**Table 6-1. Recommendations for Improved Watershed Control in the Skagit River Watershed**

Area of Opportunity for Improved Watershed Control	Recommended Action Item (2024-2030)
Public Education	Dedicate a newsletter article to the Skagit River Watershed Initiate dialogue with Janicki Hamilton about the WCP
Emergency Provisions	Contact Concrete Wastewater Treatment Plant to put notification system in place for illicit discharges
Potential Sources of Contaminants	Based on conversations with Janicki Industries, consider adding "Industry" to Potential Sources of Contaminant in Section 3.2

## **APPENDIX A**

# **MEMORANDUM OF AGREEMENT REGARDING UTILIZATION OF SKAGIT RIVER BASIN WATER RESOURCES FOR INSTREAM AND OUT OF STREAM USES**