

May 2025

Alberta Flow Estimation Tool for Ungauged Watersheds (AFETUW) v. 2.1

User Guide



Alberta Environment and Protected Areas
Government of Alberta

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Contact Information

If you have any questions about AFETUW, please contact:

GOA.AFETUW@gov.ab.ca

Introduction

The Alberta Flow Estimation Tool for Ungauged Watersheds (AFETUW, *a-fe-tu*) is designed to allow users to:

1. Delineate a watershed for any point on a stream within Alberta.
2. Estimate the following flow information for ungauged watersheds in Alberta:
 - a. environmental flow
 - b. real-time flow
 - c. historic daily flow
 - d. flow statistics
3. Query surface and groundwater water licence information within a defined area.

AFETUW is a practical web-based water resource management tool to support water management decisions by Alberta Environment and Parks (AEP) and the Alberta Energy Regulator (AER). AFETUW also benefits consultants, university researchers, and the general public.

This user guide provides complete instruction how to use the AFETUW web-application.

Before using AFETUW...

AFETUW is a rapid assessment tool used to estimate flows during the open water season (April-October) in ungauged watersheds. AFETUW ungauged flow estimates should be used with caution as presented in a Disclaimer when first visiting the website. Agreeing to the Disclaimer terms and conditions constitutes you accept the risk and review specific circumstances where the information generated by AFETUW may not be applicable.

AFETUW's flow estimation process presumes the delineated watershed and the ungauged area being assessed is effectively natural and results from surface runoff yield, ultimately contributing to a water body or is a point along a flowing water body such as a river, creek or stream.

Generated flow estimates will NOT correctly reflect the hydrology when:

1. **The watershed is regulated**, i.e. flows are impeded or stored and released by an upstream dam or other significant flow-impacting infrastructure. Flow in these systems is dependent on, or fully controlled by, operating criteria or other constraints and do not reflect natural hydrology.
2. **The watershed boundary extends outside of the Alberta border**. Currently, AFETUW uses Alberta ArchHydro Phase II dataset for watershed delineation. The geographic extent of the dataset does not extend outside the Alberta provincial boundary. As a result, AFETUW cannot delineate the entire watershed boundary when the drainage area extends beyond the Alberta border. In this case, the AFETUW generated watershed boundary and flow information should not be used.
3. **The watershed is for a water body** (e.g. below the outlet of a lake), or water body-dominated with multiple significant lakes upstream. AFETUW's catchment yield and flow generation algorithm is predominantly due to land surface runoff estimation. Two critical water body factors are:
 - Watersheds containing significant water surface area are increasingly affected by other processes such as direct precipitation on the water body (adding water) and evaporation from the water body surface (removing water), impacting the overall catchment water balance.
 - A water body provides storage and slows or can cut off outflow such that it no longer reflects a direct rainfall-runoff relationship. The water level-outflow relationship at the lake outlet will determine actual outflow. AFETUW cannot estimate lake discharge but may provide an estimate of lake inflow with an adjustment.

In these cases AFETUW data might be applied **but only if** they are adjusted or prorated to account for these distortions. For example, flows generated downstream from a lake catchment might be prorated (reduced) to account for upstream lake area, which could then provide an estimate of lake or reservoir inflow. Further offline analysis where other factors such as precipitation, evaporation and inflows routing using stage-capacity and stage-discharge relationships could then occur. However this is outside the scope of the AFETUW tool and requires qualified professional expertise.

How to Access AFETUW

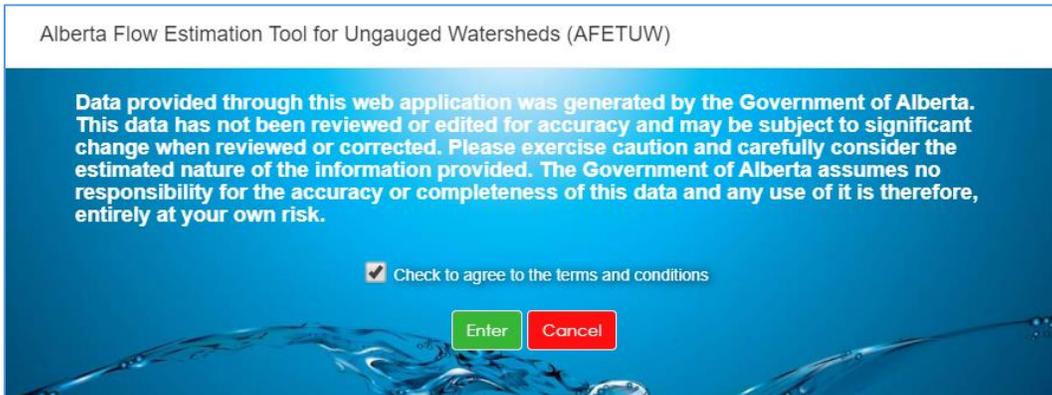
AFETUW may be accessed at the website: <https://afetuw.alberta.ca/>



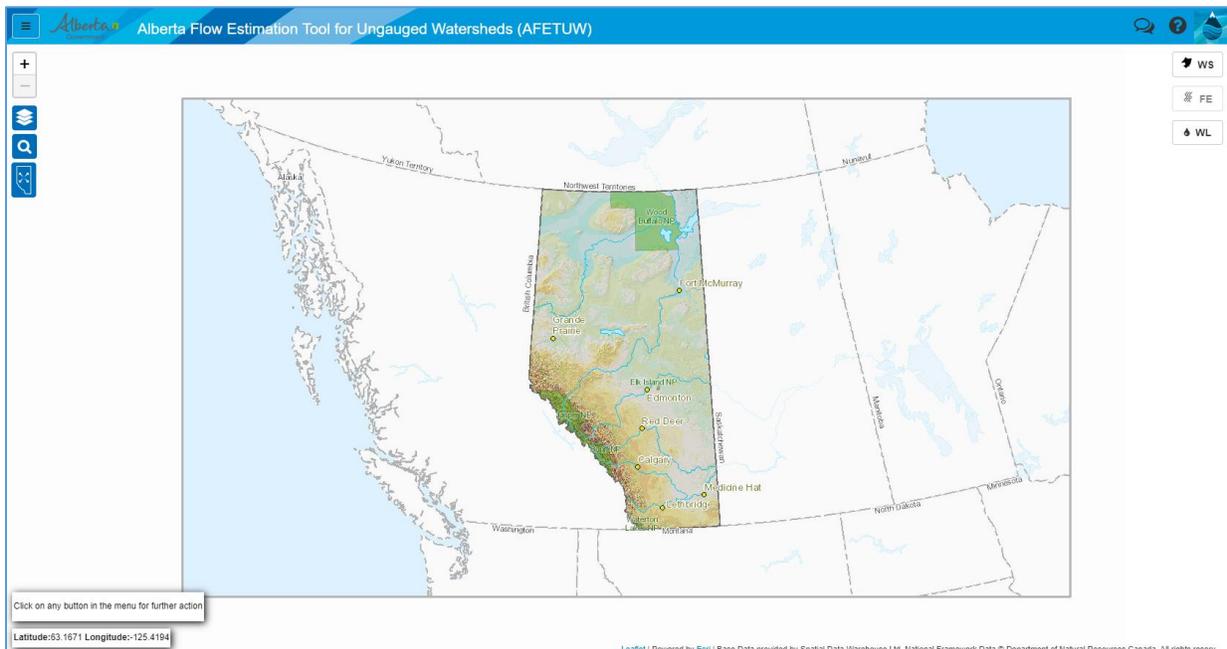
One good practice before running AFETUW is to press **Ctrl + F5** keys when using a browser. This will clean up browser's cache and temporary files to start a fresh session. Another good practice is to

make sure your browser is updated with the most recent version. It is good idea to check and try these first if AFETUW does not work as intended.

AFETUW opens with a disclaimer window. To accept the disclaimer, check the “**Check to agree to the terms and conditions**” checkbox and then click the “**Enter**” button. Select the “**Cancel**” button to exit.

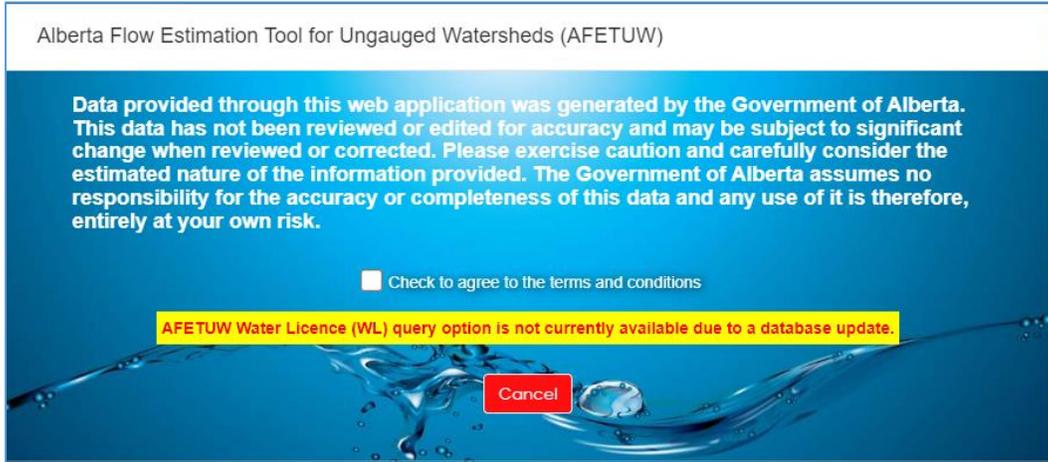


After accepting the disclaimer, the AFETUW main window appears.



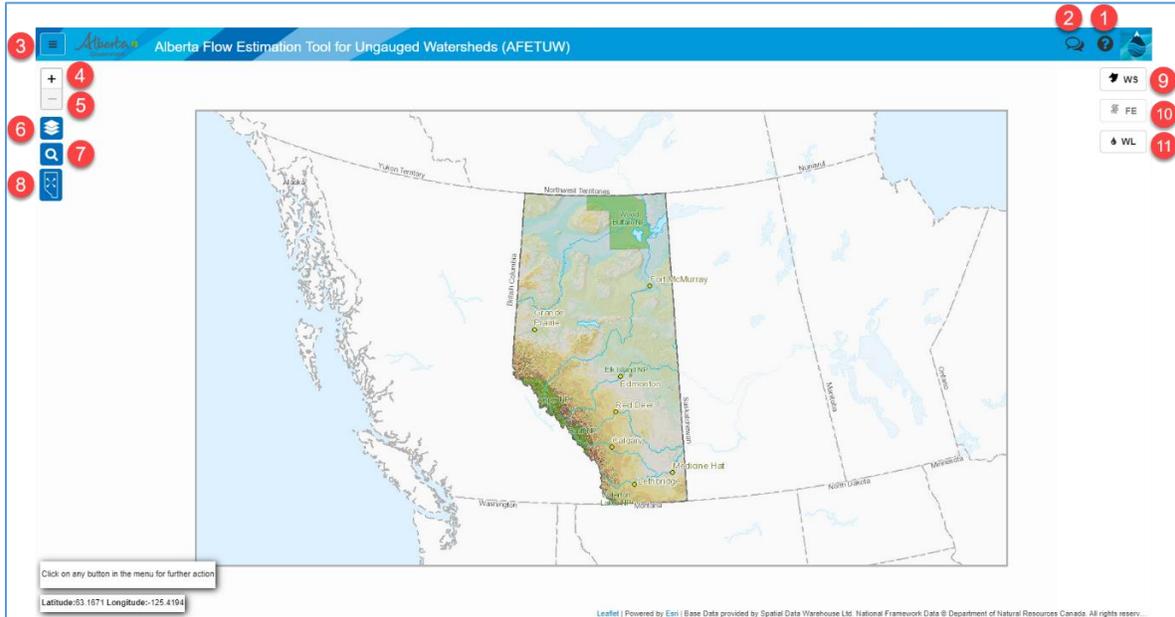


If AFETUW is under maintenance, some of functions may not be available. In this case, user will see a message in the disclaimer window as shown below:

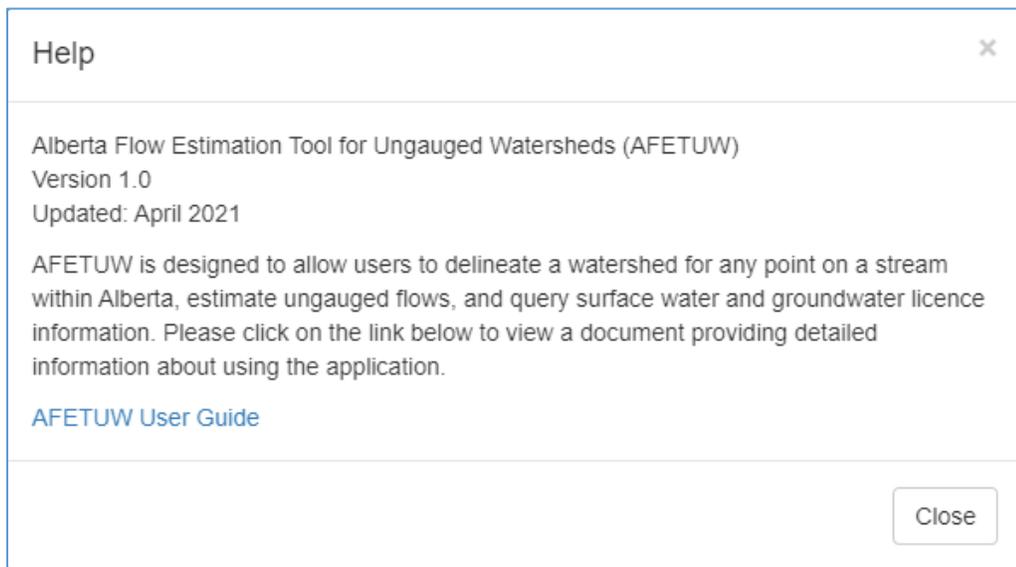


Components of AFETUW Main Window

Each component in the AFTUW main window is numbered as shown below, followed by a description of their function.

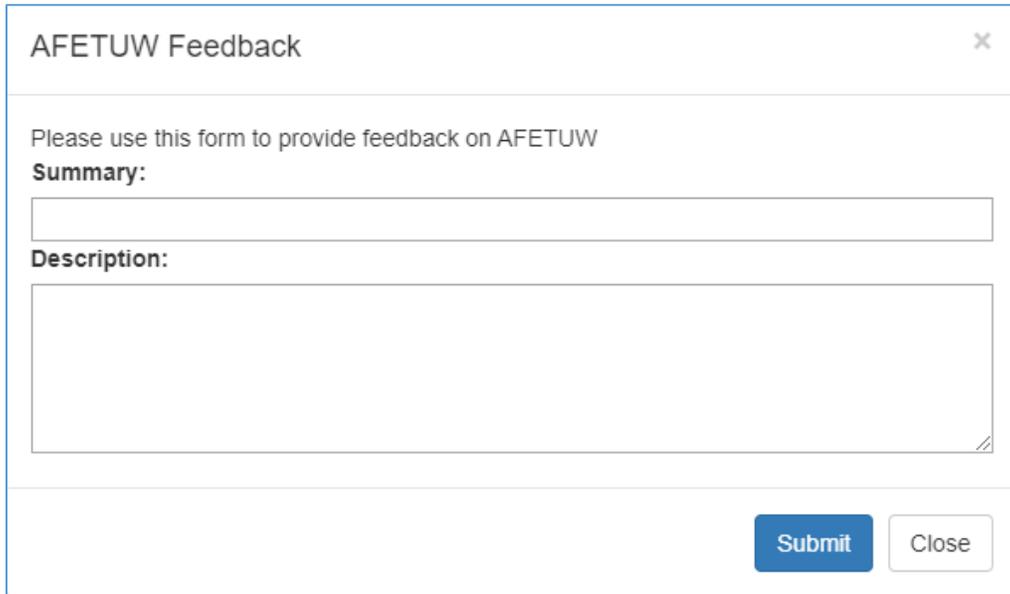


1. Help



The AFETUW User Guide may be viewed or downloaded by clicking the [AFETUW User Guide](#) hyperlink.

2.  Feedback

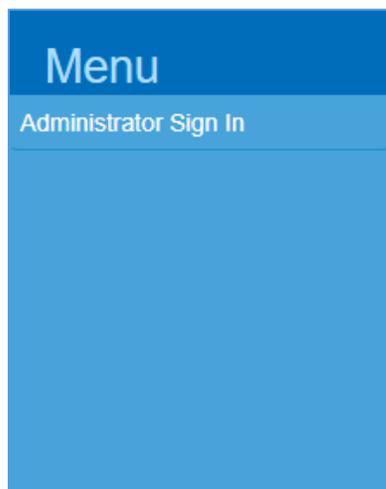


The image shows a feedback form titled "AFETUW Feedback" with a close button (X) in the top right corner. Below the title, there is a text prompt: "Please use this form to provide feedback on AFETUW". The form contains two input fields: "Summary:" followed by a single-line text box, and "Description:" followed by a larger multi-line text box. At the bottom right of the form, there are two buttons: a blue "Submit" button and a white "Close" button with a grey border.

User feedback may be entered in the **Summary** and **Description** fields, and then click the **“Submit”** button. If you would like a response please include your name and email address. Feedback will be regularly reviewed by the AFETUW Project Team.

3.  Menu

Click the hamburger button to open the **“Administrator Sign In”** menu item to sign in as an AFETUW administrator. Click again to close the menu.



4.  Zoom-In

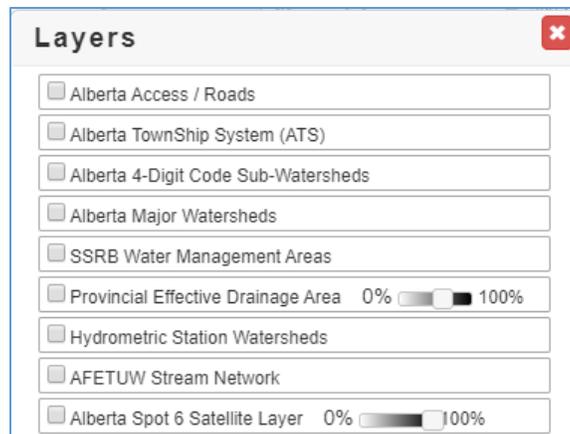
Click the button to zoom in the map.

5.  Zoom-Out

Click the button to zoom out the map.

6.  Layers

Click the button to see a list of layers available for selection to overlay on the map. Some layers will not display until the map view is zoomed in to a certain scale.

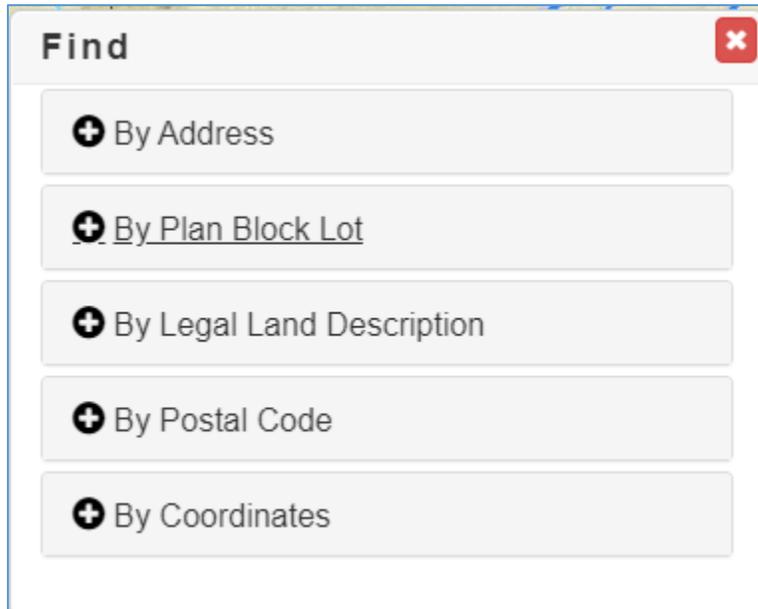


The layers available are described as follows:

- *Alberta Access/Roads*: Road/access networks throughout Alberta
- *Alberta Township System (ATS)*: Townships, sections, and quarter sections
- *Alberta 4-Digit Code Sub-Watershed*: Water Survey Canada 4-character sub-basin codes
- *Alberta Major Watersheds*: Boundaries of the major watersheds in Alberta
- *SSRB Water Management Areas*: Boundaries of Water Management Areas in the South Saskatchewan River Basin.
- *Provincial Effective Drainage Area* (with a transparency slider): Effective drainage areas in the province.
- *Hydrometric Station Watersheds*: Watershed boundaries of hydrometric stations in the province.
- *AFETUW Stream Networks*: AFETUW stream networks in the province.
- *Alberta Spot 6 Satellite Layer* (with a transparency slider): Spot 6 satellite imagery of the province. The transparency slider allows users to adjust the contrast to see more clearly.

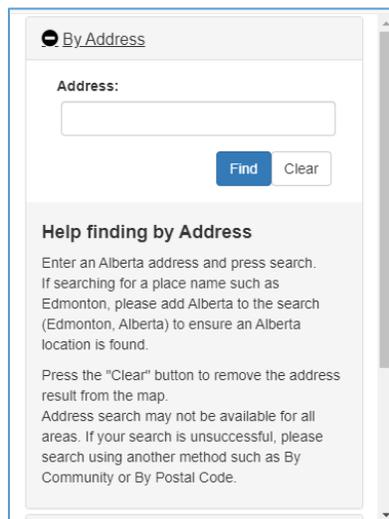
7. Find

The watershed delineation process begins by selecting a point on a stream in the map view. There are five methods to zoom in to an area for a watershed point including the address, plan block lot, legal land description, postal code, and coordinates. Click  to expand the method.



By Address

Enter the address to find the watershed point.



By Plan Block Lot

Enter plan (required), block (optional), and lot (optional) numbers to find the watershed point.

By Plan Block Lot

Plan (Required):

Block (Optional):

Lot (Optional):

Help finding by Lot, Block, and Plan

This tool will zoom into the area of the lot block and plan that you searched on.

Disclaimer: The data used in this search may not be complete. There may be some information missing from this search Feature.

By Legal Land Description

Enter section (optional), township (required), range (required), and meridian (required) information to find the watershed point.

Find

By Legal Land Description

Section (Optional):

Township (Required):

Range (Required):

Meridian (Required):

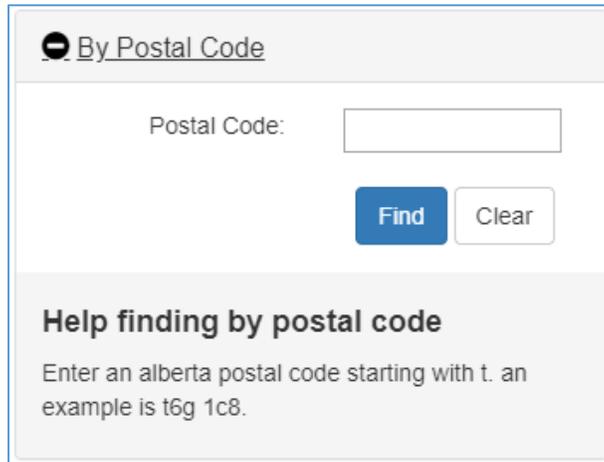
Help finding by Legal Land Description

You will normally see the legal land description written as:
NE-16-74-20-W4 (Quarter Section-Section-Township-Range-Meridian).

This search will narrow the results to the section.

By Postal Code

Enter a postal code to find the watershed point.



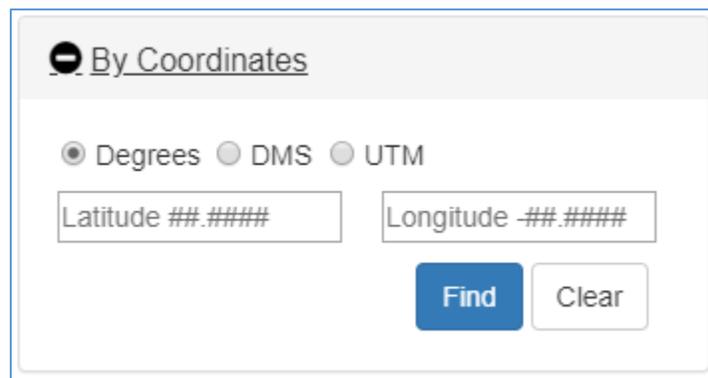
The screenshot shows a search interface titled "By Postal Code". It features a text input field labeled "Postal Code:" with a placeholder. Below the input field are two buttons: a blue "Find" button and a white "Clear" button. A help section below the buttons is titled "Help finding by postal code" and contains the text: "Enter an alberta postal code starting with t. an example is t6g 1c8."

By Coordinates

Enter map coordinates of a location in one of three formats (Degrees, DMS, or UTM) to find the watershed point.

Degrees

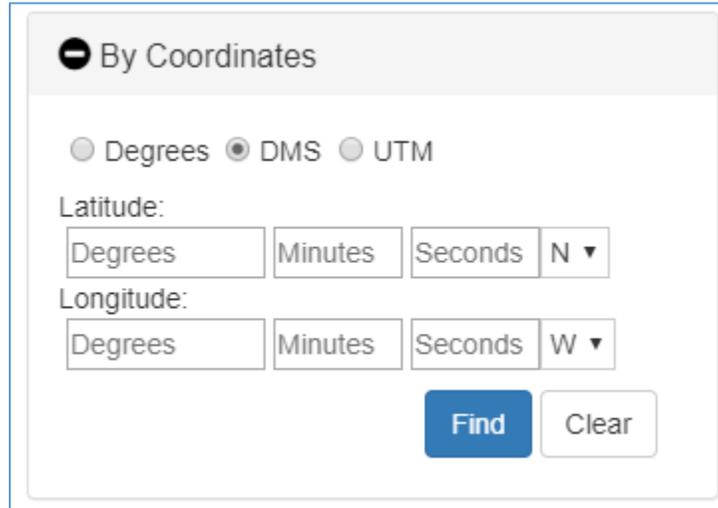
Enter latitude and longitude of the location in the format of decimal degree. In Alberta ensure to use a negative longitude.



The screenshot shows a search interface titled "By Coordinates". It features three radio buttons for selecting the coordinate format: "Degrees" (selected), "DMS", and "UTM". Below the radio buttons are two text input fields: "Latitude ##.####" and "Longitude -##.####". Below the input fields are two buttons: a blue "Find" button and a white "Clear" button.

DMS

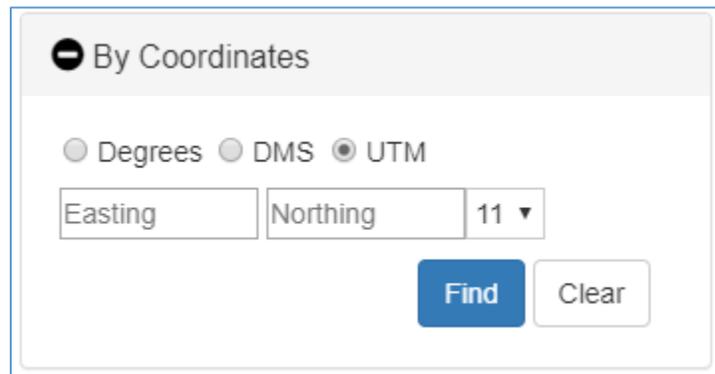
Enter latitude and longitude of the location in the format of Degrees/Minutes/Seconds.



The screenshot shows a form titled "By Coordinates" with a minus sign icon. It has three radio buttons: "Degrees", "DMS" (which is selected), and "UTM". Below the radio buttons, there are two rows of input fields. The first row is labeled "Latitude:" and contains three input boxes for "Degrees", "Minutes", and "Seconds", followed by a dropdown menu with "N" selected. The second row is labeled "Longitude:" and contains three input boxes for "Degrees", "Minutes", and "Seconds", followed by a dropdown menu with "W" selected. At the bottom right of the form are two buttons: "Find" (in blue) and "Clear" (in white).

UTM

Enter coordinates of the location in UTM Zone 11 or 12 in the format of easting and northing.



The screenshot shows a form titled "By Coordinates" with a minus sign icon. It has three radio buttons: "Degrees", "DMS", and "UTM" (which is selected). Below the radio buttons, there are three input fields: "Easting", "Northing", and a dropdown menu with "11" selected. At the bottom right of the form are two buttons: "Find" (in blue) and "Clear" (in white).

8.  Zoom to Provincial Extent

Click this button to zoom out the map to provincial extent.

9. Watershed Delineation

This button starts the Watershed Delineation function. To delineate a watershed, locate a point on a stream (i.e., called the pour-point of the watershed) using one (or combination) of following methods:

- Find button in AFETUW,
- Zoom-In & Zoom-Out buttons,
- Scrolling of mouse wheel, or
- Pinch zooming on a mobile device.

While zooming in, the stream network shown as deep blue lines, becomes more visible. The width of the stream depends on the zoom scale. These deep blue stream lines are from the AEP ArchHydro Phase 2 stream layer which represents the Alberta stream network used to delineate watersheds.

Click on the Watershed Delineation button  and then click on the blue stream line. The pour-point 'must' be clicked on the blue stream network in order to delineate a watershed boundary.



The map view shows the mouse as a pan cursor . The map view may be moved by left-clicking the mouse and dragging the pan cursor to the desired location. Also, the map view may be

changed to the full provincial extent at any time by clicking the *Zoom to Provincial Extent* button  in the upper left of the screen.

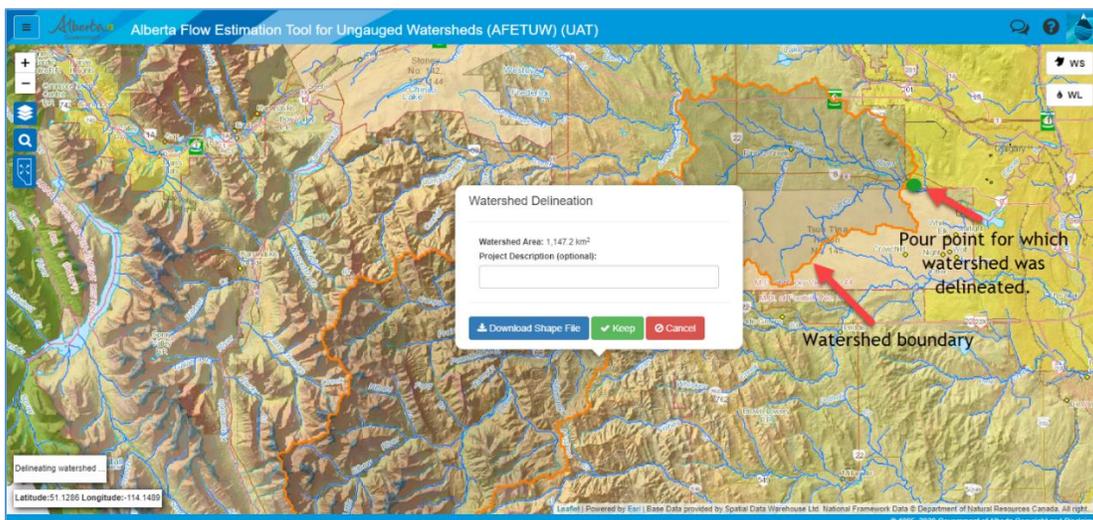


There are 4 types of stream segments in different colors used in AFETUW. Each type of stream and the availability of estimated flow information for each type are described as follows:

- (1)  (blue): All the flow information (including environmental flow, real-time flow, historical daily flow, and flow statistics) can be estimated for this type of stream segment. Environmental flow for this type of stream segment is estimated based on Alberta Surface Water Allocation Directive (SWAD).
- (2)  (cyan): All the flow information (including environmental flow, real-time flow, historical daily flow, and flow statistics) can be estimated for this type of stream segment. Environmental flow for this type of stream segment is estimated based on Instream Objective (IO) criteria pertaining to the stream segment.
- (3)  (orange): All the flow information except environmental flow (i.e., real-time flow, historical daily flow, and flow statistics) can be estimated for this type of stream.
- (4)  (red): A regulated stream segment for which all the flow information cannot be estimated.

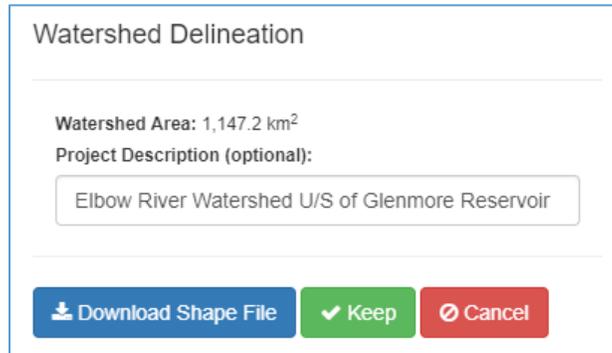
After zooming into the area of interest to display the stream network, click the *Watershed Delineation* button  to enable watershed delineation function. With this function activated, the cursor will change to crosshairs . Position the crosshairs over the stream network desired location and left-click a point to begin the watershed delineation process. The point where the watershed is delineated is called a 'pour-point'.

AFETUW displays a spinning-circle icon  while processing the watershed delineation. Once complete, the delineated watershed will be defined with an orange boundary. A "*Watershed Delineation*" window will pop up.

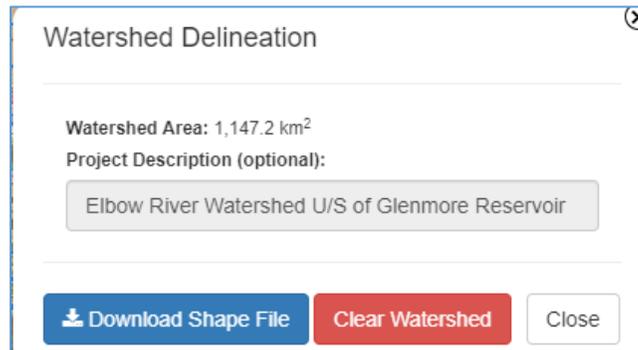


In the “*Watershed Delineation*” window, the “**Watershed Area**” is reported in km². There is an option to name the delineated watershed in the “**Project Description (optional)**” field.

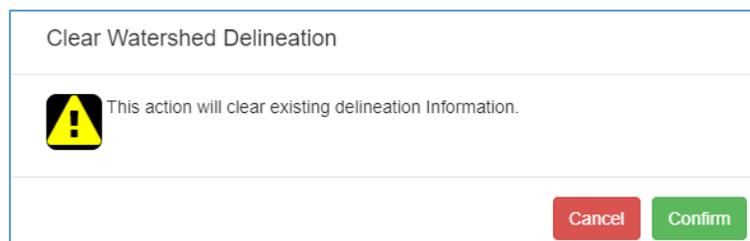
The GIS shapefiles for the delineated watershed boundary and pour-point may be downloaded into your computer as a zip file by clicking the “**Download Shape File**” button. If the watershed delineation is acceptable, click the “**Keep**” button to keep it displayed on the map and use it with the *Water Licences Viewer*. Otherwise, click the “**Cancel**” button to try again.



The *Watershed Delineation* button  may be re-selected anytime. Upon clicking the button, the “*Watershed Delineation*” window is displayed. Download the GIS shapefiles for the delineated watershed boundary and pour-point by clicking the “**Download Shape File**” button or repeat the process for another ungauged stream location by clicking the “**Clear Watershed**” button.



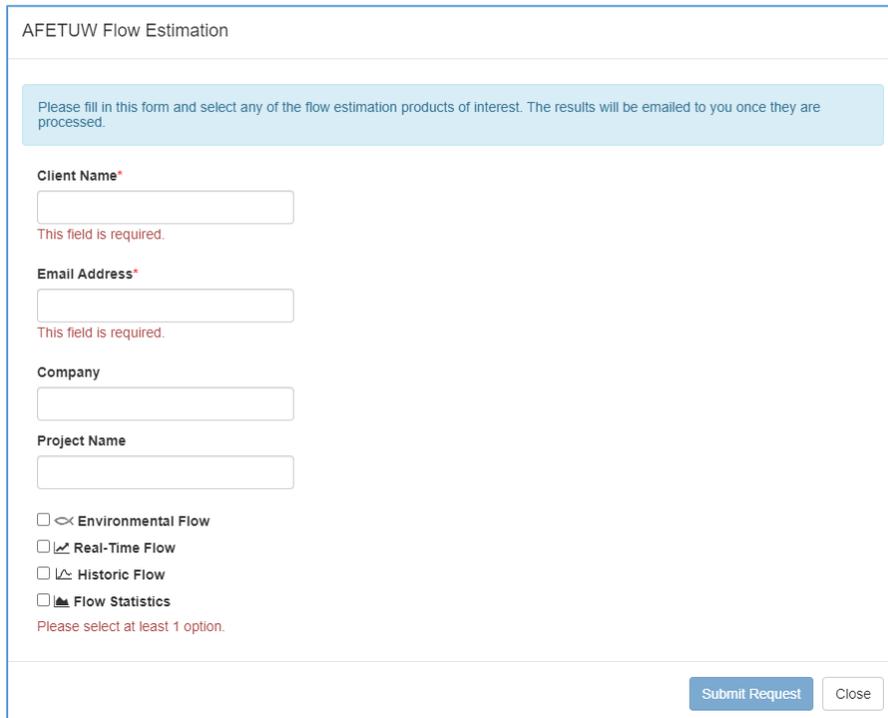
When the “**Clear Watershed**” button is clicked, the following message box is displayed. Click the “**Confirm**” button to clear the delineated watershed or click the “**Cancel**” button to cancel.



10.  Flow Estimation

Flow Information Request

Once a watershed has been delineated, the flow estimation  button may be selected to display the following “AFETUW Flow Estimation” form:



Fill out the following information in the form:

- Contact Name (required)
- Email Address (required)
- Company (optional)
- Project Name (optional)

Select at least one or all four options to estimate flows for the ungauged watershed:

- Environmental Flow
- Real-Time Flow
- Historic Flow
- Flow Statistics



If the “*Historic Flow*” option is selected, AFETUW will calculate a valid date range for Historic Flow as shown below:

Input Date Range: <small>(mm/dd/yyyy)</small>	Start	05/15/1934	End	12/06/2021
---	-------	------------	-----	------------

If needed, “Start” and “End” dates of the **Input Date Range** above may be manually adjusted.

After the “*AFETUW Flow Estimation*” form has been filled-in and at least one flow type(s) selected, click the **Submit Request** button to submit an ungauged flow request.

AFETUW Flow Estimation

Please fill in this form and select any of the flow estimation products of interest. The results will be emailed to you once they are processed.

Client Name*

Email Address*

Company

Project Name

Environmental Flow

Real-Time Flow

Historic Flow
Note: The historic daily flow data range is from '05/15/1934' to '05/15/2025'

Input Date Range:
(mm/dd/yyyy)

Flow Statistics

Submit Request



Currently, AFETUW estimates flows (including Environmental Flow, Real-Time Flow, and Historic Flow) only during open water season (i.e., from April to October). During winter flow season (i.e., from November to March) checkbox for Real-Time Flow is grayed out as illustrated below:

AFETUW Flow Estimation

Please fill in this form and select any of the flow estimation products of interest. The results will be emailed to you once they are processed.

Client Name*
Chiadhih Chang

Email Address*
chiadhih.chang@gov.ab.ca

Company
AB Environment and Protected Areas

Project Name
Elbow River US of Glenmore Reservc

Environmental Flow
 Real-Time Flow
 Historic Flow
 Flow Statistics

Please select at least 1 option.

Submit Request Close

After clicking **Submit Request**, the following “*Success Submitting Request*” message will pop-up as a reminder to monitor the email inbox for the flow estimation results.

Success Submitting Request

Successfully submitted requests. Please monitor your email for the results.

Ok

Click the “**OK**” button in the “*Success Submitting Request*” message to continue.



If you have other flow estimation requests which you haven’t submitted yet, you can click the flow estimation  button to display the “*AFETUW Flow Estimation*” form again.

Upon submitting a successful flow request, a confirmation email is sent immediately, similar to the one shown below to user's email address. The email indicates the type(s) of flow estimation requested and are being queued for processing. Once processing is completed, email will be sent with the results attached.

AFETUW Request Submitted

 AFETUW-DoNotReply@gov.ab.ca
To: Chiadih Chang

  Reply  Reply All  Forward  

Thu 2024-09-26 1:34 PM

Your request using the *Alberta Flow Estimation Tool for Ungauged Watersheds (AFETUW)* has been submitted and queued for processing. You will receive subsequent emails with the results once your request has completed.

Request Details
Name: Chiadih Chang
Company: AB Environment and Protected Areas
Project Title: Elbow River U/S of Glenmore Reservoir
Pour Point: [Latitude: 50.99142, Longitude: -114.1569]

Modules:

- **Flow Statistics (Job Request Id: 10212)**
- **Environmental Flow (Job Request Id: 10213)**
- **Real-Time Flow (Job Request Id: 10214)**
- **Historic Flow**
 - **Data Extract Range: 2000-05-15 to 2024-09-26 (Job Request Id: 10215)**

To cancel this request please click this [link](#)

AFETUW Support Team

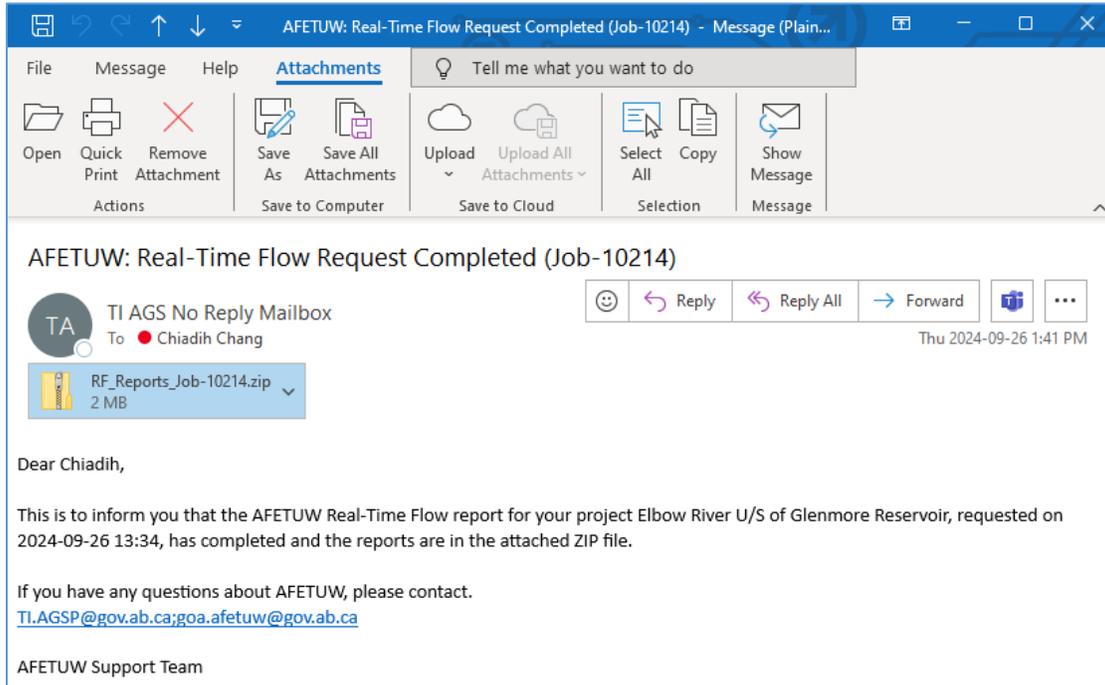
This email and any files transmitted with it are confidential and intended solely for the use of the individual or entity to whom they are addressed. If you have received this email in error please notify the [AFETUW Support Team](#). This message contains confidential information and is intended only for the individual named. If you are not the named addressee you should not disseminate, distribute or copy this e-mail.



If needed, users may cancel their flow request by clicking the hyperlink [link](#) located near the bottom of the confirmation email.

Flow information Results

Once processing is completed, an email with the results attached will be sent to the user, similar to the one shown below (e.g., Real-Time Flow):

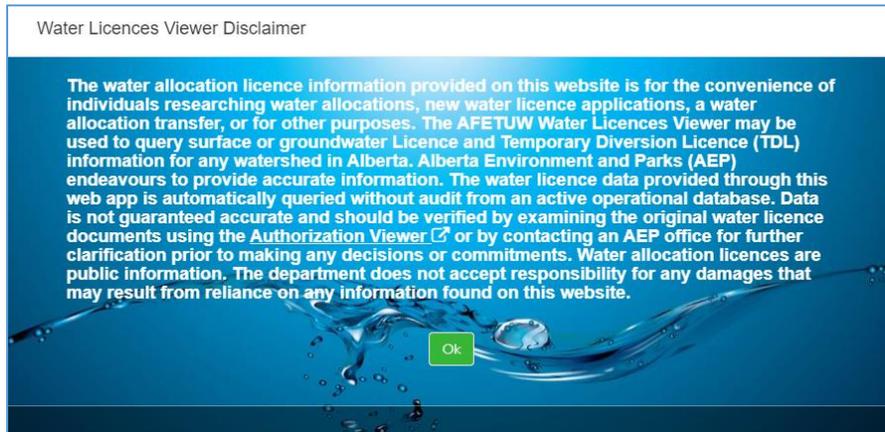


Double-click the ZIP file in the email attachment to unzip the AFETUW results files. The following table lists the results files created for each type of estimated flow:

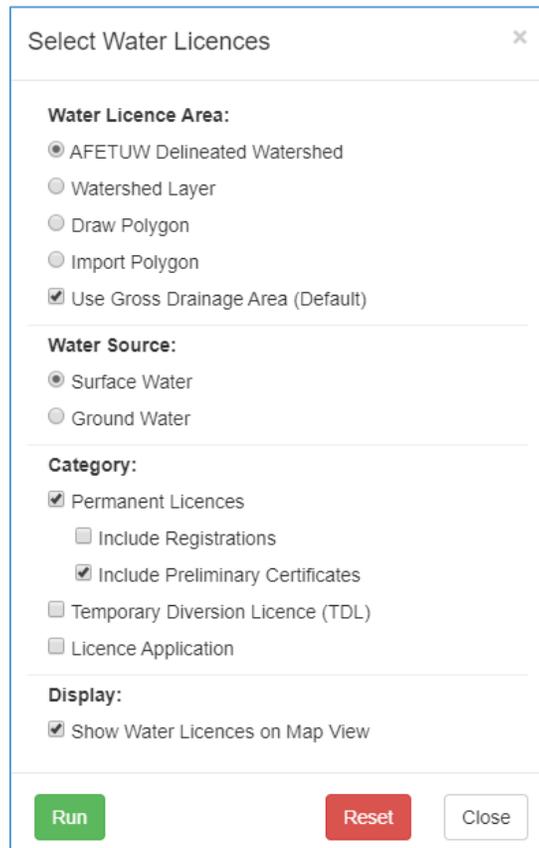
Type of Flow Information	PDF Report	Excel Spreadsheet (*.csv)
<i>Environmental Flow</i>	Yes	Yes
<i>Real-Time Flow</i>	Yes	Yes
<i>Historic Flow</i>	N/A	Yes
<i>Flow Statistics</i>	Yes	N/A

11.  Water Licences

Click the  button to start the Water Licences Viewer which opens with a disclaimer window.



To continue, click the "OK" button in the disclaimer window to display the "Select Water Licences" window.



The image shows a window titled "Select Water Licences" with a close button (X) in the top right corner. The window contains several sections of options:

- Water Licence Area:**
 - AFETUW Delineated Watershed
 - Watershed Layer
 - Draw Polygon
 - Import Polygon
 - Use Gross Drainage Area (Default)
- Water Source:**
 - Surface Water
 - Ground Water
- Category:**
 - Permanent Licences
 - Include Registrations
 - Include Preliminary Certificates
 - Temporary Diversion Licence (TDL)
 - Licence Application
- Display:**
 - Show Water Licences on Map View

At the bottom of the window, there are three buttons: "Run" (green), "Reset" (red), and "Close" (grey).

Boundaries Used for Query

There are four types of **Water Licence Areas** in the “*Select Water Licences*” window which may be used to spatially query water licences. They are:

- AFETUW Delineated Watershed
- Watershed Layers,
- Draw Polygon
- Import Polygon

AFETUW Delineated Watershed

If a watershed has been previously delineated using the AFETUW Watershed Delineation module, the “**AFETUW Delineated Watershed**” option in the “*Select Water Licences*” window is selected by default.

Select Water Licences

Water Licence Area:

- AFETUW Delineated Watershed
- Watershed Layer
- Draw Polygon
- Import Polygon
- Use Gross Drainage Area (Default)

Water Source:

- Surface Water
- Ground Water

Category:

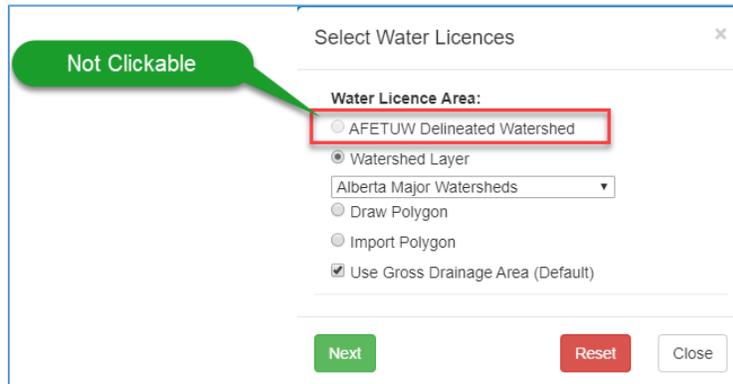
- Permanent Licences
 - Include Registrations
 - Include Preliminary Certificates
- Temporary Diversion Licence (TDL)
- Licence Application

Display:

- Show Water Licences on Map View

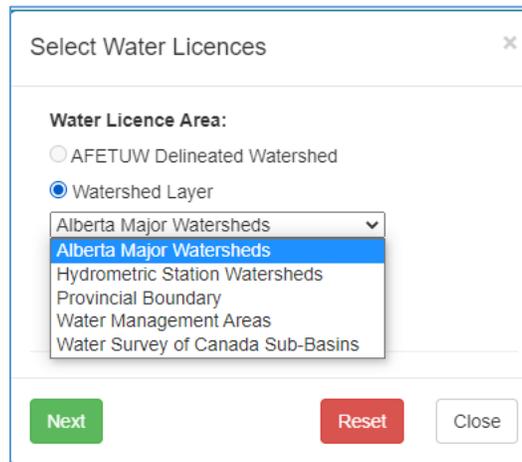
Run Reset Close

If a watershed has not been delineated by the AFETUW Watershed Delineation module, the radio button of the “*AFETUW Delineated Watershed*” option is greyed out and not clickable.



Watershed Layers

Select the “**Watershed Layers**” option to pick a watershed boundary from one of several predefined watershed layers. Click the pulldown icon  to view available watershed layers.



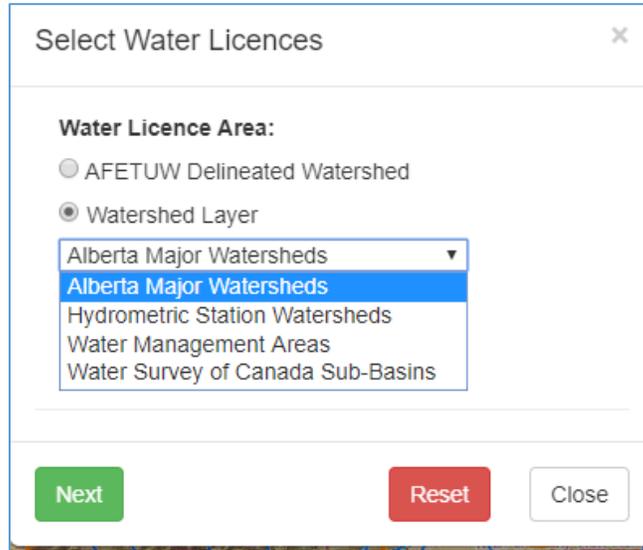
The following four types of watershed layers are available for selection:

- Alberta Major Watersheds
- Hydrometric Station Watersheds
- Provincial Boundary
- Water Management Areas
- Water Survey of Canada Sub-Basins

Select a watershed layer of interest, and then click the “**Next**” button to continue.

Alberta Major Watersheds

Select “**Alberta Major Watersheds**” for “*Watershed Layer*” in the “*Select Water Licences*” window.



Select Water Licences

Water Licence Area:

AFETUW Delineated Watershed

Watershed Layer

Alberta Major Watersheds ▼

Alberta Major Watersheds

Hydrometric Station Watersheds

Water Management Areas

Water Survey of Canada Sub-Basins

Next Reset Close

To continue, click the “**Next**” button. The “*Select Watershed(s)*” window is displayed:



Select Watershed(s)

From: Alberta Major Watersheds

Choose... ▼

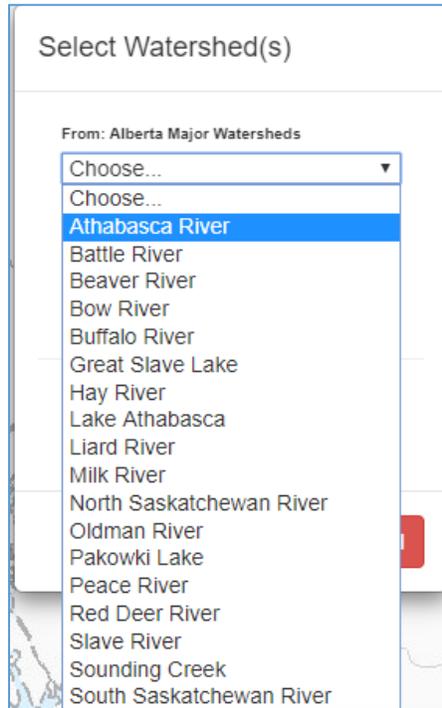
(1 Maximum)

Please make a selection or
click an area on the map

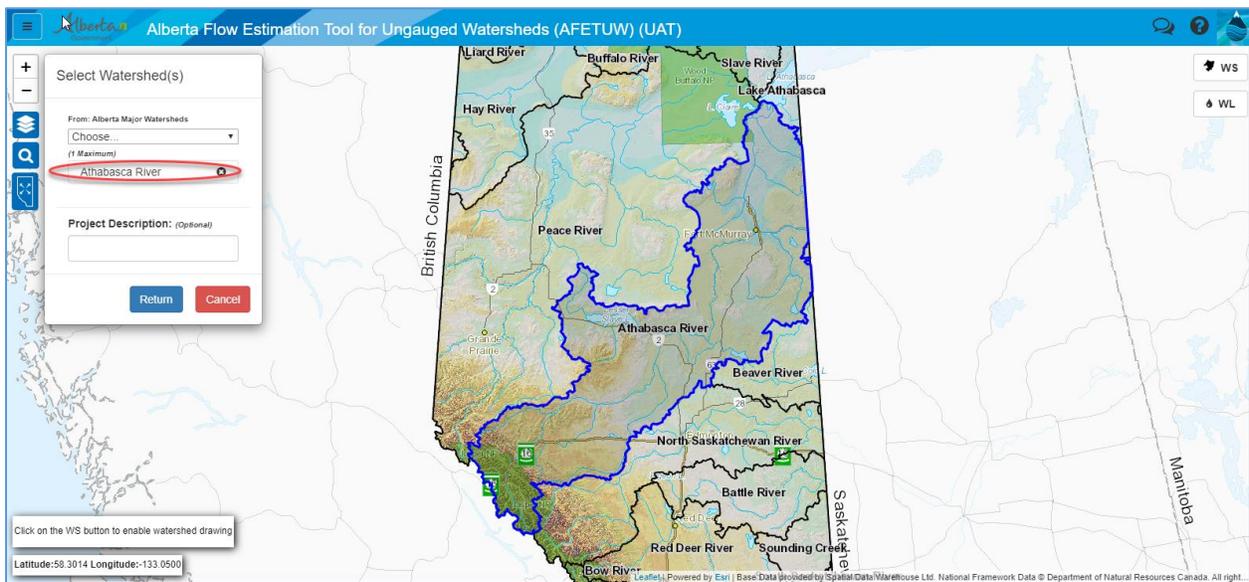
Project Description: (Optional)

Return Cancel

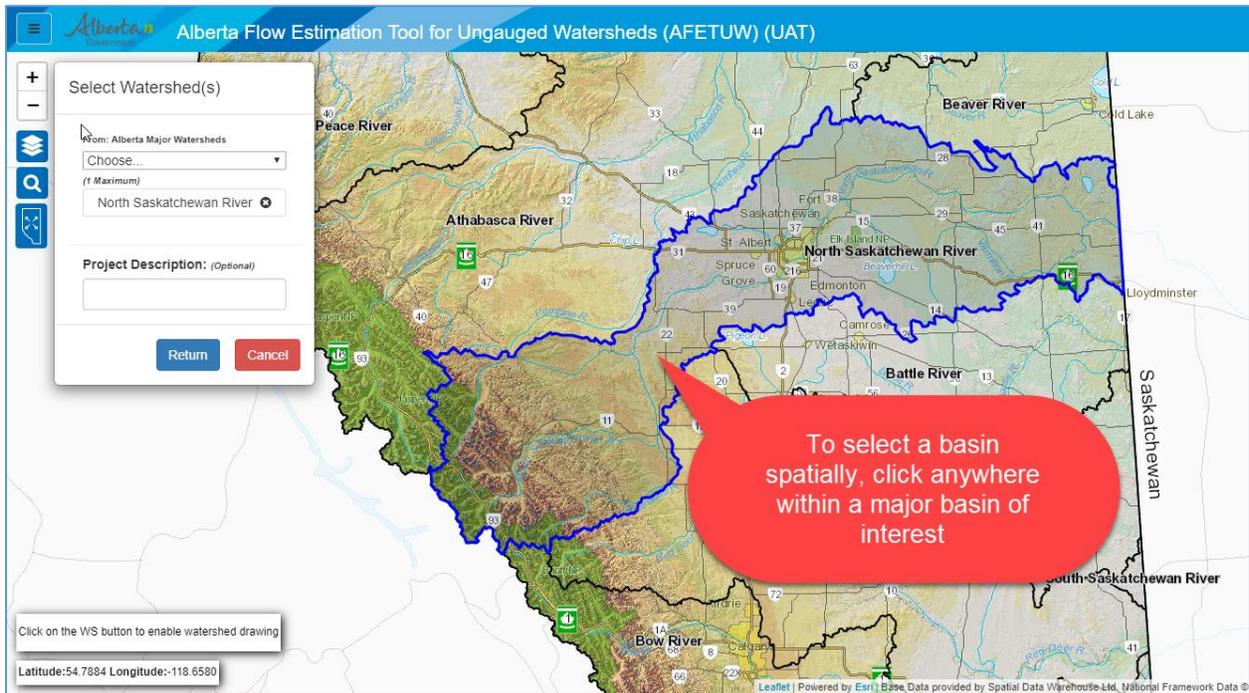
In the “*Select Watershed(s)*” window, click the pulldown icon  to view a list of Alberta Major Watersheds:



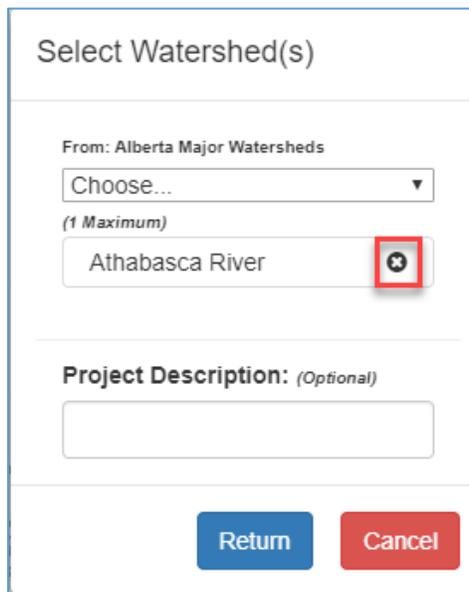
Choose a major watershed from the list, e.g., Athabasca River. After making a selection, the name of the major basin will be shown in the “*Select Watershed (s)*” window and its boundary in dark blue will be displayed in the map view.



Alternatively, a major basin may be selected spatially on the map view by clicking a point located within a major watershed of interest, e.g., North Saskatchewan River:



To reselect a major watershed, click the button  in the “Select Watersheds” window and remove the existing selected watershed.



Optionally, a project description may be entered into the “*Project Description (Optional)*” field in the “*Select Watershed(s)*” window.

Select Watershed(s)

From: Alberta Major Watersheds

Choose...

(1 Maximum)

Athabasca River

Project Description: (Optional)

Sample: Enter description here

Return Cancel

After a major watershed is selected, press the “**Return**” button to continue or press “**Cancel**” button to cancel the process.

Hydrometric Station Watersheds

Select “*Hydrometric Station Watersheds*” for “*Watershed Layer*” in the “*Select Water Licences*” window.

Select Water Licences

Water Licence Area:

AFETUW Delineated Watershed

Watershed Layer

Hydrometric Station Watersheds

Alberta Major Watersheds

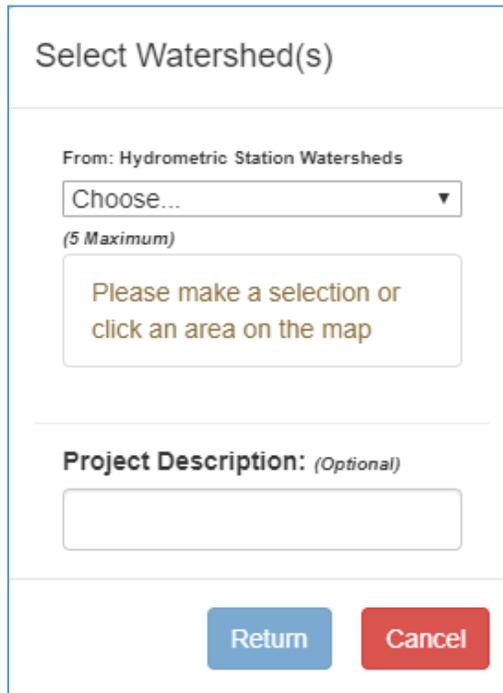
Hydrometric Station Watersheds

Water Management Areas

Water Survey of Canada Sub-Basins

Next Reset Close

To continue, click the **“Next”** button. The **“Select Watershed(s)”** window is displayed:



Select Watershed(s)

From: Hydrometric Station Watersheds

Choose...

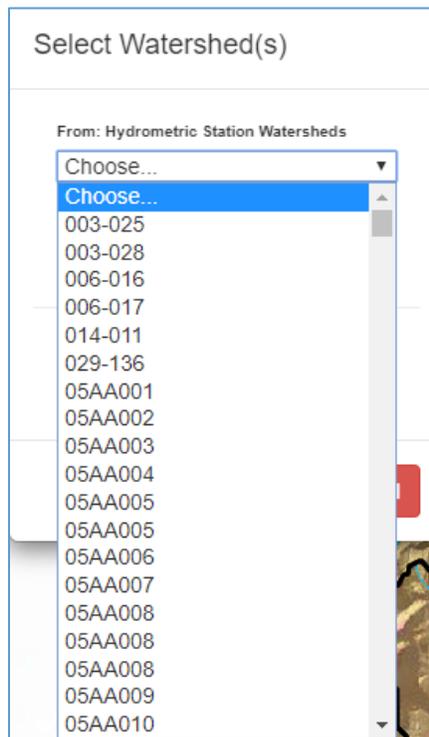
(5 Maximum)

Please make a selection or click an area on the map

Project Description: (Optional)

Return Cancel

In the **“Select Watershed(s)”** window, click the pulldown icon  to view a list of Hydrometric Station Watersheds:



Select Watershed(s)

From: Hydrometric Station Watersheds

Choose...

Choose...

003-025

003-028

006-016

006-017

014-011

029-136

05AA001

05AA002

05AA003

05AA004

05AA005

05AA005

05AA006

05AA007

05AA008

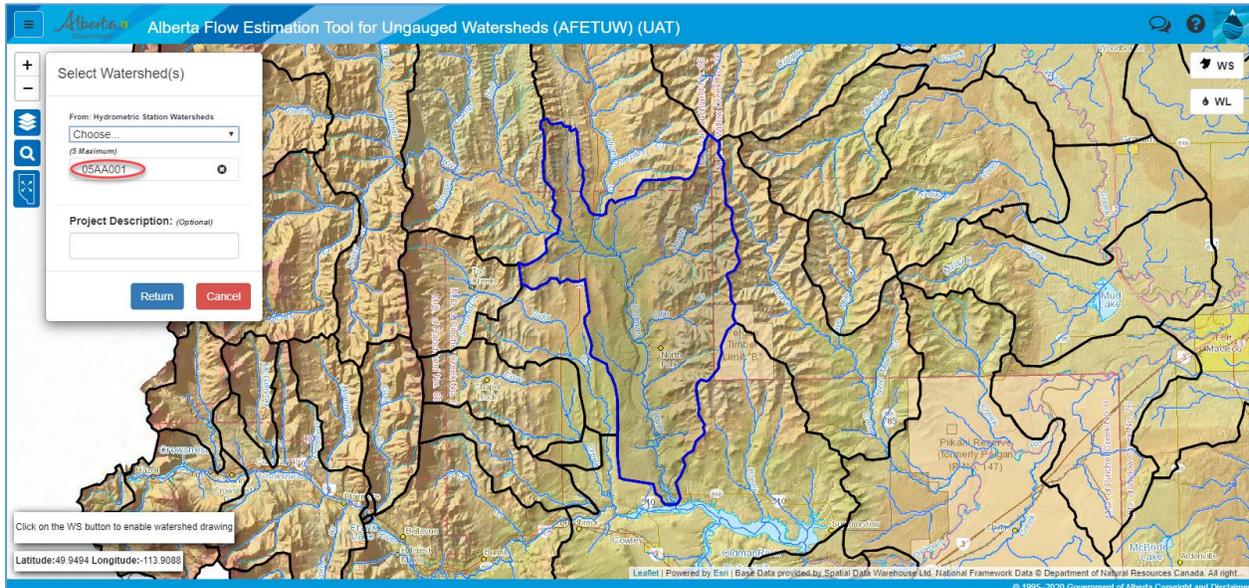
05AA008

05AA008

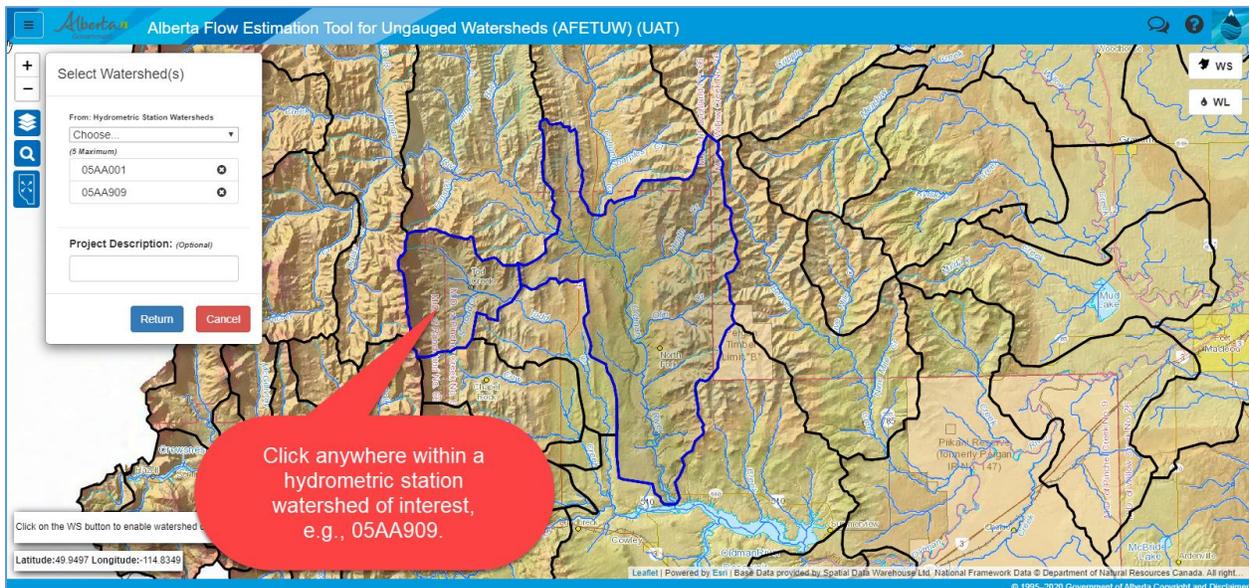
05AA009

05AA010

Choose one of the available hydrometric station from the list, e.g., 05AA001. The selected hydrometric station will be shown in the “*Select Watershed (s)*” window and its boundary in dark blue will be displayed in the map view.

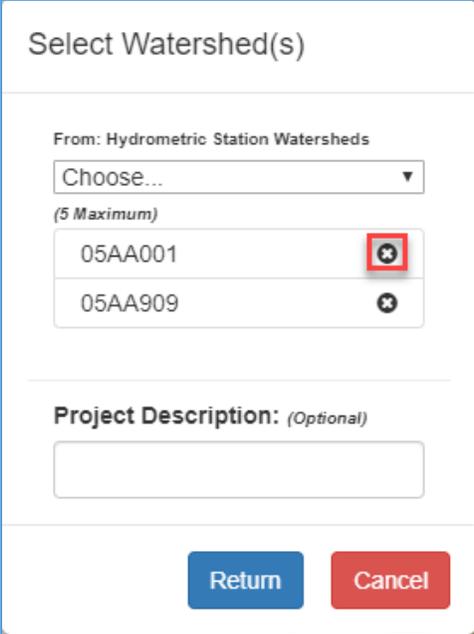


Alternatively, a watershed may be selected by clicking a point on the map located within a hydrometric station watershed of interest, e.g., 05AA909:



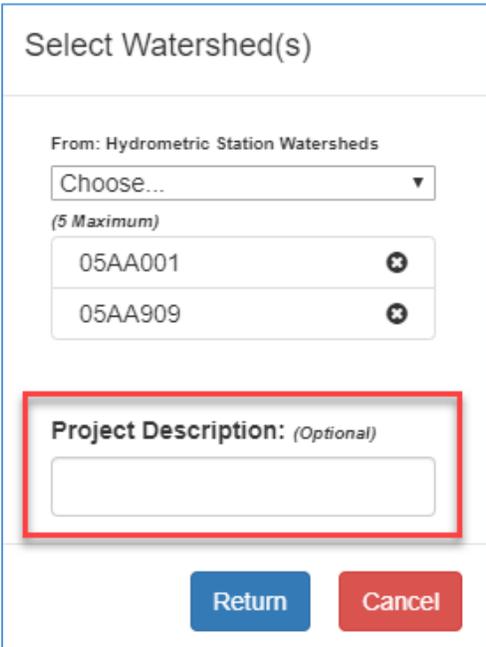
A maximum of 5 hydrometric station watersheds may be selected for a water licence query at the same time.

To remove a selected hydrometric station watershed, click the button  in the “*Select Watersheds*” window.



The screenshot shows the "Select Watershed(s)" window. At the top, it says "From: Hydrometric Station Watersheds" with a dropdown menu set to "Choose...". Below this, it indicates "(5 Maximum)". There are two rows of selected watersheds: "05AA001" and "05AA909". Each row has a small square button with a white 'x' on a red background to its right. The button for "05AA001" is highlighted with a red square. Below the watershed list is a text input field labeled "Project Description: (Optional)". At the bottom, there are two buttons: "Return" (blue) and "Cancel" (red).

Optionally, a project description may be entered into the “*Project Description (Optional)*” field in the “*Select Watershed(s)*” window.

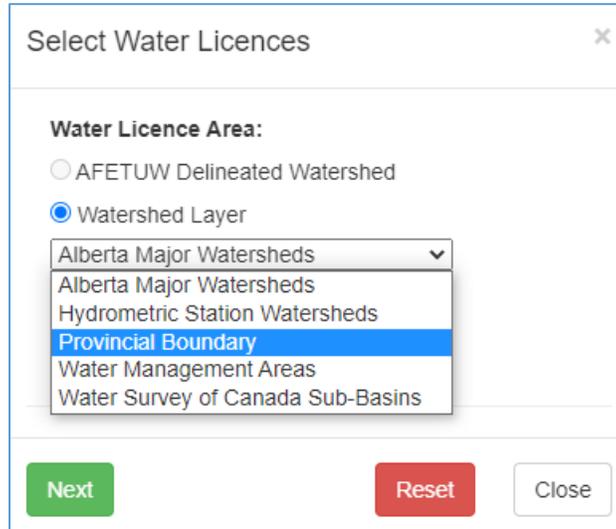


This screenshot is identical to the previous one, but the "Project Description: (Optional)" text input field is highlighted with a red rectangular border.

After the selection of hydrometric station watershed(s), press the “**Return**” button to continue or press “**Cancel**” button to cancel the process.

Provincial Boundary

Select “Provincial Boundary” for “Watershed Layer” in the “Select Water Licences” window.



Select Water Licences

Water Licence Area:

AFETUW Delineated Watershed

Watershed Layer

Alberta Major Watersheds

Alberta Major Watersheds

Hydrometric Station Watersheds

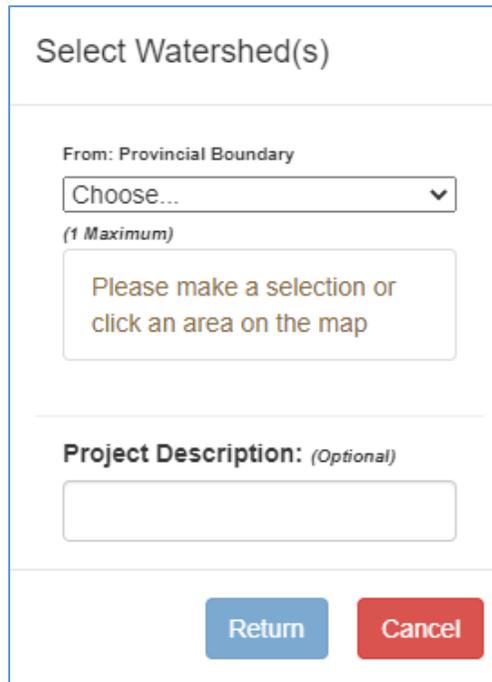
Provincial Boundary

Water Management Areas

Water Survey of Canada Sub-Basins

Next Reset Close

To continue, click the “Next” button. The “Select Watershed(s)” window is displayed:



Select Watershed(s)

From: Provincial Boundary

Choose...

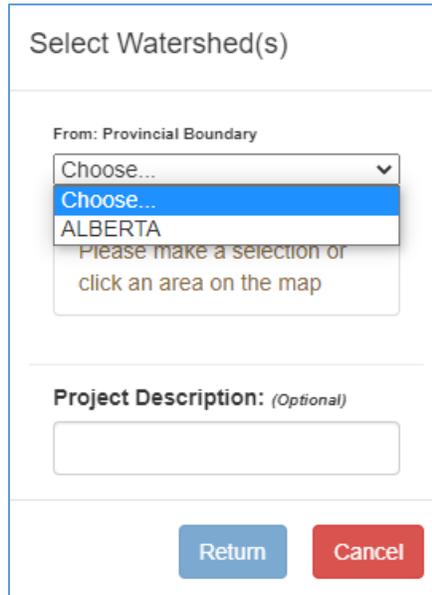
(1 Maximum)

Please make a selection or
click an area on the map

Project Description: (Optional)

Return Cancel

In the “*Select Watershed(s)*” window, click the pulldown icon  to view a list of available layer(s):



Select Watershed(s)

From: Provincial Boundary

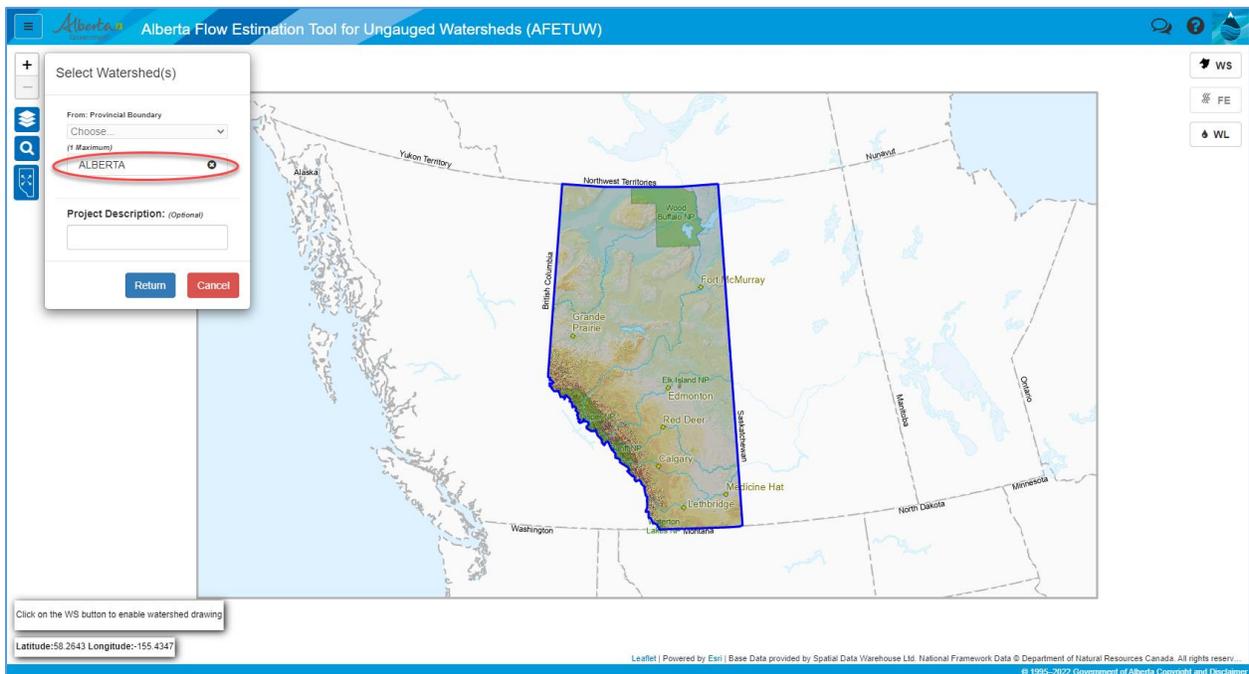
Choose...
Choose...
ALBERTA

Please make a selection or
click an area on the map

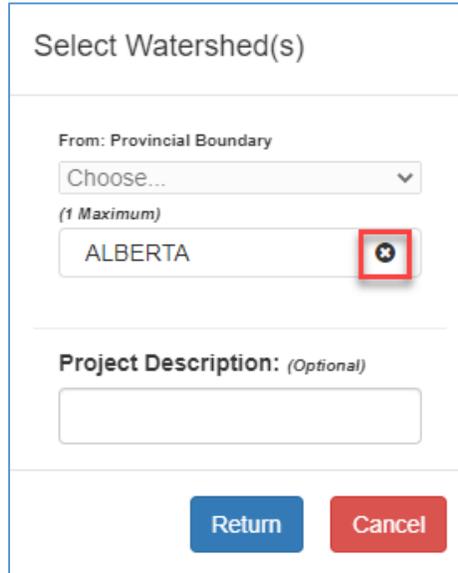
Project Description: (Optional)

Return Cancel

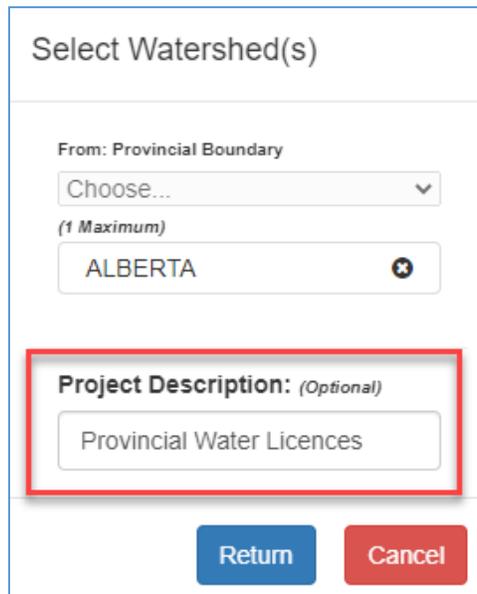
Choose “ALBERTA” from the list. The selected “ALBERTA” layer will be shown in the “*Select Watershed(s)*” window and its boundary in dark blue will be displayed in the map view.



To remove the selected “ALBERTA” layer, click the button  in the “Select Watersheds” window.



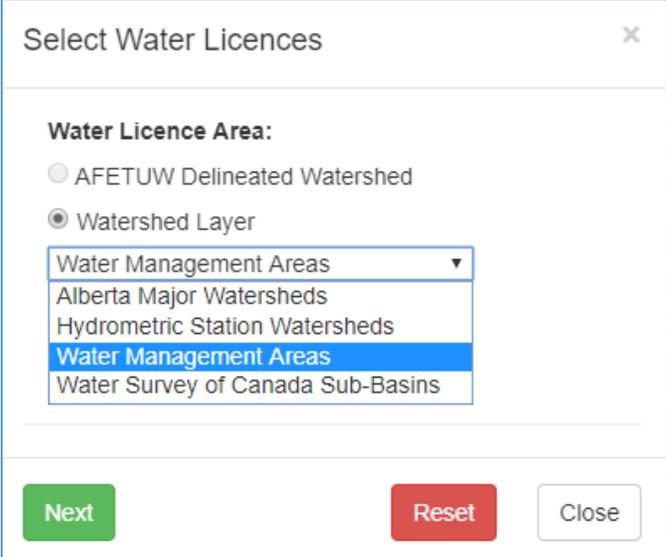
Optionally, a project description may be entered into the “Project Description (Optional)” field in the “Select Watershed(s)” window.



After selecting a water management area(s), press the “Return” button to continue or press “Cancel” button to cancel the process.

Water Management Areas

Select “*Water Management Areas*” for “*Watershed Layer*” in the “*Select Water Licences*” window.



Select Water Licences

Water Licence Area:

AFETUW Delineated Watershed

Watershed Layer

Water Management Areas ▼

Alberta Major Watersheds

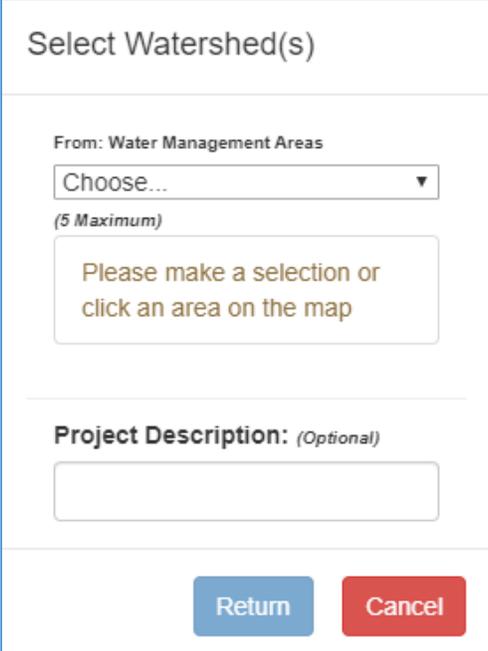
Hydrometric Station Watersheds

Water Management Areas

Water Survey of Canada Sub-Basins

Next Reset Close

To continue, click the “**Next**” button. The “*Select Watershed(s)*” window is displayed:



Select Watershed(s)

From: Water Management Areas

Choose... ▼

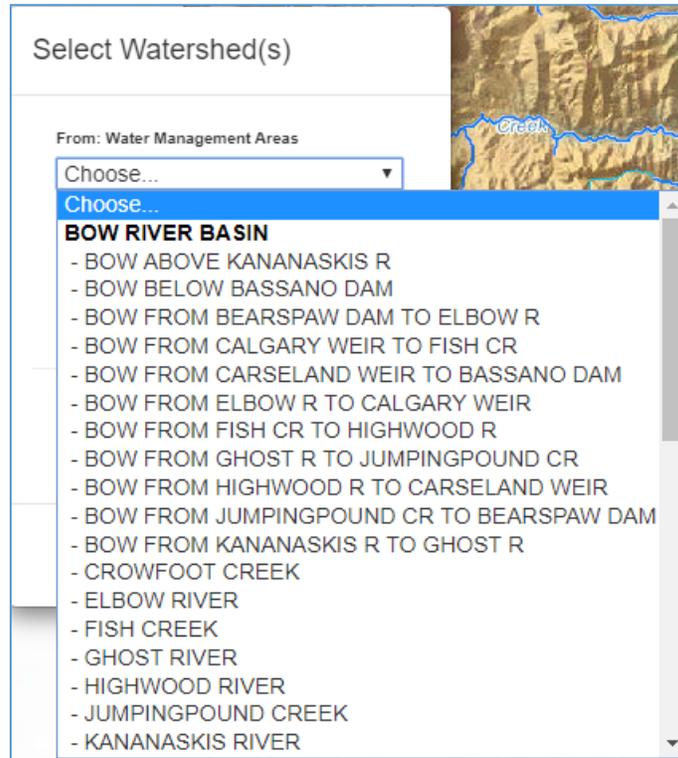
(5 Maximum)

Please make a selection or
click an area on the map

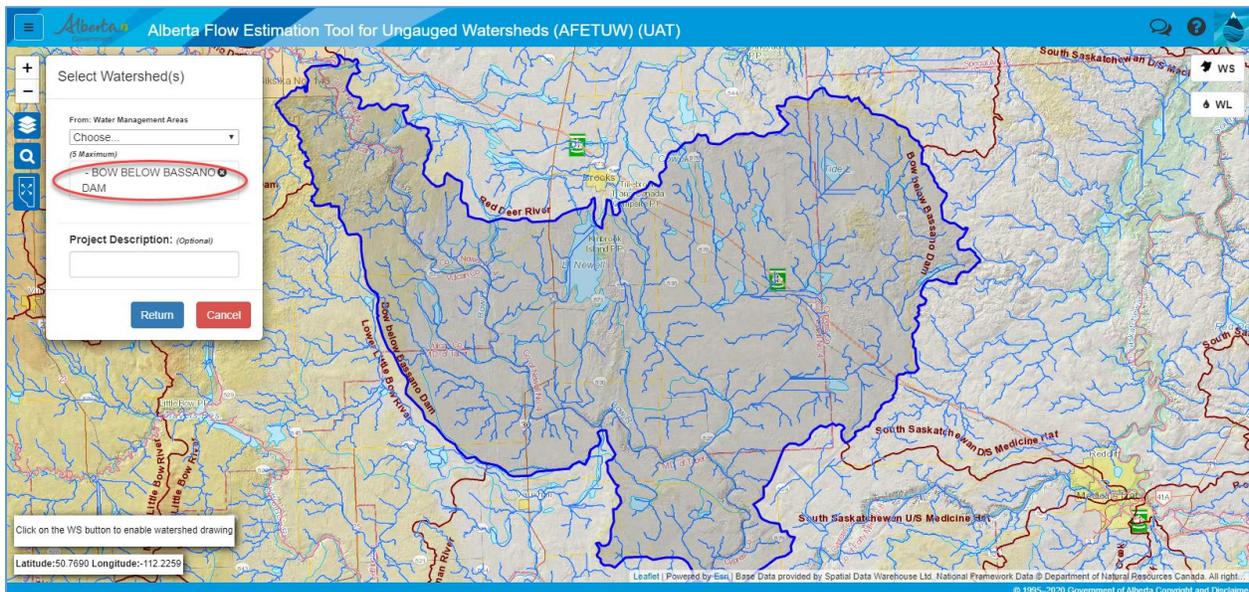
Project Description: (Optional)

Return Cancel

In the “*Select Watershed(s)*” window, click the pulldown icon  to view a list of *Water Management Areas*:



Choose one of available water management areas from the list, e.g., Bow BELOW BASSANO DAM. The selected water management area will be shown in the “*Select Watershed (s)*” window and its boundary in dark blue will be displayed in the map view.

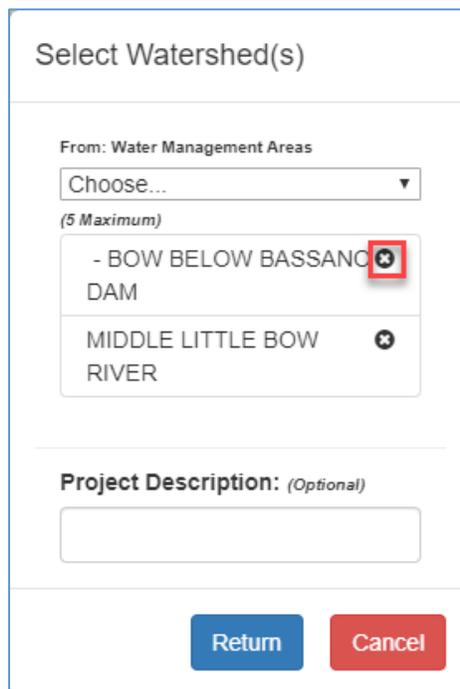


Alternatively, a water management area may be selected spatially on the map view. Click a point located within a water management area of interest, e.g., MIDDLE LITTLE BOW RIVER:

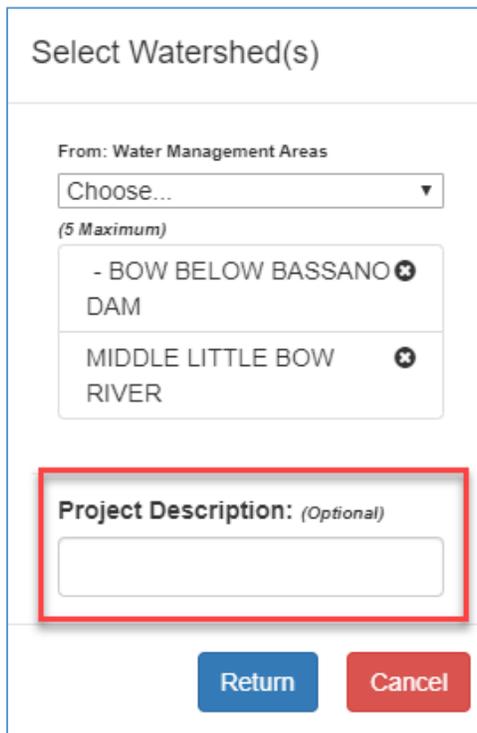


A maximum of 5 water management areas may be selected for water licences query at the same time.

To remove a selected water management area, click the button  in the "Select Watersheds" window.



Optionally, a project description may be entered into the “*Project Description (Optional)*” field in the “*Select Watershed(s)*” window.



Select Watershed(s)

From: Water Management Areas

Choose... ▼

(5 Maximum)

- BOW BELOW BASSANO DAM
- MIDDLE LITTLE BOW RIVER

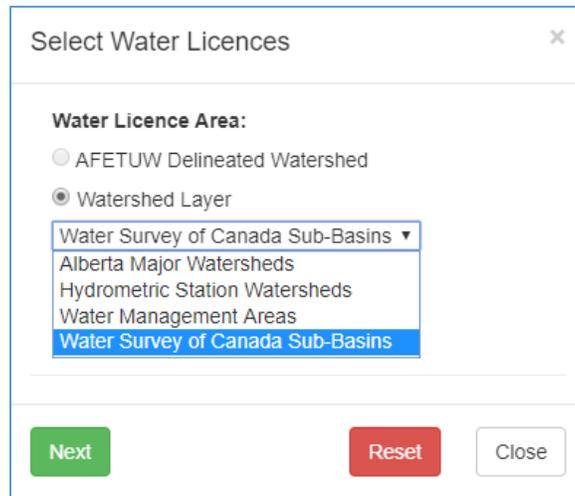
Project Description: (Optional)

Return Cancel

After selecting a water management area(s), press the “**Return**” button to continue or press “**Cancel**” button to cancel the process.

Water Survey of Canada Sub-Basins

Select “*Water Survey of Canada Sub-Basins*” for “*Watershed Layer*” in the “*Select Water Licences*” window.



Select Water Licences

Water Licence Area:

AFETUW Delineated Watershed

Watershed Layer

Water Survey of Canada Sub-Basins ▾

Alberta Major Watersheds

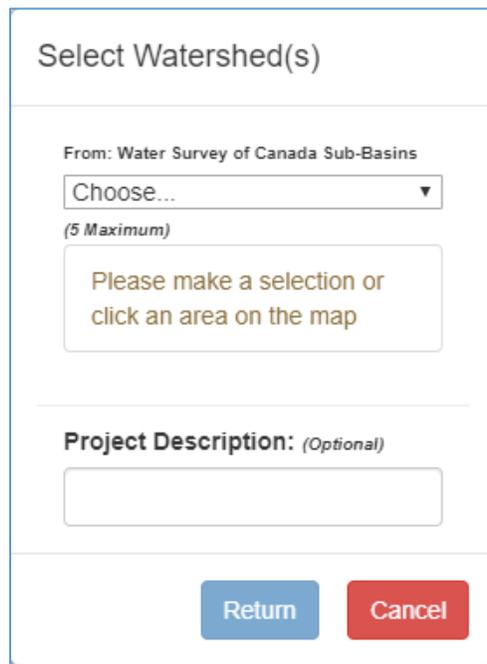
Hydrometric Station Watersheds

Water Management Areas

Water Survey of Canada Sub-Basins

Next Reset Close

To continue, click the “**Next**” button. The “*Select Watershed(s)*” window is displayed:



Select Watershed(s)

From: Water Survey of Canada Sub-Basins

Choose... ▾

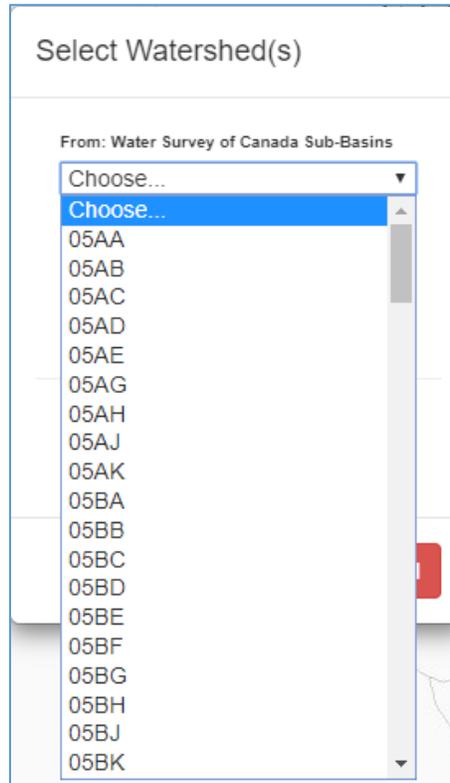
(5 Maximum)

Please make a selection or
click an area on the map

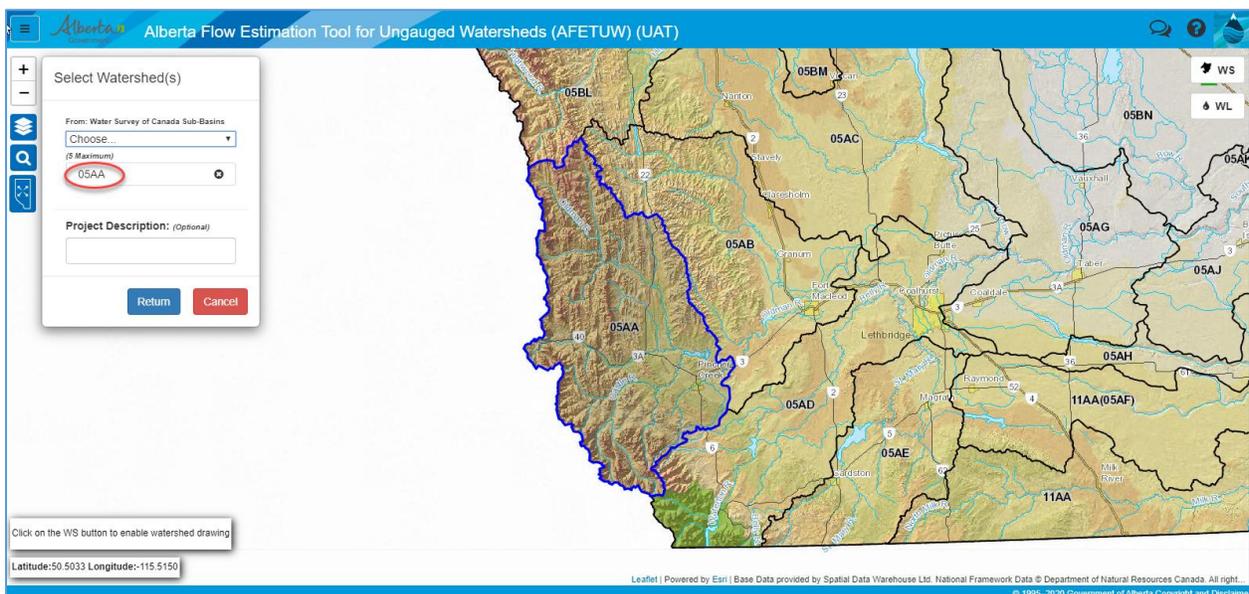
Project Description: (Optional)

Return Cancel

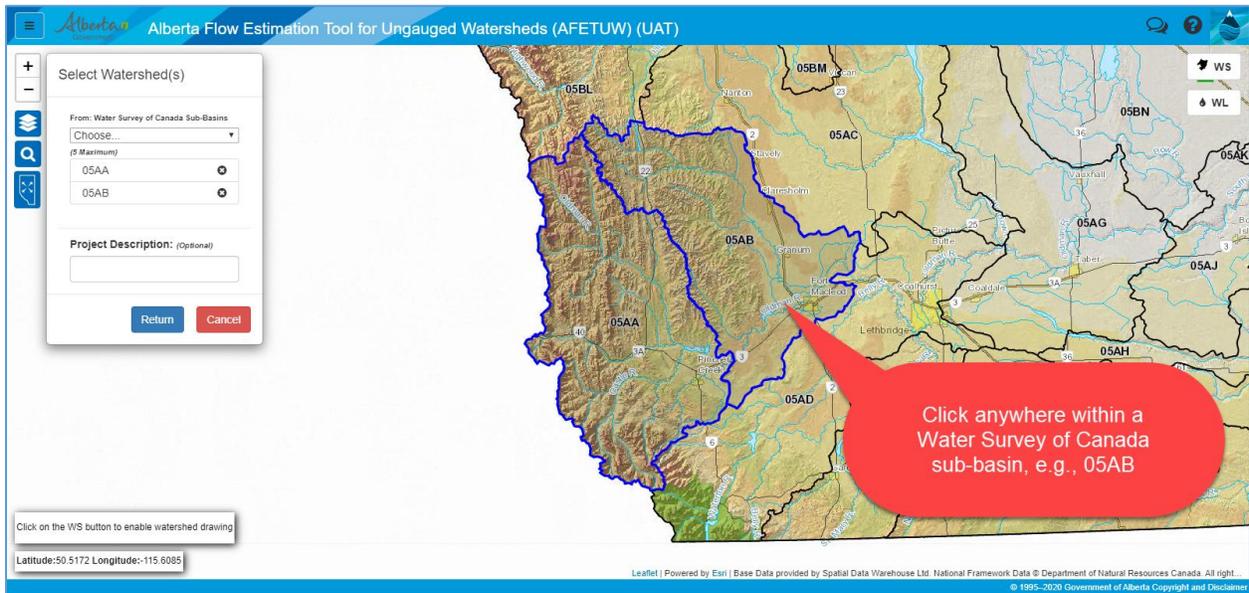
In the “*Select Watershed(s)*” window, click the pulldown icon  to view a list of *Water Survey of Canada Sub-Basins*:



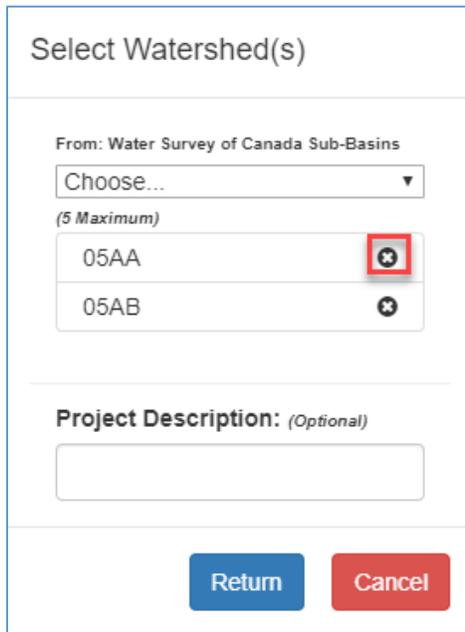
Choose one of the available Water Survey of Canada sub-basins from the list, e.g., 05AA. The selected Water Survey of Canada sub-basin is shown in the “*Select Watershed (s)*” window and its boundary in dark blue will be displayed in the map view.



Alternatively, a Water Survey of Canada sub-basin may be selected spatially on the map view. Click a point located within a sub-basin of interest, e.g., 05AB.



A maximum of 5 Water Survey of Canada sub-basins may be selected for water licences query at the same time. To remove a Water Survey of Canada sub-basin, click the button  in the “Select Watersheds” window.



Optionally, a project description may be entered into the “*Project Description (Optional)*” field in the “*Select Watershed(s)*” window.

Select Watershed(s)

From: Water Survey of Canada Sub-Basins

Choose...

(5 Maximum)

05AA

05AB

Project Description: (Optional)

Return Cancel

After selecting a Water Survey of Canada sub-basin(s), press the “**Return**” button to continue or press “**Cancel**” button to cancel the process.

Draw Polygon

Select the “*Draw Polygon*” option in the following “*Select Water Licences*” window.

Select Water Licences

Water Licence Area:

AFETUW Delineated Watershed

Watershed Layer

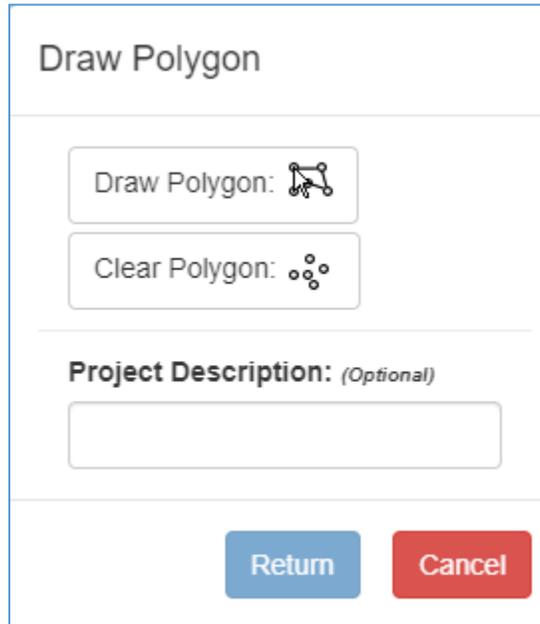
Draw Polygon

Import Polygon

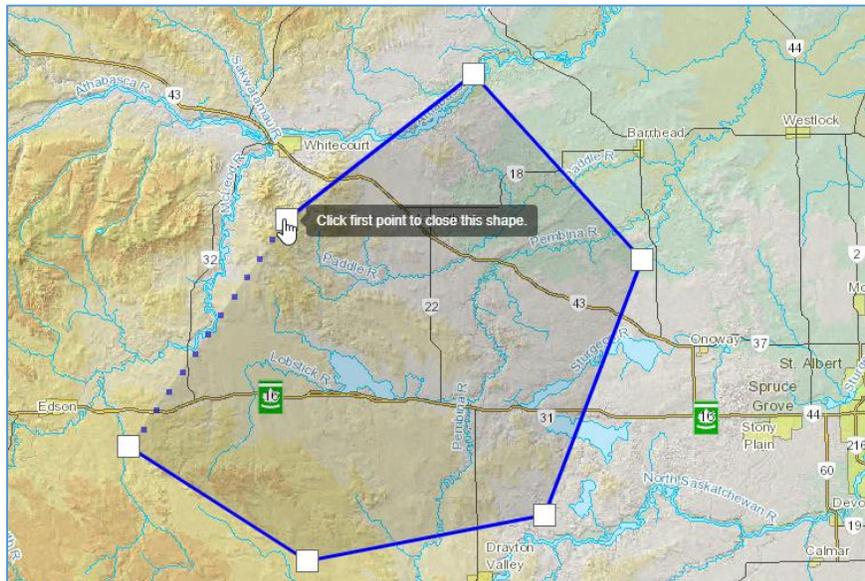
Use Gross Drainage Area (Default)

Next Reset Close

Click the “**Next**” button to continue. The “*Draw Polygon*” window is displayed:

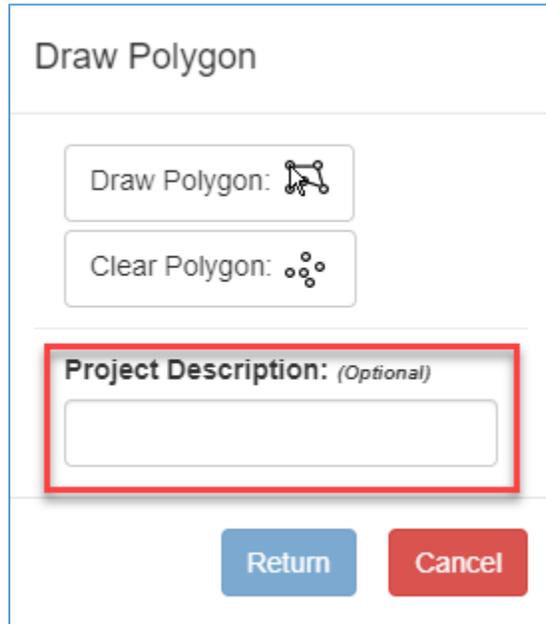


To manually draw an area on the map, click the “**Draw Polygon**” button. The mouse cursor will be changed to a crosshairs . Position the crosshairs on the map view area and draw the polygon by clicking on each point. To close the polygon, simply click the first point of the polygon.



To remove the polygon drawn, click the **“Clear Polygon”** button.

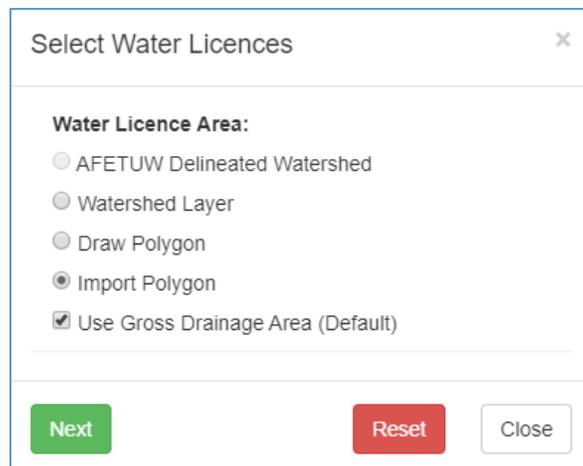
Optionally, a project description may be entered into the **“Project Description (Optional)”** field in the **“Draw Polygon”** window.



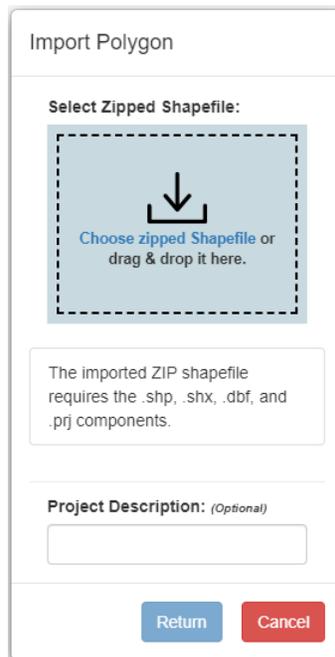
After drawing a polygon, press the **“Return”** button to continue or press **“Cancel”** button to cancel the process.

Import Polygon

Select the **“Import Polygon”** option in the following **“Select Water Licences”** window.



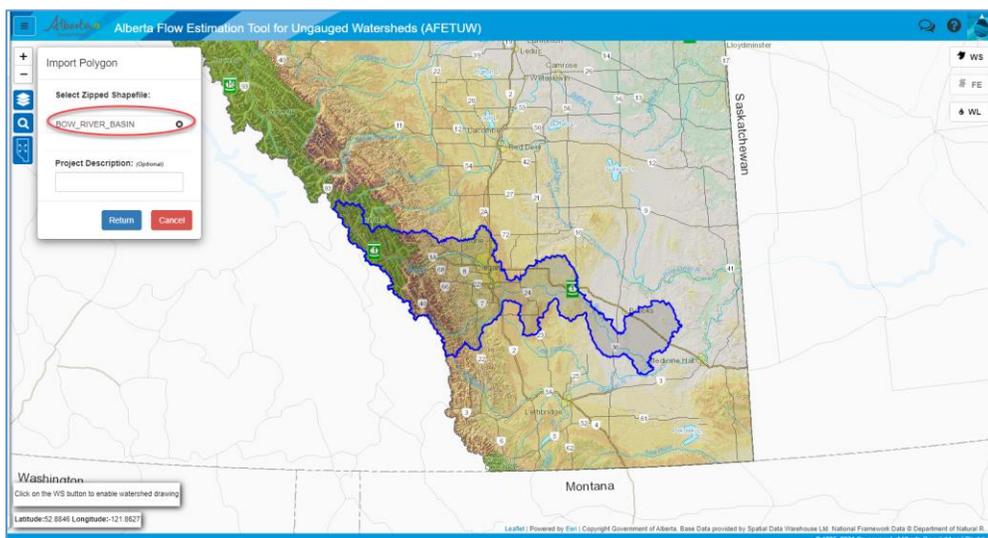
Click the “**Next**” button to display the “*Import Polygon*” window.



There are two methods to import a polygon:

1. Click “*Choose Zipped Shapefile*” in the “*Import Polygon*” window and select a zipped polygon shapefile to import.
2. Drag & drop a zipped polygon shapefile onto the light blue rectangle area in the “*Import Polygon*” window to import.

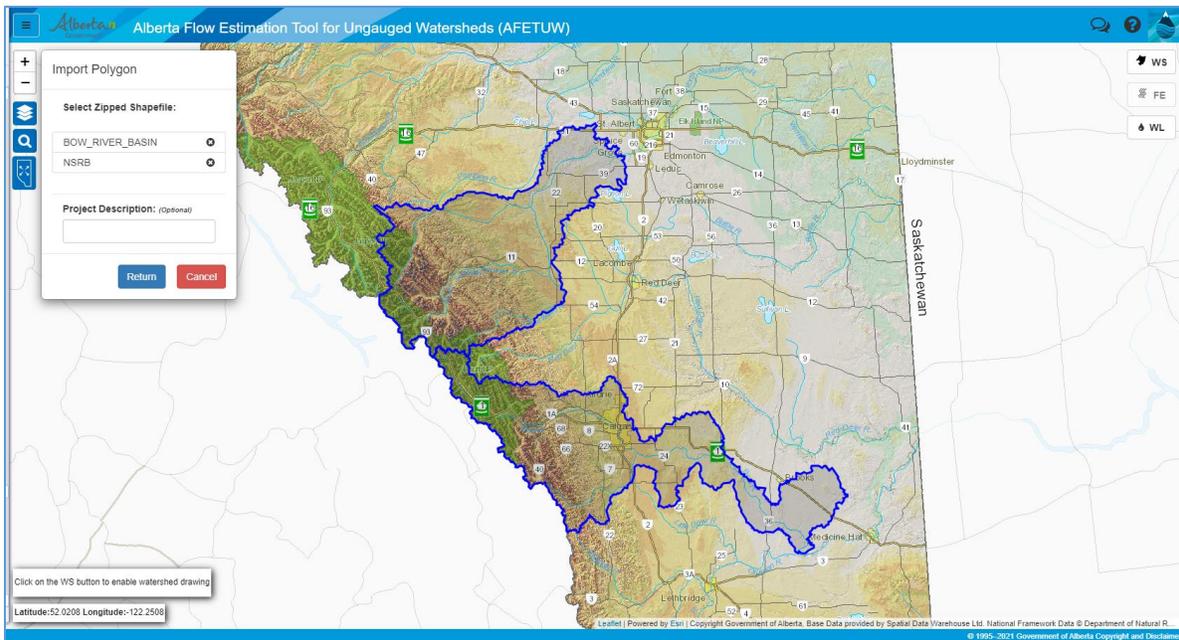
After a polygon shapefile is imported, the shapefile name will be shown in the “*Import Polygon*” window and its boundary will be shown in the map view outlined in dark-blue.



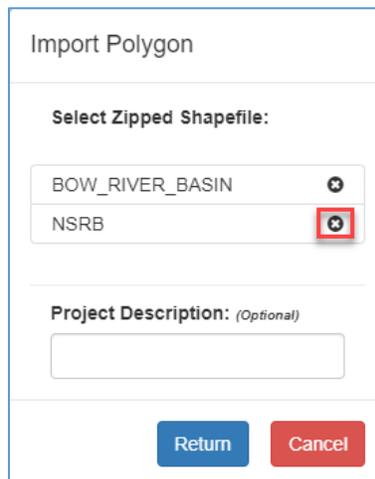


To import a zipped polygon shapefile, ensure that the imported ZIP shapefile contains at least the .shp, .shx, .dbf, and .prj components. Please also note AFETUW imported shapefiles must be compressed using the standard (.ZIP) format and will not work with 7-Zip (.7z) compression.

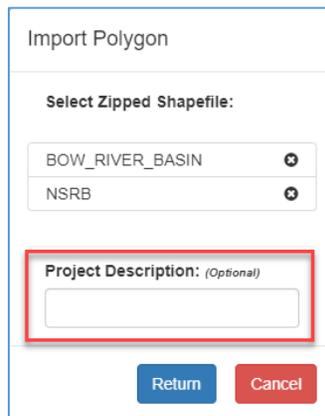
Multiple polygon shapefiles may be imported to query water licences for the combined area at the same time.



To remove an imported shapefile, click the button  in the "Import Polygon" window.



The “Import Polygon” window has a project description option which may be entered in the “*Project Description (Optional)*” field.



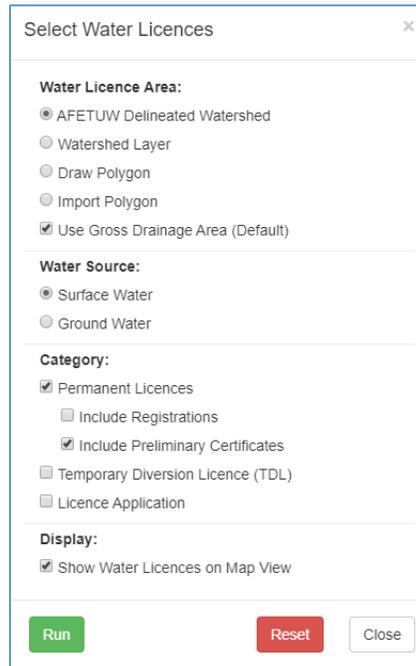
The screenshot shows a window titled "Import Polygon". Inside the window, there is a section labeled "Select Zipped Shapefile:" containing two list items: "BOW_RIVER_BASIN" and "NSRB", each with a small 'x' icon to its right. Below this list is a text input field labeled "Project Description: (Optional)", which is highlighted with a red rectangular border. At the bottom of the window, there are two buttons: a blue "Return" button and a red "Cancel" button.

After importing a polygon shapefile(s), press the “**Return**” button to continue or press “**Cancel**” button to cancel the process.

Results of Water Licences Query

After a boundary is selected for water licences query, the “*Select Water Licences*” window is displayed. In this window, a number of query criteria may be specified, including:

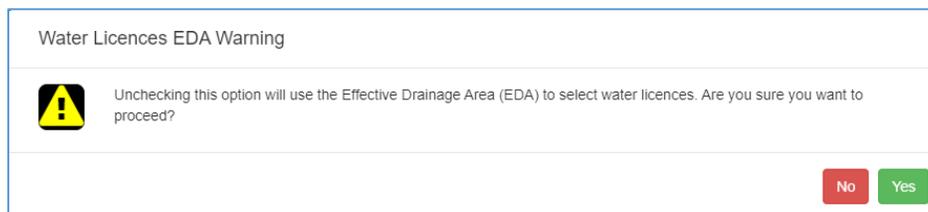
- Water Source: Surface Water or Ground Water
- Category: Permanent Licences, Temporary Diversion Licences, Licence Application, etc.



To spatially view the results of water licences query on the map view, select the “*Show Water Licences on Map View*” checkbox.



Note that the “*Use Gross Drainage Area (Default)*” checkbox in the “*Select Water Licences*” window is checked by default to query water licences in the Gross Drainage Area (GDA). If this option is unchecked, a warning message displays requesting confirmation to query water licences in the Effective Drainage Area (EDA) instead.



Click “**No**” to use the default Gross Drainage Area for a water licence query. Otherwise, click “**Yes**” to continue with an Effective Drainage Area water licence query instead.

In the “*Select Water Licences*” window:

Click the “**Reset**” button to reset the current options to the original default settings.

Click the “**Close**” button to close the “*Select Water Licences*” window.

Click the “**Run**” button to execute a water licence query based on the selected criteria.

Results of Water Licences Viewer module are presented in two views, i.e.,:

- tabular view and
- spatial view if the “*Show Water Licences on Map View*” checkbox in the “*Select Water Licences*” window is checked.



After running a water licence query, select “**Open Report**” to open the water licence tabular view.

The screenshot shows the "Select Water Licences" dialog box with the following settings:

- Water Licence Area:**
 - AFETUW Delineated Watershed
 - Watershed Layer
 - Draw Polygon
 - Import Polygon
 - Use Gross Drainage Area (Default)
- Water Source:**
 - Surface Water
 - Ground Water
- Category:**
 - Permanent Licences
 - Include Registrations
 - Include Preliminary Certificates
 - Temporary Diversion Licence (TDL)
 - Licence Application
- Display:**
 - Show Water Licences on Map View

At the bottom, there are four buttons: "Run" (green), "Open Report" (blue, circled in red), "Reset" (red), and "Close" (grey).

Tabular View

After running a water licence query, the water licence tabular view lists the water licence query results within the delineated watershed or a specified boundary.



A different water licence query may be run any time by clicking the AFETUW Water Licence  button and then changing the query criteria in the “*Select Water Licences*” window. After running the new query, the water licence tabular view will be updated for the same delineated watershed or boundary specified.

Below describes each of the components numbered in the water licences tabular view:

1 Summary of water licence volumes.

Licence Volume ³	Losses	Return Flow
0	0	0
4,930	3,700	0
9,870	2,470	0
14,800	14,800	0
86,368	0	0
24,423	0	0
1,240	620	0
3,700	0	0
0	0	0
25,572,902.3 (m³/year)	550,894.7 (m³/year)	10,456,505.48 ...

2 show or hide notes in the bottom of the table which explain some terms related to water licences.

Licence Report: Surface Water, Permanent Licences including (Preliminary Certificates)

Export to Excel Export to TXT Elbow River Number of Records = 104

Approval Id	Priority ¹	Licensee	Source ²	Effective Date	Expiry Date	Licence Volume ³	Losses	Return Flow	C
31491	19791004010	HENKER, HAR...	Bragg Creek	1980-08-15		0	0	0	0
34624	19740307001	ROCKY VIEW ...	Tributary to Spri...	1986-09-15		9,870	2,470	0	7
28318	19890403003	ROCKY VIEW ...	Tributary to Elb...	1991-11-04		14,800	14,800	0	0
393449	19741024001	REDSTONE C...	Lott Creek	2018-08-23	2028-08-22	86,368	0	0	8
392076	19880819004	REDSTONE C...	Tributary to Cull...	2018-08-15	2043-08-14	24,423	0	0	2
31534	19800506002	HIGHLAND ST...	Tributary to Lott...	1980-07-10		1,240	620	0	6
32672	19780706001	HENKER, HAR...	Bragg Creek	1980-08-19		3,700	0	0	3
331300	20090817002	ROCKY VIEW ...	Elbow River	2014-02-04	2039-02-03	0	0	0	0
331300	19740307001	ROCKY VIEW ...	Elbow River	2014-02-04	2039-02-03	86,434	0	0	8
						25,556,871.42 (m ³ /ye...	538,557.3 (m ³ /year)	10,456,505.48 ...	14.4

Show/Hide Notes

(1) Priority - first in time first in right, based on the date of a complete application (YYYY-MM-DD-00X); e.g. 1958-11-03-001 = 1958(year), 11(month), 03(day), 001(database generated)
 (2) Source - Refer to the licence document for the approved source
 (3) Licence - maximum annual quantity that may be diverted; units are in cubic metres
 (4) Diversion Rate - maximum instantaneous diversion rate; units for surface water diversion rate are cubic metres/second; units for an aquifer diversion rate are cubic metres/day
 (5) Purpose - purposes are grouped into a classification system within a database. Refer to the licence document for approved purpose

3 The *Approval Id* links to digitized licence documents in PDF format. If a digitized licence document is found a clickable document link  and document summary will be displayed at the bottom of the table. Click the document link to open the licence document in PDF format.

Licence Report: Surface Water, Permanent Licences including (Preliminary Certificates)

Export to Excel Export to TXT Elbow River Number of Records = 107

Approval Id	Priority ¹	Licensee	Source ²	Effective Date	Expiry Date	Licence Volume ³	Losses	Return Flow	C
31491	19791004010	HENKER, HAR...	Bragg Creek	1980-08-15		0	0	0	0
38511	19630725005	MORGAN, GE...	Tributary to Elb...	1967-10-05		4,930	3,700	0	1
34624	19740307001	ROCKY VIEW ...	Tributary to Spri...	1986-09-15		9,870	2,470	0	7
28318	19890403003	ROCKY VIEW ...	Tributary to Elb...	1991-11-04		14,800	14,800	0	0
393449	19741024001	REDSTONE C...	Lott Creek	2018-08-23	2028-08-22	86,368	0	0	8
392076	19880819004	REDSTONE C...	Tributary to Cull...	2018-08-15	2043-08-14	24,423	0	0	2
31534	19800506002	HIGHLAND ST...	Tributary to Lott...	1980-07-10		1,240	620	0	6
32672	19780706001	HENKER, HAR...	Bragg Creek	1980-08-19		3,700	0	0	3
331300	20090817002	ROCKY VIEW ...	Elbow River	2014-02-04	2039-02-03	0	0	0	0
						25,572,902.3 (m ³ /year)	550,894.7 (m ³ /year)	10,456,505.48 ...	14.4

1 Result(s)

 Document 00031491-00-00 HENKER, WR, 19874 is held by Harold Henker, under the provisions of the *Water Resources Act*. This Licence is currently issued as of Aug. 15, 1980 and does not expire.

Click here to open the licence document.

Alberta
ENVIRONMENT

LICENCE
to DIVERT AND USE WATER
Pursuant to Sections 11 and 35
THE WATER RESOURCES ACT

File No. 19874
Priority No. 1979-10-04-10

Purpose	Storage
Drainage Basin	Bow River
First Issued	1980 08 15

H.H. Henker
244 Superior Avenue, S.W.
Calgary, Alberta
T3C 2H9

HAVING COMPLIED with the applicable provisions of The Water Resources Act and the regulations thereunder and Interim Licence No. 10631, a copy of which is attached hereto and incorporated herein,

IS HEREBY GRANTED LICENCE to divert and use the quantities of water prescribed in the Interim Licence in accordance with and subject to all other applicable provisions of that Act and the regulations thereunder, and the terms and conditions attached hereto and incorporated herein, at locations described in the Interim Licence.

BY MEANS AND THROUGH works and undertakings described in the Interim Licence.

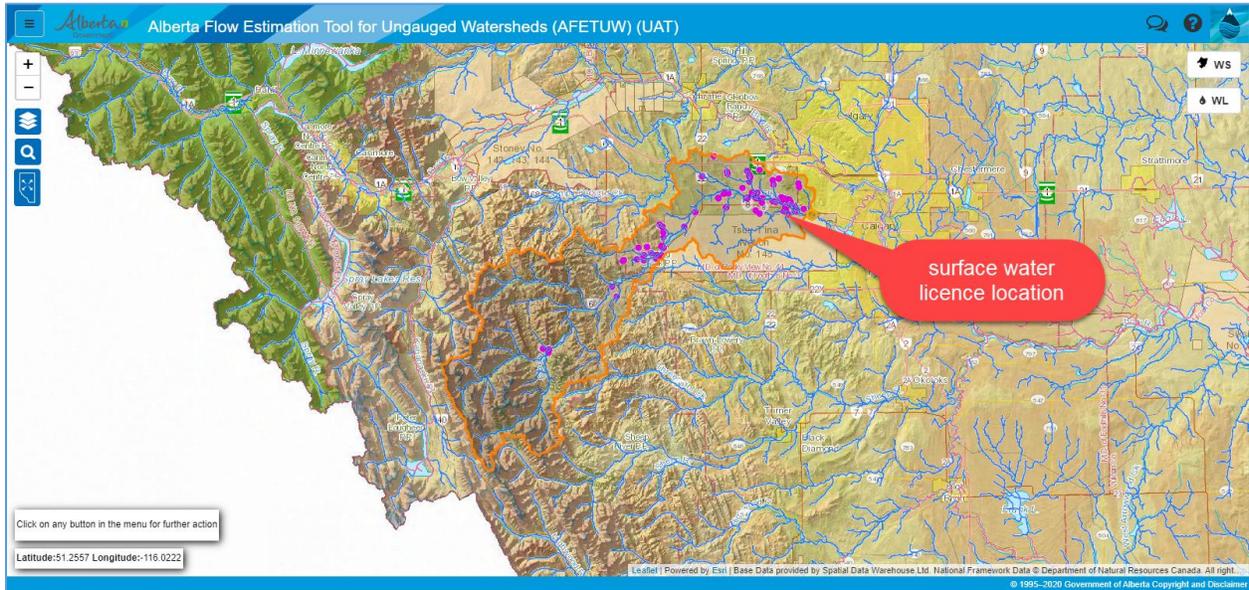
1980 08 15
Date

- 4 Licence information may be exported to an Excel spreadsheet by clicking the “**Export to Excel**” button.
- 5 Licence information may be exported to a text file by clicking the “**Export to TXT**” button.
- 6 The total number of water licence records based on the query criteria specified.
- 7  (Minimize) or  (maximize) the water licences table view.
- 8  Close the water licences table view.

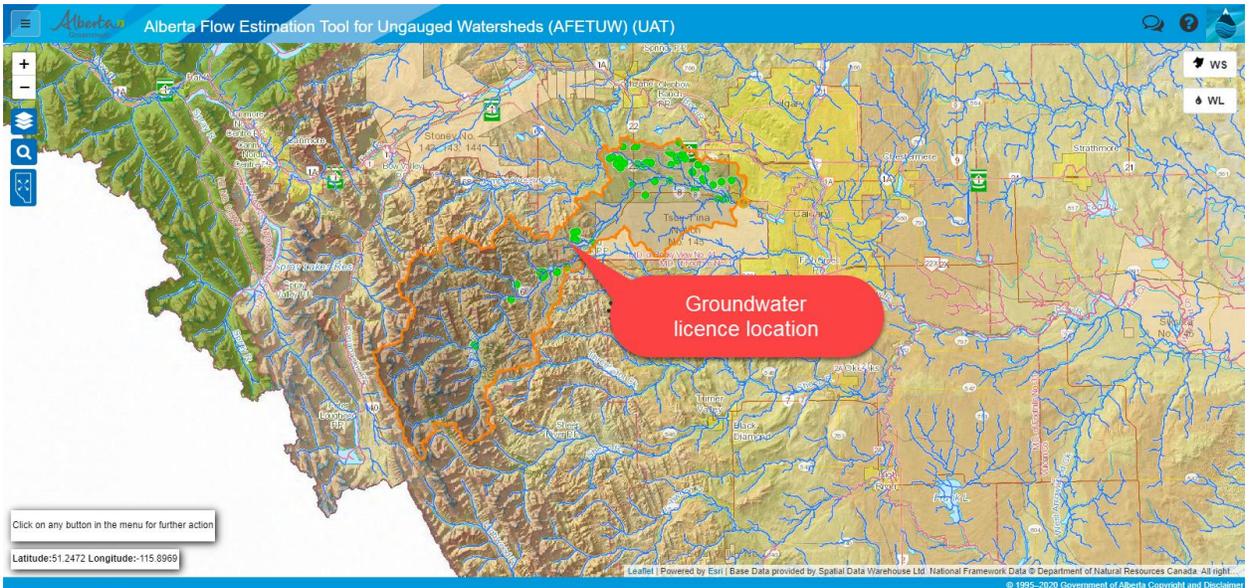
Spatial View

The spatial view of query results show the water licence locations as purple points for surface water or green points for ground water on the map view.

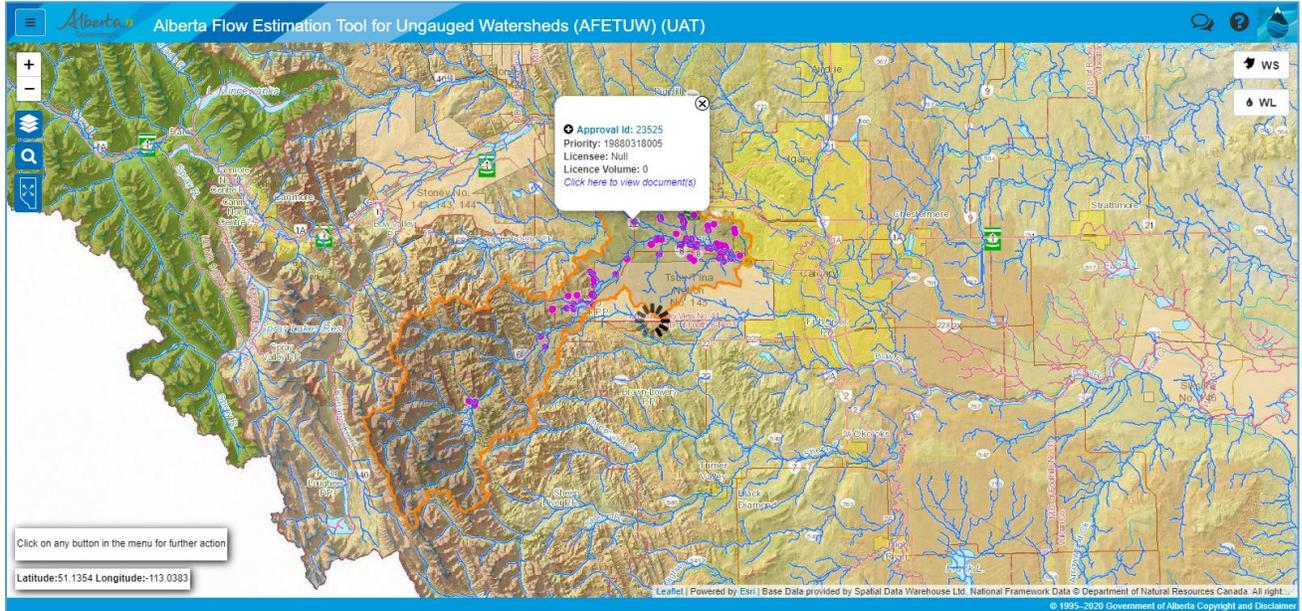
Surface water licence locations:



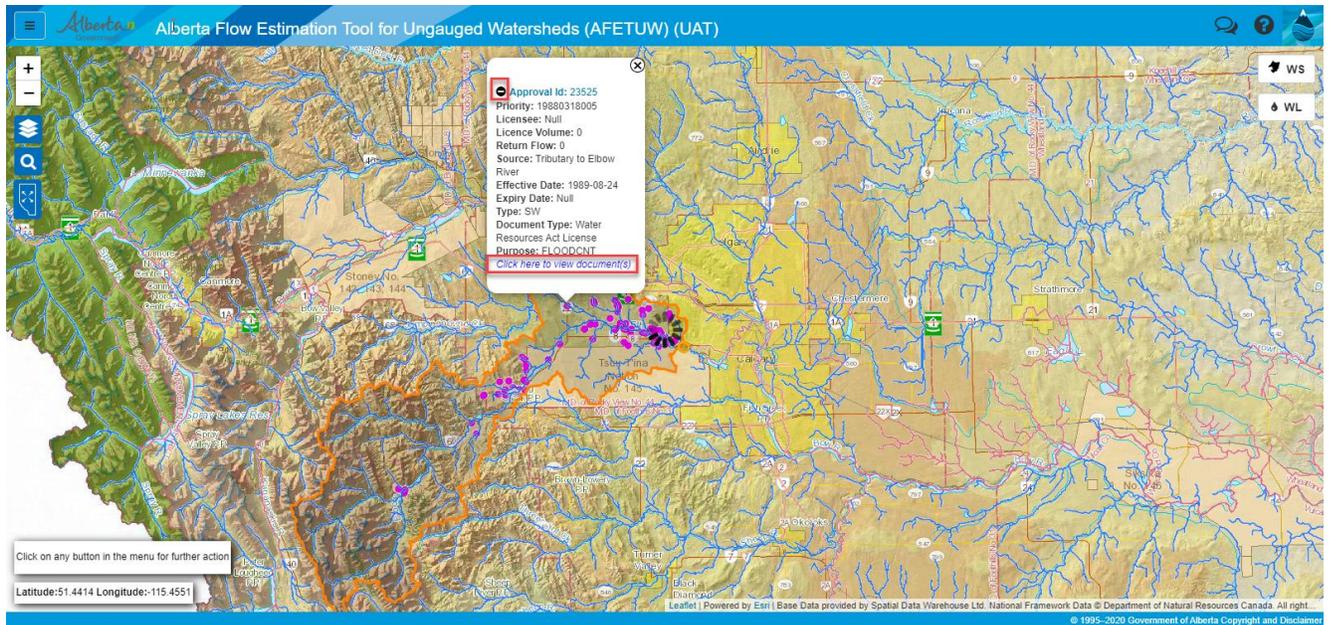
Ground water licence location:



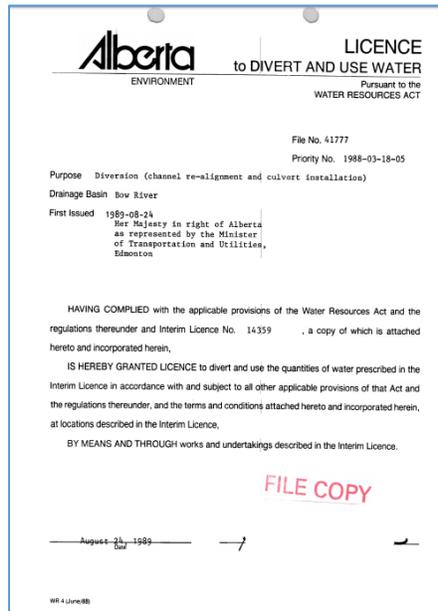
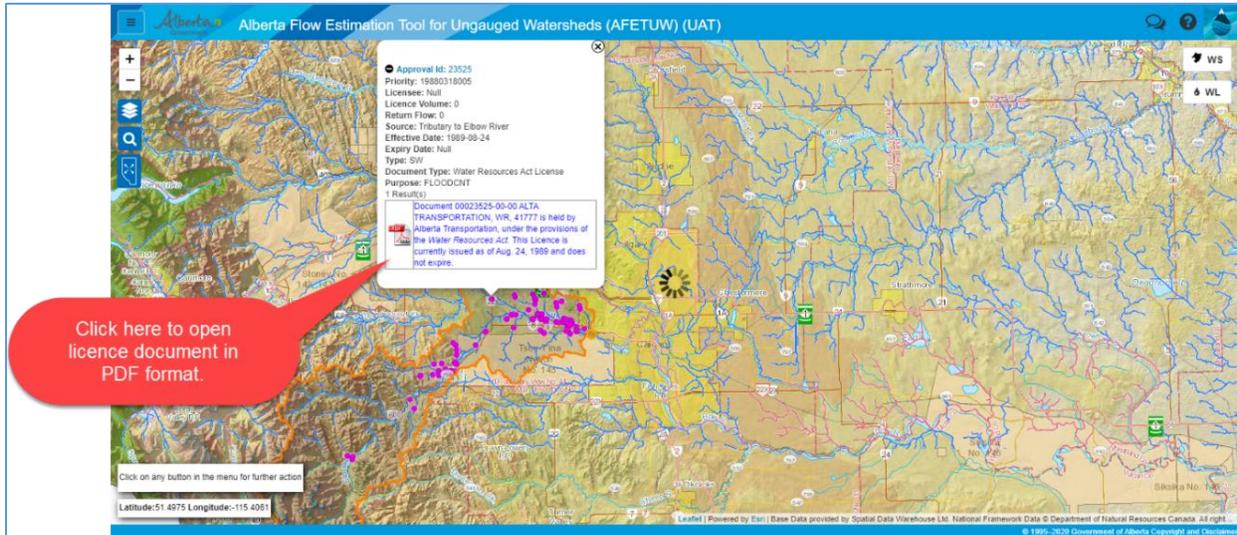
Click on a mapped point to see the licence information in a pop-up window:



Click  in the pop-up window to expand the window to view more water licence information.



Click the “[Click here to view document\(s\)](#)” in the pop-up window to link to digitized licence documents in PDF. If a digitized licence document is found, a clickable document link  and document summary information will be displayed at the bottom of the pop-up window. Click the document link to open the licence document in PDF format.



Appendix: AFETUW and ERV Water Licence Query Instructions

AFETUW Core Team
2025-05-14

OVERVIEW

The AFETUW Water Licence query function is currently disabled due to a persistent water licence database migration issue migrating AFETUW from the old EMS database into a new DRAS structure. Although AFETUW water licence query is currently disabled there is a new GoA ERV tool that may be used to query water licenses in Alberta at the website: <https://geospatial.alberta.ca/erv/>

The Environmental Records Viewer (ERV) provides somewhat similar water licence query function as AFETUW including selecting water licenses within a pre-defined layer such as the major watersheds in Alberta. One noted exception is ERV cannot delineate a watershed area from a point. In order to query water licenses within a user defined AFETUW watershed area, requires using both AFETUW and ERV at least for now this is the only option. This guide explains how to use ERV to obtain a water licence query for an AFETUW derived watershed.

INSTRUCTIONS

Although AFETUW water licence query is currently disabled, the following instructions provide an interim method that may be used to query water licence information in Alberta from an AFETUW derived watershed. This process is not as easy or straight forward as when AFETUW was working, but is currently the only method to derive water licence information for a user defined watershed area.

The process involves deriving a watershed in AFETUW, exporting the watershed area as a Shape File, then importing the Shape File into ERV and then use ERV to query water licenses within the AFETUW derived watershed.

To begin derive a watershed area in AFETUW (Fig 1) and select *Download Shape File* option. Save the file onto your computer into a temporary folder (Fig 2).

Extract the downloaded AFETUW watershed .ZIP files which contains a number of GIS files prefixed either *PourPointLayer* or *WatershedPolygonlayer* (Fig 3). Only the “WatershedPolygonlayer” prefixed filenames are of interest for ERV.

Copy all “WatershedPolygonLayer” prefixed files (Fig 4:1) into a new Zip file (Fig 4:2). The newly created ZIP file may be imported into ERV. Without this step ERV will not be able to properly import the exported AFETUW derived watershed.

From the [ERV website](#) *Water Act*, expand *Spatial Filter* (Fig 5:1), and *Select with geometry* (Fig 5:2), and *Upload shapefile* (Fig 5:3). Select the new Zip file which has just the “WatershedPolygonLayer” prefixed files (Fig 6). ERV will import the AFETUW watershed new ZIP file and draw it on the map view (Fig 7:1).

Select “Select” to process the water licence query (Fig 7:2). ERV will process the query and display the selected water licence records within the AFETUW derived watershed in a map view.

As of May 14, 2025, the ERV map view does not display the selected water licenses within the imported watershed accurately; a number of water licenses are charted outside the watershed boundary (Fig 8:1) however the query results are none-the-less accurate the problem has to do with the ERV mapping app is not working properly.

The default “Open Report” option (Fig 8:2) also does not work which should display the water licence query results in an on-line table format. For now select the drop-down and chose the *Extract to csv* option (Fig 8:3) and save the file onto your computer which may be opened in Excel.

Note that ERV extracts ALL ACTIVE water licence information in the AFETUW delineated watershed. That is ERV extracts Preliminary Certificates, Temporary Diversion Licenses, Term Licenses, etc.. ERV also includes Ground and Surface Water licenses together in the query results (Fig 9). Therefore use Excel to filter for the type of water licence information of interest.

FIGURE 1

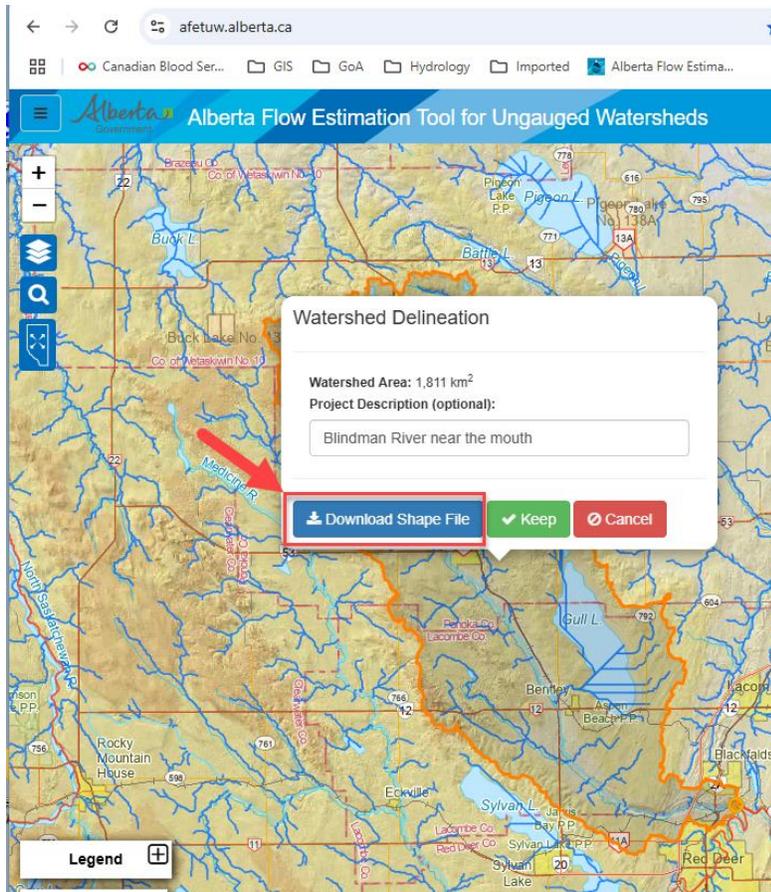


FIGURE 2

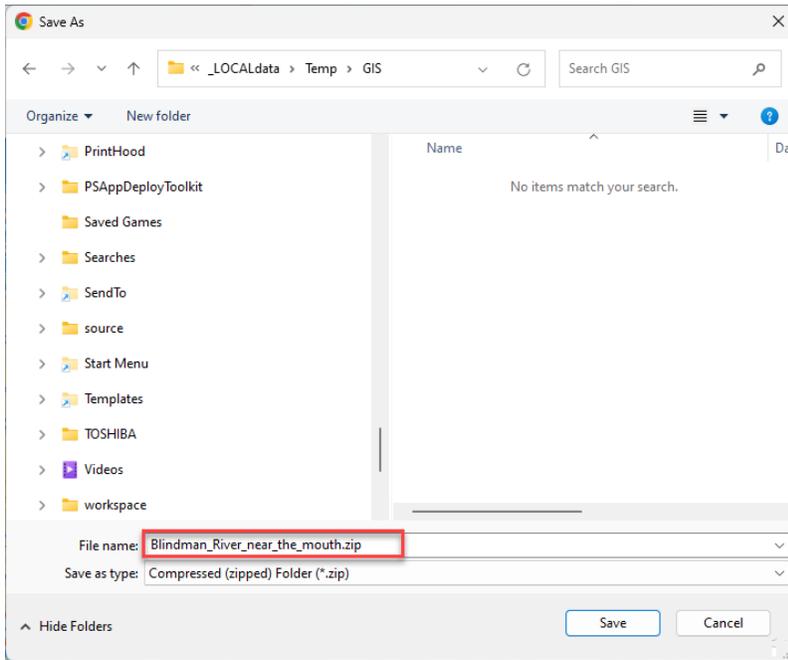


FIGURE 3

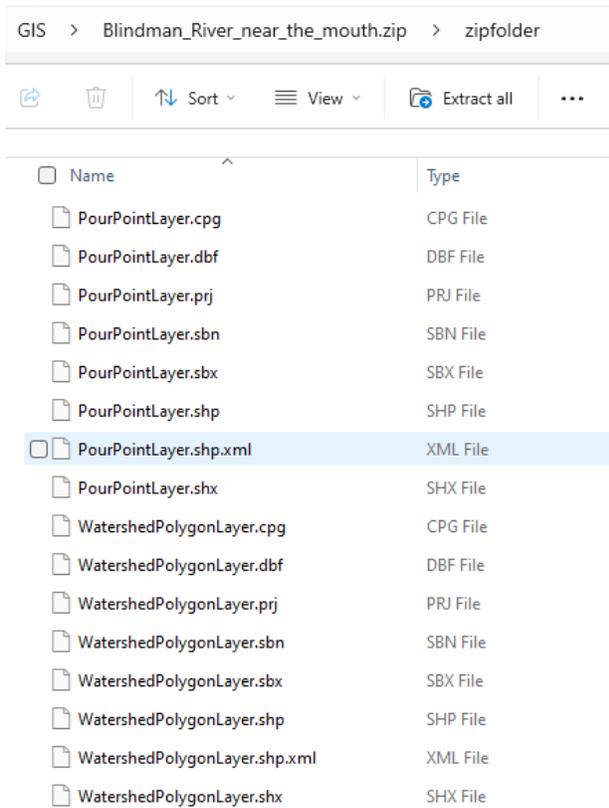


FIGURE 6

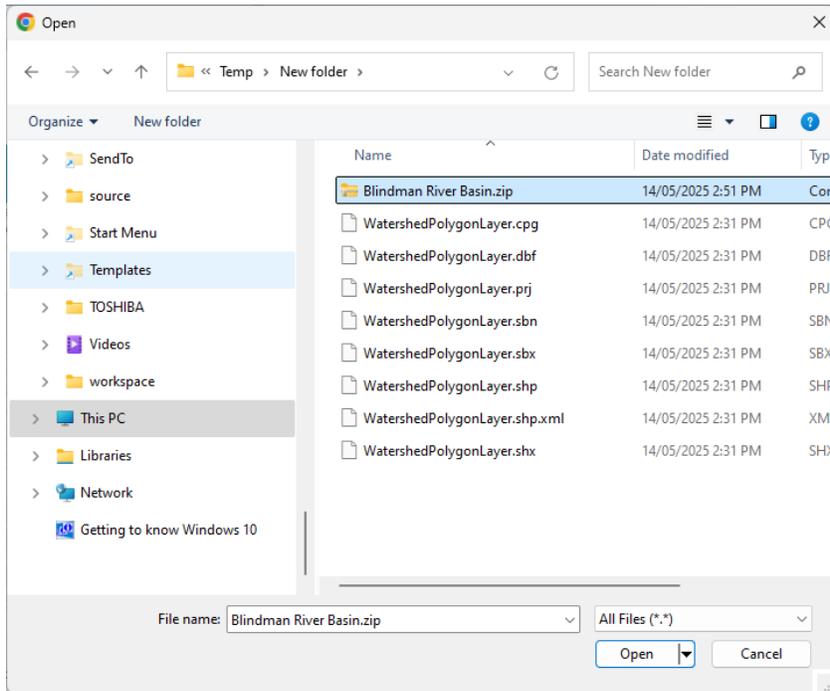


FIGURE 7

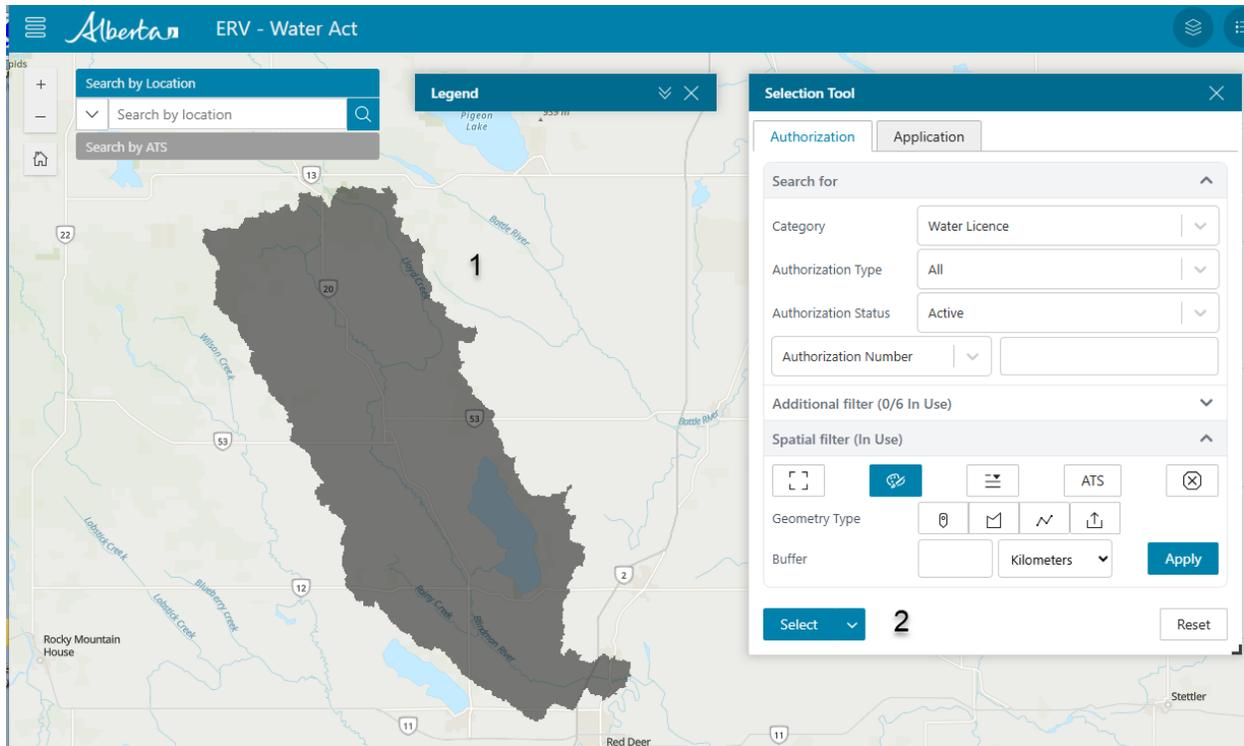


FIGURE 8

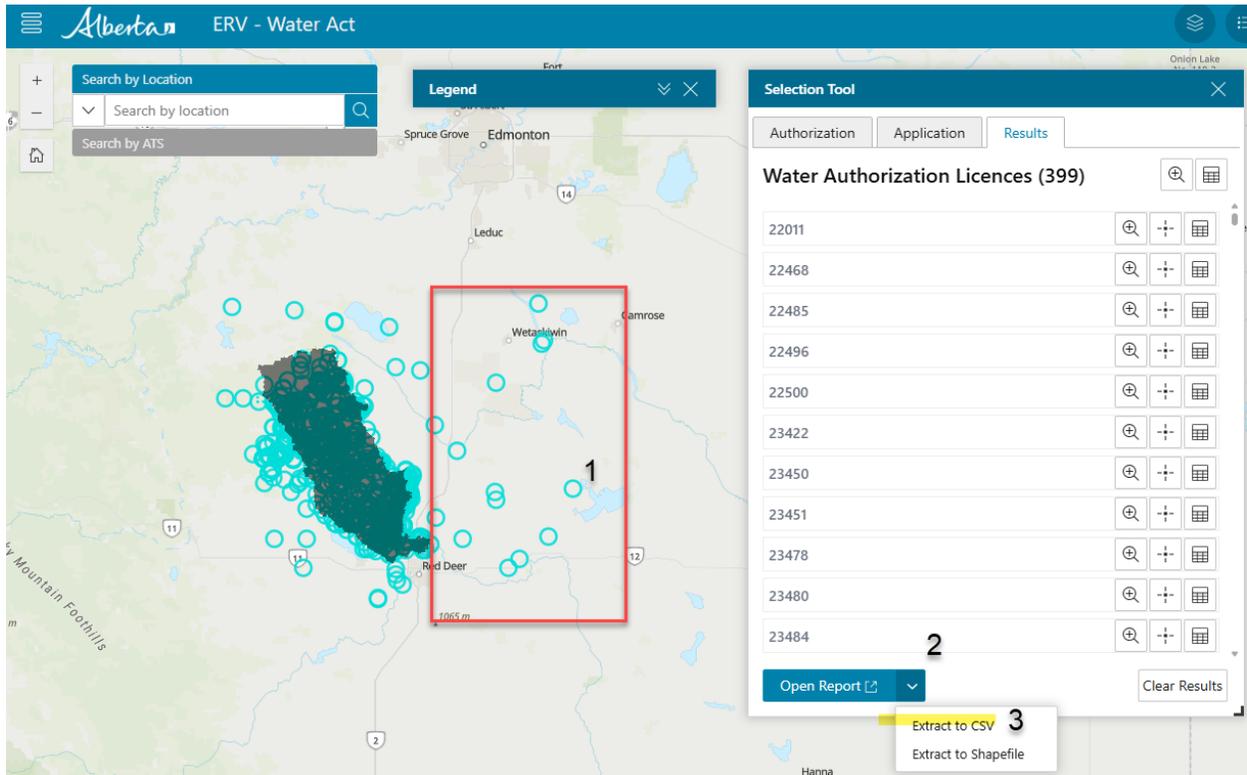


FIGURE 9 – ERV .CSV Extract Imported into Excel using Data Filter

