

# Fish and Wildlife Habitat Enhancement in the Omineca Region

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## Society for Ecosystem Restoration in North Central British Columbia [SERNbc]

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SOCIETY FOR ECOSYSTEM RESTORATION  
IN NORTHERN BRITISH COLUMBIA



HABITAT  
CONSERVATION TRUST  
FOUNDATION

## SUMMARY

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The purpose of this project was to identify potential habitat enhancement sites in Fisheries Sensitive Watersheds (FSWs) and Wildlife Habitat Areas (WHAs) within the Omineca Region. There are 22 FSWs and 20 WHAs within the region.

Steps undertaken to identify sites for this project included engagement with government specialists, review of existing reports and other information related to the selected FSWs and WHAs and a search of the Provincial Stream Crossing Inventory System (PSCIS) to determine the extent of existing fish passage assessments and habitat confirmations within the FSWs.

The results of this seeding project include the following potential projects:

- Two (2) watershed scale Fish Passage Assessments,
- Twenty-two (22) Fish Habitat Confirmations in 6 watersheds on previously identified high habitat value fish barriers or potential barriers,
- Five (5) Water Quality Effectiveness Evaluations on non-status roads within FSWs, and
- Three (3) Watershed Health Status Evaluations (Tier II) field surveys.

These are discussed briefly below and in further detail in the report.

Fish Passage Assessments: The fish passage assessments are recommended to expand knowledge of the impact of fish barriers in the Ankwil and Milk River watersheds. These two watersheds were shown to have harvesting and road disturbance but no assessments were found in the PSCIS database (BC Government, 2018).

Fish Habitat Confirmations: Twenty-two fish habitat confirmations are recommended to be done on sites that have been previously identified through assessment as being barriers or potential barriers to fish passage, and also to be of high habitat value. The habitat will be confirmed at these sites and the structures will be assessed as to whether they are still barriers. Once this step is completed, SERNbc or another proponent may choose to pursue remediation of the sites.

Water Quality Effectiveness Evaluations: Water Quality effectiveness evaluations will be carried out on non-status roads with Milk River, Chehischic, Hominka River, Table River, and Missinka watersheds. The purposed is to target roads that may not be covered by government water quality effectiveness surveys. These effectiveness evaluations could result in roads being identified as sediment sources within fisheries sensitive watersheds and these sites could be deactivated or rehabilitated to eliminate the source of sediment.

Watershed Status Evaluations: The final type of project identified is to undertake Tier II or field-based Watershed Health Status Evaluations within three watersheds under direction from regional government specialists. These would be undertaken in a systematic manner as indicated in the WSE protocol and be carried out within the Chehischic Creek, Milk River, and Seebach Creek FSWs. These watersheds were rated as having high risk thresholds and therefore are likely good candidates for further surveys.

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# 1 INTRODUCTION

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## 1.1 PROJECT BACKGROUND

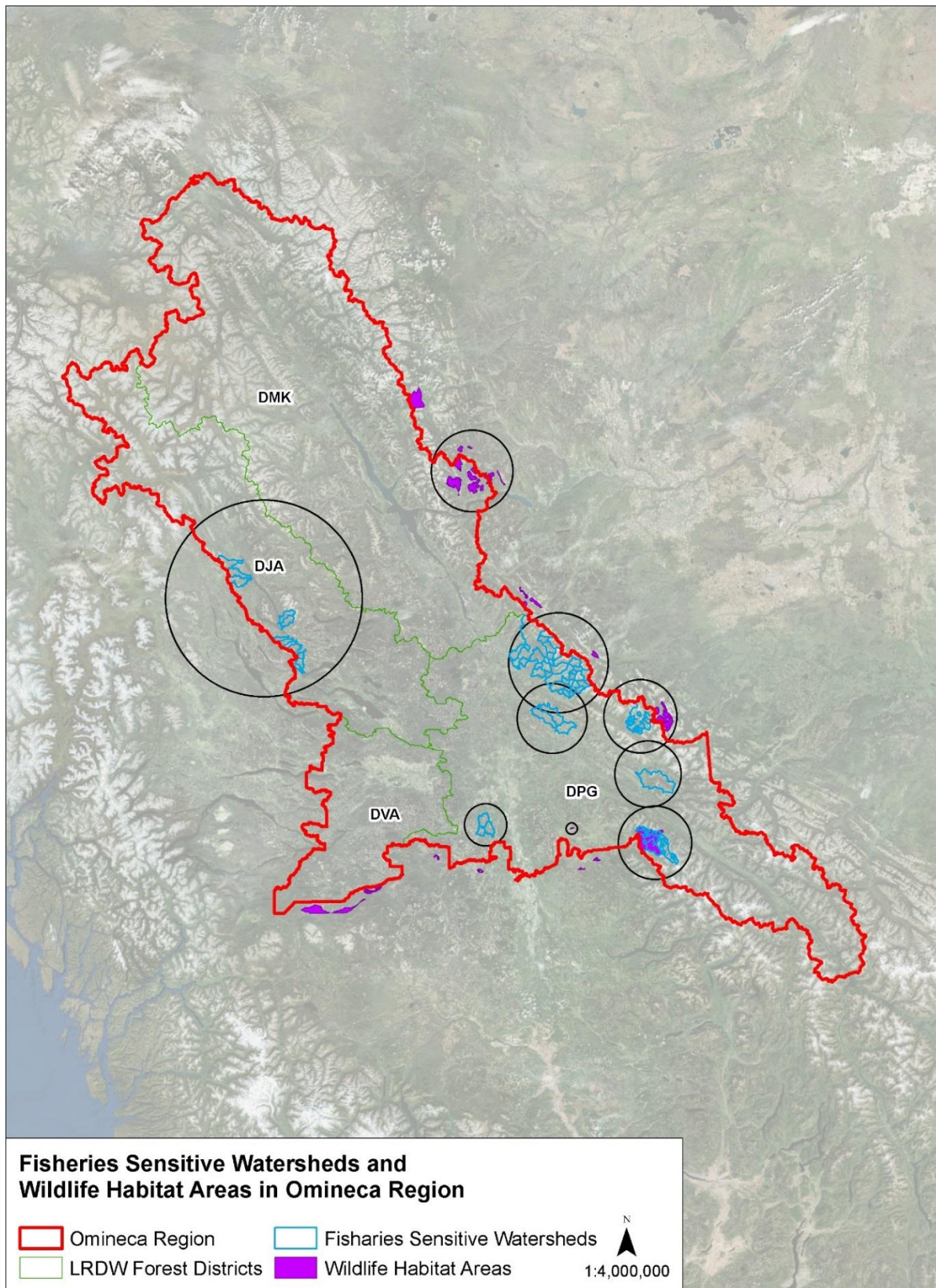
The Society for Ecosystem Restoration in Northern British Columbia (SERNbc) is proposing to work in collaboration with the provincial government and other partners in the Omineca region to identify areas for potential habitat enhancement in association with designated Wildlife Habitat Areas (WHAs) and Fisheries Sensitive Watersheds (FSWs). Habitat enhancement treatments will include a broad range of activities that would be driven by the species specific needs of a given WHA or FSW in combination with the current and desired future conditions in and around these areas. Through the completion of this initial review (seed project), SERNbc will work to identify specific treatments that are warranted, and return to HCTF with specific proposals to develop prescriptions and implement treatments at specific locations based on species and site specific objectives.

## 1.2 PROJECT OBJECTIVES

Engage regional biologists, DFO, provincial and local government officials, and key stakeholders in the region in order to identify sites where habitat enhancement treatment is needed to support the objectives of designated WHAs and FSWs.

## 1.3 STUDY AREA

The focus of this review was to identify sites within or associated with FSWs and WHAs within the Omineca Region (**Figure 1**).



**Figure 1 Fisheries Sensitive Watersheds and Wildlife Habitat Areas in the Omineca Region.**

## 1.4 FISHERIES SENSITIVE WATERSHEDS

At the time this project began there were 5 designated FSWs within the Omineca Region. On March 12, 2018 seventeen more were added. The FSWs and their focus species are listed in **Error! Reference source not found.** below. The established objectives for each of these FSWs can be found on the Ministry of Environment Approved Fisheries Sensitive Watersheds webpage<sup>1</sup>.

**Table 1 Fisheries Sensitive Watersheds in the Omineca Region (as approved prior to March 12, 2018).**

Fisheries Sensitive Watershed Name	Tag	District	Year Established	Focus Species
Seebach Creek	F-7-001	PG	2013	Bull Trout
Framstead Creek	F-7-002	PG	2013	Bull Trout
Milk River	F-7-003	PG	2013	Bull Trout & Chinook
Upper Goat River	F-7-004	PG	2013	Bull Trout and Chinook
Chehischic Creek	F-7-005	PG	2013	Rainbow Trout, Mountain Whitefish, Burbot, Chinook.
Gluskie Creek,	f-7-006	FS James	2018	Including but not limited to Sockeye Salmon, Chinook Salmon, Bull trout
Forfar Creek,	f-7-007	FS James	2018	
O'Ne-ell Creek	f-7-008	FS James	2018	
Bivouc Creek,	f-7-010	FS James	2018	
Van car Creek,	f-7-011	FS James	2018	
Sidney Creek,	f-7-012	FS James	2018	
Paula Creek,	f-7-013	FS James	2018	
Sandpoint Creek,	f-7-014	FS James	2018	
Narrows Creek,	f-7-015	FS James	2018	
Frypan Creek,	f-7-016	FS James	2018	
Lovell Creek and	f-7-017	FS James	2018	
Ankwill Creek.	f-7-018	FS James	2018	
Walker Creek	F-7-019	PG	2018	Including but not limited to Bull Trout & Chinook Salmon
Missinka River	F-7-020	PG	2018	Including but not limited to Bull Trout & Arctic Grayling
Hominka River	f-7-021	PG	2018	
Table River	f-7-022	PG	2018	
Anzac River	f-7-023	PG	2018	

## 1.5 WILDLIFE HABITAT AREAS

There are 20 WHAs within the Omineca Region (**Table 2**):

- **WHA 7-003** is a small site set aside for a Mountain Caribou mineral lick with a trail to subalpine.
- **WHAs 7-004 to 7-011** are associated with the Goat River FSW and are for Bull Trout habitat protection.
- **WHA 9-001** (Four sites) are designated as core mountain goat habitat
- **WHAs 9-035 to 9-040, 9-102 and 9-103** are designated as wildlife habitat areas for Northern Caribou calving and rutting.

<sup>1</sup> <http://www.env.gov.bc.ca/wld/frpa/fsw/approved.html>

**Table 2 Wildlife Habitat Areas within Omineca Region**

Wildlife Habitat Area ID	Year of Establishment	Focus Species	Comments	Area (ha)
7-003	2005	Mountain Caribou	Wet mineral lick, buffered 500m radius. Trail to subalpine buffered 200m either side.	174.8
7-004 to 7-011	2013	Data sensitive	Bull trout redds	34,862
9-001	2000	Mountain Goat	4 sites of Wildlife Habitat Core Area	45.2
9-035 to 9-040, 9-102 and 9-103	2008	Northern Caribou	calving, rutting	26,100

## 2 APPROACH

Three general steps were taken to identify possible SERNbc projects in the FSWs and WHAs.

1. Engage with government resource specialists (fish, wildlife, stewardship) to solicit local knowledge and information regarding restoration or enhancement activities.
2. Review existing reports/assessments, including the Watershed Status Evaluation (WSE) Tier 1 Watershed Evaluation reports.
3. Consult PSCIS data and relevant reports to look for previously recommended remediation activities as they pertain to fish passage

### 2.1 ENGAGEMENT WITH GOVERNMENT LAND AND RESOURCE SPECIALISTS AND LICENSEES

Possible enhancement opportunities were discussed with the following government staff:

- James Jacklin (FLNRORD)
- Zsolt Sary (FLNRORD)
- Sandra Sulyma (FLNRORD)
- Guy Scharf (DFO)
- Leslie McKinley (FLNRORD)
- Roy Howard (Fraser Headwaters Alliance)

In general, the concept of habitat enhancement was viewed favorably by all of those contacted. Despite this, no specific opportunities were identified within WHAs, generally based on 1) the government was in the process of developing strategies, 2) no information was available, or 3) in the case of some of the FSWs, there was thought to be sufficient protection by the established GAR order.

The Provincial Stream Crossing Inventory System (PSCIS) was identified as the best source for identifying possible enhancement projects related to FSWs, specific to barriers to fish passage. In summary:

- Several government specialists and landbase stewardship officers were contacted through phone calls and emails. Those who responded were in support of restoration activities but at the time were not able to suggest specific sites in need of restoration.
- Department of Fisheries and Oceans was also contacted, though no feedback on possible treatments has been received.

- Roy Howard, Fraser Health Alliance - indicated that there may be more opportunity in the Milk Watershed than the Goat FSW given past disturbance and harvesting (while the Goat is relatively undisturbed). He also mentioned that they were looking for a partner to create a Newberry Weir on a Highway crossing of Holiday Creek in Dunster. The current crossing is a barrier to both Chinook and Bull Trout, however is outside the scope of this project.
- Kevin Hoekstra, Senior Ecosystems Biologist with FLNRORD, PG – shared interest on a role for SERNbc in the caribou areas, albeit in follow-up to the strategies being developed by government. This work is currently underway and may not coincide with our project timelines. Government will need to develop these strategies before SERNbc can help implement them. Occasional ad-hoc projects could be delivered, although none have been identified as of yet.
- Canfor was contacted regarding the status of sites within Tree Farm License 30 (given the overlap with the Seebach FSW). No restoration stream works have been carried out to their knowledge in the Seebach FSW.

## 2.2 REVIEW OF EXISTING REPORTS AND PLANS

Existing reports or other documents were reviewed to determine if specific restoration sites had been previously identified or recommended. Specific sources referred to in this stage generally included, but were not limited to the following:

- FREP Report #39, April 2015: Watershed Status Evaluation: An Assessment of 71 Watersheds Meeting BC's Fisheries Sensitive Watershed Criteria (Porter, M. Casley, S. Ochoski, N, and Huang, S. 2015)
- Prince George Fisheries Sensitive Watershed Review, (Beaudry, P.G. 2009).
- McGregor Watershed Fish Passage Inventory Phase 2 & 3. TFL 30, FIA 9212005, (Triton Environmental, 2011).
- Chehischic Creek Headwater Riparian Function Analysis: An Approach for Screening and Evaluating Impaired Reaches and Prescribing Remedial Treatment Options, (Triton Environmental, 2011).
- 1999 Reconnaissance Level (1:20000) Fish and Fish Habitat Inventory in the Herrick Creek Watershed WSC: 190-265100, (Lheidli T'enneh Band, 2000).

## 2.3 REVIEW OF EXISTING WATERSHED STATUS EVALUATIONS

The Forest and Range Evaluation Program (FREP) is an important element of the Forest and Range Practices Act (FRPA) with the mission of collecting and communicating monitoring information related to natural resource management and sharing this information to help inform and improve decision making and show evidence of the Government's commitment to environmental sustainability (BC Government, 2018).

FSWs are designated under the Forest and Range Practices Act Government Action Regulation and the Oil and Gas Activities Act. FREP Effectiveness monitoring and assessments are critical components for the success of the goals of ensuring that natural functions and processes are maintained for fish.

A GIS-based assessment ('Tier I' assessment) and a field-based assessment ('Tier-II' assessment) have been developed by the government and other experts to evaluate the effectiveness of the GAR

regulations within the FSWs. A pilot project was carried out to implement the Tier I evaluation protocol over 71 FSWs throughout BC. Five of these watersheds are within the Omineca Region: the Chehischic, Seebach, Goat, Framstead, and Milk watersheds.

### 2.3.1 Results of FREP Tier 1 Watershed Evaluations for Chehischic, Seebach, Goat, Framstead, and Milk watersheds

The authors (Porter et al, 2015) list the 71 FSWs by the following 9 habitat pressure indicators:

- Road density in km/km<sup>2</sup> for the entire watershed
- Road density for the portions of the watershed in the upper 60% of the watershed (H<sub>60</sub> line)
- Road density less than 100m from a stream in km/km<sup>2</sup>
- Stream crossing density in crossings/km<sup>2</sup>
- The portion of all streams that have been logged in km/km
- The portion of fish bearing streams that have been logged in km/km
- The proportion of streambanks logged on >60% slopes in km/km<sup>2</sup>
- The watershed Peak Flow Index, and
- The road density on unstable slopes in km/km<sup>2</sup>

The Tier I evaluation protocol allows for prioritization and comparisons of different watersheds. **Table 3** (Porter, 2015) summarizes the five FSWs designated in 2013 in the Omineca Region. Tier I evaluations for the new 2018 FSW were not available at the time of this report.

The table shows that the outcomes for the Tier I evaluations for Chehischic were high across almost all categories and for a few categories in Seebach and Milk, but low for all categories in the Goat River FSW. Framstead received only one moderate rating and the rest were low. The results of the Tier I evaluation led us to focus some activities on these watersheds, as discussed further in this report.

**Table 3 Watershed evaluation results for 5 FSWs (Source)**

Watershed Evaluation Indicator	Fisheries Sensitive Watershed				
	Chehischic	Framstead	Goat	Milk	Seebach
Road density	high	low	low	mod	mod
Road density above the H60 line	high	low	low	low	high
Road density less than 100m from a stream	high	low	low	high	high
Stream crossing density	high	mod	low	High	High
Proportion of stream logged	high	low	low	low	low
Proportion of fish-bearing stream logged	high	low	low	low	low
Density of stream banks logged on slopes greater than 60%	high	low	low	low	not avail

Peak flow index	low	low	low	low	low
Road density on unstable slopes	low	low	low	low	low

## 2.4 TYPES OF PROJECTS IDENTIFIED

After a GIS-based Tier I evaluations of watersheds, and depending on the result of the initial desktop assessment, a more focused field-based evaluation may take place. These are generally referred to as 'Tier II' or field-based assessments and design protocols have been developed for the following two types:

- Riparian and stream channel function
  - Tier II assessments for general watershed health
- Water Quality Evaluations (Sediment delivery processes)

In addition, fish habitat assessments, fish habitat confirmation, crossing design and remediation are also options for remediation in FSWs. These are discussed below under Habitat for Fish Connectivity.

### 2.4.1 Watershed Status Evaluations for Riparian and Stream Channel Function (Tier II Evaluations)

Two methods of undertaking evaluations of riparian and stream channels are generally carried out: FREP and WSEP:

- WSEP methods are interested in a general assessment of riparian and stream channel condition over the **entire watershed**. This will include a watershed scale sample design, target population of all FWA stream reaches, three strata which include non-fish habitat, fish habitat less than 3<sup>rd</sup> order streams and fish habitat in less than 3<sup>rd</sup> order streams. Reaches are selected with a generalized random tessellation stratified sampling algorithm.
- FREP riparian assessment methods are similar but not appropriate when we are interested in assessing watershed level condition of riparian areas. The FREP method is focused specifically on evaluating the condition of streams **beside or within recently harvested cut-blocks**.

As a result, because no specifically degraded sites have been identified, a WSEP type assessment is more appropriate than a FREP style assessment for this project.

### 2.4.2 Water Quality Evaluations (Sediment delivery processes)

The Tier I evaluation identifies the extent of several pressures on the watershed and fish habitat but does not speak to the extent to which those pressures result in actual impacts (Pickard et al., 2014). These assessments focus on three field indicators: **fine sediment generation, coarse sediment generation, and artificial drainages impact on peak flow**.

Sample design for sediment delivery assessments was still under development (as of date of Pickard 2014 report). For sediment delivery assessments recommended in this project, the Water Quality Protocol (Carson, 2009) is the one suggested, however other methods may be used.

### 2.4.3 Habitat Connectivity for Fish

The Fish Passage Technical Working Group (FPTWG) has developed a Fish passage protocol for field assessments (BC MOE, 2011) where crossings streams by roads will be assessed to determine if those crossings are barriers to fish habitat. Assessments are entered into the government Provincial Stream Crossing Inventory System (PSCIS) to facilitate efficient remediation of fish habitat. Crossings identified in the PSCIS database are categorized as being in one of four phases in the PSCIS database. These are:

1. Assessment,
2. Habitat Confirmation,
3. Design, and
4. Remediation.

If a structure has been assessed and found to be a barrier, the next step is to confirm habitat at the site. If habitat is confirmed, and the habitat gained is sufficiently high to warrant replacement, a crossing will have a design planned for it. Once a site is in the process of being replaced with a fish-friendly culvert it is the remediation phase. These are sequential phases, where the assessment will be done before the habitat confirmation etc. This is to ensure that the highest value sites are remediated first.

#### **Phase 1: PSCIS Assessments:**

- Points where a fish passage assessment has been performed on a stream crossing structure. This is Phase 1 of 4 in Fish Passage Workflow.

#### **Phase 2: PSCIS Habitat Confirmation:**

- Points where an evaluation of the fish habitat up and downstream of a road crossing have been carried out.
- Phase 2 of 4 in the Fish Passage Workflow, Habitat Confirmations are done at sites where the crossing structure is known to be a failure.
- The Habitat Confirmation is performed to ensure that the site in question is a good candidate for moving on to the Design (Phase 3) and Remediation (Phase 4) stages of the workflow.
- This phase confirms crossings as a barrier, compares the crossing to other roads and crossings in the watershed and determines quality and quantity of habitat to be gained if the site is fixed.

#### **Phase 3: PSCIS Design Proposals:**

- Points where a fish passage assessment has been performed and a barrier was found and identified as a priority for remediation based on a variety of potential criteria including:
  - habitat quality upstream of crossing,
  - amount of fish habitat upstream,
  - presence and importance of fish species,
  - operational plans

#### **Phase 4: PSCIS Remediation:**

- Points where a barrier to fish passage has been rectified or remediated.
- This is the third phase in the process and can only follow the previous steps

For the purposes of identifying projects, PSCIS data for the FSWs was examined to determine at what phase the watershed was at. If a phase had not been completed that phase was recommended. As a result, only Phase 1 and Phase 2 assessments are proposed.

In summary, the four types of potential projects brought forward as a result of engagement, review of existing reports and analysis of PSCIS data are the following:

- **Fish Passage Assessments**
- **Fish Habitat Confirmations**
- **Water Quality Evaluations on non-status roads**
- **Watershed Status Evaluations**

### 3 ASSESSMENT OR TREATMENT RECOMMENDATIONS

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Recommended assessments or treatments resulting from the research and engagement included:

- Fish Passage Assessments – two Phase 1 watershed-based fish passage assessments
- Fish Habitat Confirmation – 20 Phase 2 Fish habitat confirmations in 6 watersheds
- Water Quality Effectiveness Evaluations – in five watersheds
- Watershed Status Evaluations (Tier II) – three watersheds

#### 3.1 HABITAT CONNECTIVITY FOR FISH

##### 3.1.1 Phase 1 Fish Passage Assessments:

Fish passage assessments will lead to greater knowledge regarding the impacts of roads and crossings as barriers to fish. Stream crossings will be classified at a watershed level into fish or non-fish bearing, then crossings will be surveyed by field crews to determine if they are barriers to fish or not. Fish passage assessments are the first phase of the fish passage workflow. No other phases should be undertaken without an assessment having been complete.

Two of the fisheries sensitive watersheds have not had assessments completed: Ankwil Creek and Milk River. The Ankwil Creek watershed has concentrated anthropogenic disturbance in the lower end of the watershed and the Milk watershed has concentrated anthropogenic disturbance in the valley bottom adjacent to the mainstem.

##### 3.1.2 Phase 2 Habitat Confirmations

Fish Habitat confirmation is Phase 2 of the fish passage restoration workflow and will support decision making on selecting remediation sites. Many of the Omineca FSWs have had fish passage assessments complete and through this process, barriers and potential barriers have been identified. These have also been categorized into High, Medium and Low habitat value. Focus of any further work should be on *High* habitat value barriers or potential barriers. The habitat confirmation step leads to decisions on whether to pursue remediation of the sites.

Habitat confirmation are recommended for twenty-two sites in 6 watersheds.

- Hominka River (1 Site),
- Missinka River (3 Sites),
- Seebach Creek (14 Sites),
- Sidney Creek (2 Sites),
- Table River (1 Site), and
- Framstead (1 Site).

### ***Hominka Creek***

Hominka has one high value site, assessed in 2015. This assessed structure (#125031) is on the Chuchinka FSR just past the crossing of Hominka River.

### ***Messinka River***

Missinka River FSW has three high value sites, #s 125423, 125474 and 125466, assessed in 2013. Two of these crossings are on the Chuchinka-Messinka Rd and the other is on an unnamed road. All are on direct tributaries to the Messinka River.

### ***Seebach Creek***

Seebach Creek FSW has 14 high value sites assessed in 2006 to be barriers or potential barriers to fish (6696, 6695, 6649, 6694, 6026, 6647, 6646, 6674, 6642, 6678). These sites are within Tree Farm License 30, administered by Canfor. Canfor was contacted regarding the status of these sites and has said they are not aware of any stream works or fish passage restoration works carried out in the Seebach FSW.

### ***Sidney Creek***

Sidney Creek FSW has two high value sites assessed in 2013: Crossing numbers 125857 and 125859. The first is on Austin road and the second is on 3.1km branch of Austin road. The second was recommended for deactivation by the original assessor.

### ***Table River***

Table River FSW has one high value site on the Chuchinka-Table FSR, assessed in 2013: #125205. It is a large diameter pipe. On the far side of the mainline from the culvert, there is a CN rail line. The crossing type under the rail line is unknown.

### ***Framstead***

One site (Crossing ID #8964) identified as an 'expired design' should be re-visited for habitat confirmation and barrier assessment. It was either updated or abandoned in 2011.

Assessment of these individual sites by SERNbc should be coordinated with the road permit holder or the MFLNRORD in the case of FSRs. These tenure holders, although responsible for the road, may not be held accountable to restore fish passage if the road was built prior to the Forest Practices Code (to the standards of the day). In this case, cost sharing options could be entertained. Funding eligibility would need to be confirmed regardless.

This list of sites was referred to the Fish Passage Technical Working group for confirmation, however no response has been received to date.

### 3.2 WATER QUALITY EFFECTIVENESS EVALUATIONS

Water Quality Effectiveness Evaluations (Carson et al. 2009) were designed to estimate the potential contribution of fine sediment from crossings and other sources (Baird et al., 2012). These assist in locating the problem spots where sediment is being introduced to streams and lead to more focused maintenance of problem areas. One of the challenges of attempting to find potential projects is that there is limited information of where problem areas are. Conducting WQEEs may remedy the knowledge gap in FSWs.

It is the responsibility of the road permit holder to manage sediment in accordance with pertinent legislation and regulations (including the FSW GARs). For non-status roads, there is a gap in the responsibility to monitor and or respond to significant sediment sources.

The identified FSWs could be considered for evaluation, with watersheds prioritized based on the length of non-status roads (**Table 4**).

**Table 4. Length of non-status roads in designated Fisheries Sensitive Watersheds.**

FSW	Length of Non-Status Roads (km)
Milk River	~47km retired roads
Chehischic Creek	~30km retired roads
Hominka River	~23km retired roads
Table River	~18km retired roads
Missinka River	~18km retired roads

### 3.3 WATERSHED STATUS EVALUATIONS (TIER II FIELD-BASED ASSESSMENTS)

Watershed Status Evaluations (Tier II or field based evaluations) will generally support the government in verifying Tier I results. They are conducted on a sample or census population at a watershed scale to support strategic decision making.

The resulting information supports a better understanding of these watersheds with potentially high disturbance levels. The Tier 1 evaluation (**Table 3**) clearly shows that the **Chehischic** has high habitat risk ratings for almost all the categories. The **Milk** has one category as moderate in overall road density and two high categories: in road density close to streams and in stream crossing density. The Seebach creek watershed has three high ratings all related to road and crossing density and one moderate for overall road density (Porter). Recommended priority for Tier 2 evaluations are as follows:

1. Chehischic Creek,
2. Milk River, and
3. Seebach Creek.

Assessments on the newly designated FSWs (March 2018) should wait until a Tier I assessment has been completed or published.

## **4 WHA-RELATED PROJECT OPPORTUNITIES**

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Of the ten WHAs within the Omineca Region, no sites for potential projects were identified through conversations with Government. The government is currently developing strategies for some of the Caribou related WHAs, that will provide further direction or understanding on the need for restoration or enhancement treatments that SERNbc and the HCTF could become involved in facilitating or funding. There may be one-off enhancement opportunities that come to light from time to time. Ongoing conversations with the wildlife and ecosystems staff within the MFLNRORD should be used to stay on top of these developing project opportunities.

## 5 REFERENCES

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- Baird, E.J., Floyd, W., Meerveld, I., (2012, Summer) Anderson, A.E. Road Surface Erosion, Part 1: Summary of Effects, Processes, and Assessment Procedures, Streamline Watershed Management Bulletin, Vol 15, N.1., Retrieved online at [http://forrex.org/sites/default/files/publications/full\\_issues/Streamline\\_Vol15\\_No1.pdf](http://forrex.org/sites/default/files/publications/full_issues/Streamline_Vol15_No1.pdf)
- Beaudry, P.G. (2009), *Prince George Fisheries Sensitive Watershed Review*. Pp 84. Retrieved from MOE EcoCat website: [http://a100.gov.bc.ca/appsdata/acat/documents/r18542/fsw\\_reportvers7\\_1277156290453\\_260634b41bb6c3178746ad8cd7a98be68adf921376ad9f5b82f94a1c1c5d2bc3.pdf](http://a100.gov.bc.ca/appsdata/acat/documents/r18542/fsw_reportvers7_1277156290453_260634b41bb6c3178746ad8cd7a98be68adf921376ad9f5b82f94a1c1c5d2bc3.pdf)
- BC Government, Habitat Wizard Provincial Stream Inventory System (PSCIS), Streaming Web Content, (2018). Accessed on March 22, 2018 at <https://www2.gov.bc.ca/gov/content/environment/plants-animals-ecosystems/ecosystems/habitatwizard>
- MFLNRORD. (2013). *GAR Order F-7-001 and F-7-005: Seebach Creek FSW and Chehischich Creek FSW*. Retrieved from Ministry of Environment (MOE) website: <http://www.env.gov.bc.ca/wld/frpa/fsw/approved.html>
- MFLNRORD. (2013). *GAR Order F-7-002: Framstead Creek FSW*. Retrieved from Ministry of Environment (MOE) website: <http://www.env.gov.bc.ca/wld/frpa/fsw/approved.html>
- MFLNRORD. (2013). *GAR Order F-7-003 and F-7-004: Milk River FSW and Goat River FSW*. Retrieved from Ministry of Environment (MOE) website: <http://www.env.gov.bc.ca/wld/frpa/fsw/approved.html>
- Pickard, D., M. Porter, L. Reese-Hansen, R. Thompson, D. Tripp, B. Carson, P. Tschaplinski, T. Larden, and S. Casley. 2014. *Fish Values: Watershed Status Evaluation, Version 1.0*. BC Ministry of Forests, Lands and Natural Resource Operations and BC Ministry of the Environment (MOE), Victoria, BC.
- Porter, M., S. Casley, N. Ochocki, and S. Huang. 2015. *Watershed Status Evaluation: An assessment of 71 Watersheds Meeting BC's Fisheries Sensitive Watershed Criteria*. Victoria BC FREP Report 39. Retrieve from <https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/forestry/frep/docs/frep-fsw-watershedeval-2015.pdf>
- Triton Environmental Consultants Ltd. (2011), *McGregor Watershed Fish Passage Inventory Phase 2 & 3, TFL 30, FIA 9212005*, Retrieved on March 14, 2018 from [http://a100.gov.bc.ca/appsdata/acat/documents/r24184/9212005\\_Final\\_Report\\_1328813610020\\_6591ca11f9f70671ec174256b82723c30c7d77f2249a068dbec8d2f22b70be1a.pdf](http://a100.gov.bc.ca/appsdata/acat/documents/r24184/9212005_Final_Report_1328813610020_6591ca11f9f70671ec174256b82723c30c7d77f2249a068dbec8d2f22b70be1a.pdf)

## 6 APPENDIX

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### 6.1 ENGAGEMENT NOTES

- James Jacklin (FLNRORD)
  - Discussed potential for projects. No thoughts on WHAs. FSWs: more were coming down the pipe. Would send something out way if it came up.
- Zsolt Sary (FLNRORD)
  - WHAs, not a lot of opportunity for restoration
  - Maybe look into temperature sensitive streams, S4, S6 riparian protections
  - Chehischic, lots has been done to varying effectiveness. Range issues, planting,
  - Effectiveness monitoring
  - Seebach, little has been done there, some report being processed, not released yet.
  -
- Sandra Sulyma (FLNRORD)
  - Supportive of project, for FSWs, recommended check with PSCIS. For WHAs, no sites come to mind.
- Guy Scharf (DFO): Passed on message to several others in DFO. No response from those forwarded except Roy Howard.
- Leslie Mckinley (FLNRORD):
  - Goat river, which is WHA and FSW, sites are pretty well undisturbed, and tough to access. No sites came to mind.
- Roy Howard (Fraser Headwaters Alliance):
  - Referred to Roy through Guy Scharf at DFO. Roy mentioned that Milk River had lots of disturbance, but no thoughts on Goat. One site outside of FSW was mentioned (Holliday Creek), but it was outside scope.
- Craig Mount: I asked about the process for confirming sites for design/remediation. Craig's reply was:
  - When we are looking through the assessments to try and determine good sites to go to the next stage (Habitat Confirmations) we are looking at a number of factors:
  - A willing partner (this could be SERNBC)
  - Sites identified in the original assessment report as being of high priority (takes some time to read through the relevant reports)
  - Sites in watersheds that are: FSWs or Community Watersheds or have Red or Blue Listed / Species at Risk in them, etc.
  - If there are sites that are in your areas of interest that meet those criteria, we (the Technical Working Group) should chat with you (SERNBC) about potential collaboration.
  - I'm not sure about recent work in the Seebach – Richard or Dave might know.

## 6.2 HABITAT CONFIRMATION INFORMATION

### 6.2.1 List of Habitat Confirmation Sites.

Table 5 List of Habitat Confirmation Sites

Fisheries Sensitive Watershed	PSCIS Stream Crossing ID	Stream Name	Road Tenure information	Road Name	UTM Coordinate
Framstead Creek	8964	Tributary to Framstead Creek			UTM10N 630782mE 6012677mN
Hominka River	125031	Tributary to Hominka River	550601	Chuchinka FSR	UTM10N 566843mE 6061054mN
Missinka River	125143	Tributary to the Missinka River	R01821N	Unnamed	UTM10N 570397mE 6051417mN
Missinka River	125186	Tributary to the Missinka River	5506-11	Chuchinka-Missinka	UTM10N 565417mE 6052678mN
Missinka River	125194	Tributary to the Missinka River	5506-11	Chuchinka-Missinka	UTM10N 563283mE 6050578mN
Seebach Creek	6026	Trib to Seebach Crk		Rainbow Rd.	UTM10N 549177mE 6029683mN
Seebach Creek	6073	Trib to E. Seebach Crk		Otter Rd.	UTM10N 565831mE 6025264mN
Seebach Creek	6640			Seeback	UTM10N 563188mE 6017950mN
Seebach Creek	6642			Seeback	UTM10N 560024mE 6025617mN
Seebach Creek	6646			Seeback	UTM10N 556962mE 6028002mN
Seebach Creek	6647			Seeback	UTM10N 554950mE 6030220mN
Seebach Creek	6649			Seeback	UTM10N 553643mE 6031771mN
Seebach Creek	6674			Mozart	UTM10N 557109mE 6027234mN
Seebach Creek	6677			Hadyn Rd	UTM10N 564726mE 6023630mN
Seebach Creek	6678			Hadyn Rd	UTM10N 564385mE 6026970mN
Seebach Creek	6692			Hadyn	UTM10N 563026mE 6028779mN
Seebach Creek	6694			Hadyn	UTM10N 560427mE 6031462mN
Seebach Creek	6695			Hadyn	UTM10N 558159mE 6033474mN

Seebach Creek	6696			East Seebach Xing	UTM10N 557537mE 6033407mN
Sidney Creek	125857	Mis-mapped tributary to Sidney Creek	R03448 J	Austin	UTM10N 344443mE 6079782mN
Sidney Creek	125859	Mis-mapped tributary to Sidney Creek	R03448 K	31.1 km branch of Austin	UTM10N 345849mE 6079867mN
Table River	125204	Tributary to Table River	5506-08	Chuchinka-Table FSR	UTM10N 557884mE 6068377mN

## 6.2.2 Maps of Habitat Confirmation Sites

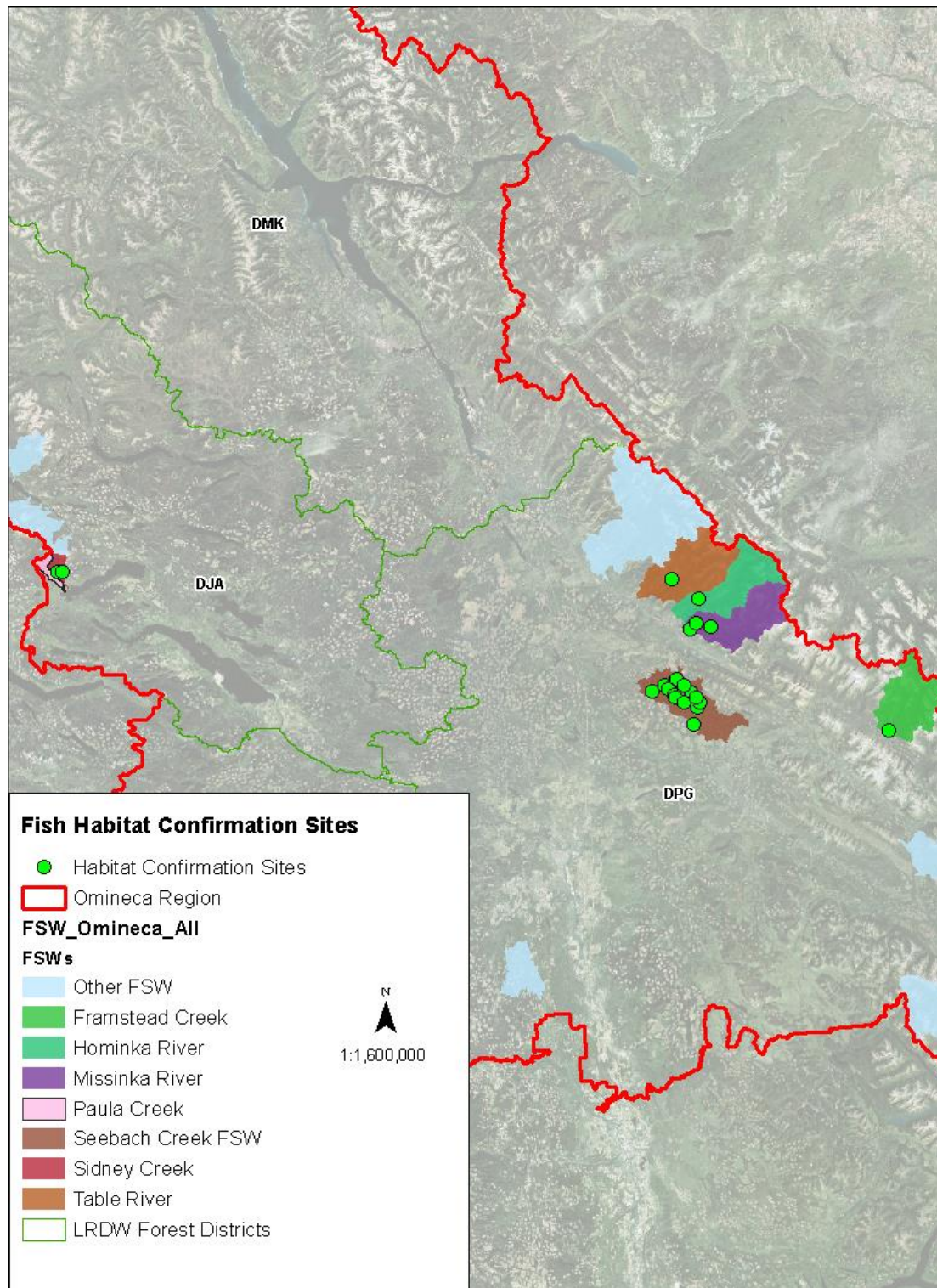


Figure 2 Habitat Confirmation Site Overview Map

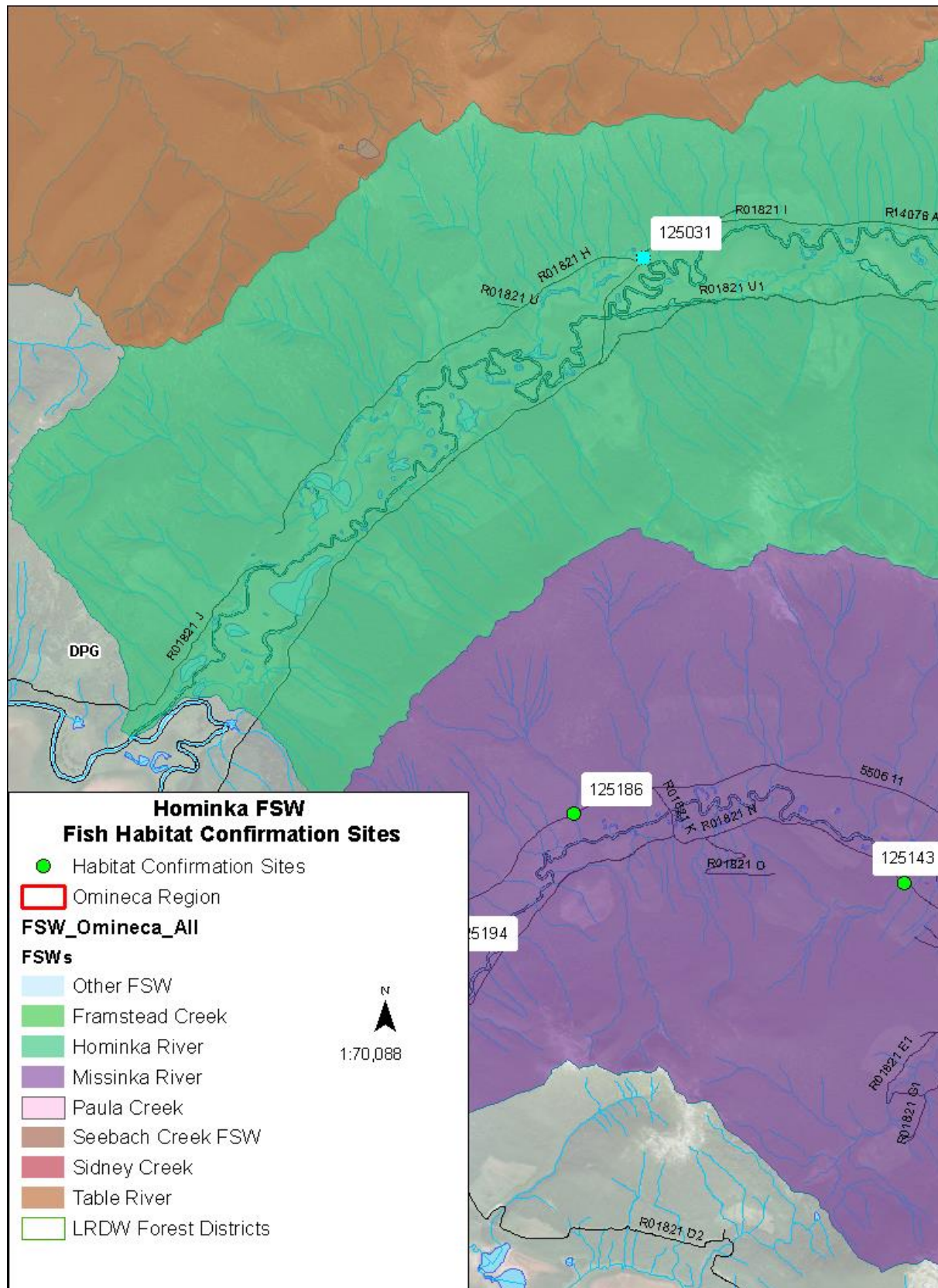


Figure 3 Hominka River FSW Habitat Confirmation Site

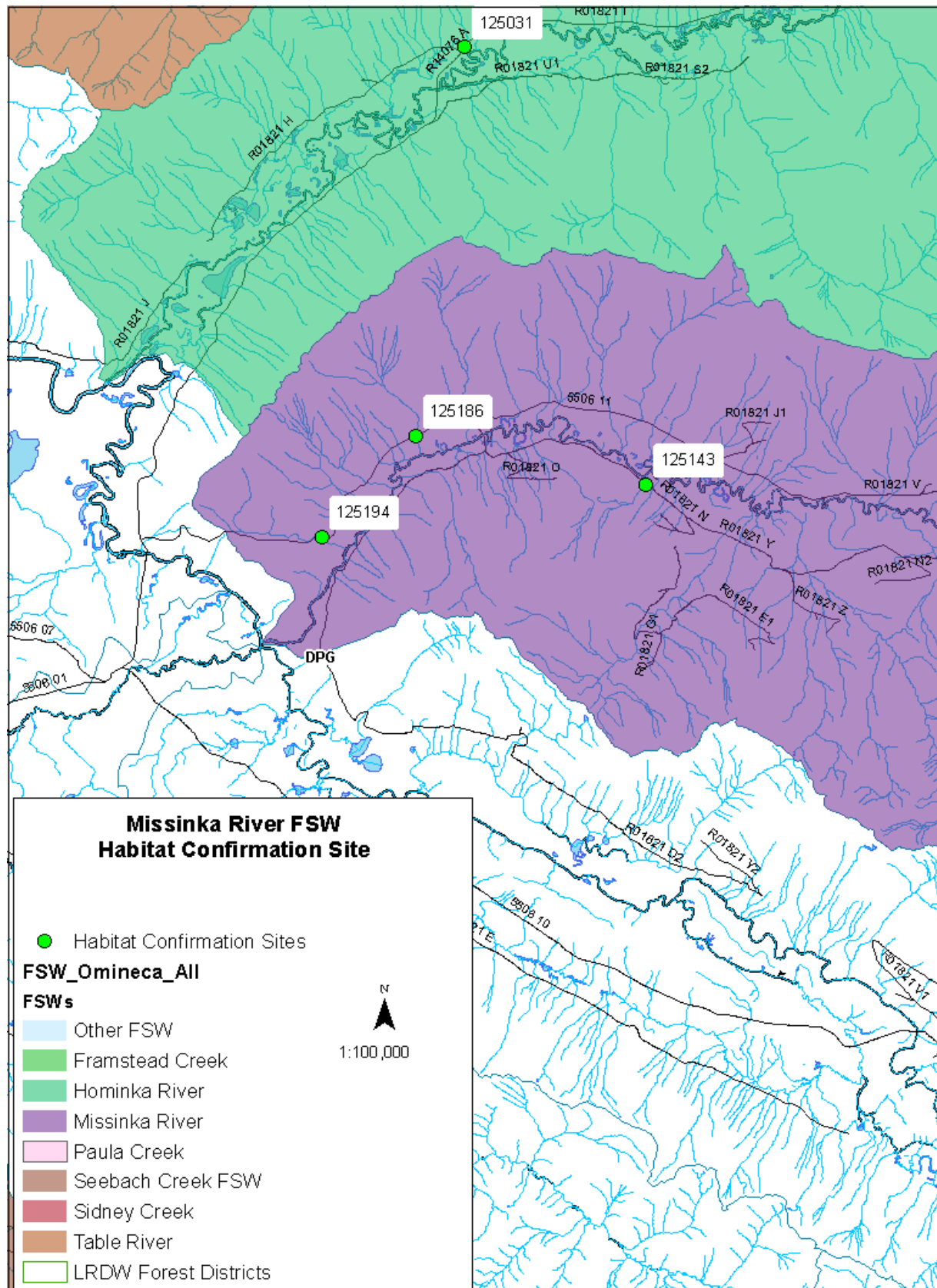


Figure 4 Missinka River FSW Habitat Confirmation Sites

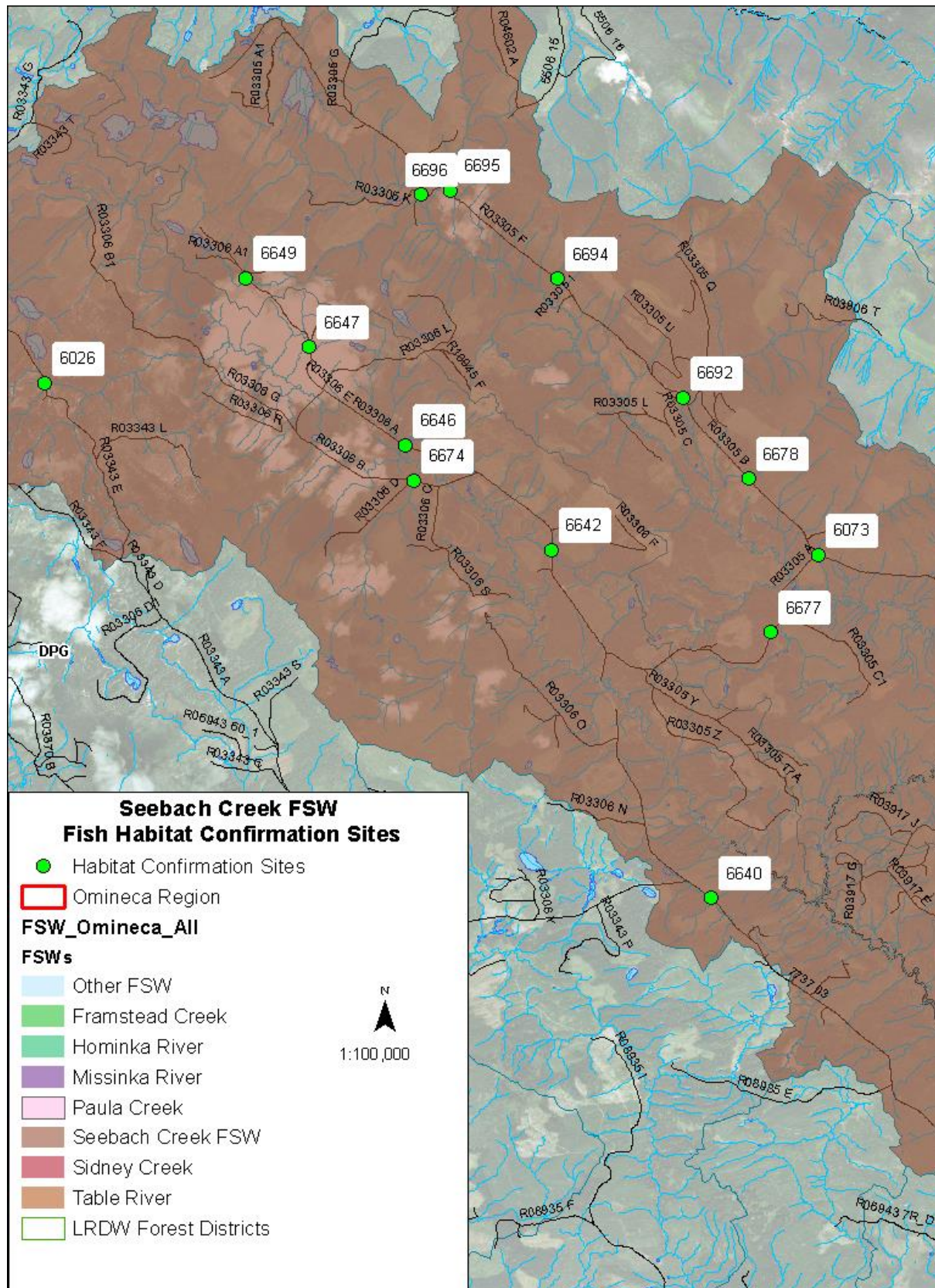


Figure 5 Seebach Creek FSW Habitat Confirmation Sites

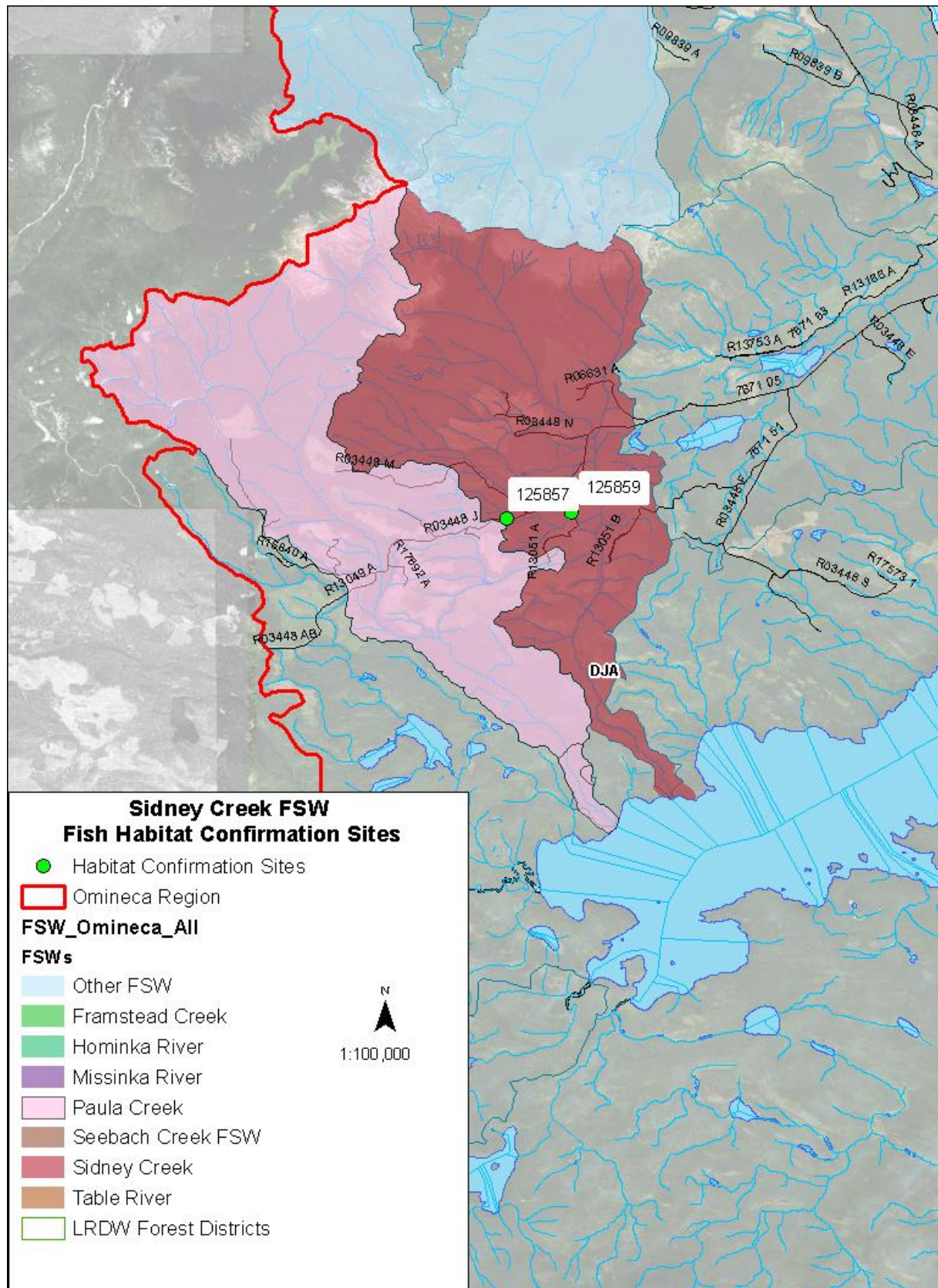


Figure 6 Sidney Creek FSW Habitat Confirmation Sites

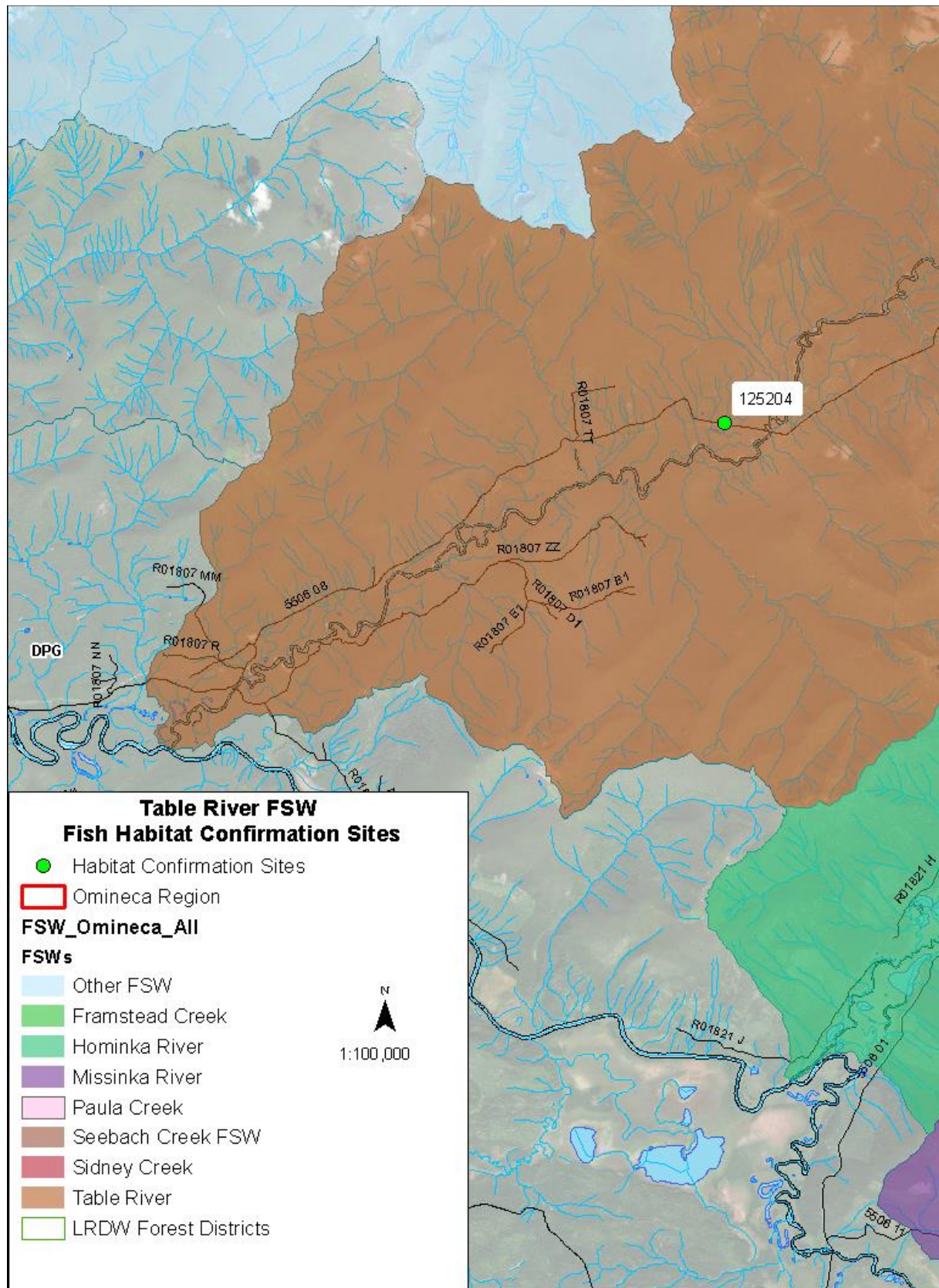


Figure 7 Table River FSW Habitat Confirmation Site

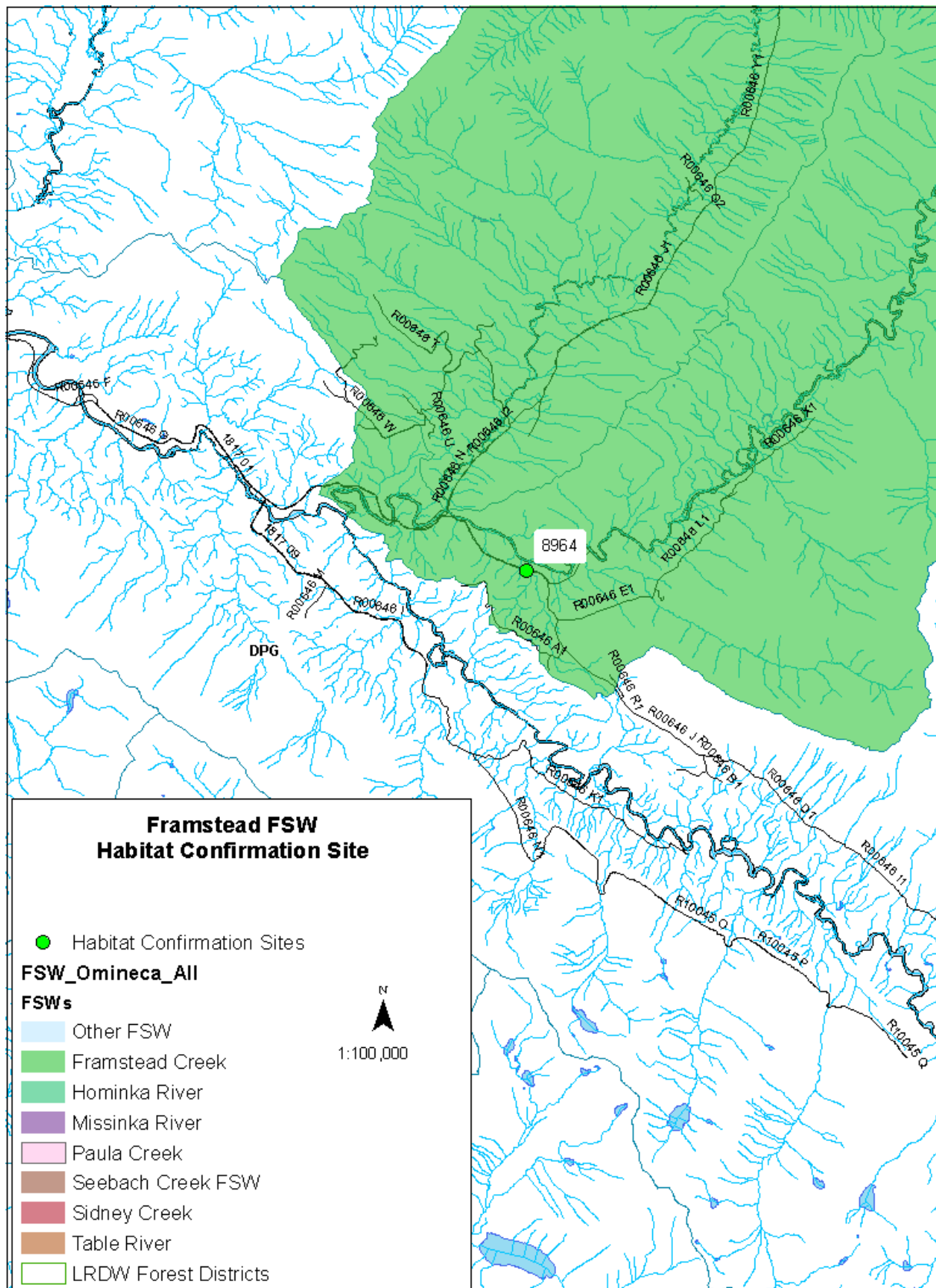


Figure 8 Framstead FSW Habitat Confirmation Site



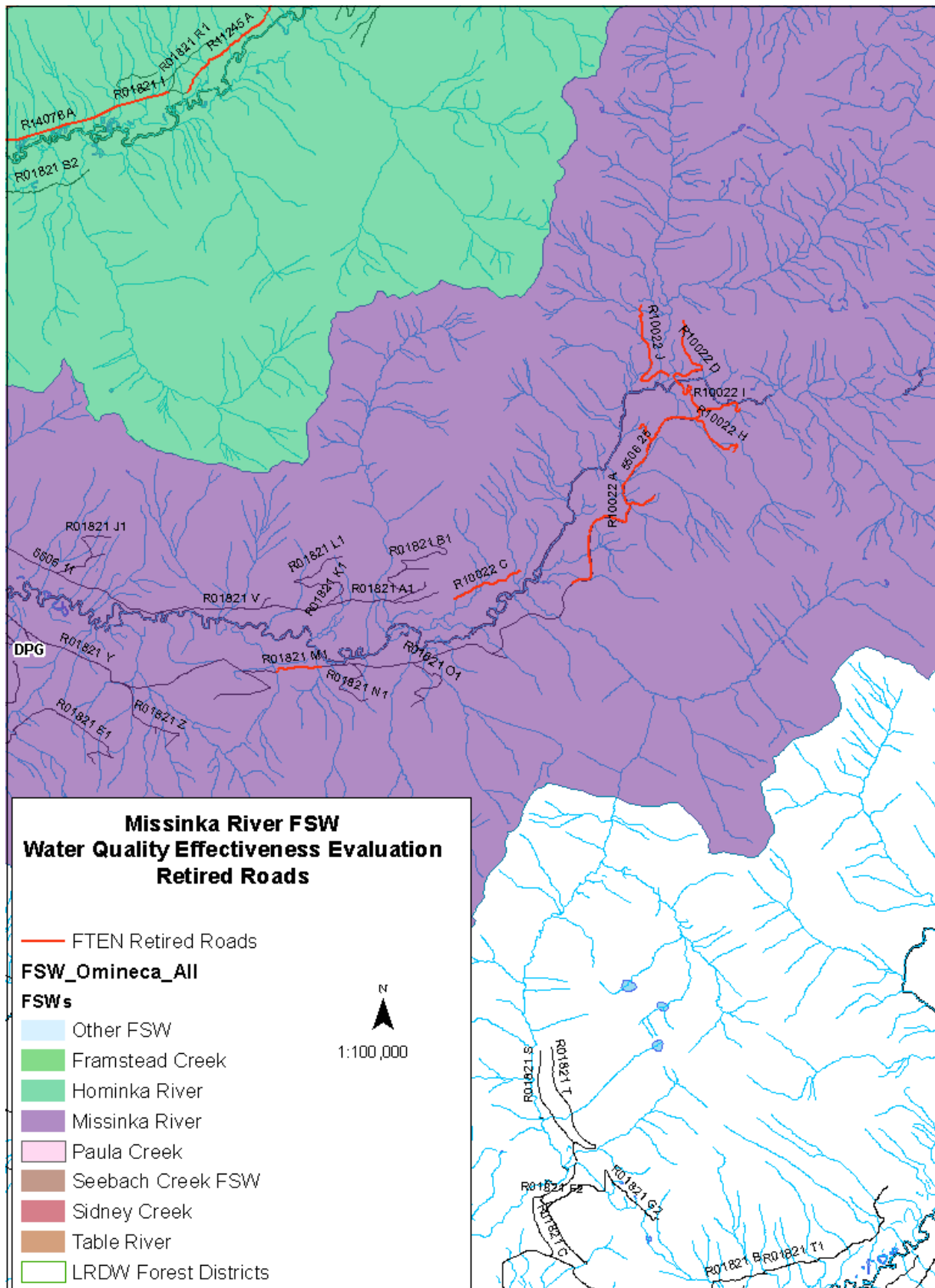


Figure 10 Missinka River FSW WQE Potential Sites (Retired Roads)

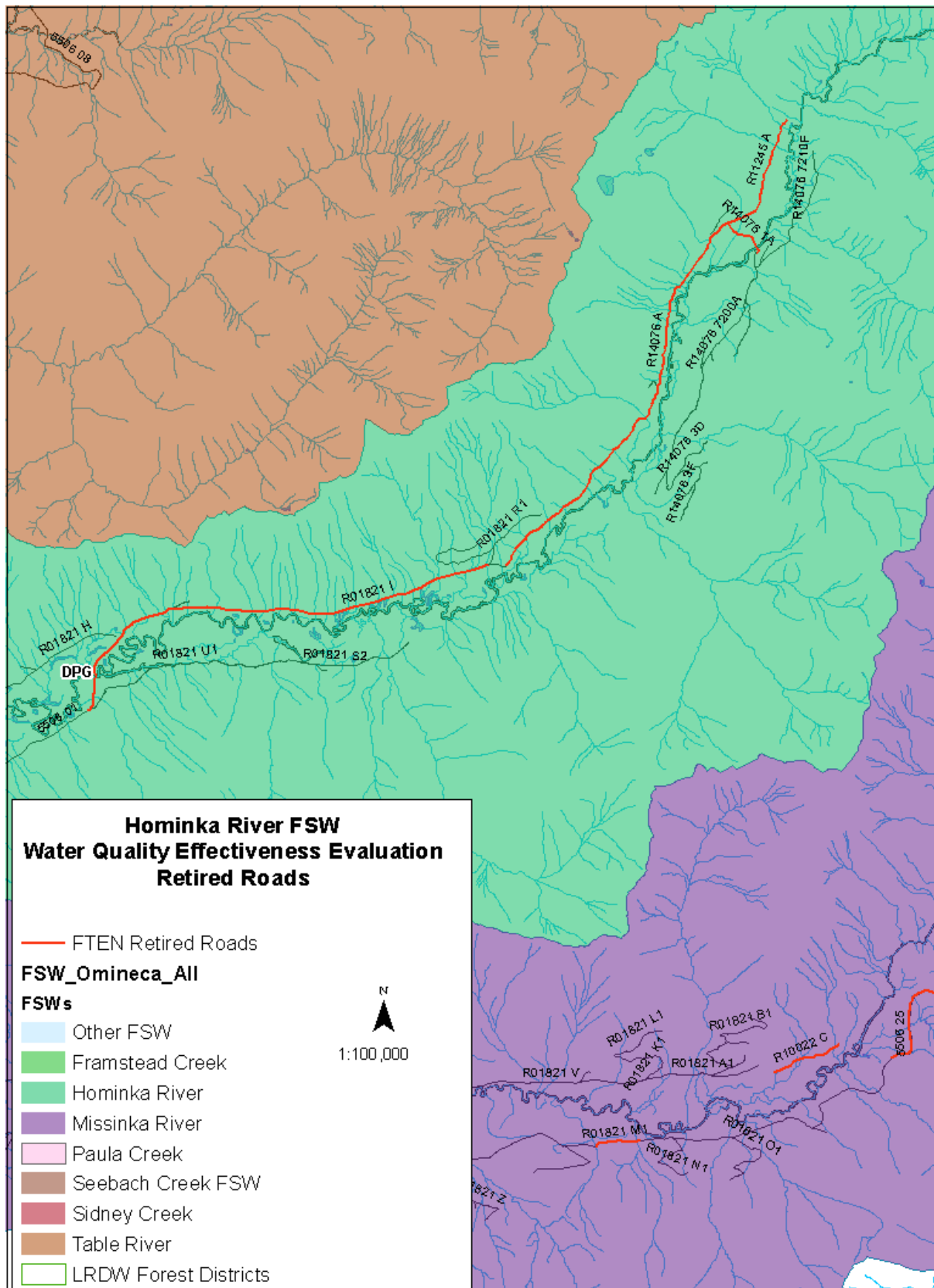


Figure 11 Hominka River FSW WQE Potential Sites (Retired Roads)

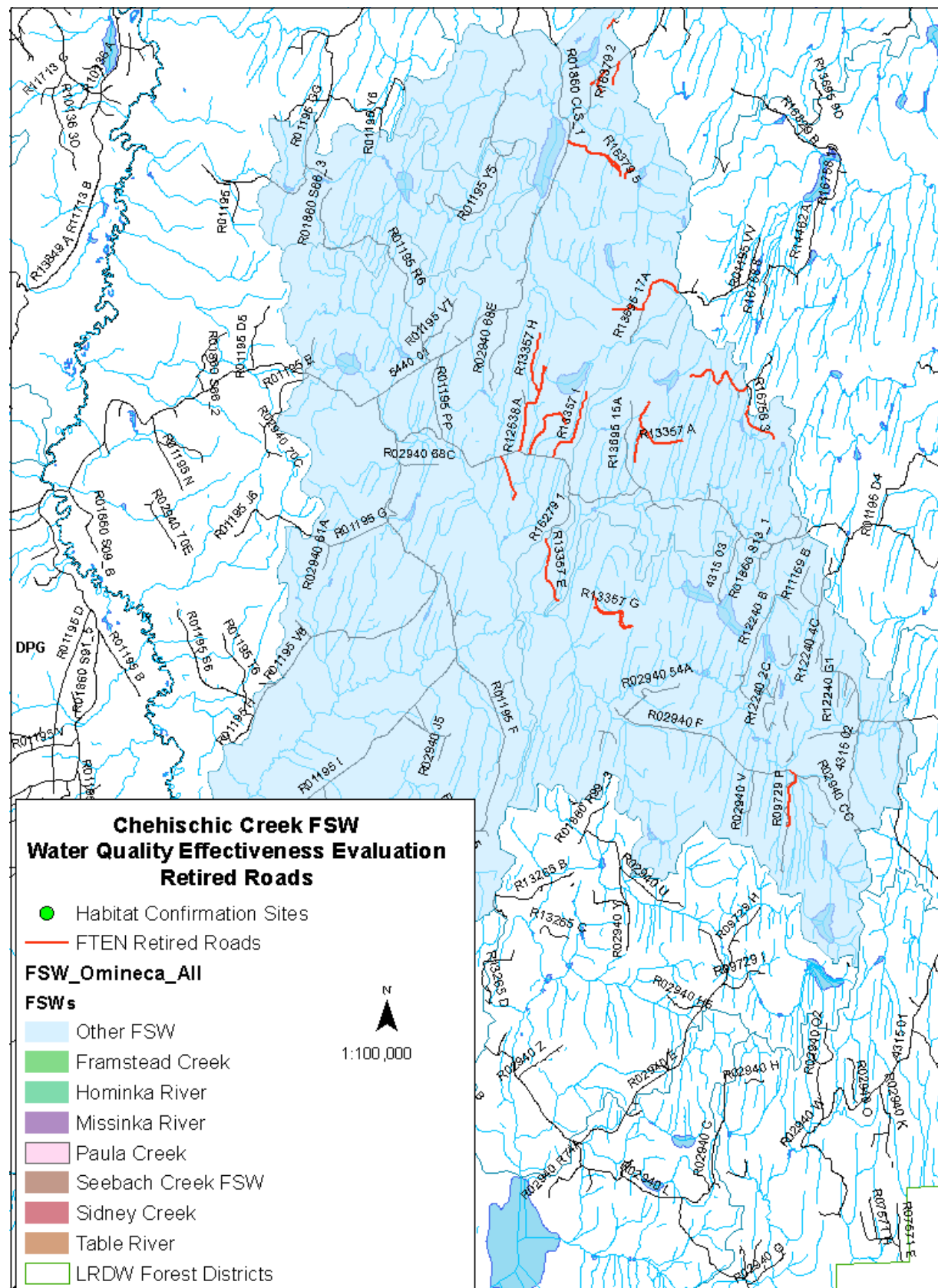


Figure 12 Chehisic Creek FSW WQE Potential Sites (Retired Roads)

