

STATE OF WASHINGTON  
**DEPARTMENT OF FISH & WILDLIFE**  
**LANDS AND RESTORATION SERVICES PROGRAM**  
Salmonid Screening, Habitat Enhancement &  
Restoration Division (SSHEAR)

**OFF-CHANNEL SITE INVENTORY DATA**

**General Information:**

<b>Region:</b> North Coast	<b>Observer(s):</b> Nettnin
<b>River System:</b> Sol Duc	<b>Date:</b> 1/8/98 - 4/9/99
<b>Site Identifier:</b> S-0313	<b>WRIA:</b> 20.0313
<b>River Mile Location:</b> 23.6 mi.	<b>RB/LB:</b> RB
<b>Local Name:</b> Lake Creek	<b>Trib. to:</b> Sol Duc R. (20.0096)
<b>Legal Description:</b> NE ¼ Sec 9 T29N R13W	<b>County:</b> Clallam

**Habitat Type:** Terrace trib and lake

**Landowner:** (X) Federal (X) State (X) County ( ) Other Government (X) Private  
- Department of Natural Resources  
- Rayonier Timber Operations Company, and numerous smaller landowners.  
- Clallam County  
- U S Forest Service

**Directions to site:**

North from Forks (Hwy 101) to MP198.2. At this point, the stream that crosses under the highway is Lake Creek. There are numerous other access points to the lower reach, to the lake and to the upper reach. The individual reports on the tributaries will address those accesses.

**Site Overview:**

Local fishery experts have reported that Lake Creek is the most productive tributary to the Sol Duc River. The notable fish species it supports are: chinook, coho, sockeye, steelhead, and cutthroat trout. The system drains 11.4 mi<sup>2</sup> (Catalog of Coastal Streams and Salmon Utilization, WDFW).

The Lake Creek system can be broken into five main reaches. The lowest reach, from the confluence upstream to Lake Pleasant has a gradient of less than 5%. It supports the majority of the chinook spawning, and portion of coho, sockeye and steelhead spawning. The numerous small valley wall tributaries feeding into it from Tye Hill are important for gravel recruitment. This valuable spawning material is important since the lake limits recruitment from the upper reaches.

The second reach consists of Lake Pleasant. It is 486 surface acres, 2 miles long, and 50 feet deep (Lakes of Washington, Volume 1, Western Washington, third edition, DOE). Waters that feeds into the lake are numerous small valley wall tributaries, two larger valley wall tributaries, several terrace tributaries, including a 2.5 acre unnamed lake, and the upper reach of Lake Creek. The valley wall tributaries recruit gravel to the lake edge which is important for sockeye spawning. The tributaries also provide spawning and rearing for trout and coho. The terrace tributaries and wetland margins of the lake provide quality off channel rearing for coho and cutthroat trout. It has been observed by a local fishery expert that the small associated lake has been a prime rearing area for coho. Beaver ponds adjacent to Lake Pleasant were observed with numerous coho fry.

The third reach has the most productive coho habitat. It may possibly be the most productive reach in the Quillayute River system if the tributaries are included. This reach extends from the inlet of the lake to and including 20.0318, about 1.5 miles. It flows through an U-shaped valley at about 1 - 2% gradient. The mainstem provides excellent spawning opportunities for coho,

steelhead, cutthroat trout and possibly sockeye. Spawning and rearing habitat for coho and trout was observed in the four major associated tributaries. Off channel rearing habitat was observed in the terrace tributaries and associated wetlands. The majority of off channel habitat for Lake Creek, excluding the Lake Pleasant area, is found in this reach. There has been some recent bank disruption from logging activities in this area of the mainstem and also in the tributaries.

The fourth reach extends about one mile from the confluence of 20.0318 to the anadromous barrier at RM 7.0. It flows through a V notch valley with a gradient beginning at 3% and increasing to about 7% for most of the reach. It terminates at a 25% cascade at the foot of a 30-meter fall. The substrate is dominated by rubble and boulders but there are still good spawning opportunities. The valley walls are much tighter and steeper. Woody debris jams are more prevalent. The 300-meter reach from the confluence of 20.0319 to the falls has had several inner gorge failures. This has resulted in deposition of many tons of woody debris in the channel. But, there is fish use, both spawning and rearing, up to the base of the cascades.

The uppermost reach extends about 0.7 miles from the falls to the source. The gradient of this reach is about 1 - 5% through a V-notch valley which ends in a bowl-shaped basin at the base of the headwall. There is usable habitat throughout most of this reach but salmonids were not observed. This area may be intermittent during the summer limiting any resident population. There are four headwater tributaries that enter this reach. The tributaries are an integral part of the system for the recruitment of gravel and high quality water supply.

A large portion of the watershed is commercial forest but impacts to the lake and associated waters can be attributed to land development. There are numerous residences and some commercial businesses located on the lake or within a half mile below the outlet. The Portac and Clallam County properties could be potential pollution sources. Portac has a large mill on the western end of the lake, and the county has an old garbage dump near the mouth. The dump site has the potential of leaching into Lake Creek. Another source of potential pollution to this drainage is old septic systems.

**Habitat Information:**

**Water source:** Upper valley wall tributaries, terrace tributaries, springs

**Intermittent/year-around:** Year-around

**Estimated flows (cfs):** Lower end: 60.0 - 120.0 Upper end: 0.5 - 1.0

**Water temperatures:** Lower end: 4.5 - 10.0°C Upper end: 5.5 - 10.0°C  
- These temps ranged over the course of the survey

**Adjacent stream temperature (Sol Duc R.):** 4.0°C

**Other water observations:**

- Clearwater
- Susceptible to pollution from numerous sources: old garbage dump, existing transfer station, chemicals from old mills and existing mills, failed septic tanks, accidental spills at highway crossing

**Site area measurements:**  Indirect  Direct  Combination

Widths: Channel- 2.0 - 12.0 m Lake- 200 - 800 m Wetlands- 20 - 200 m

Depths: Channel- 5 - 90 cm Lake- 15.2 m \* Wetlands- 5 - 30 cm

Total length estimated (includes lake and wetlands): 12,550 m (\*\*7.8mi)

\* Wolcott, Lakes of Washington, Volume 1, Western Washington

\*\* Phinney, L; Bucknell, P., Catalog of Washington Streams and Salmon Utilization

**Total existing habitat area (est.):** 2,131,900 m<sup>2</sup>

Spawning area: 13,000 m<sup>2</sup> Tributaries: 11,000 m<sup>2</sup> Total: 24,000 m<sup>2</sup>

Impounded area: 1,966,800 m<sup>2</sup> \* Tributaries: 16,300 m<sup>2</sup> Total: 1,983,100 m<sup>2</sup>

Other rearing area: 52,200 m<sup>2</sup> Tributaries: 29,200 m<sup>2</sup> Total: 81,400 m<sup>2</sup>

\* Wolcott, Lakes of Washington, Volume 1, Western Washington (two area figures are given in the book. The lesser figure was used.

**Spawning Habitat conditions:**  None  Poor  Fair  Good  Excellent

**Describe spawning habitat:**

- There are all categories of spawning conditions meeting the needs and preferences of chinook, coho, sockeye, steelhead, cutthroat trout and other fishes.
- The reach below the highway lacks gravel.
- The reach between the highway and the lower county bridge is the primary spawning area for chinook. It is also used by steelhead, sockeye and coho.
- The upper lake shores are used by sockeye.
- The reach from the inlet of the lake to the confluence of 20.0318 is the primary coho area for the mainstem.
- Tribs 20.0317B and 20.0318 are also primary coho areas (see individual reports for more information)

**Rearing habitat conditions:**  None  Poor  Fair  Good  Excellent

**Describe pond and other rearing habitat:** (Riparian, woody debris)

- The reach below the highway is well shaded with large alder and scattered large conifer. This area is lacking large woody debris and quiet water. There is a spring channel that provides some off channel rearing.
- The reach between the highway and the lower county bridge has been logged on both sides. Most of the RMZ is standing and is primarily large alder and conifer. There is more woody debris in this reach. However, off channel rearing is very limited.
- The short reach between the lower county bridge and the outlet of the lake is impacted by residences. Shade in this reach is provided mainly by overhanging brush. The low gradient characteristics of this area should result in good rearing opportunities.
- The residential impact continues along two thirds of the shoreline of Lake Pleasant.
- There are some wetlands along the margins of the middle and upper shores; they have thick stands of willow and other brushes that will provide excellent rearing and cover. Some old growth timber still exists along the shores in the upper half of the lake but the northeast shore has scattered homes.
- The reach from the lake to the confluence of 20.0318 is well shaded with large old alder and conifer. There are moderate amounts of woody debris scattered throughout this reach, and several excellent off channel rearing areas.
- The reach from the confluence of 20.0318 to the falls has excellent shade due to a mix of 40 - 60 year old deciduous and conifer with scattered old growth. This reach has large amounts of woody debris, particularly in the upper half. The gradient is higher in this area. It is characterized by more boulders and less quiet water, and no off channel habitat.

**Describe inaccessible habitat:**

- The reach above the falls has about 9,000 m<sup>2</sup> of stream habitat. Most of it is below 5% gradient, well shaded, ample woody debris, spawning opportunities and a marsh in the uppermost valley.
- One sculpin was observed during the survey but no fish were captured in minnow traps. These headwater streams may be intermittent during the summer and probably will not support a resident population.
- More observations need to be made for this upper area.

**Describe wetland:**  Bog  Marsh  Scrub-shrub Wetland  Forested Wetland

- The scrub-shrub wetlands are confined to the margins of the lake. Saturation levels fluctuate with the level of the lake. They are vegetated with willows, red-osier dogwood, douglas spirea, salmonberry, scrub alder and scattered conifer.
- Forested wetlands occur on the lake margins also. Most of this wetland type occurs between the valley walls, along both sides of the mainstem from the lake upstream to about Death Valley trib (20.0317B) - at LB RM 6.0. Vegetation includes sedges, skunk cabbage, salmonberry, crab apple, mixed aged alder, and mixed age conifer.

**Flooding potential:**  Low  Medium  High

- The Lake Creek system gets high flows but the lower reach does not appear to go over its banks. The upper reach does top over its banks in the forested wetland. The lake apparently absorbs the infusion of storm water.
- High flows have been observed several times however, the water quality seems to stay good. Turbidity appears lighter than greatly discolored.

**Fish Information:**

**Site entry condition to Sol Duc R.:**  Poor  Fair  Good

- Open and accessible.
- Located just above a large pool in the Sol Duc River.

**Coho access and use:**

- Juvenile-  Unknown  None  Poor  Fair  Good
- Adult-  Unknown  None  Poor  Fair  Good
- There are spawner indexes on this system.
- Spawner survey data is available from the Quileute tribe and WDFW.

**Other species access and use:**  Chum  Pink  Sockeye  Chinook  Trout

- The channel is open and available to all species.
- Spawner survey data for these species is available from the Quileute tribe and WDFW.

**Habitat Improvements:**

**Enhancement opportunities:**

- Possible project type:
- Improve on the off channel rearing possibilities in the lower reach.
- Possibility redirecting the flow back in an abandoned channel. This area, above the lake, appears to have been straightened.
- Place woody debris in the lower channel and in the straightened reach above Death Valley tributary (if flow is not rerouted).
- Maintain the integrity of the system.
- Equipment access: There is good access to the upper site through Rayonier property.

**Additional Comments:** There is a 300-meter reach of the channel between RM 6.0 and 6.2 that is straight and incised. This is out of character for this area. There is evidence of an abandoned channel above and below this reach suggesting that sometime in the past, the channel was altered.

A limiting factor in the lower reach is off channel rearing.

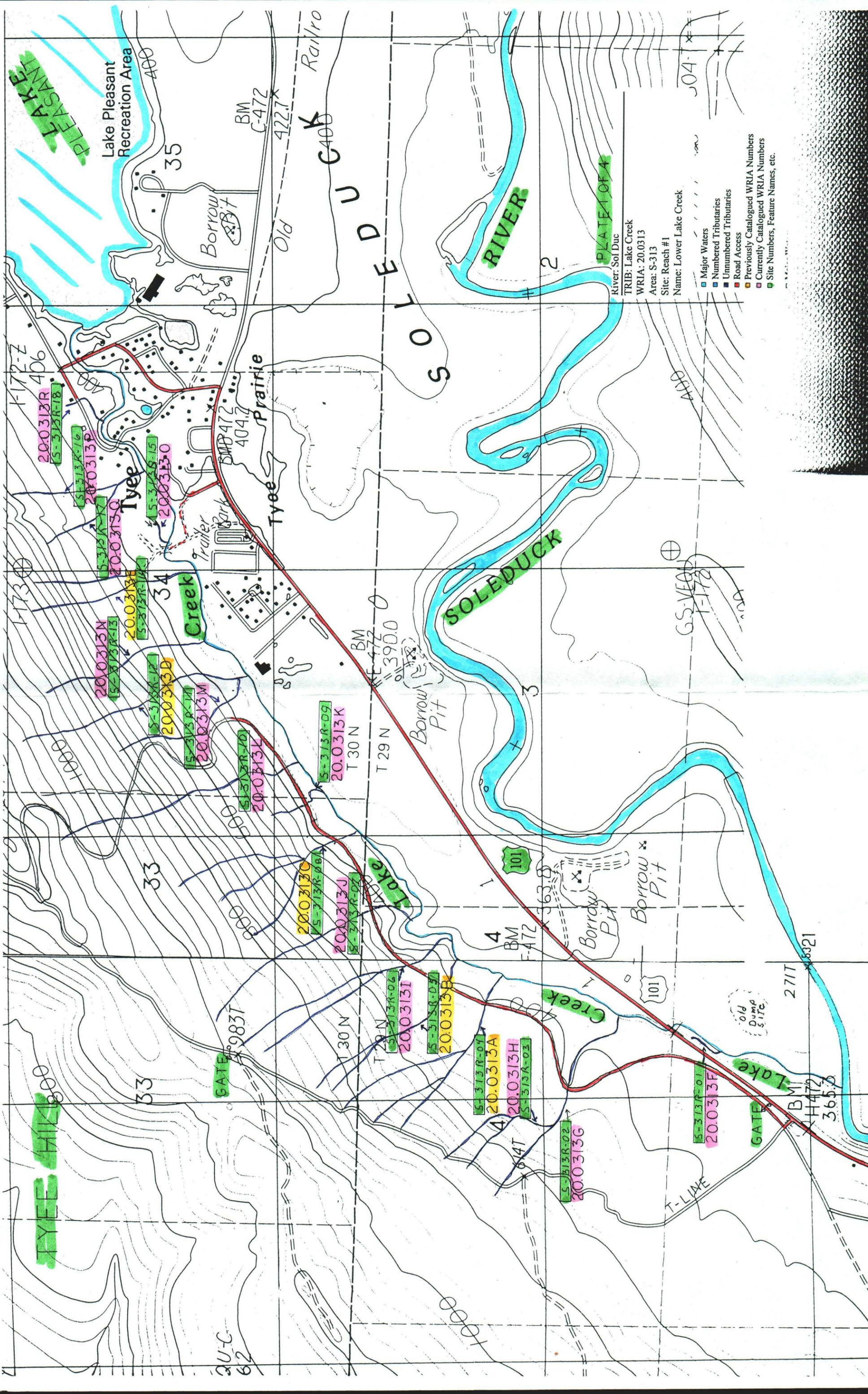
G.P.S. position data was taken for a several features along the mainstem:

- Confluence of S-313R-24 (Braid of mainstem)	East 1,025,393.4 ft.	North 1,068,016.4 ft.
- Confluence of S-313R-25 (Braid of mainstem)	East 1,025,341.7 ft.	North 1,067,974.7 ft.
- Confluence of S-313R-26	East 1,026,052.0 ft.	North 1,068,427.6 ft.
- Confluence of S-313R-27	East 1,026,244.2 ft.	North 1,068,482.6 ft.
- Confluence of S-313R-30	East 1,069,780 ft.	North 1,027,810 ft.
- Confluence of 20.0316	East 1,070,278 ft.	North 1,028,098 ft.
- Confluence of 20.0317	East 1,070,409 ft.	North 1,028,006 ft.
- Confluence of S-313R-31	East 1,070,514 ft.	North 1,028,374 ft.
- Confluence of S-313L-10	East 1,071,104 ft.	North 1,028,413 ft.
- Confluence of 20.0318	East 1,071,719 ft.	North 1,030,560 ft.
- Bridge at RM 7.7 (road 3026/FSR-100)	East 1,073,264 ft.	North 1,035,515 ft.

**Attachments Available:**

Contact respective SSHEAR habitat biologist for the following checked items:

<input type="checkbox"/> Aerials	<input checked="" type="checkbox"/> Sketch	<input checked="" type="checkbox"/> Maps	<input checked="" type="checkbox"/> Culvert Report
<input type="checkbox"/> Other references	<input checked="" type="checkbox"/> Spawning surveys	<input checked="" type="checkbox"/> Juvenile trapping	<input type="checkbox"/> Fishway Report



River: Sol Duc  
 TRIB: Lake Creek  
 WRIA: 20.0313  
 Area: S-313  
 Site: Reach #1  
 Name: Lower Lake Creek

- Major Waters
- Numbered Tributaries
- Unnumbered Tributaries
- Road Access
- Previously Catalogued WRIA Numbers
- Currently Catalogued WRIA Numbers
- Site Numbers, Feature Names, etc.

Lake Pleasant  
 Recreation Area

Tyee Hill

SOLEDUCK RIVER

Tyee Creek

Creek

LAKE

Tyee

Prairie

Borrow Pit

Borrow Pit

Borrow Pit

Borrow Pit

old Pump Site

GATE

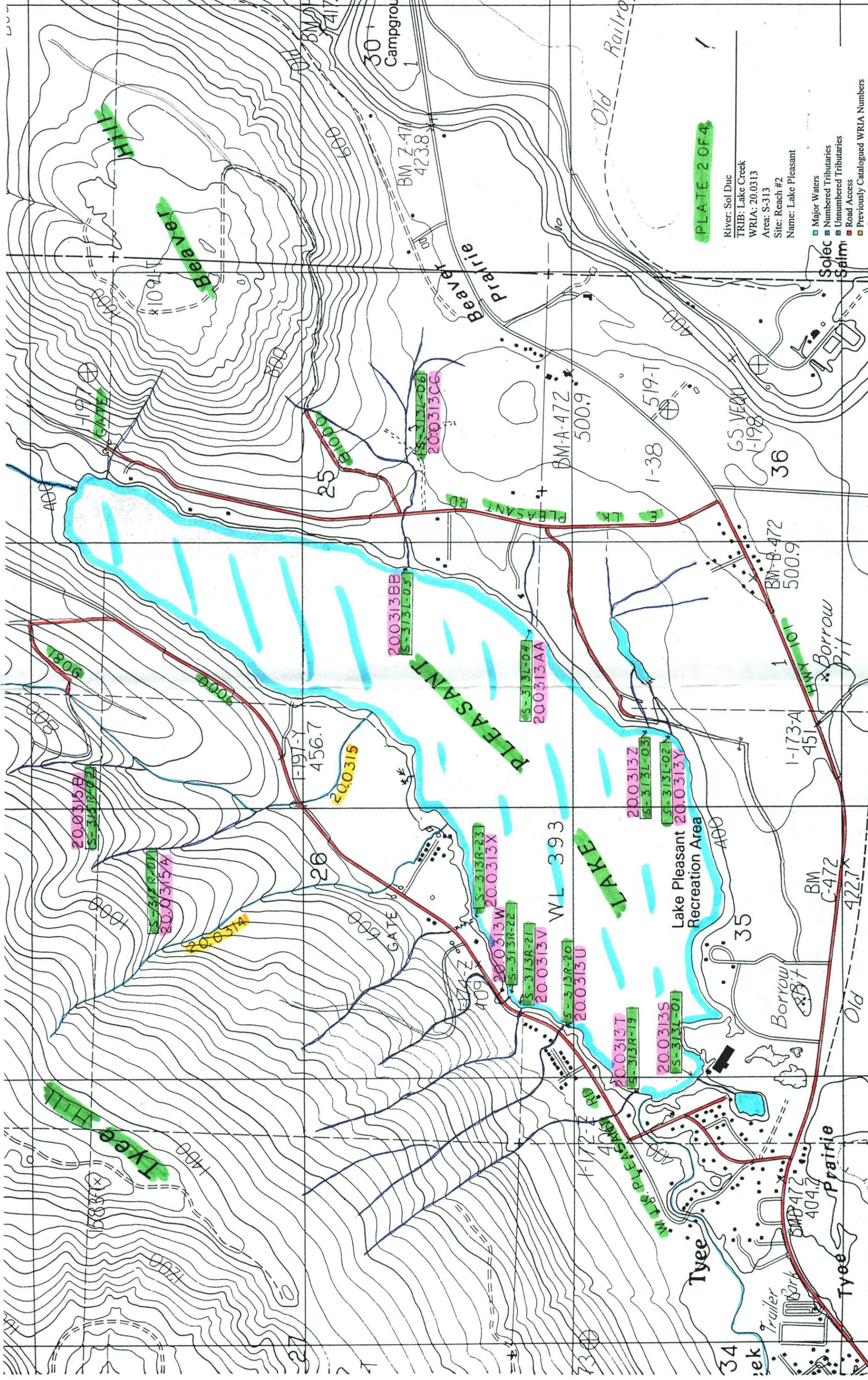


PLATE 2 OF 4

River: Sol Duc  
 TRIB: Lake Creek  
 WRJA: 20.0313  
 Area: S-313  
 Site: Reach #2  
 Name: Lake Pleasant

- Major Waters
- Numbered Tributaries
- Unnumbered Tributaries
- Road Access
- Previously Catalogued WRJA Numbers
- Currently Catalogued WRJA Numbers

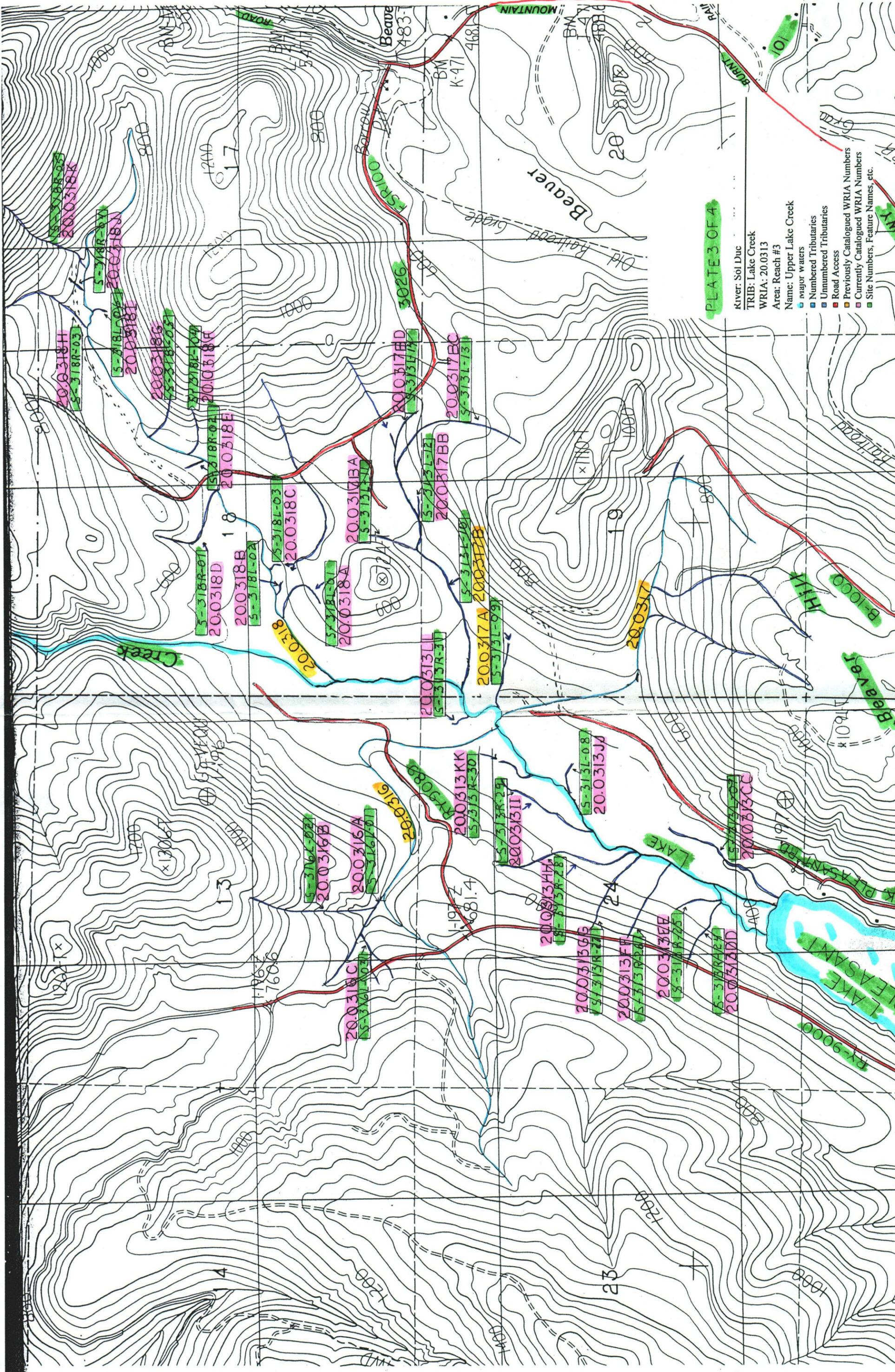
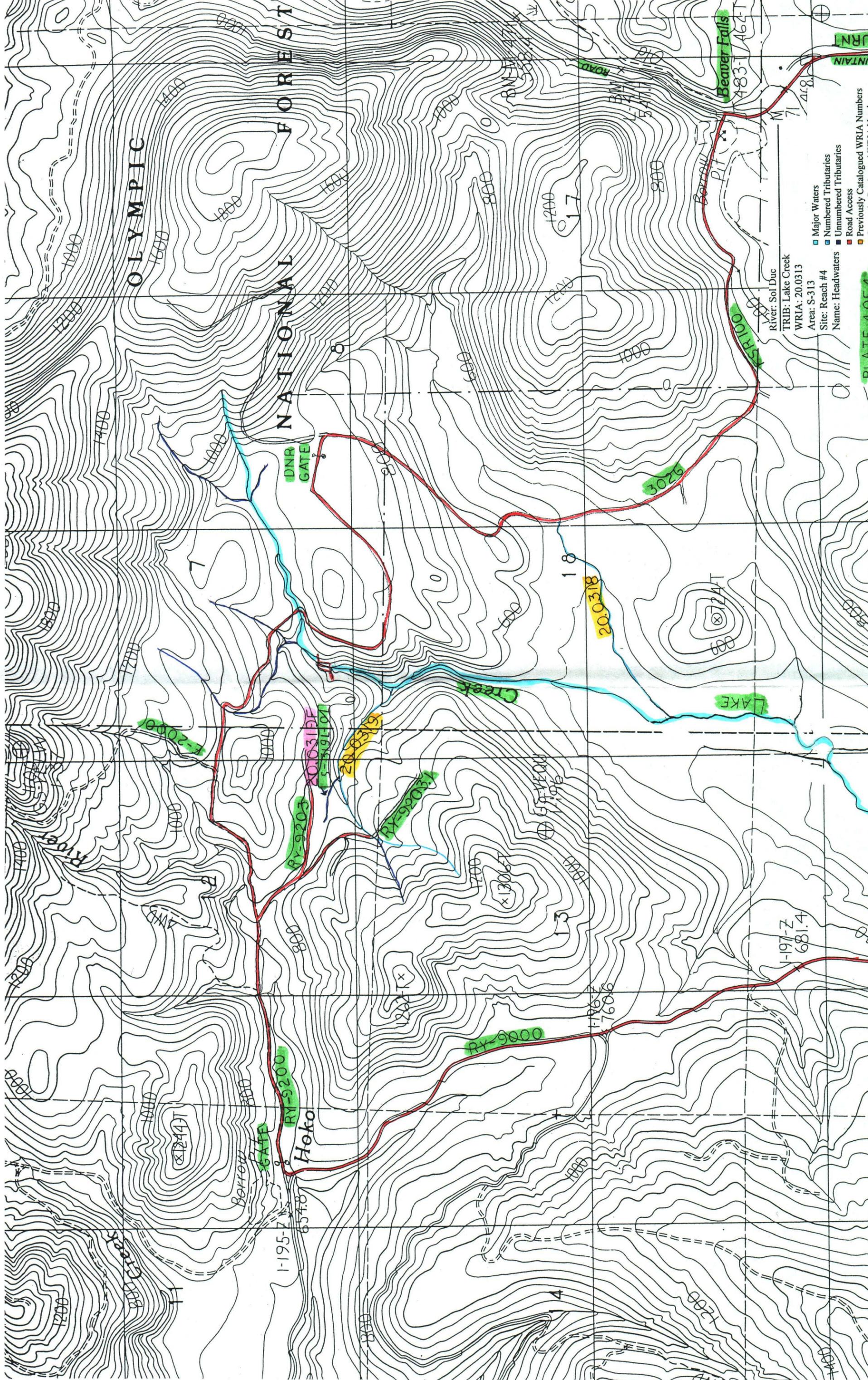


PLATE 3 OF 4

- Kiver: Sol Duc
- TRIB: Lake Creek
- WRIA: 20.0313
- Area: Reach #3
- Name: Upper Lake Creek
- Major waters
- Numbered Tributaries
- Unnumbered Tributaries
- Road Access
- Previously Catalogued WRIA Numbers
- Currently Catalogued WRIA Numbers
- Site Numbers, Feature Names, etc.

20.0318K  
S-318R-03  
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S-318R-100



River: Sol Duc  
 TRIB: Lake Creek  
 WRIA: 20.0313  
 Area: S-313  
 Site: Reach #4  
 Name: Headwaters

- Major Waters
- Numbered Tributaries
- Unnumbered Tributaries
- Road Access
- Previously Catalogued WRIA Numbers
- Currently Catalogued WRIA Numbers

RIVER: SOL DUC RIVER

AREA: S-R3

AREA MAP

9/96

