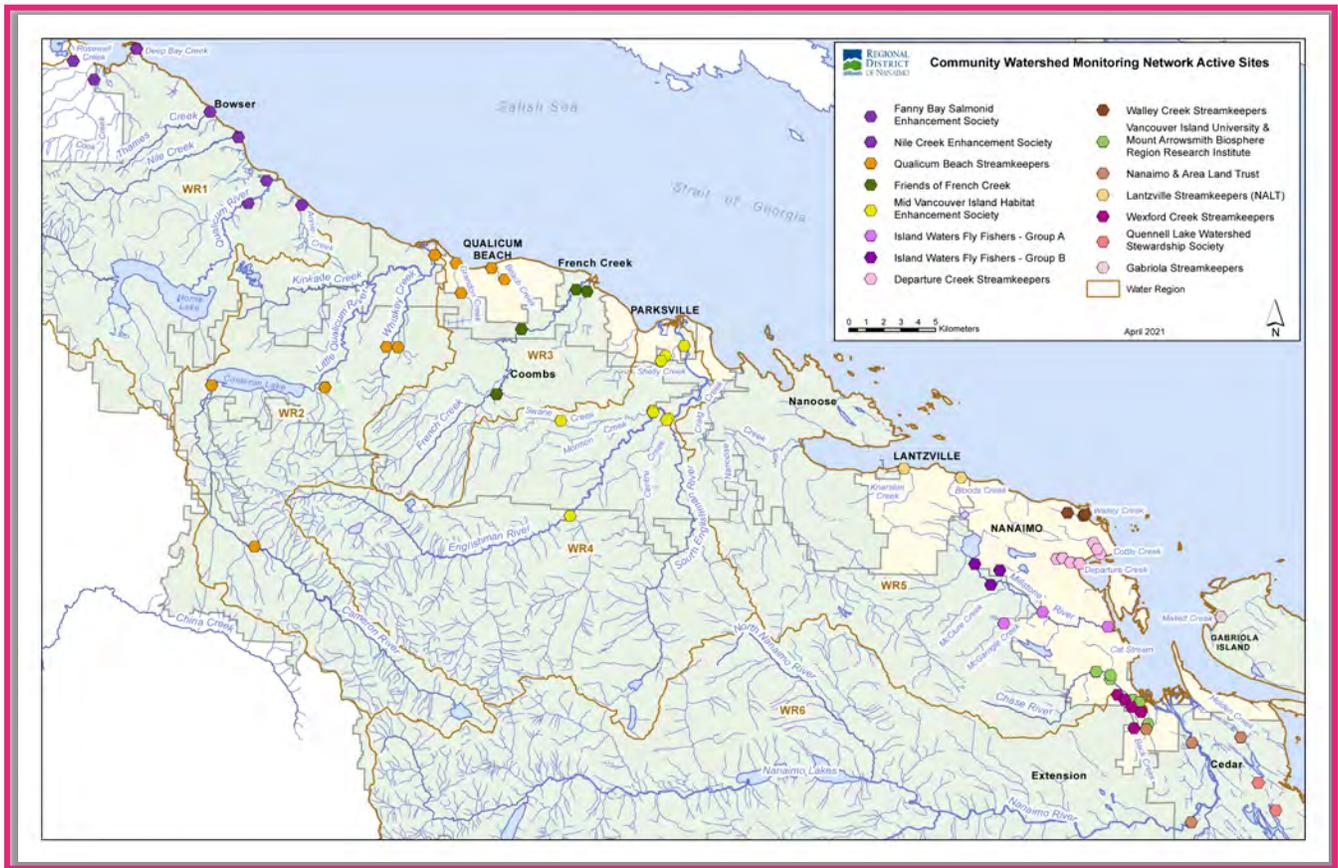
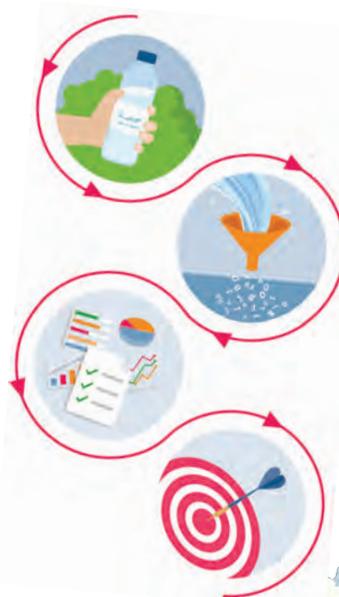


# Community Watershed Monitoring Network 2020 Results by Water Region



## Included in Your Water Region Package:

1. CWMN Sample Sites in Water Region (WR) 3
2. How to Interpret a Box Plot and Summer /Fall Exceedance Maps
3. Box Plot Comparison 2020 Data to Previous Years: *Graphs displayed per parameter (Temperature, Dissolved Oxygen, Turbidity, Conductivity) and per sample period (summer and fall)*
4. 2011-2020 Water Quality Trend Analysis Map
5. 2011-2020 Summer Exceedance Map
6. 2011-2020 Fall Exceedance Map
7. QBS Site Map
8. FFCCS Site Map



Water Region 3  
sampled by:

**Qualicum Beach  
Streamkeepers Society  
(QBS)  
&  
Friends of French Creek  
Conservation Society  
(FFCCS)**

## **CWMN Sample Sites in WR 3:**

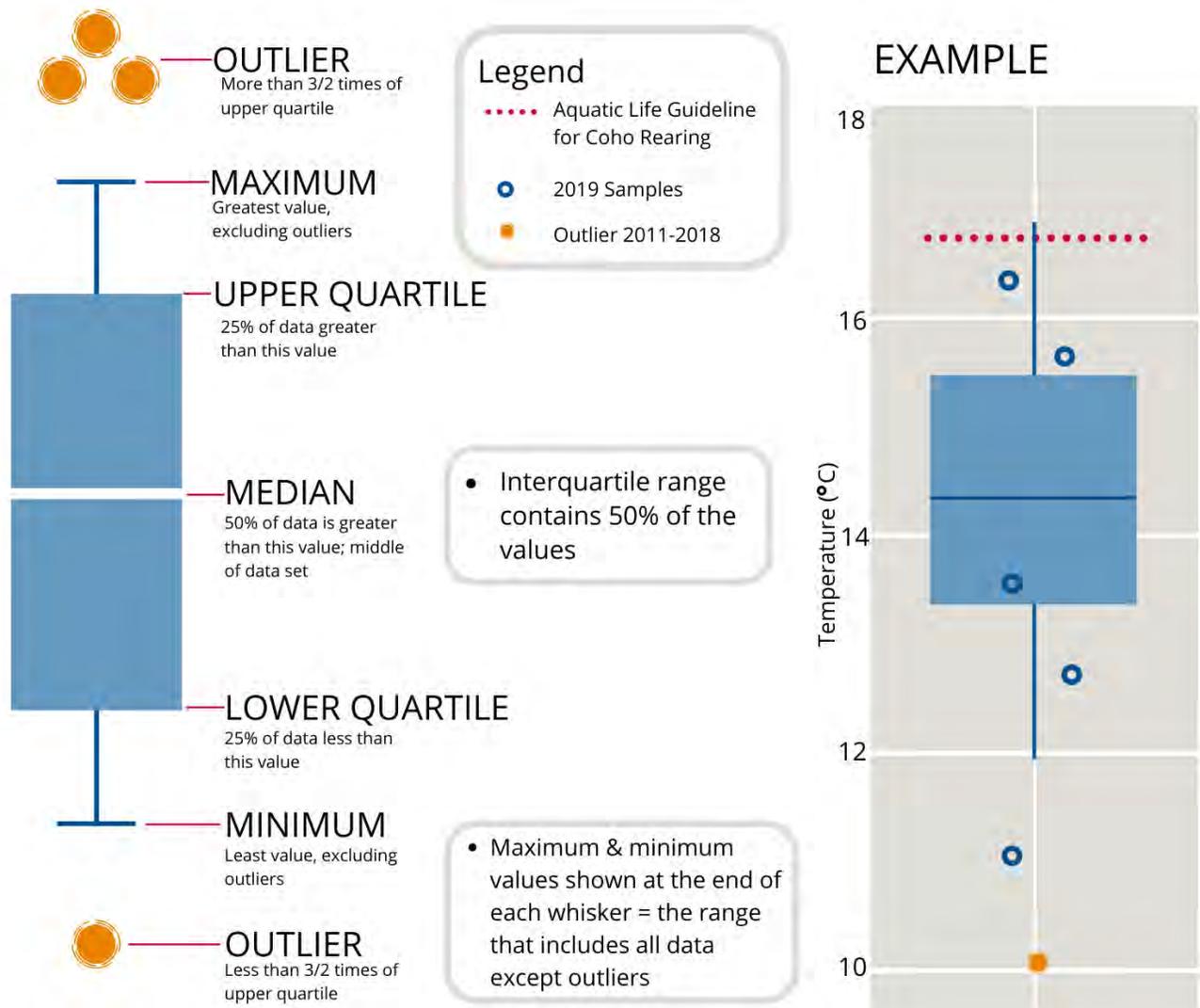
The table below shows the groups and sites monitored, as well as the number of years and which years a site was sampled. The number of years is important to keep in mind when interpreting the box plots as the plot for each site may contain a slightly different temporal range.

<b>Group</b>	<b>EMS ID</b>	<b>Geographic Description</b>	<b>Years Sampled*</b>	<b>Years Monitored</b>
QBS	E288091	Grandon Creek at Laburnum Road	10	2011 - present
QBS	E288090	Grandon Creek at West Crescent (Caissons)	10	2011 - present
QBS	E288092	Beach Creek near Chester Road at Hemsworth Road	10	2011 - present
QBS	E288093	Beach Creek near Memorial Golf Course Pond	10	2011 - present
FFCCS	E243024	French Creek at Grafton Road	10	2011 - present
FFCCS	E243021	French Creek at new highway	10	2011 - present
FFCCS	E243022	French Creek at Barclay Bridge	10	2011 - present
FFCCS	E318151	Morningstar Creek 100m u/s Lee Rd W	2	2019 - present

*\*The number of years sampled up to and including 2020.*



## How to Interpret a Box Plot:

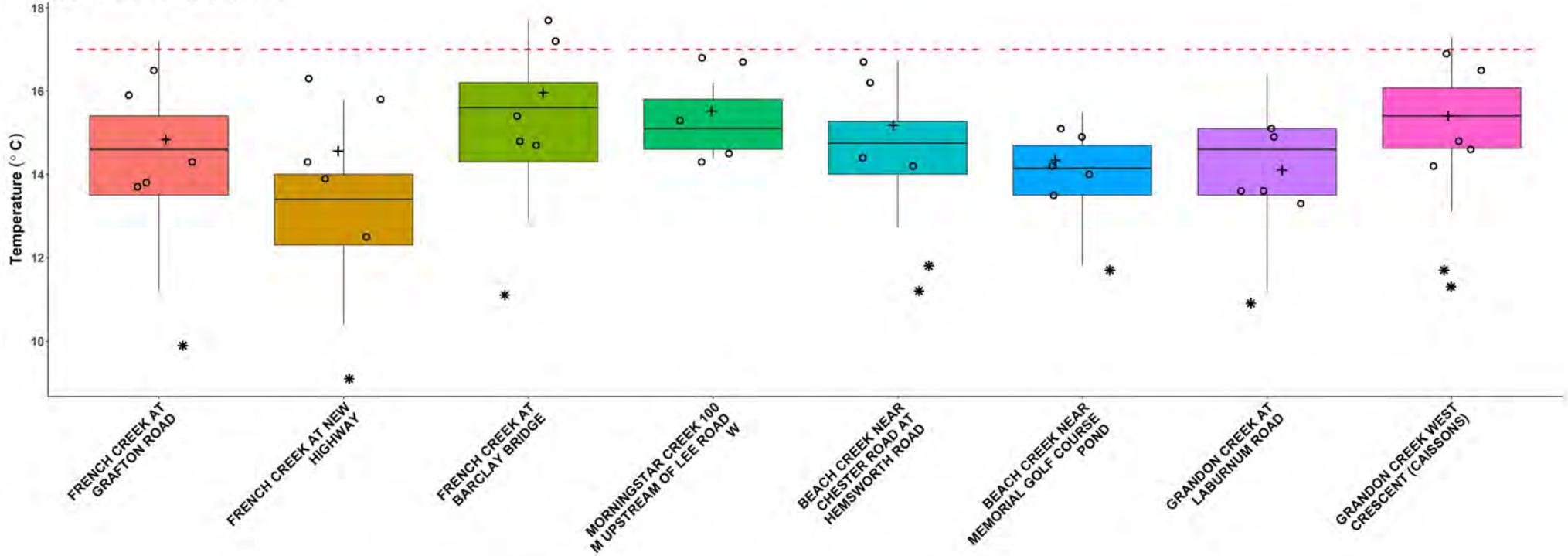


## How to Interpret Summer and Fall Exceedance Maps:

The summer and fall exceedance frequency maps included in this package express the number of sample periods (summer low-flow / fall flush) with exceedances for each site. There are four frequency categories for the number of sample periods with exceedances: no exceedance recorded (0), low (1 – 2), moderate (3 – 4), and high (5 or more). The exceedance categories are for the three parameters with aquatic water quality guidelines and objectives based on the following thresholds: temperature  $\geq 17^{\circ}\text{C}$ , dissolved oxygen  $\leq 5\text{mg/L}$ , summer turbidity  $\geq 2\text{NTU}$ , and fall turbidity  $\geq 5\text{NTU}$ .



### WR3 Summer Temperature

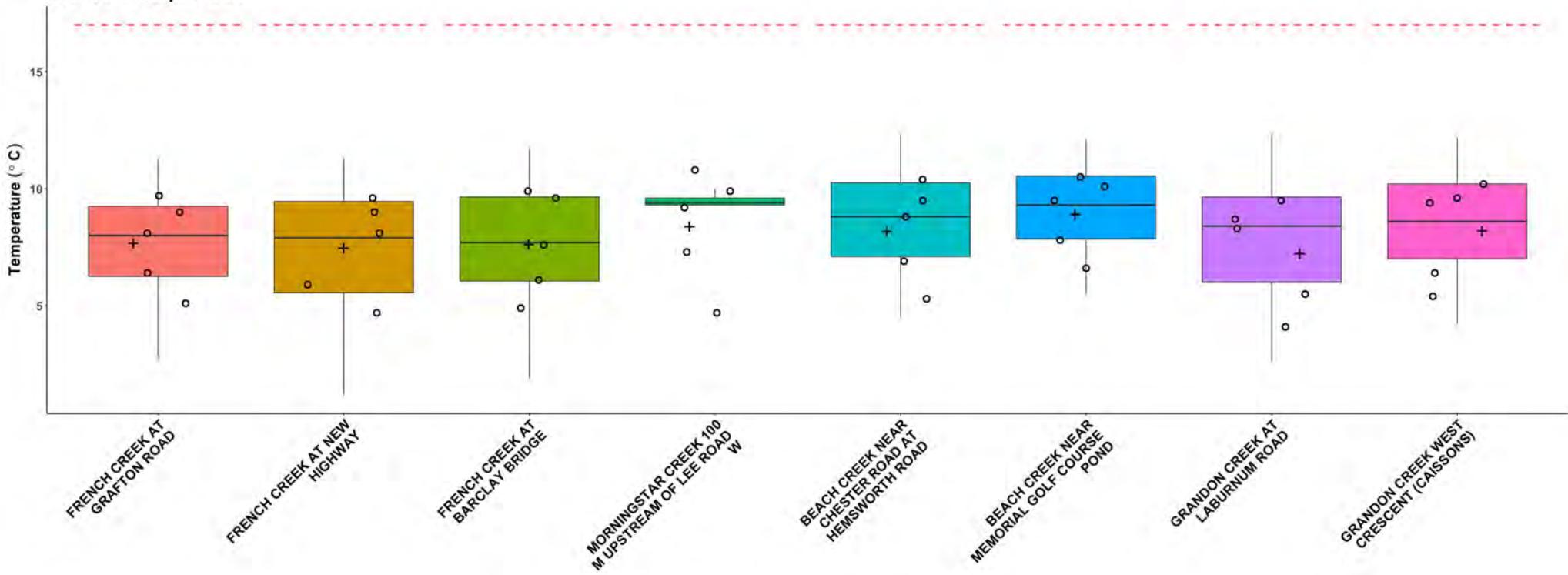


○ 2020 Samples  
\* Outlier 2011-2019  
+ 2020 30 Day Avg

**Guideline**  
-- Aquatic Life Guideline for Coho Rearing (17°C)



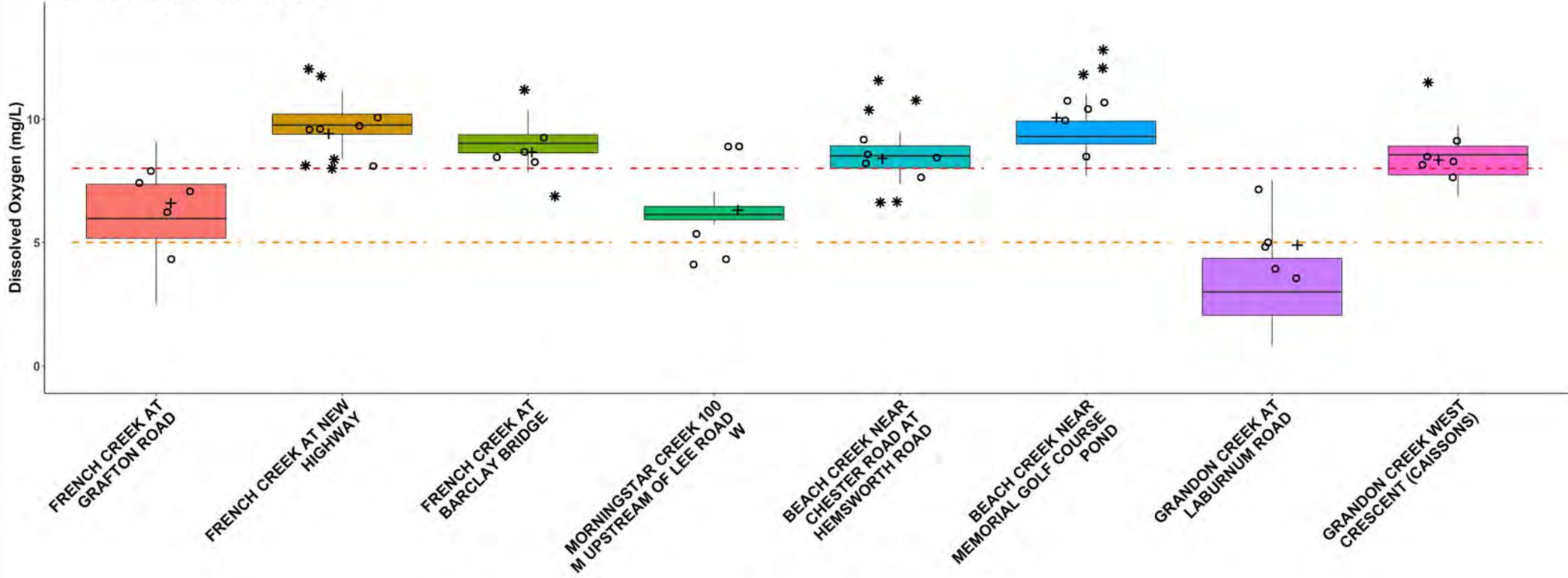
### WR3 Fall Temperature



○ 2020 Samples      Guideline  
+ 2020 30 Day Avg    -- Aquatic Life Guideline for Coho Rearing (17°C)



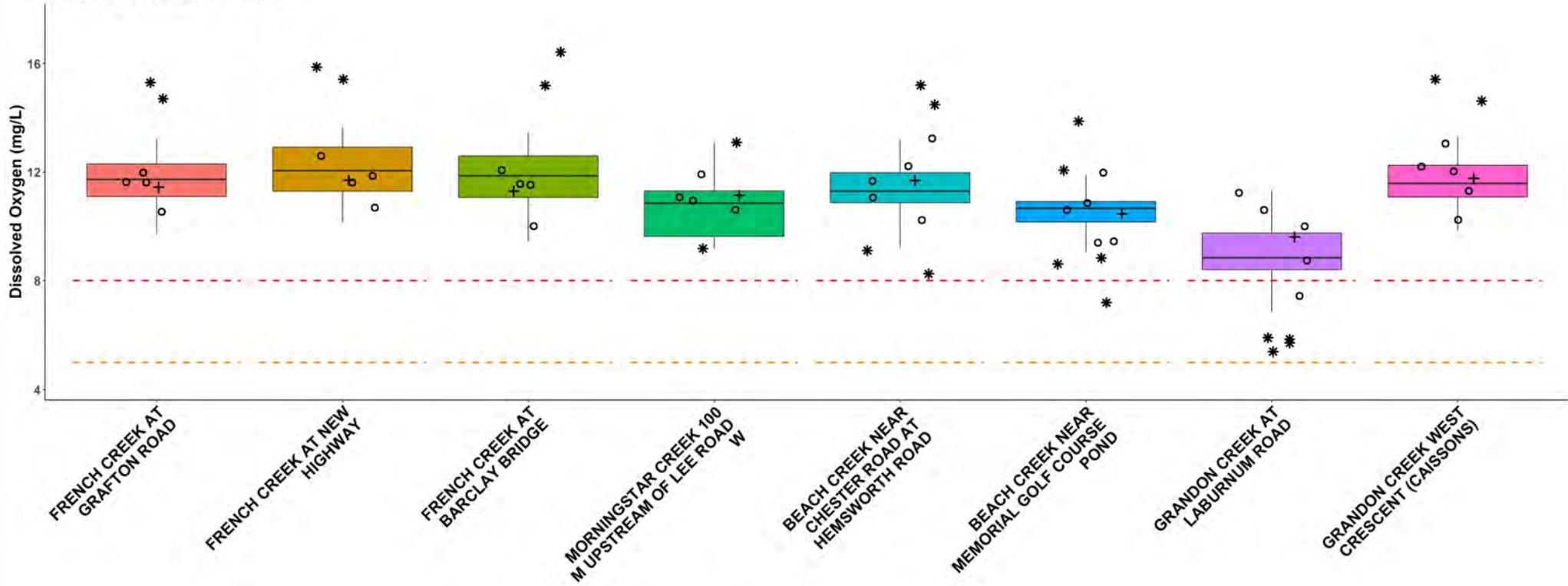
### WR3 Summer Dissolved Oxygen



- 2020 Samples
  - \* Outlier 2011-2019
  - + 2020 30 Day Avg
- Guideline**
- 30 Day Average (<8 mg/L)
  - Instantaneous Minimum (<5 mg/L)



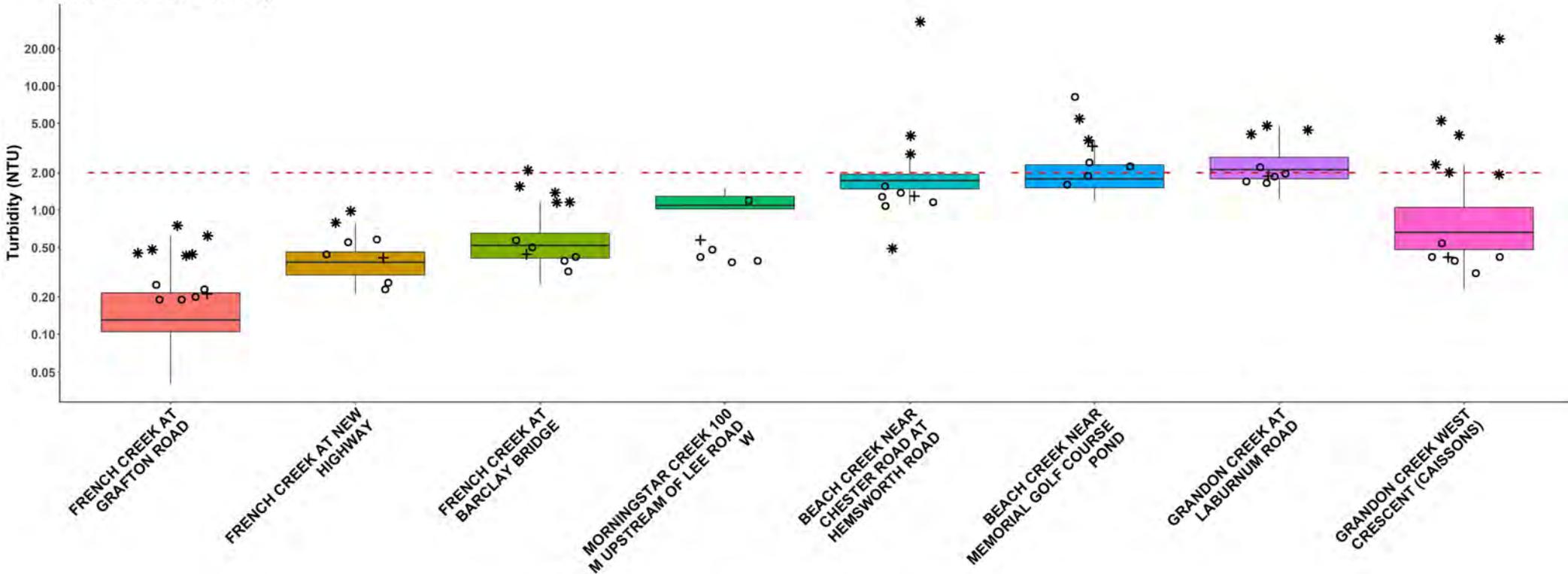
**WR3 Fall Dissolved Oxygen**



- 2020 Samples
  - \* Outlier 2011-2019
  - + 2020 30 Day Avg
- Guideline**
- - 30 Day Average (<8 mg/L)
  - - Instantaneous Minimum (<5 mg/L)



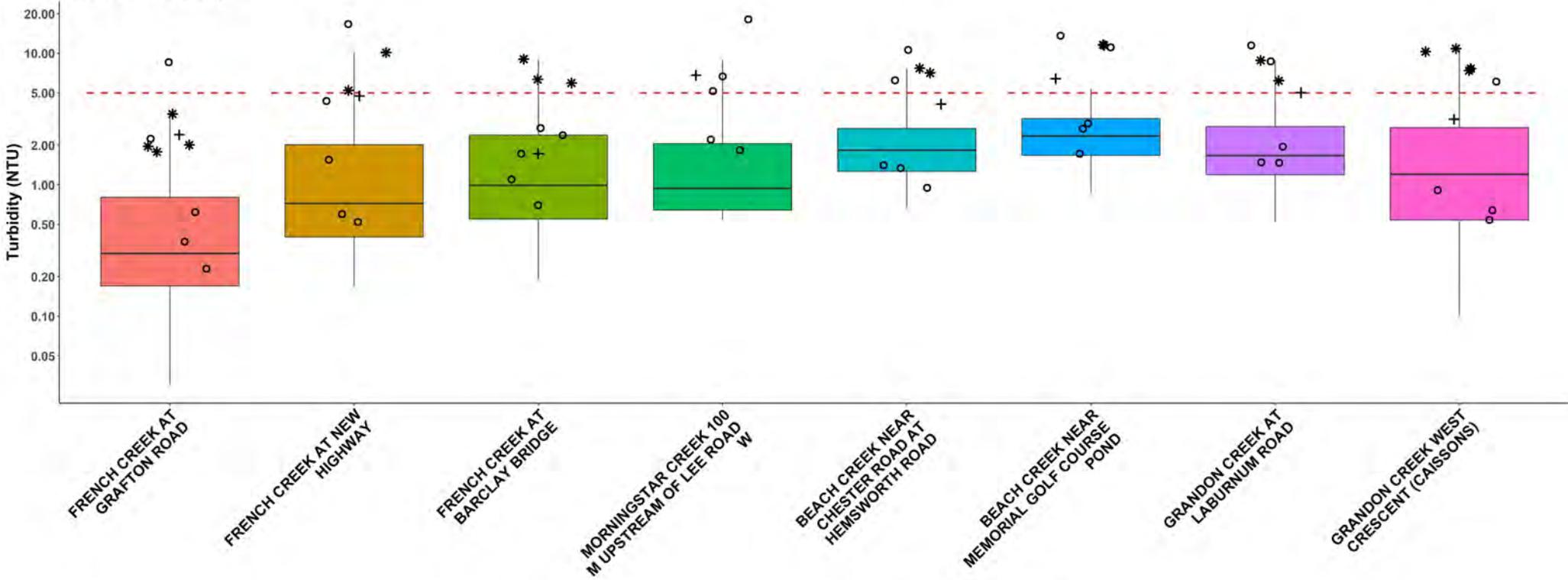
# WR3 Summer Turbidity



○ 2020 Samples  
 \* Outlier 2011-2019  
 + 2020 30 Day Avg  
 --- Guideline Jan-Sept Max (2 NTU)



### WR3 Fall Turbidity



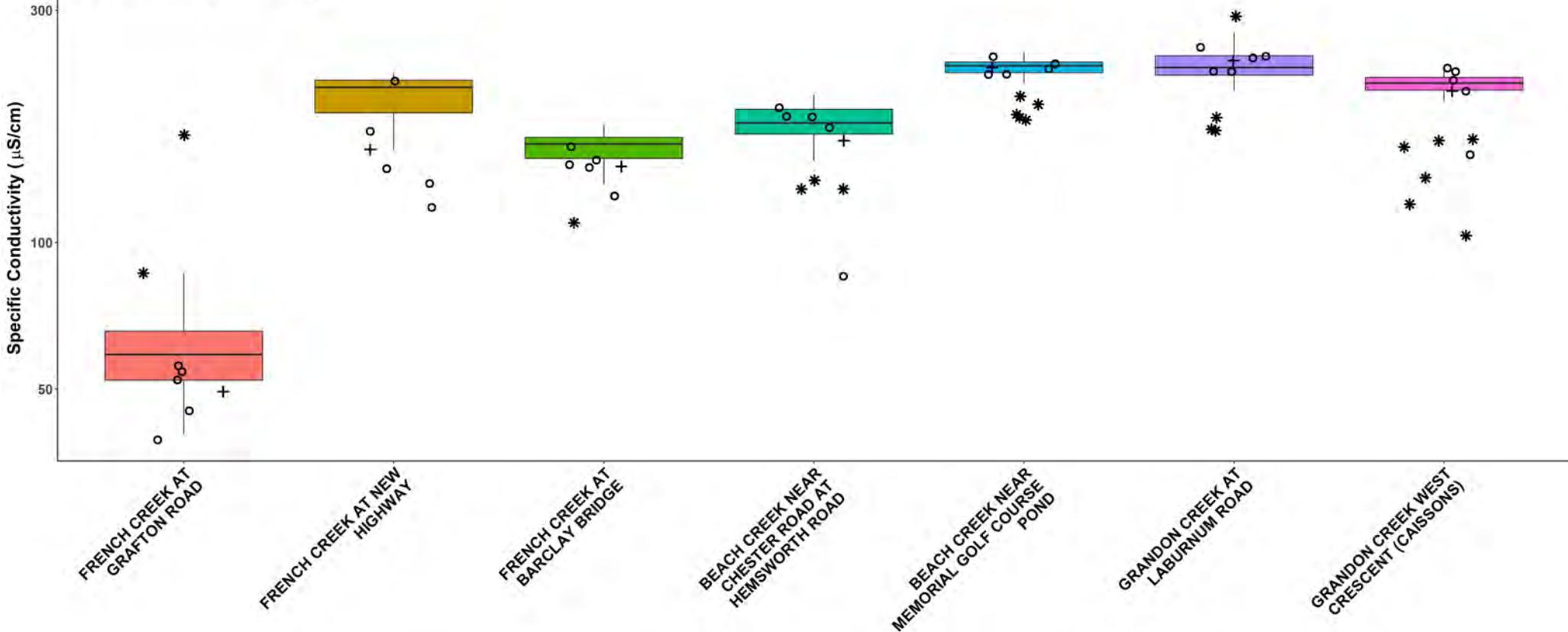
**Guideline**

-- Oct-Dec Max (5 NTU)

- o 2020 Samples
- \* Outlier 2011-2019
- + 2020 30 Day Avg



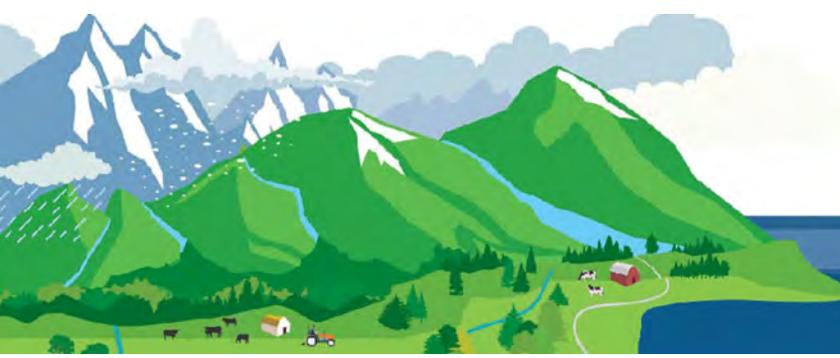
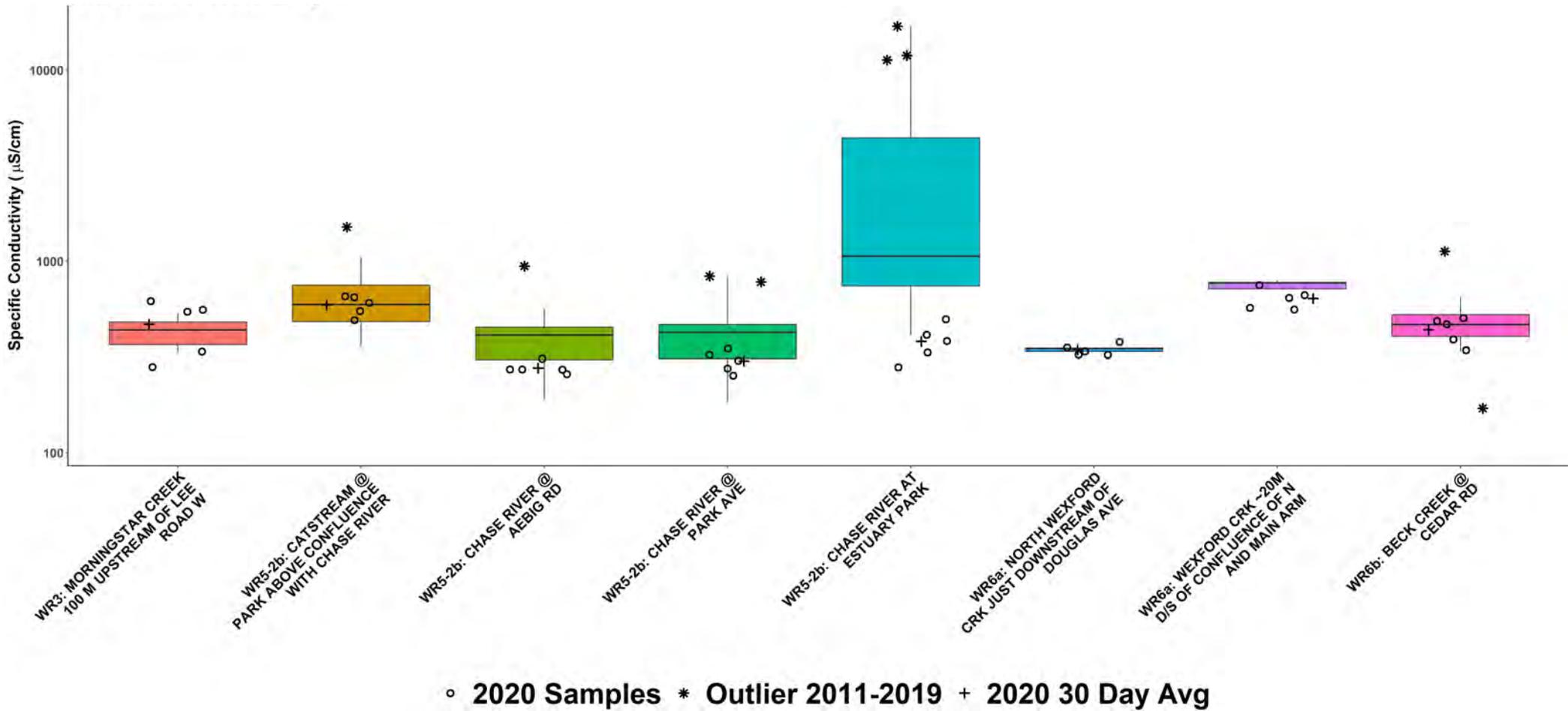
### WR3 Summer Conductivity



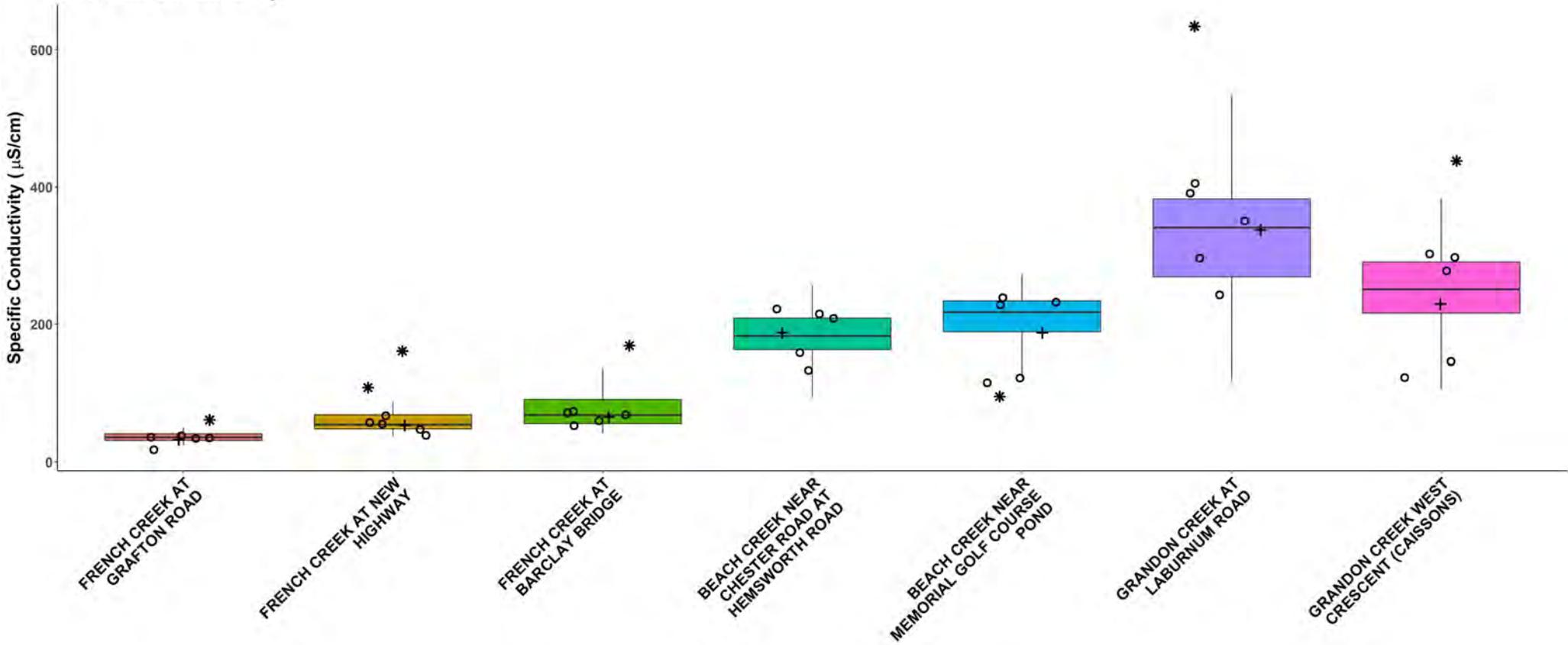
○ 2020 Samples \* Outlier 2011-2019 + 2020 30 Day Avg



### CWMN Sites with High Summer Conductivity



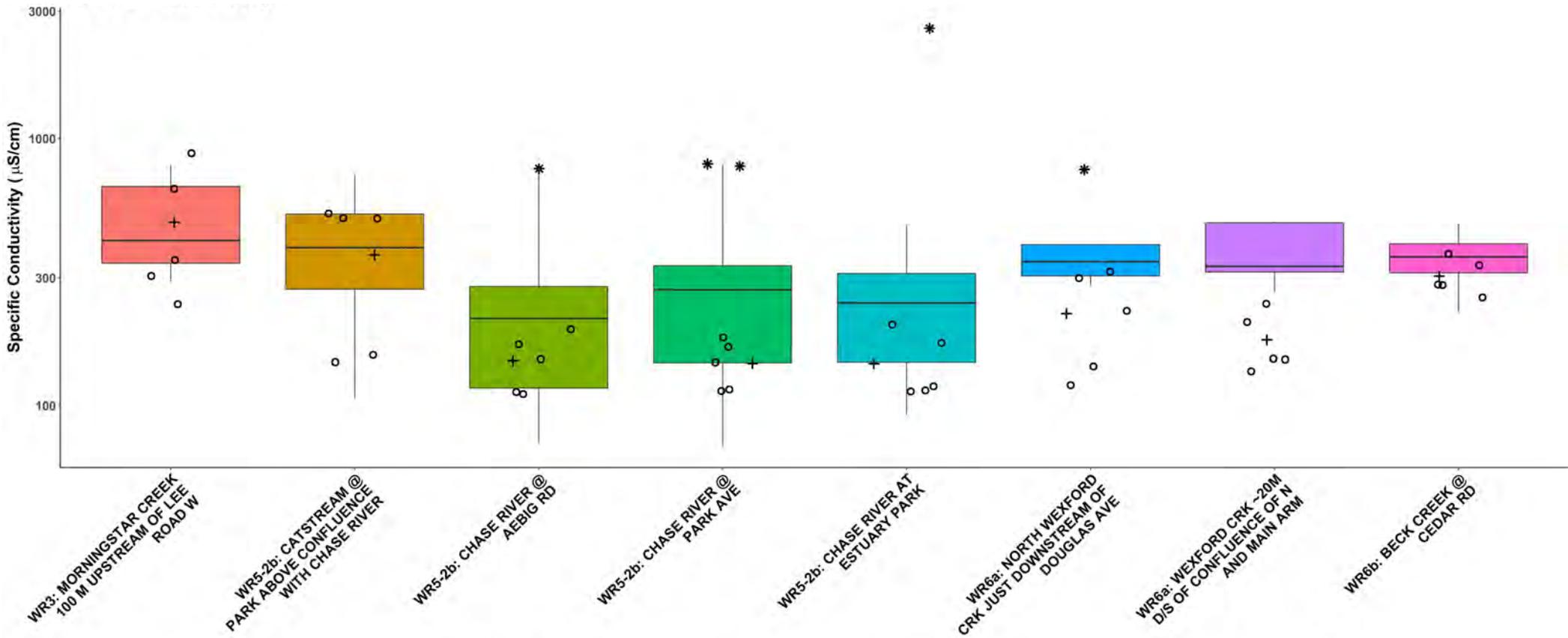
### WR3 Fall Conductivity



○ 2020 Samples \* Outlier 2011-2019 + 2020 30 Day Avg



## CWMN Sites with High Fall Conductivity



◦ 2020 Samples \* Outlier 2011-2019 + 2020 30 Day Avg



# Regional District of Nanaimo

## CMMN Water Quality Trend Analysis 2011-2020

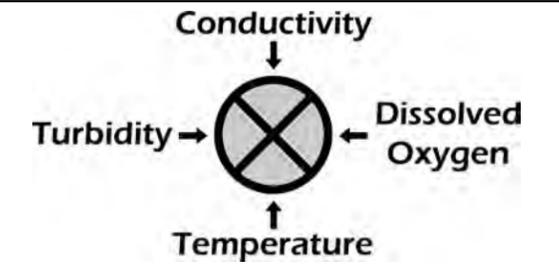
### WR3: French Creek

**Location:** Nanaimo, BC  
**Project No.:** 21-3702  
**Prepared for:** Regional District of Nanaimo  
**Prepared by:** Ecoscape Environmental Consultants Ltd.  
**Coordinate System:** NAD83-UTM Zone 10  
**Imagery:** ESRI Canada

### LEGEND

- Sample Site - No Trend Assessed
- Sample Site - Trend Assessed
- Highway
- Watershed
- Water Region
- Lake
- Trend Color Code**
- Improving
- Stable
- Degrading

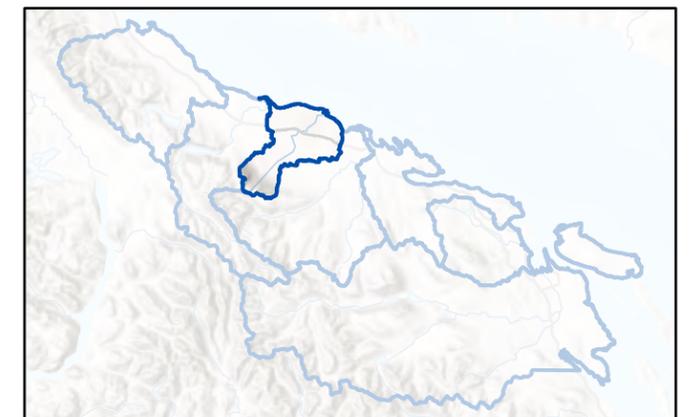
### SAMPLE SITE KEY



Conductivity can be influenced by factors such as groundwater and ocean spray that are not necessarily indicative of a degrading condition. For simplicity, an increase in conductivity is categorized here as degrading.

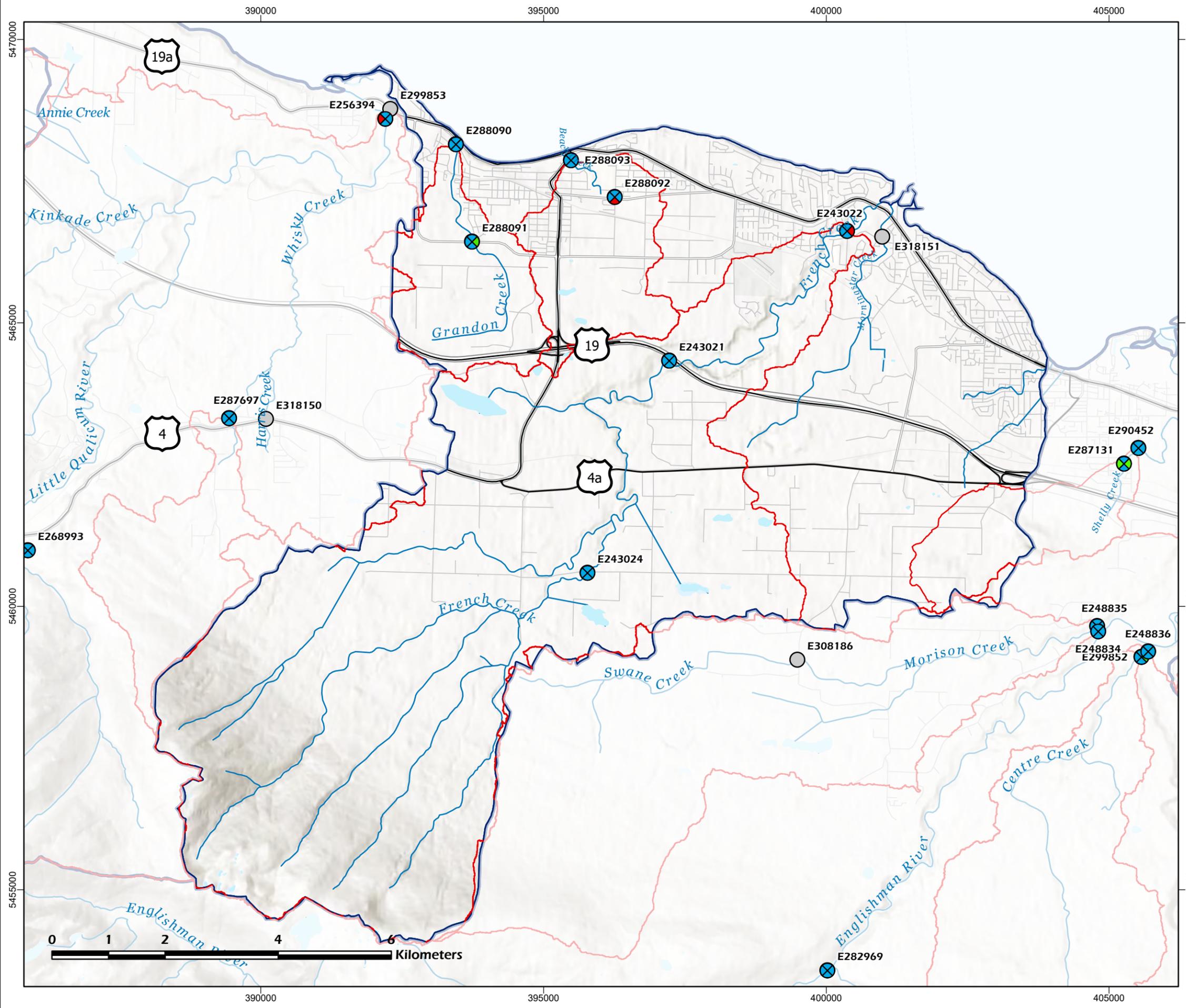
### MAP INDEX

Solid blue lines indicate entire water region; extent of main view map may be scaled to better visualize sample -site-dense regions.



### DISCLAIMER

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# Regional District of Nanaimo

## CMMN 2011-2020 Summer Exceedance Assessment

### WR3: French Creek

**Location:** Nanaimo, BC  
**Project No.:** 21-3702  
**Prepared for:** Regional District of Nanaimo  
**Prepared by:** Ecoscape Environmental Consultants Ltd.  
**Coordinate System:** NAD83-UTM Zone 10  
**Imagery:** ESRI Canada

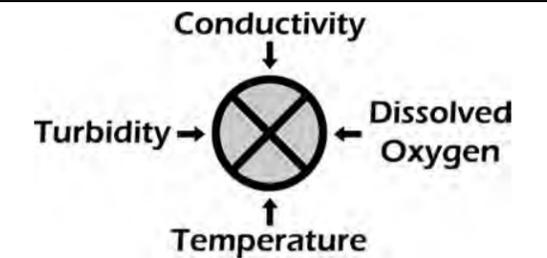
#### LEGEND

-  Sample Site
  -  Highway
  -  Stream
  -  Watershed
  -  Water Region
  -  Lake
- Note the exceedance frequency categories are reflective of the number of sample periods with exceedances, not the number or values of the exceedances.*

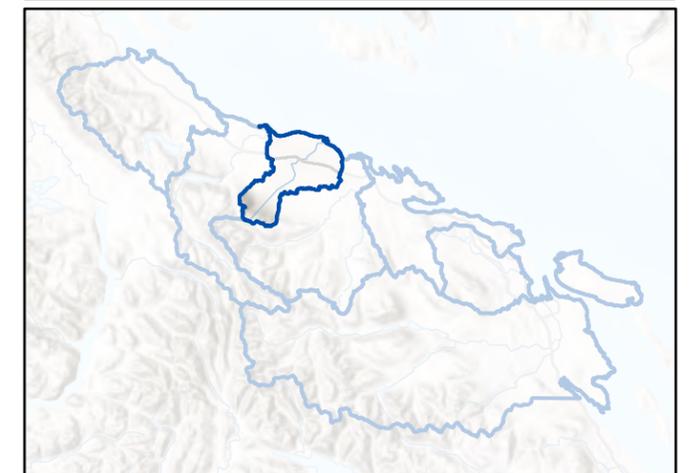
#### Exceedance colour key

-  No exceedance recorded
-  Low exceedance frequency
-  Moderate exceedance frequency
-  High exceedance frequency

#### SAMPLE SITE KEY

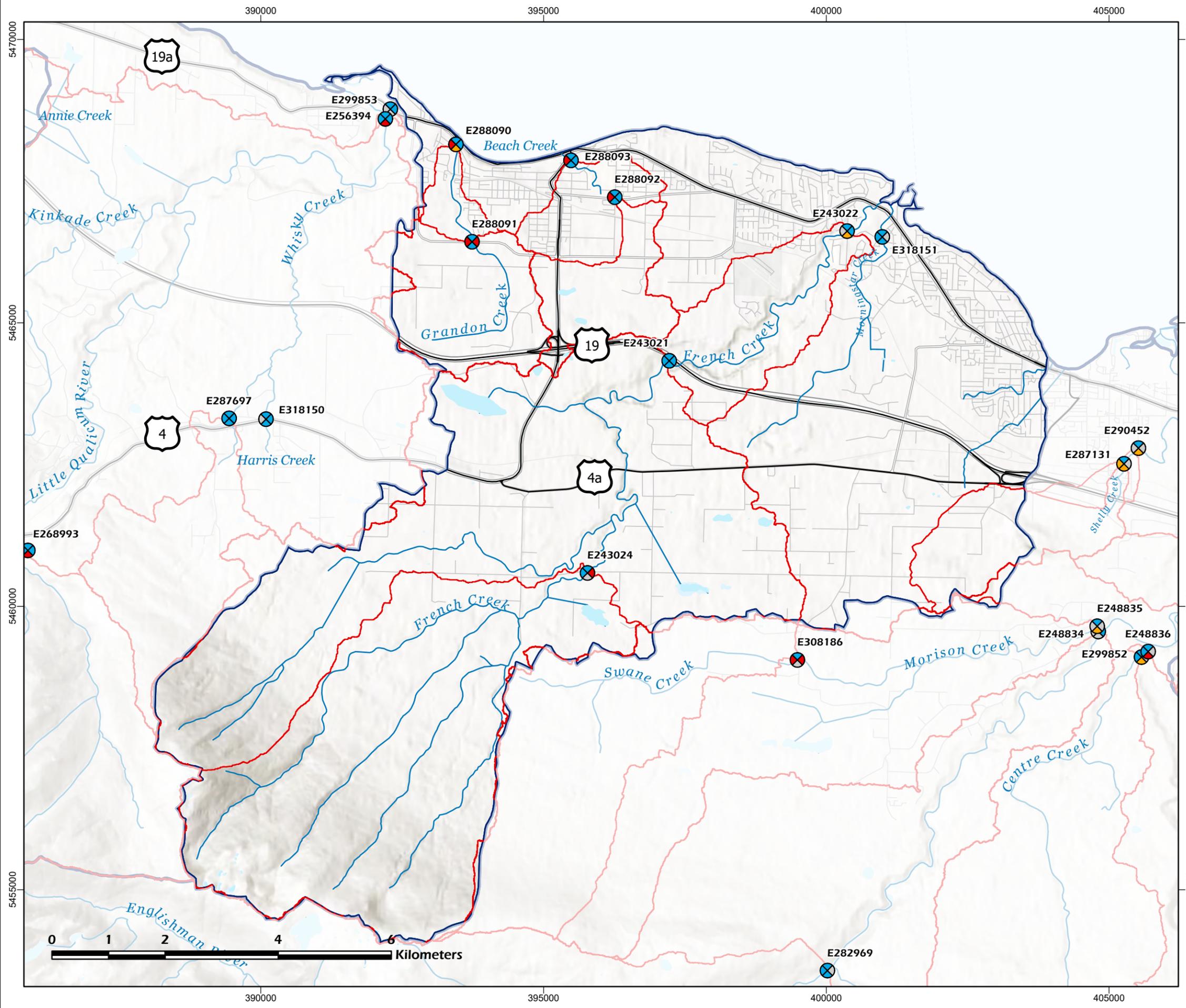


#### MAP INDEX



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# Regional District of Nanaimo

## CMMN 2011-2020 Fall Exceedance Assessment

### WR3: French Creek

**Location:** Nanaimo, BC  
**Project No.:** 21-3702  
**Prepared for:** Regional District of Nanaimo  
**Prepared by:** Ecoscape Environmental Consultants Ltd.  
**Coordinate System:** NAD83-UTM Zone 10  
**Imagery:** ESRI Canada

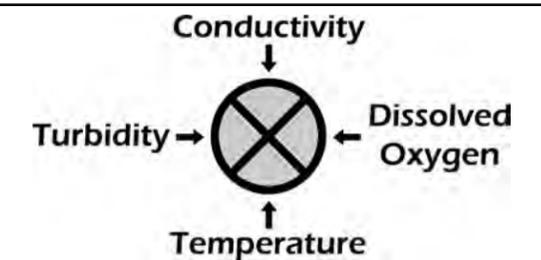
### LEGEND

-  Sample Site
  -  Stream
  -  Highway
  -  Watershed
  -  Water Region
  -  Lake
- Note the exceedance frequency categories are reflective of the number of sample periods with exceedances, not the number or values of the exceedances.*

### Exceedance colour key

-  No exceedance recorded
-  Low exceedance frequency
-  Moderate exceedance frequency
-  High exceedance frequency

### SAMPLE SITE KEY

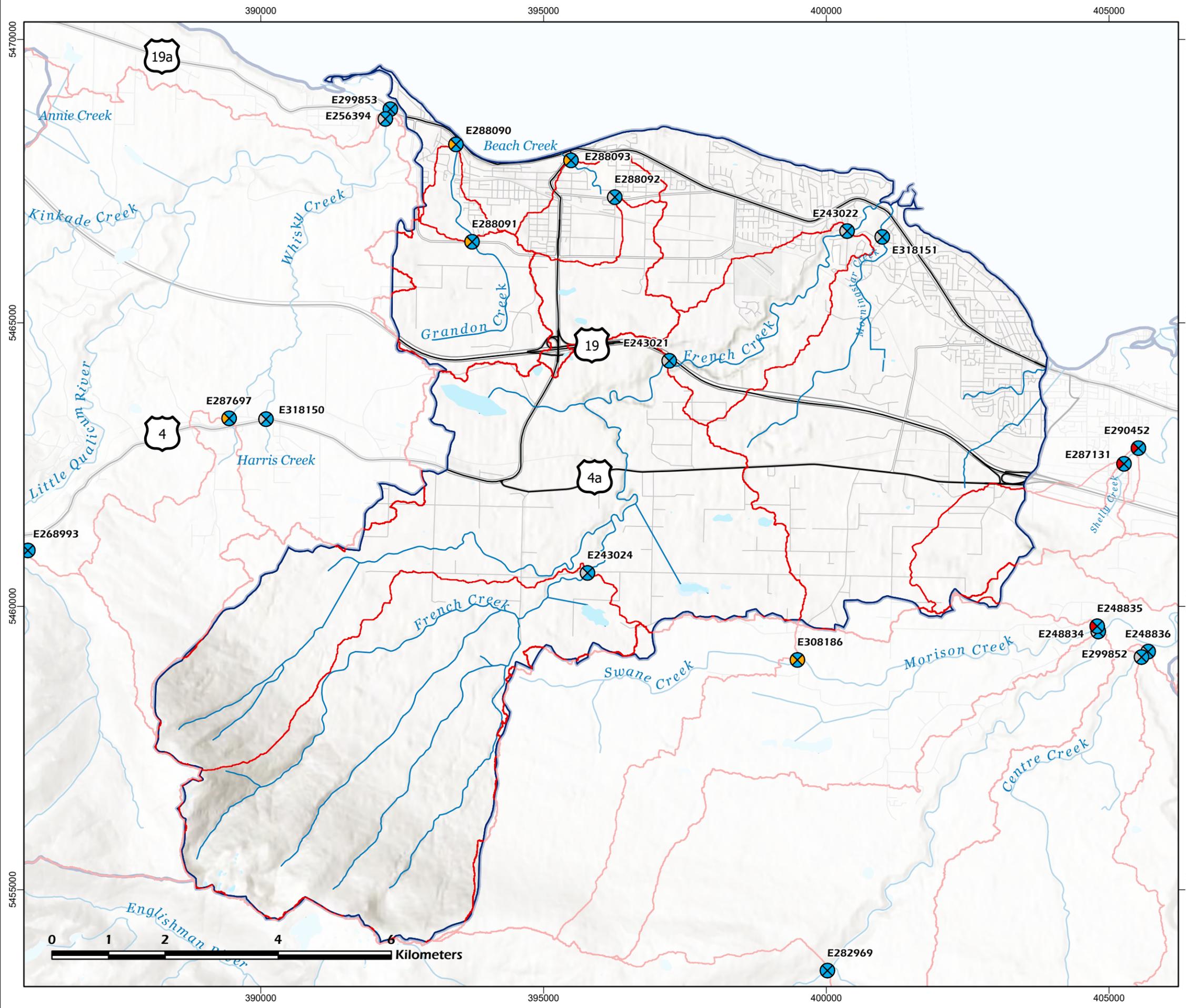


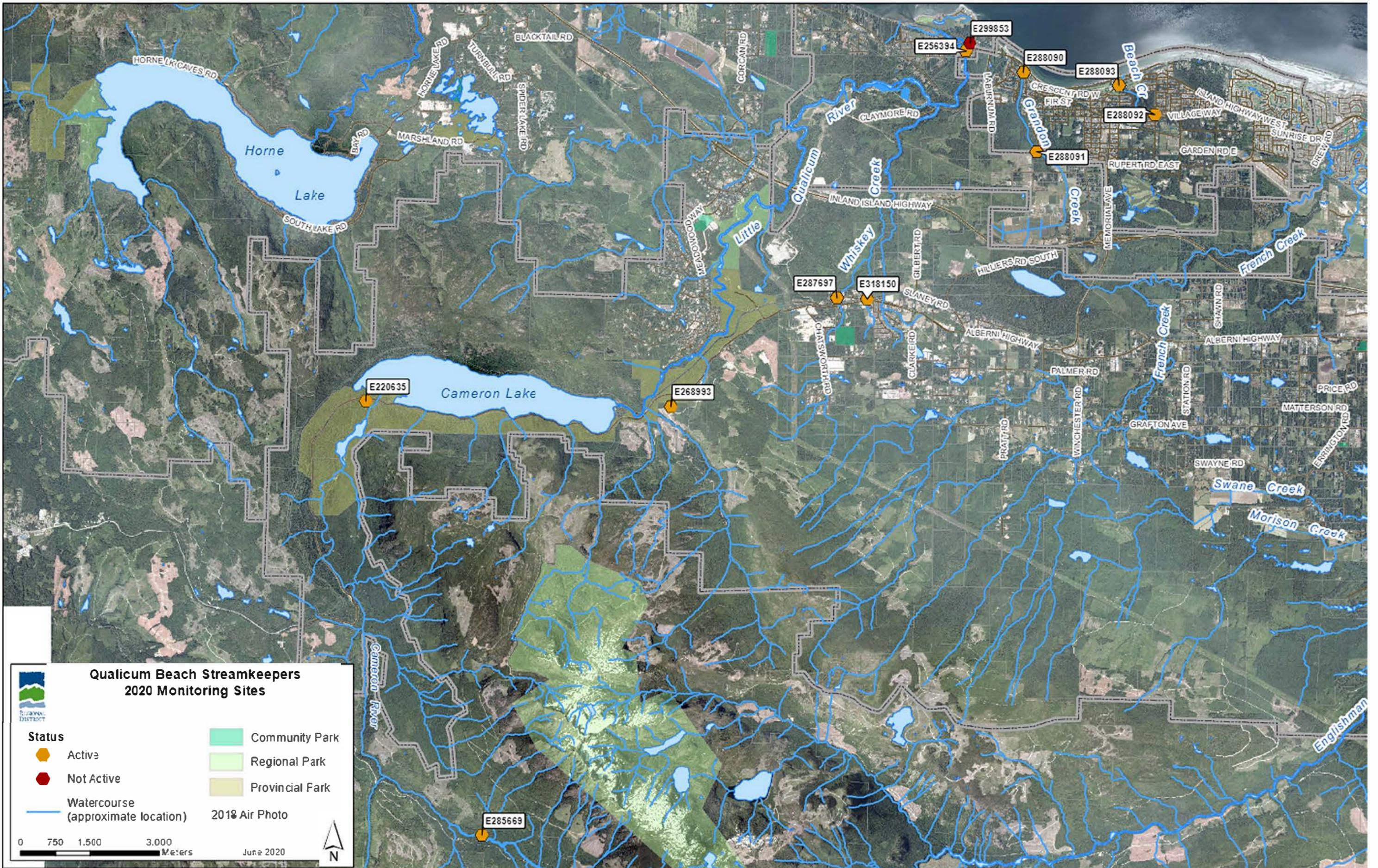
### MAP INDEX

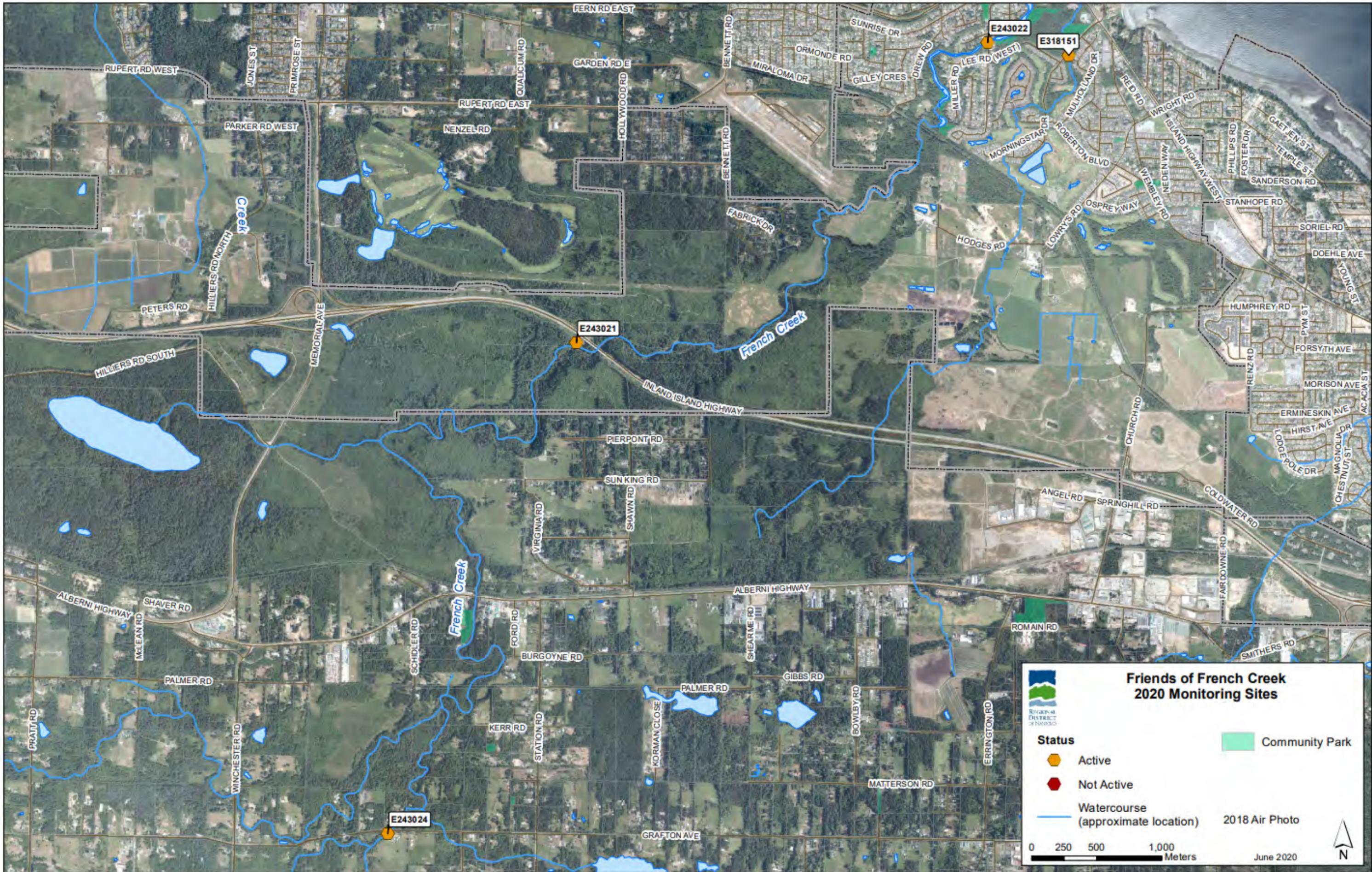


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**Friends of French Creek  
2020 Monitoring Sites**

REGIONAL DISTRICT OF HAWKSDO

**Status**

- Active
- Not Active

— Watercourse (approximate location)

Community Park

2018 Air Photo

0 250 500 1,000 Meters

June 2020

N