

# Wildfire Threat Analysis

Analyzing wildfires to protect your assets



# Introduction

- Every year, hundreds of wildfires in the province of British Columbia pose a threat to buildings, assets and human life. Wildfires are unpredictable and can move fast due to wind conditions and other factors.
- Wildfires can move as fast as 6 miles per hour in forests and 14 miles per hour in grasslands.
- Active wildfire information is updated on a daily basis by the British Columbia Wildfires Branch.
- Emergency Managers use the data to determine if a wildfire presents a threat to FortisBC asset.

The presentation discusses FortisBC's implementation of a GIS Web solution to analyze the impact and threats of wildfires on its pipelines, stations and other assets.

# Learning Objectives

## Learning Objectives

- Integrating daily updated wildfire data with asset data
- Viewing active wildfire data and analyzing impact on asset vulnerability
- Providing analysis and reporting tools in the hands of non-GIS users i.e. Emergency and Operations Managers

# FortisBC Company Overview

## FortisBC Companies

- Formerly known as BC Gas, Terasen Gas
- 2,200 employees
- Gas Distribution 1,000,000 customers
- Electric Distribution 168,000 customers
- Serve 160 communities & 100 Indian reserves in British Columbia
- 48,000 km (30,300 miles) gas pipelines
- 7,000 km (4,500 miles) electric cable

## GIS Applications

- Smallworld applications for Gas Distribution and Transmission
- Geo Spatial Analysis for analysis and risk modelling, Mobile GIS, Tensing
- Interfaces to SAP and Filenet
- ArcGIS, ArcFM and Arc Mobile for Electric Distribution and Transmission
- FME, FME Server and SBS plugin
- Over 1,000 GIS Users

# FortisBC Service Territory



# Wildfire Damages

The Insurance Bureau of Canada says insured **damage** caused by the wildfires in **Fort McMurray**, Alta., totalled \$3.58 billion, making it the most expensive disaster for insurers in the country's history. Jul 7, 2016



[Fort McMurray wildfire: \\$3.6B in damage, says Insurance Bureau of ...](http://globalnews.ca/.../fort-mcmurray-wildfire-cost-of-damage-from-alberta-disa...)

# Former Process

The screenshot shows the BC Wildfire Service web map interface. The header includes the logo and the text "Active Wildfires". Below the header, there is a navigation menu with "Back to menu". The main content area is titled "BC Active Wildfires" and lists three categories of fires: "Active Fires", "Fires of Note (click for more details)", "New Fires (less than 24hrs old - not fires of note)", and "Active Fires (not fires of note)". A map of Alberta is visible in the background, with a popup window for fire G80046. The popup window contains the following information:

<b>G80046</b>	
<i>Date of discovery:</i>	00:00:00 04/18/2016
<i>Suspected Cause:</i>	Person
<i>Approximate Location:</i>	Beaton Airport Road
<i>Estimated Size:</i>	15739 HA
<i>Fire Status:</i>	Active
<i>Fire of Note Page:</i>	<b>Beaton Airport Road</b>

Below the popup window, there is a section titled "Wildfires of Note" with a search bar. A red box highlights the text "160 sq. km" and "60 sq.ml" in the popup window.

1. Each morning Emergency Operations review the active and new wild fires for that day using the BC Wildfire Service web map.
2. They zoom into a wild fire location on the map.
3. They use the location and go to the GIS to plot the wild fire location.
4. They determine the impact of the fire on any FortisBC asset (stations, pipelines, towers and buildings).
5. If a wild fire is close to an asset they notify the Operations Managers so they can take immediate action.
6. It is a cumbersome manual process and staff may overlook a wild fire being close to an asset that may pose a threat

<http://apps.gov.bc.ca/pub/dmf-viewer/?siteid=5131184402955244847>

# New Process

The screenshot displays the British Columbia Data Catalogue interface. At the top, the logo for British Columbia is on the left, and the text 'Data Catalogue' is in the center. A search bar on the right contains the text 'Search datasets...'. Below the header is a navigation menu with links for 'What is DataBC?', 'Data Catalogue', 'Geographic Services', 'Blog', 'Developers', and 'Contact'. A secondary menu includes 'Datasets', 'Organizations', 'Groups', 'Stay Up To Date', and 'About'. A 'Log in' link is located on the far right. A large search bar is positioned below the navigation. The breadcrumb trail reads: Home / Organizations / Ministry of Forests, Lands and ... / BC Wildfire Service. Below this, there are icons for 'Dataset', 'Groups', 'Activity Stream', 'Share this Record', and 'Permalink'. The main title of the dataset is 'Fire Perimeters - Current', with a 'Geographic Dataset' badge on the right. The publisher information is 'Published by the Ministry of Forests, Lands and Natural Resource Operations - BC Wildfire Service'. A section titled 'Data and Resources' contains three items: 'Fire Perimeters - Current - Custom Download' with an 'Explore' button, 'Download Shapefile of Current Fire Perimeters' with a fire icon and an 'Explore' button, and 'WMS getCapabilities request' with a truncated link and an 'Explore' button.

<https://catalogue.data.gov.bc.ca/dataset/fire-perimeters-current>



# Wildfire data is GIS ready

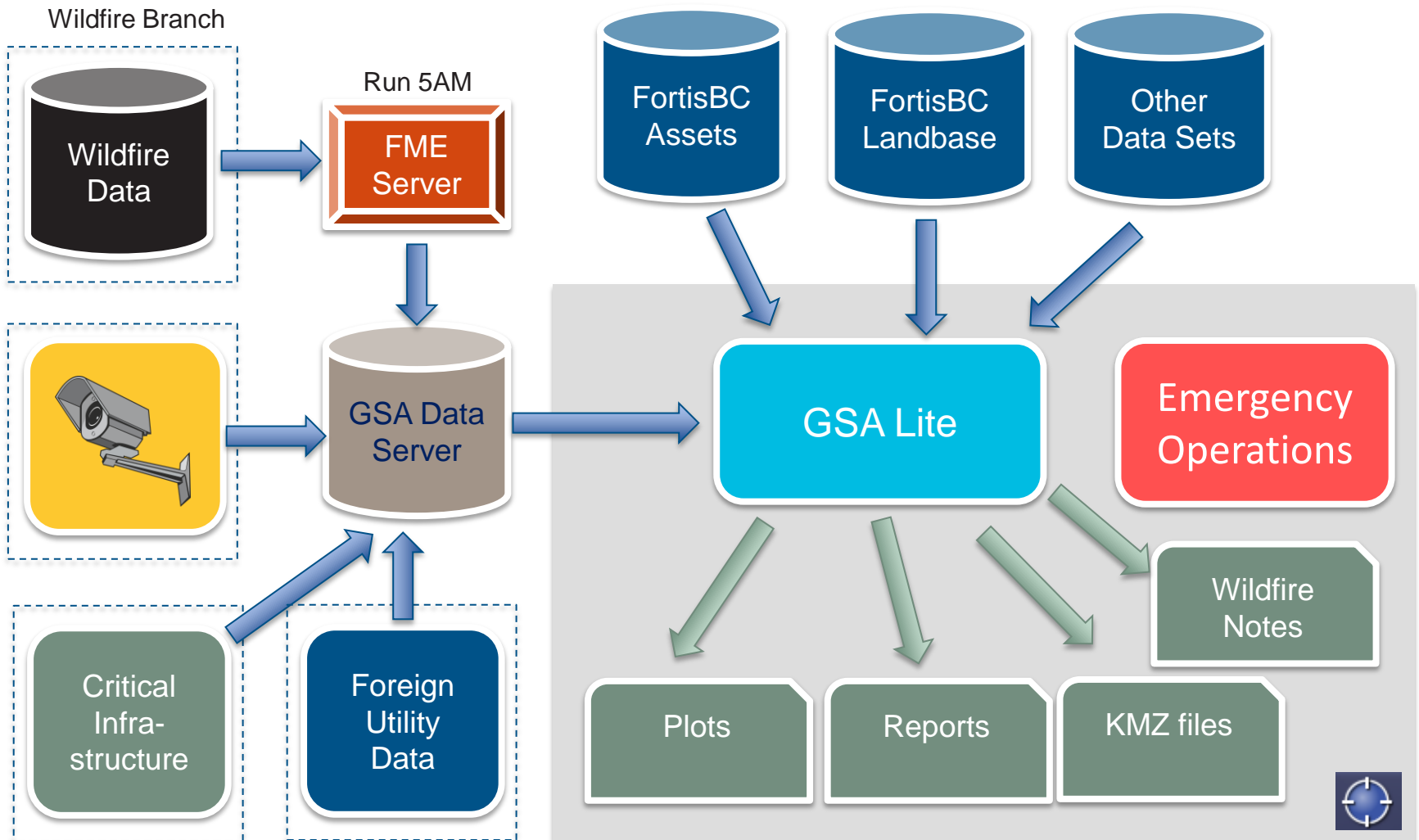
## Data Format

prot_current_fire_point_buffers.dbf	2/6/2017 7:05 AM	DBF File
prot_current_fire_point_buffers.prj	2/6/2017 7:05 AM	PRJ File
prot_current_fire_point_buffers.shp	2/6/2017 7:05 AM	SHP File
prot_current_fire_point_buffers.shx	2/6/2017 7:05 AM	SHX File
prot_current_fire_points.dbf	2/5/2017 10:00 PM	DBF File
prot_current_fire_points.prj	2/5/2017 10:00 PM	PRJ File
prot_current_fire_points.shp	2/5/2017 10:00 PM	SHP File
prot_current_fire_points.shx	2/5/2017 10:00 PM	SHX File
prot_current_fire_points_2_Polygon_shape2shape.fmw	5/17/2016 8:08 AM	FMW File
prot_current_fire_points_2_Polygon_shape2shape.log	1/19/2017 8:29 AM	Text Document
prot_current_fire_polys.dbf	2/5/2017 7:45 PM	DBF File
prot_current_fire_polys.prj	11/6/2016 7:45 PM	PRJ File
prot_current_fire_polys.shp	2/5/2017 7:45 PM	SHP File
prot_current_fire_polys.shx	2/5/2017 7:45 PM	SHX File

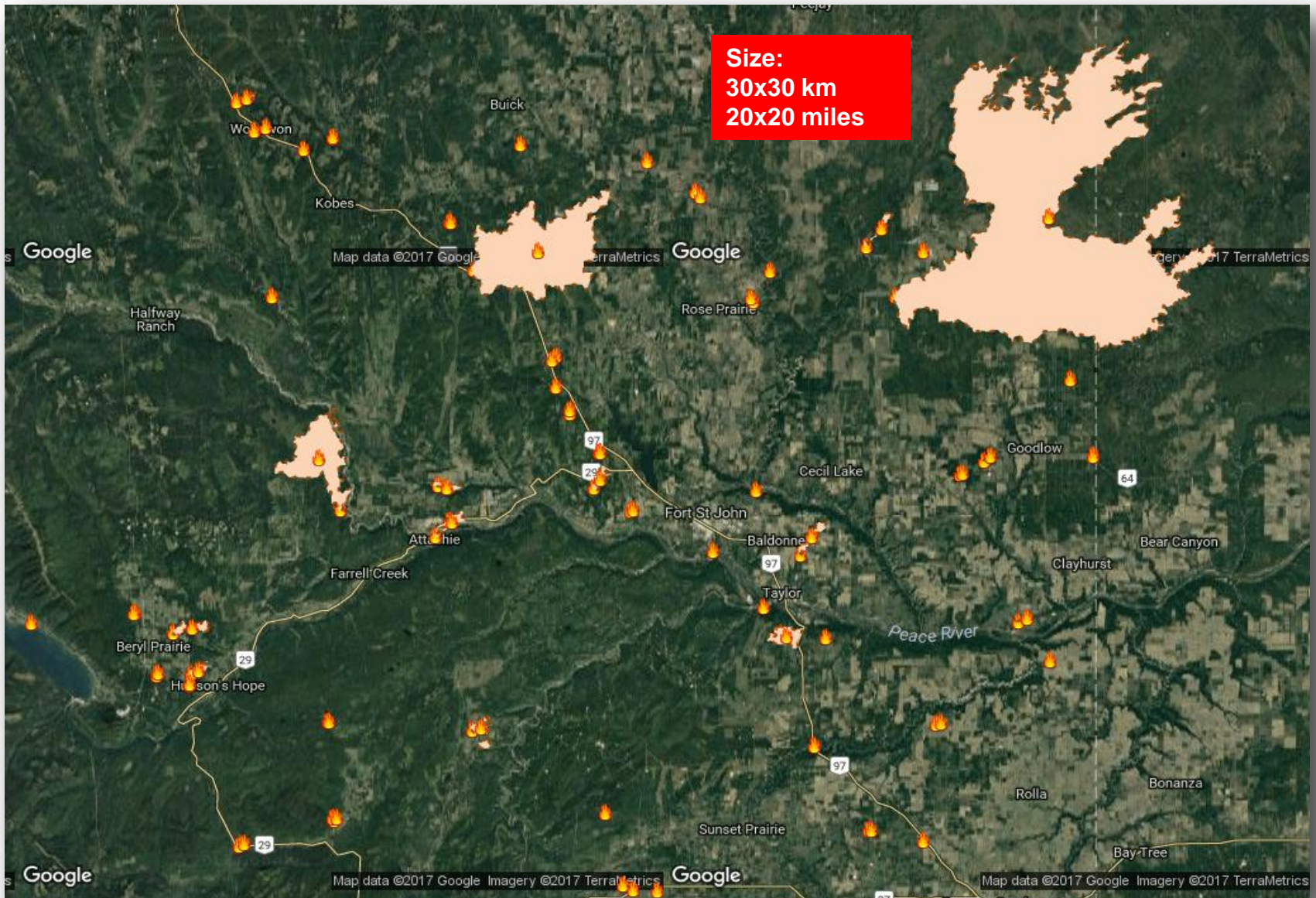
## Data Structure

FIRE_NUMBE	VERSION_NU	FIRE_SIZE_	SOURCE	TRACK_DATE	LOAD_DATE	FEATURE_CO	FIRE_STAT	FIRE_NT	FIRE_NT_NM	FIRE_NT_LK
G80046	2016051902	15739.20	Non-correcte	19/05/2016	23/05/2016	JA70003000	Active	586	Beatton Airp	<a href="#">/WildfireNews/OneFire.asp?ID=586</a>
G80051	2016041901	390.90	Non-correcte	19/04/2016	19/04/2016	JA70003000	Not Active	585	Attachie	<a href="#">/WildfireNews/OneFire.asp?ID=585</a>
G80065	2016041901	251.00	Non-correcte	19/04/2016	19/04/2016	JA70003000	Not Active	582	Charlie Lake	<a href="#">/WildfireNews/OneFire.asp?ID=582</a>
G80068	2016060201	84574.40	Non-correcte	02/06/2016	02/06/2016	JA70003000	Active	593	Siphon Creek	<a href="#">/WildfireNews/OneFire.asp?ID=593</a>
G80074	2016052201	5635.70	Non-correcte	22/05/2016	22/05/2016	JA70003000	Not Active	596	Halfway Rive	<a href="#">/WildfireNews/OneFire.asp?ID=596</a>

# Work Flow




# Wildfire Data



# Wildfire GIS Ready Data

- ▶ Gas Distribution
- ▶ Gas Transmission
- ▶ Land
- ▶ Leaders Hub Map
  - ▶ Airports
  - ▶ BC Ferries Webcams
  - ▶ BC Hydro
  - ▶ **BC Wildfires**
  - ▶ Census
  - ▶ Earthquake Data USGS
  - ▶ Emergency Response Routes
  - ▶ Flood Zone
  - ▶ FortisBC Asset & Document
  - ▶ FortisBC Building
  - ▶ FortisBC Electric
  - ▶ FortisBC Gas
  - ▶ FortisBC Locations
  - ▶ FortisBC Office and Building
  - ▶ FortisBC Webcams
  - ▶ Geo Notes
  - ▶ Highway Webcams
  - ▶ Hydrometric Data
  - ▶ Oil and Gas Pipeline
  - ▶ Railroad
  - ▶ Shaw
  - ▶ Telus





## BC Wildfire Service

- Report a Wildfire
- Current Wildfire Situation
- Fire Bans and Restrictions
- Information Bulletins
- Fire Danger
- Wildfire Prevention
- Wildfire Statistics

Home / Public Safety & Emergency Services / Wildfire Status / Current Wildfire Situation / Wildfires of Note

### Wildfires of Note

• Choose another wildfire of note

#### Siphon Creek (G\_0068)

This is the final update for the 'Siphon Creek' fire; no further updates will be posted on this website as it is no longer considered to be a Wildfire of Note. If you require updated information on this fire, please contact the Prince George fire centre.

**Last updated:** Monday, June 13, 2016 at 11:03 AM

**Location:** Siphon Creek Road; four kilometres east of the Doig River First Nations community

- See **approximate** location of this wildfire on a [interactive map](#).
- View an [interactive map](#) of all active Wildfires of Note. (This fire has been archived so it will no longer be displayed on the interactive map.)

**Discovered:** Monday, April 18, 2016

**Size:** 85,300.0 hectares (estimated)


**Status:** Active

- 80% contained

The estimated breakdown of fire size on the BC and Alberta side of the border is as follows:

- BC - 62,700ha
- Alberta - 22,600ha

The change in size reflects better mapping and a more accurate assessment of the fire's extent.

**Interface:**  Interface Fire

Previous evacuations have been **rescinded**.

**More information**

**Contact:**


- Amanda Reynolds
- Fire Information Officers
- 250-565-6129

**Cause:** Under Investigation

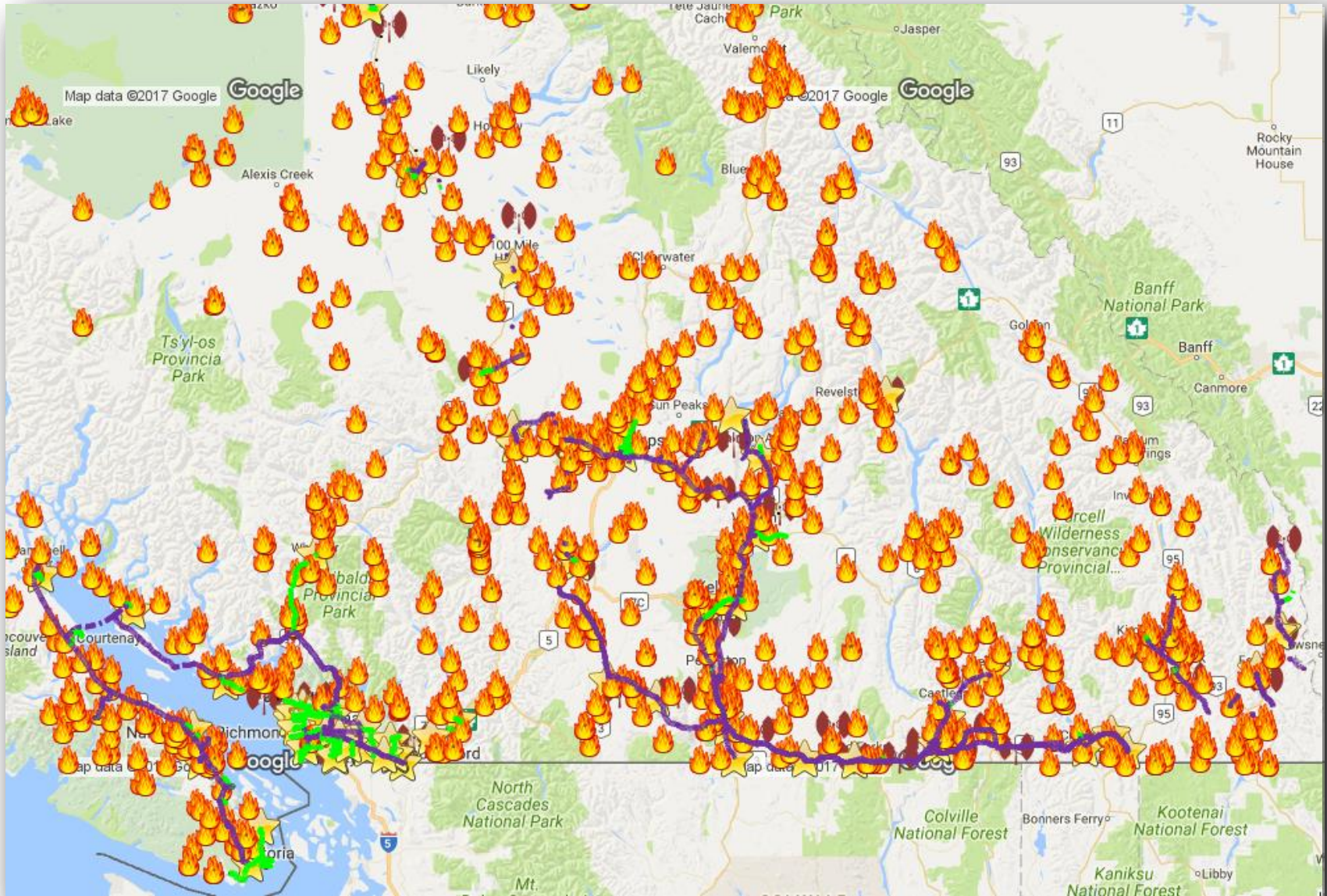
**Resources**

- 20 firefighters
- 1 helicopters

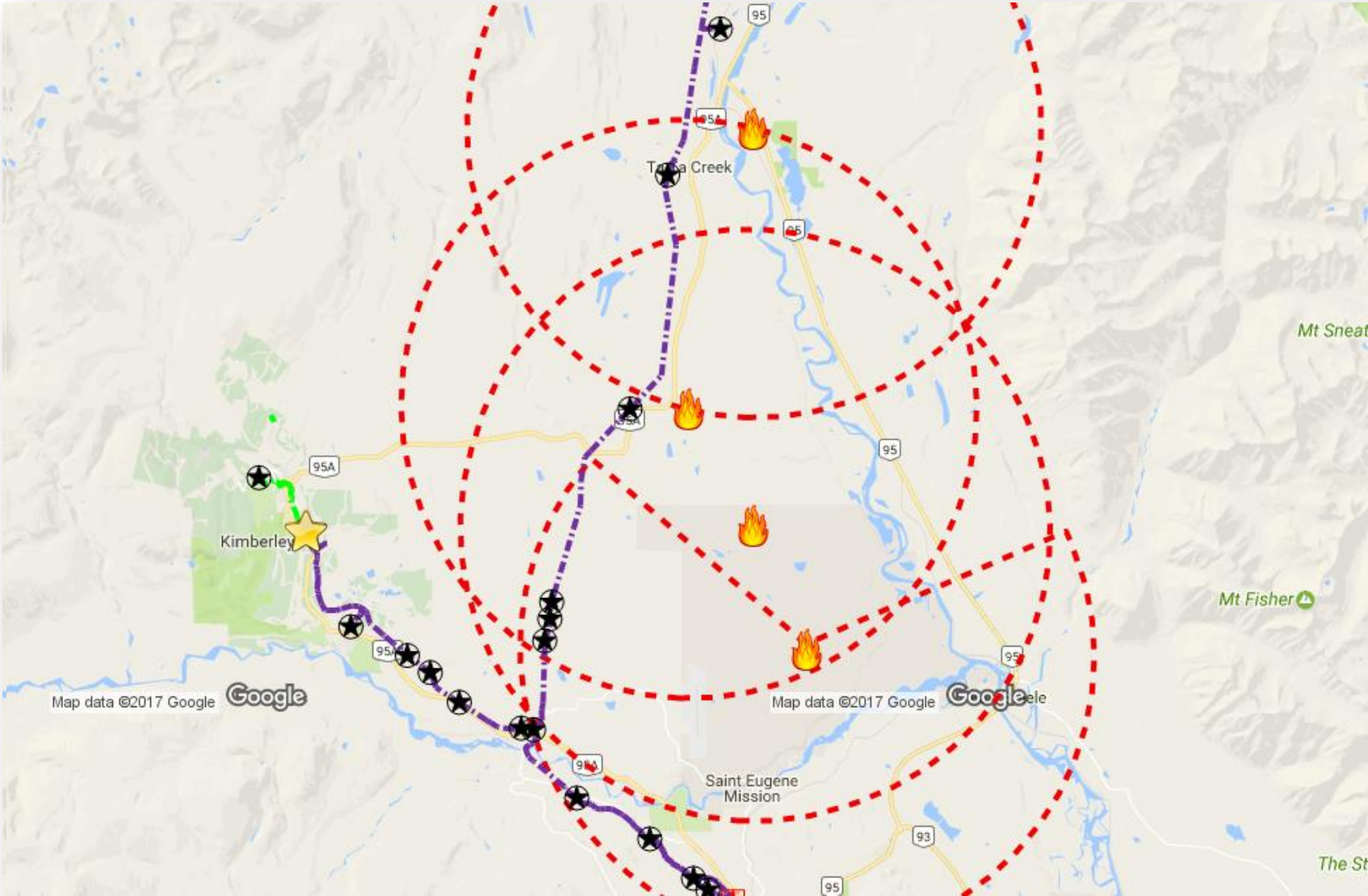
Both the BC and Ontario team continue to work collaboratively.



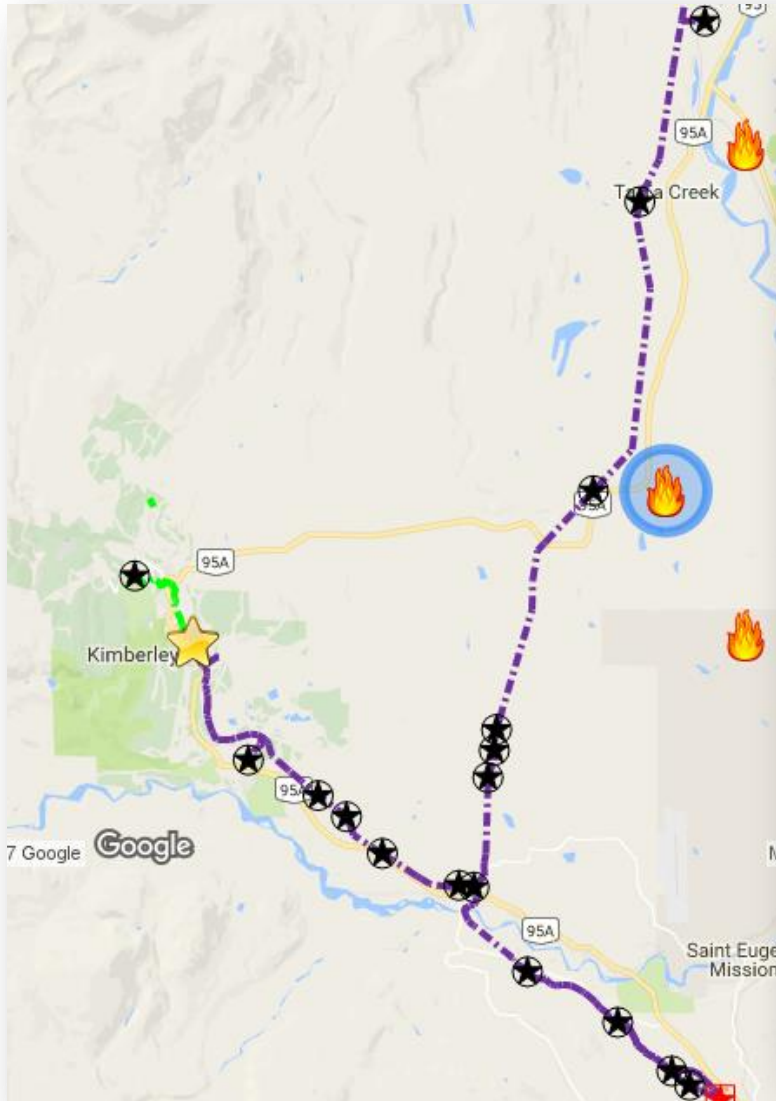
# FortisBC Pipelines, Stations and Towers



# Wild Fires within 10 km of an Asset



# Wild Fires Analysis



## Wildfires of Note

• [Choose another wildfire of note](#)

### Beatton Airport Road (G80046)

This is the final update for the 'Beatton Airport Road' fire; no further updates will be posted on this website as it is no longer considered to be a Wildfire of Note. If you require updated information on this fire, please [contact](#) the Prince George fire centre.

**Last updated:** Thursday, June 09, 2016 at 1:33 PM

**Location:** 45 kilometres north of Fort St. John

• See **approximate** location of this wildfire on a [interactive map](#).

• View an [interactive map](#) of all active Wildfires of Note. (This fire has been archived so it will no longer be displayed on the interactive map.)

**Discovered:** Monday, April 18, 2016

**Size:** 15,739.0 hectares (estimated)

**Status:** Active

• 90% contained

Crews continue to mop-up and patrol hotspots found from scans and demobilize equipment. Scans will continue throughout the week to identify any hot spots.

This is the last update for this incident and will be taken of the Wildfire of Note page tomorrow June 10, 2016. This fire has received a significant amount of rainfall in the past 24 hours.

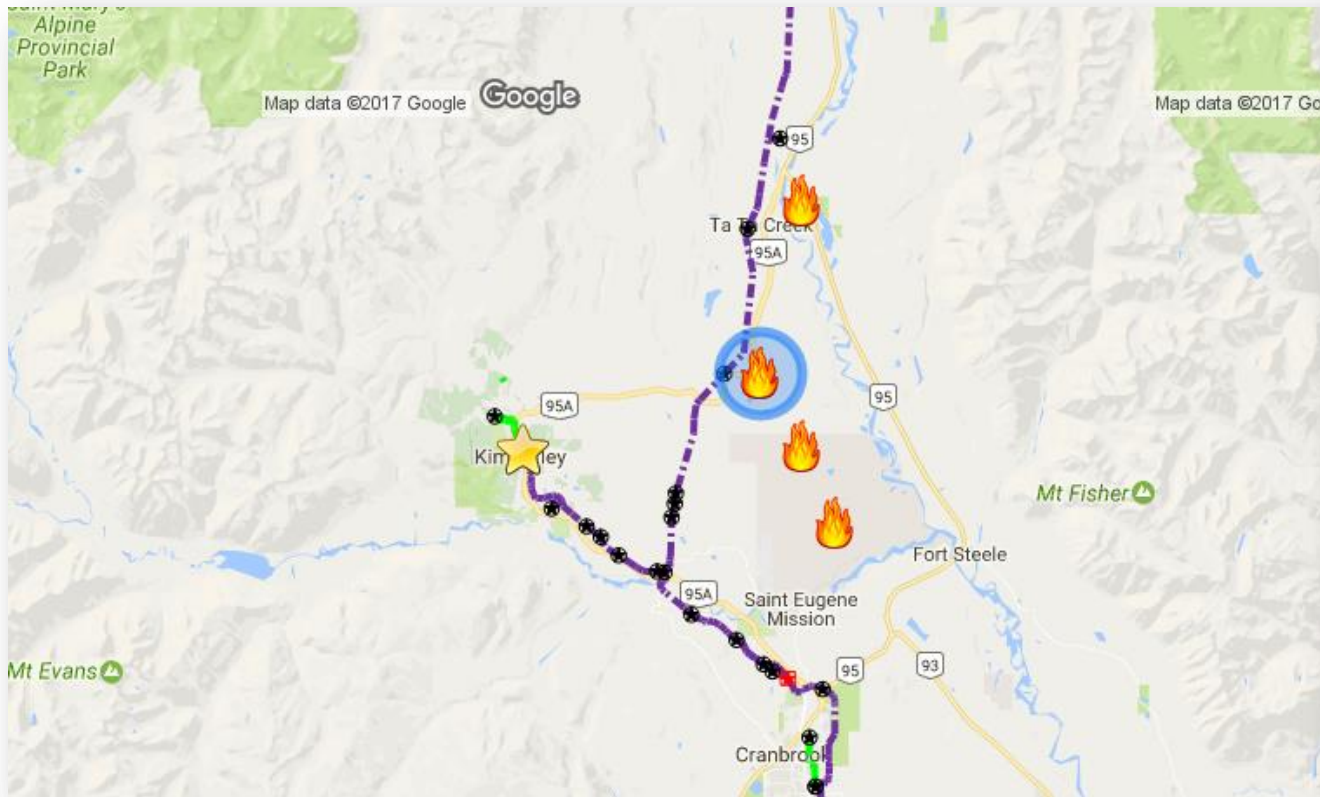
**Interface:** Interface Fire














Previous evacuations have been **rescinded**.

#### More information

The BCWS recommends that all British Columbians FireSmart their property. For more information go to: <http://bcwildfire.ca/Prevention/firesmart.htm>

# Export data to Excel and Kml



-  AutoCAD DWG
-  Csv
-  ESRI ArcShape
-  GeoJSON
-  GeoPackage
-  GML
-  Google Kml
-  Html
-  MapInfo MIF/MID
-  MapInfo TAB
-  Microsoft Excel
-  MicroStation DGN
-  TomTom POI

Result List

Forest Fire Area | Go To | Select | Export | Create Report | Objects: 4 | Re-Run

Record Number	Geometry	Objectid	Fire Year	Fire Number	Version Nu	Fire Size	Source	Track Date	Load Date	Feature Co	Buffer	Communication T...	DP Station	Building	Pipeline	TP Station
148	34.9 ha	8470	2016	N10002	2016060601	34.9	Non-corrected ground GPS	06/06/2016	27/06/2016	JA70003000	337.86 km²		MCGINTY ROAD ...		SKOOKUMCHUCK ...	
149	6.76 ha	8568	2016	N10004	2016040501	6.7	Non-corrected ground GPS	05/04/2016	24/08/2016	JA70003000	222.64 km²		9006 WYCLIFFE ...		SKOOKUMCHUCK ...	MOPHEE ROAD
152	3.51 ha	8458	2016	N10037	2016051301	3.5	Unknown	13/05/2016	30/05/2016	JA70003000	320.03 km²		MOAN ROAD AN...		SKOOKUMCHUCK ...	
153	6.46 ha	8518	2016	N10143	2016080101	6.4	Non-corrected ground GPS	01/08/2016	05/08/2016	JA70003000	322.32 km²		TA TA CREEK, M...		SKOOKUMCHUCK ...	





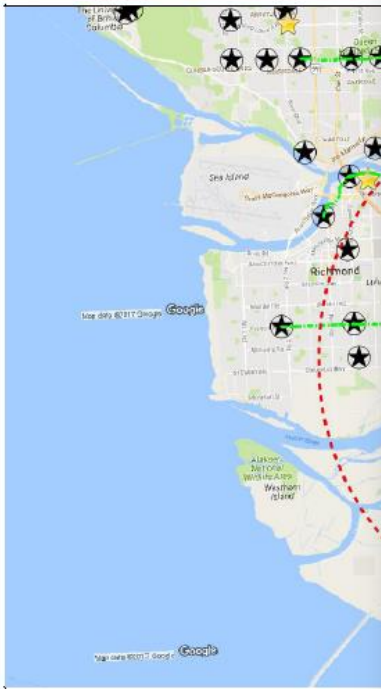
# Wildfire Reports






## FortisBC Wildfire Analysis and Report

### Wildfire Details

Fire Year: 2016      Source: Digitized other      Fire Size (ha): 78.4  
Fire Number: V10173      Track Date: 04/07/2016      Wildfire of Note:  
Version Nu: 2016070401      Load Date: 05/07/2016      Long: -122.9996  
*Source: BC Government / BC Wildfire Service*      Lat: 49.1363

### Wildfire Map with 10 km radius      FortisBC Assets within Wildfire Radius

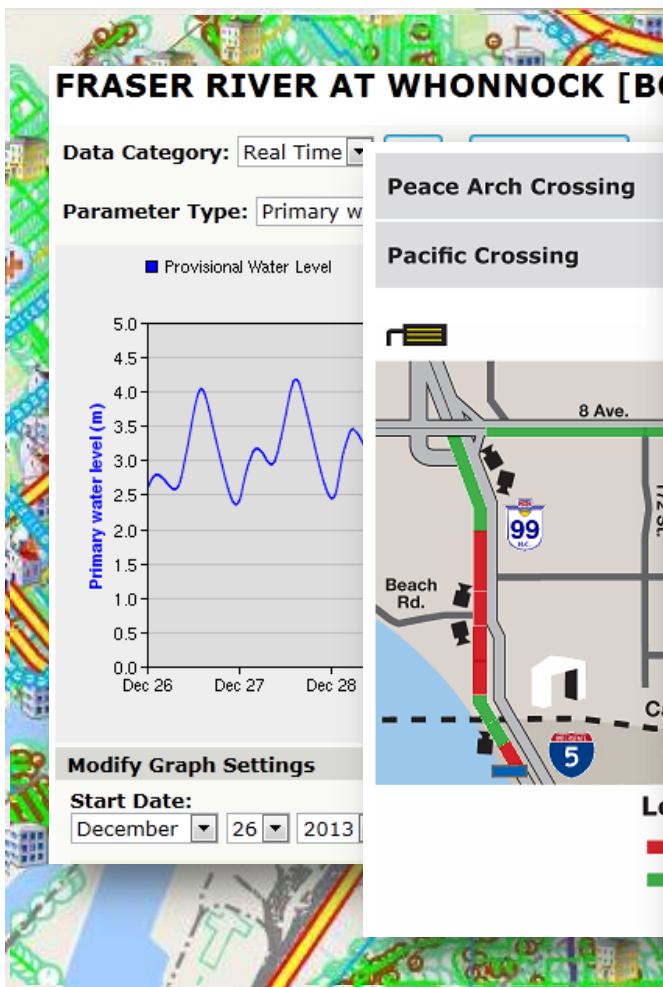


	COMMUNICATION TOWERS	
	FORTISBC BUILDINGS	LNG PLANT (TANK), GOUDY MUSTER
	TRANSMISSION PIPELINES	LIVINGSTONE PATTULLO 457, LIVINGSTONE PATTULLO 457, LIVINGSTONE PATTULLO 457, LIVINGSTONE PATTULLO 457, LIVINGSTONE PATTULLO 457, LIVINGSTONE PATTULLO 457, LIVINGSTONE PATTULLO 457, LIVINGSTONE PATTULLO 457, LIVINGSTONE PATTULLO 457, LIVINGSTONE PATTULLO 457
	TRANSMISSION STATIONS	TILBURY ISLAND
	DISTRIBUTION STATIONS	16 AVENUE AND CANADA WAY, 1235 QUAYSIDE DR., NW, MCPHERSON AVENUE AND BERESFORD STREET, GILLEY AVENUE AND BERESFORD STREET, 16 AVENUE AND MARY AVENUE, BYRNE ROAD AND MEADOW AV., 6389 PATTERSON AVENUE, IMPERIAL STREET AND JUBILEE AVENUE, 8508 GLENLYON PARKWAY, 8700 KINROSS ST, 3695 SKANA DR, RIVER ROAD, 50 AVENUE EAST AND VIVIAN STREET, 2390 Rosedale Drive, MARINE DRIVE AND ELLIOTT STREET 420, MARINE D

# Web Tools



# Web Tools



# Conclusion

- Wild fires pose a significant threat to pipelines, stations and building
- Wild fires can move very fast so analyzing the most current wild fire data is critical
- GIS Analysis tools provide great benefits to determine which fires could pose a risk
- Export the analysis and create reports and plots for first responders
- Provide up to date information on a daily basis
- Web cams and additional web tools can be very useful to assist with an emergency

# Questions

## Contact Information

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