

Site 10 of 48: 12.4Km @ 252°: Vancouver - Campbell/Keefe (5)



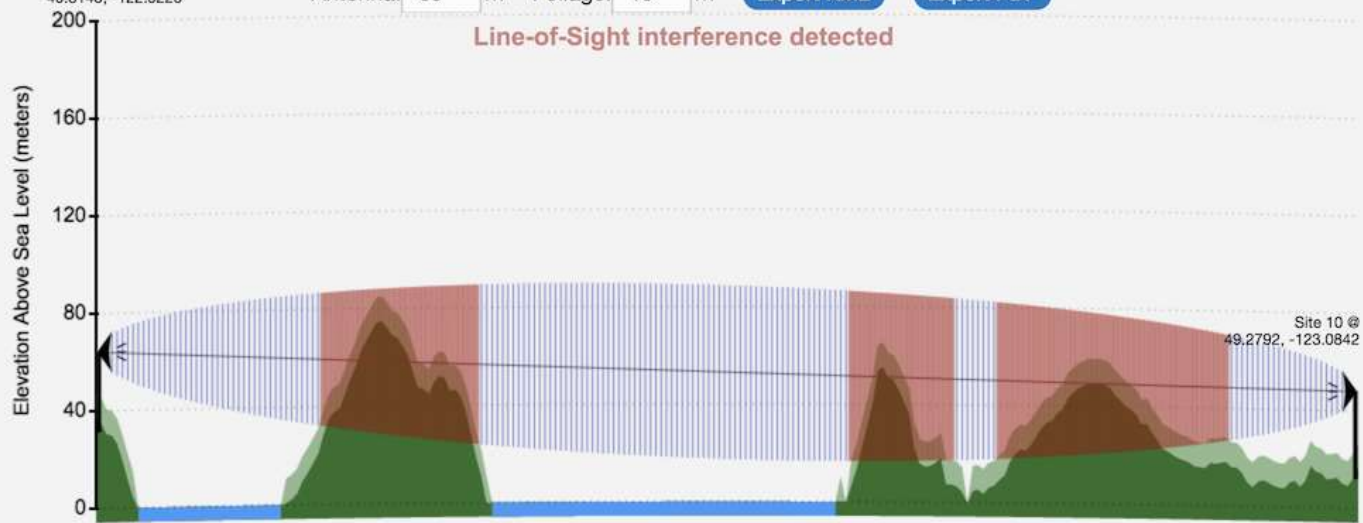
Bullseye @ 49.3145, -122.9225

Antenna: 33 m Foliage: 10 m

Export KML

Export PDF

Line-of-Sight interference detected



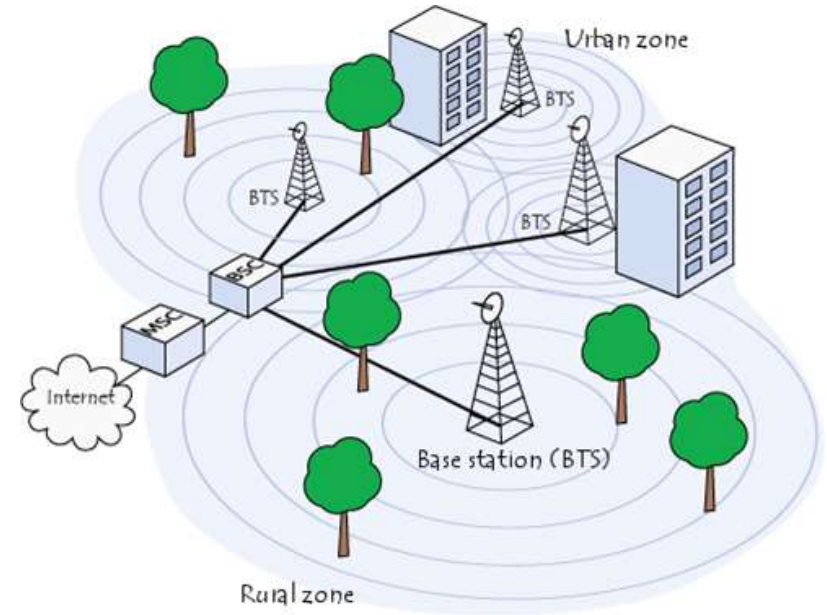
Pathloss (dB)	Aim Back	HAnt (m)	Tx (MHz)	Rx (MHz)	Horiz Azim	Vert Elev	Gain (dBi)	Loss (dB)	Power (dBm)	Bw (MHz)	Service Type	Licensee	Mod	Last Modified	
113	12°	36	732.7	702.7	60°		15.8	0.3	49.0	5	Macrocell	Rogers	LTE	2018-Apr-26	Huawei HUA AAU
113	12°	36	737.5	707.5	60°		15.8	0.3	49.0	5	Macrocell	Rogers	LTE	2018-Apr-26	Huawei HUA AAU
122	12°	36	2120.0	1720.0	60°		17.4	0.8	50.8	20	Macrocell	Rogers	LTE	2018-Apr-26	Huawei HUA AAU
124	12°	36	735.0	705.0	60°		15.8	0.9	49.0	5	Macrocell	Rogers	LTE	2018-Apr-26	Huawei HUA AAU
126	42°	5	2550.0	2550.0	30°	0	11.4	1.0	33.4	20	Macrocell	Cablewav	Cablewav	2018-Aug-1	Cablewav/Cablewav
130	18°	30	743.0	713.0	90°	16.0°	1.0	1.5	40.0	5	Macrocell	Telus	LTE	2018-May-1	Huawei Huawei Ar
132	18°	30	885.0	840.0	90°	16.0°	13.0	1.5	43.0	10	Macrocell	Telus	LTE	2018-May-1	TenXc Wireless CC
139	18°	30	2142.5	1742.5	90°	14.0°	16.0	1.5	43.0	5	Macrocell	Telus	LTE	2018-May-1	TenXc Wireless CC
139	18°	30	2142.5	1742.5	90°	14.0°	16.0	1.5	43.0	5	Macrocell	Telus	LTE	2018-May-1	TenXc Wireless CC
141	18°	30	2675.0	2555.0	90°	14.0°	18.0	1.5	43.0	10	Macrocell	Telus	LTE	2018-May-1	Huawei Huawei Ar
141	18°	30	2685.0	2565.0	90°	14.0°	18.0	1.5	43.0	10	Macrocell	Telus	LTE	2018-May-1	Huawei Huawei Ar

# LOXCEL CELLULAR SERVICES (Canada, Australia & New Zealand)

Loxcel Geomatics sales @ loxcel.com

# In a Nutshell

- Do you work with Cellular or WISP networks in Canada, Australia or New Zealand?



- Loxcel Cellular Services can help

# Loxcel Cellular Services

- Designed by wireless professionals:  
*“Saves me a lot of time supplying quick terrain profiles and tower locations”* - Customer quote
- Find colocation and site acquisition opportunities
- Includes Cellular & Fixed Wireless (WISP)
- Identify Macro, Metrocell & DAS
- Google Earth integration
- Mobile app
- Web-based: easy to get up and going

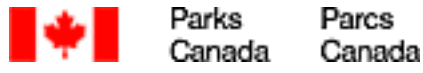
# Loxcel Geomatics is ...

- Based in Toronto, Canada
- 17 years geomatics / analytics experience
- Clients across Canada, United States, UK, Australia

# Clients (Carriers & Communications)



# Clients (Government, Utilities & Media)



# Clients (Investment & Consulting)



# Testimonials

- *Thoroughly recommend this tool ... quick and easy to use.*
- *“Extremely impressed by your service ... Superbly crafted”*
- *“Closest Sites will help in planning path losses with cellular”*
- *“A powerful imaging tool to help us foresee troubles in our line of sight paths ... never fails to impress those who don't quite understand just how involved a site survey is and how unforeseen obstacles can interfere with a reliable wireless link”*
- *“Helped us coordinate network border sites with other carriers”*
- *“The most valued tool I have in my day”*
- *“It told me more in a few seconds than an hour I spent looking before”*
- *“Your cellular map was so useful troubleshooting coverage problems”*
- *“Your online cell tower map was very helpful during the development of our new wireless facilities protocol”*



Find Best LTE sites with clear NLoS from May 2018 ranked by Path loss

Show Bullseye 49.3145, -122.9225

Antenna: 33 m Foliage: 10 m 100% Fresnel No Overshot

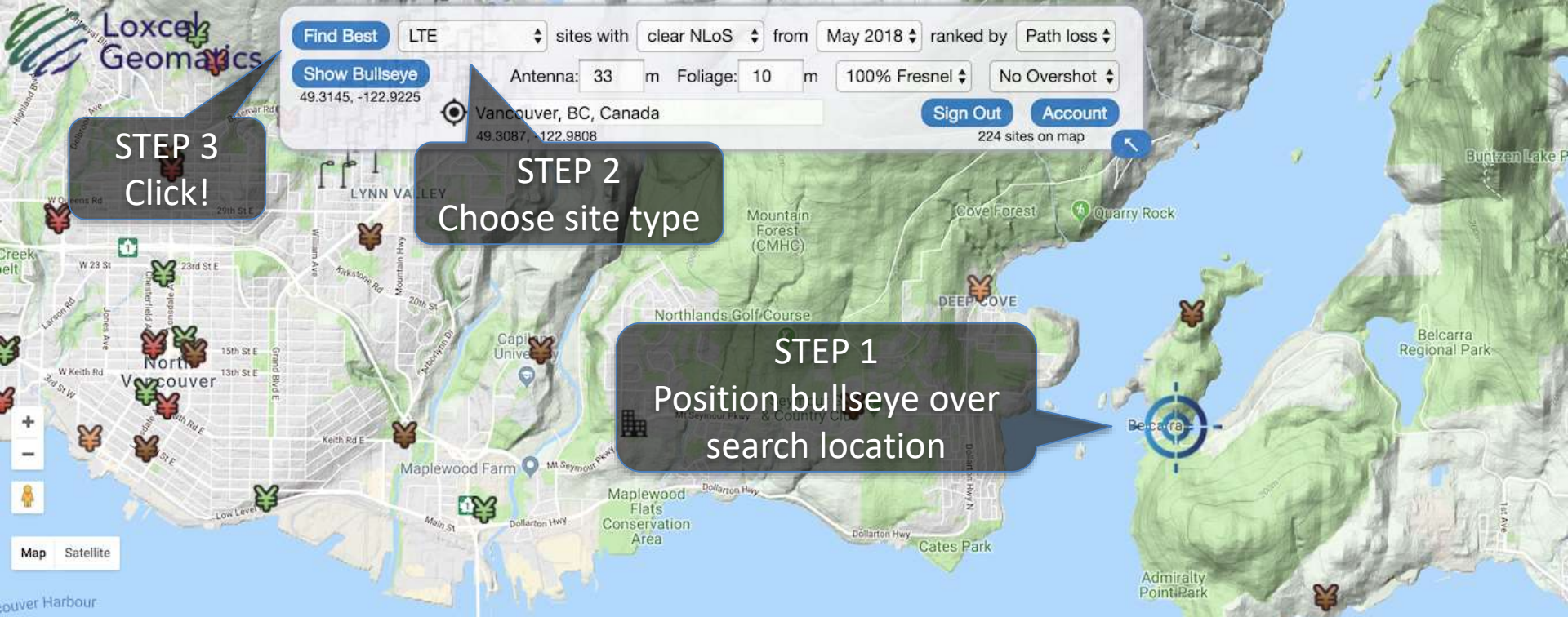
Vancouver, BC, Canada 49.3087, -122.9808

Sign Out Account 224 sites on map

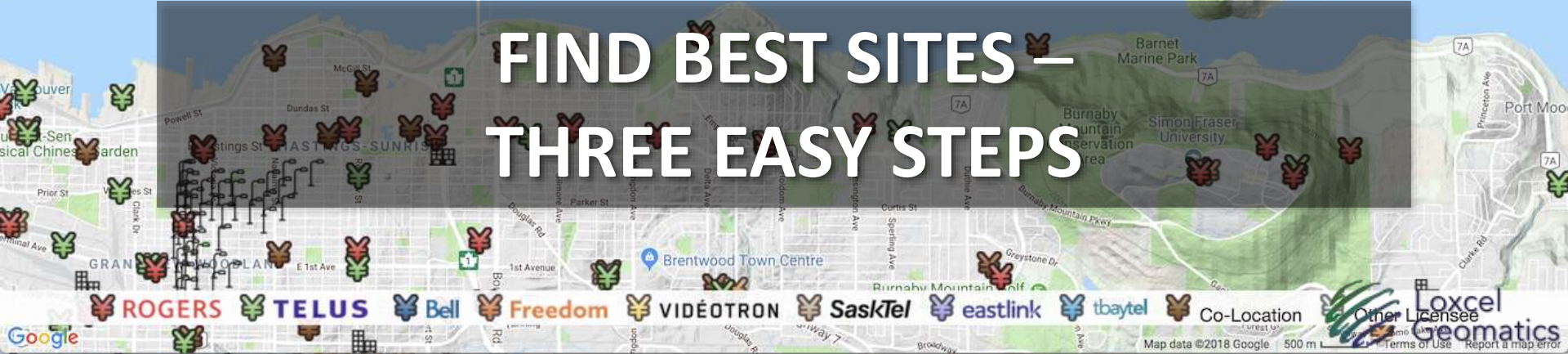
STEP 3  
Click!

STEP 2  
Choose site type

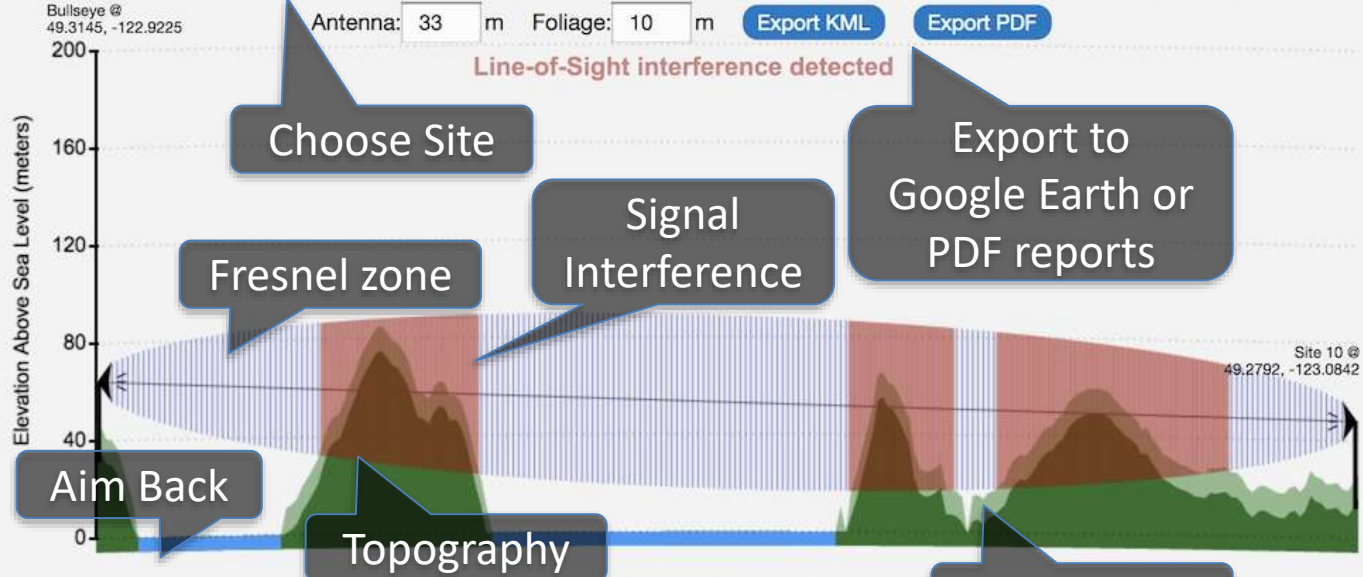
STEP 1  
Position bullseye over search location



# FIND BEST SITES – THREE EASY STEPS



Site 10 of 48: 12.4Km @ 252°: Vancouver - Campbell/Keefe (5)



Pathloss (dB)	Aim Back	HAnt (m)	Tx (MHz)	Rx (MHz)	Horiz Azim	Vert Elev	Gain (dBi)	Loss (dB)	Power (dBm)	Bw (MHz)	Service Type	Licensee	Mod	Foliage
113	12°	36	732.7	702.7	60°		15.8	0.3	49.0	5	Macrocell	Rogers	LTE	2018-Apr-26 Huawei HUA_AAU
113	12°	36	737.5	707.5	60°		15.8	0.3	49.0	5	Macrocell	Rogers	LTE	2018-Apr-26 Huawei HUA_AAU
122	12°	36	2120.0	1720.0	60°		17.4	0.8	50.8	20	Macrocell	Rogers	LTE	2018-Apr-26 Huawei HUA_AAU
122	12°	36	2120.0	1720.0	60°		17.4	0.8	50.8	20	Macrocell	Rogers	LTE	2018-Apr-26 Huawei HUA_AAU
129	18°	30	2630.0	2510.0	30°		18.0	1.0	43.0	10	Macrocell	Telus	LTE	2017-Aug-24 Huawei Huawei_Ar
130	18°	30	743.0	713.0	90°	16.0°	1.0	1.5	40.0	6	Macrocell	Telus	LTE	2018-May-1 Huawei Huawei_Ar
132	18°	30	885.0	840.0	90°	16.0°	13.0	1.5	43.0	10	Macrocell	Telus	LTE	2018-May-1 TenXc Wireless CC
139	18°	30	2142.5	1742.5	60°	14.0°	16.7	1.5	49.0	5	Macrocell	Telus	LTE	2018-May-1 TenXc Wireless CC
139	18°	30	2150.0	1750.0	60°	16.0°	16.7	1.5	49.0	5	Macrocell	Telus	LTE	2018-May-1 TenXc Wireless CC
141	18°	30	2630.0	2510.0	30°	18.0°	18.0	2.0	43.0	10	Macrocell	Telus	LTE	2018-May-1 Huawei Huawei_Ar
141	18°	30	2675.0	2555.0	90°	14.0°	18.0	1.5	43.0	10	Macrocell	Telus	LTE	2018-May-1 Huawei Huawei_Ar
141	18°	30	2685.0	2565.0	90°	14.0°	18.0	1.5	43.0	10	Macrocell	Telus	LTE	2018-May-1 Huawei Huawei_Ar

20 CLOSEST "LTE" SITES - BUT \*NOT\* THE BEST SITES

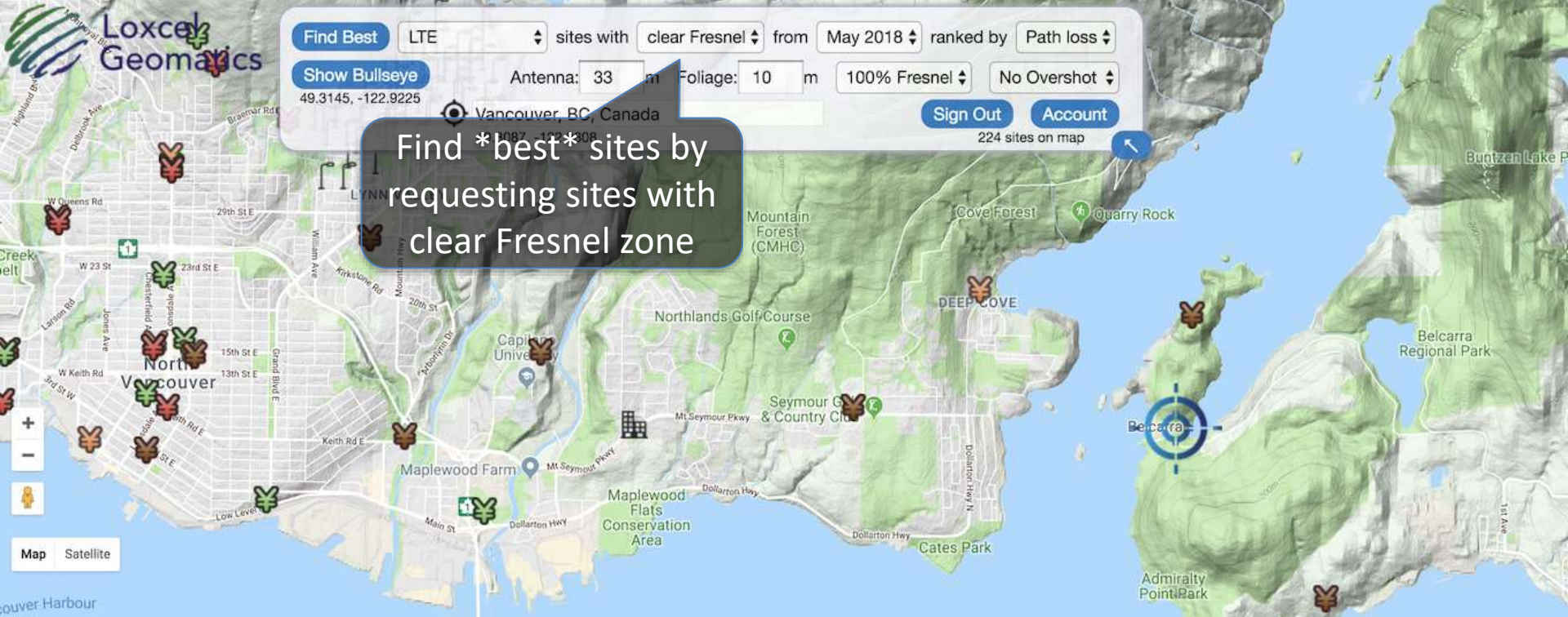
Find Best LTE sites with clear Fresnel from May 2018 ranked by Path loss

Show Bullseye Antenna: 33 m Foliage: 10 m 100% Fresnel No Overshot

49.3145, -122.9225 Vancouver, BC, Canada

Sign Out Account 224 sites on map

Find \*best\* sites by requesting sites with clear Fresnel zone



**FIND \*BEST\* SITES – NO NEED MANUALLY INSPECT DOZENS OF OBSTRUCTED SITES**



Find Best  
Show Bulls  
49.3145, -122

Find Best sites with clear Fresnel from May 2018 ranked by Path loss  
na: 33 m Tol: 0 m 100% Fresnel No Overshot  
Sign Out Account  
2.9808 225 sites on map

Cellular Licensees

- Cellular
- Macrocell
- Metrocell
- DAS
- Rogers
- Telus / Bell
- Telus Owned
- Bell Owned
- Freedom
- Videotron
- SaskTel
- Eastlink
- Tbaytel
- Ice Wireless
- Sogetel
- Lynx Mobility
- 700 MHz
- 850 MHz
- 1.9 GHz
- 2.1 GHz
- 2.3 GHz
- 2.5 GHz
- 2G
- CDMA
- WCDMA
- LTE
- LTE or WCDMA
- Rogers LTE
- Telus / Bell LTE
- New
- Co-location
- HANT < 15m
- HANT 15-29m
- HANT 30-59m
- HANT > 59m

Small Cell

FILTER BY LICENSEE, BAND, LTE, etc. (Canada)

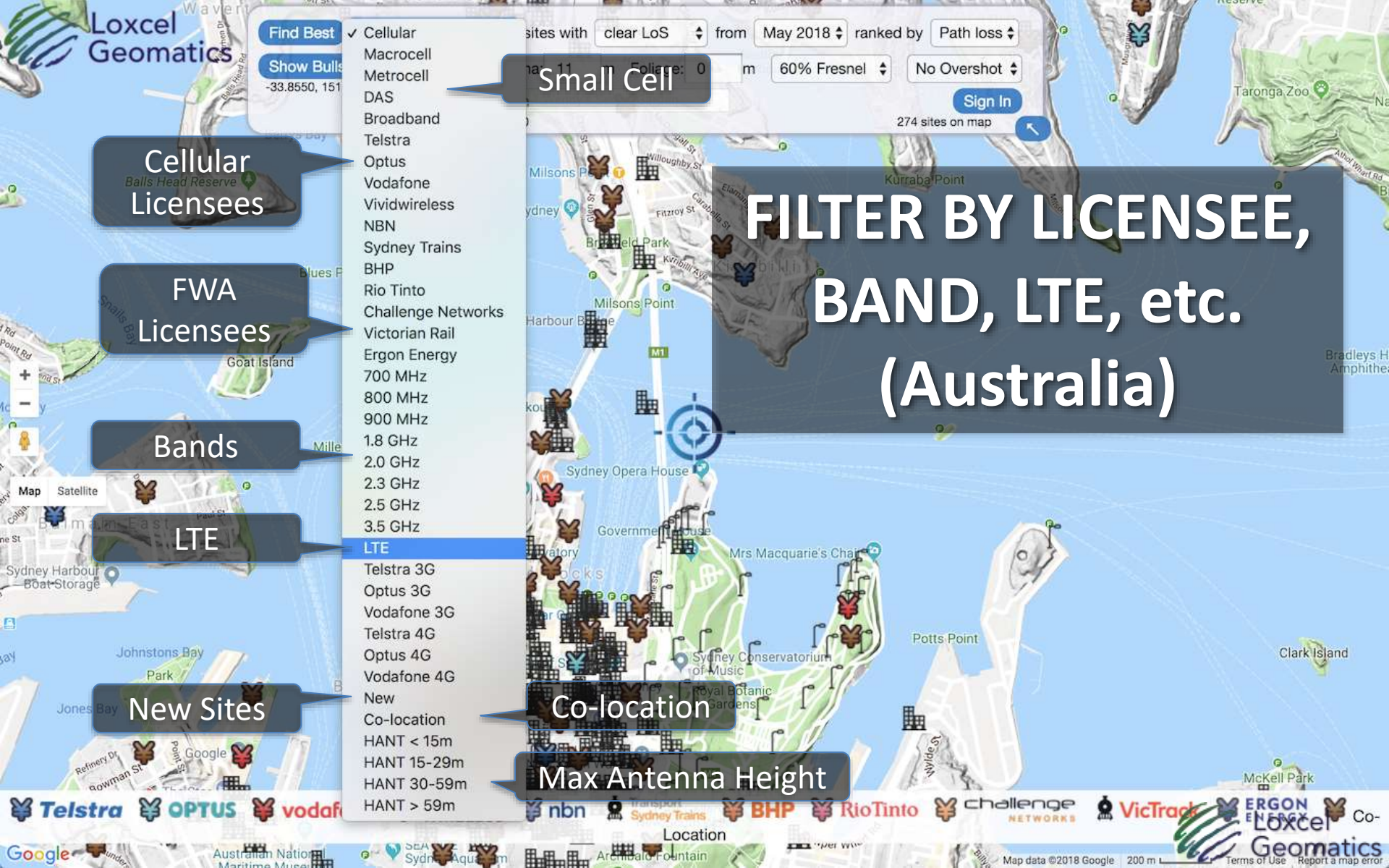
Bands

LTE

Co-location

New Sites

Max Antenna Height



Find Best

Cellular

clear LoS

from May 2018

ranked by

Path loss

Show Bulls

Macrocell

60% Fresnel

No Overshot

Sign In

274 sites on map

Cellular Licensees

FWA Licensees

Bands

LTE

New Sites

Small Cell

Co-location

Max Antenna Height

FILTER BY LICENSEE, BAND, LTE, etc. (Australia)

- Cellular
- Macrocell
- Metrocell
- DAS
- Broadband
- Telstra
- Optus
- Vodafone
- Vividwireless
- NBN
- Sydney Trains
- BHP
- Rio Tinto
- Challenge Networks
- Victorian Rail
- Ergon Energy
- 700 MHz
- 800 MHz
- 900 MHz
- 1.8 GHz
- 2.0 GHz
- 2.3 GHz
- 2.5 GHz
- 3.5 GHz
- LTE
- Telstra 3G
- Optus 3G
- Vodafone 3G
- Telstra 4G
- Optus 4G
- Vodafone 4G
- New
- Co-location
- HANT < 15m
- HANT 15-29m
- HANT 30-59m
- HANT > 59m

Find Best  Cellular sites, ranked by Path loss

Show Bulls  -45.8250, 170

Small Cell

Cellular Licensees

FWA Licensees

Bands

New Sites

- Cellular
- Macrocell
- Metrocell
- DAS
- Broadband
- Vodafone
- Spark
- 2degrees
- Lightwire
- Korderas
- Compass
- Gisborne Net
- Blue Reach
- Chorus
- WIZwireless
- Kordia
- TeamTalk
- Amuri.net
- Uber
- Primo
- Wasp
- 700 MHz
- 850 MHz
- 900 MHz
- 1.8 GHz
- 2.1 GHz
- 2.3 GHz
- 2.5 GHz
- 3.5 GHz
- New
- Co-location
- HANT < 15m
- HANT 15-29m
- HANT 30-59m
- HANT > 59m

Co-location

Max Antenna Height

**FILTER BY LICENSEE, BAND, LTE, etc. (New Zealand)**

Find Best Cellular sites with clear LoS from **May 2018** ranked by Path loss

Show Bullseye 53.9300, -122.6900

Antenna: 11 m Foliage: 0

Enter a location 53.9300, -122.6900

Nov 2016  
**Jul 2015**  
Aug 2014  
Aug 2013

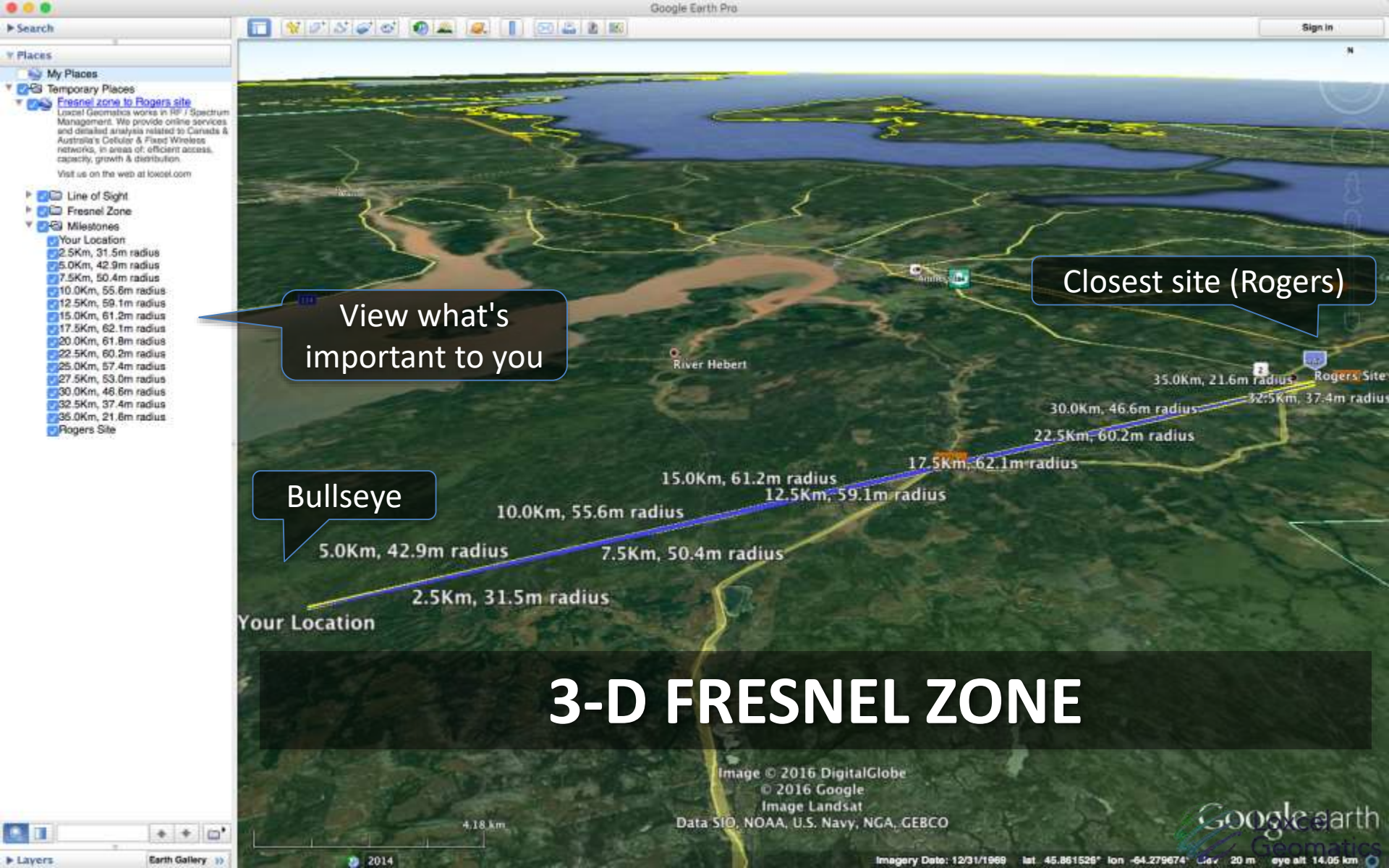
No Overshot

Sign In

23 sites on map

Choose a date in the past

# HISTORICAL VIEW (Canada)



Places

- My Places
- Temporary Places
- Fresnel zone to Rogers site**
  - Lowel Geomatics works in 3D / Spectrum Management. We provide online services and detailed analysis related to Canada & Australia's Cellular & Fixed Wireless networks, in areas of: efficient access, capacity, growth & distribution. Visit us on the web at lowel.com
- Line of Sight
- Fresnel Zone
- Milestones
  - Your Location
  - 2.5Km, 31.5m radius
  - 5.0Km, 42.9m radius
  - 7.5Km, 50.4m radius
  - 10.0Km, 55.6m radius
  - 12.5Km, 59.1m radius
  - 15.0Km, 61.2m radius
  - 17.5Km, 62.1m radius
  - 20.0Km, 61.8m radius
  - 22.5Km, 60.2m radius
  - 25.0Km, 57.4m radius
  - 27.5Km, 53.0m radius
  - 30.0Km, 46.6m radius
  - 32.5Km, 37.4m radius
  - 35.0Km, 21.6m radius
  - Rogers Site

View what's important to you

Closest site (Rogers)

Bullseye

Your Location

# 3-D FRESNEL ZONE

Image © 2016 DigitalGlobe  
 © 2016 Google  
 Image Landsat  
 Data SIO, NOAA, U.S. Navy, NGA, GEBCO



▼ Search

Search Google Parcel Search (APN)

 Search

ex: 15213

Get Directions History

▼ Places

▼  My Places▶  Sightseeing Tour

Make sure 3D Buildings layer is checked

▼  Temporary Places▼  Fresnel Zone - Bell site @ 4

Loxcel Geomatics provides consulting services to industry and government, concerning the growth and distribution of cellular &amp; fixed wireless assets across Canada.

▶  Line of Sight▶  Fresnel Zone▼  Milestones

- Your Location
- 2.5Km, 31.2m radius
- 5.0Km, 42.4m radius
- 7.5Km, 49.7m radius
- 10.0Km, 54.6m radius
- 12.5Km, 57.9m radius
- 15.0Km, 59.7m radius
- 17.5Km, 60.2m radius
- 20.0Km, 59.4m radius
- 22.5Km, 57.3m radius
- 25.0Km, 53.7m radius
- 27.5Km, 48.3m radius
- 30.0Km, 40.3m radius
- 32.5Km, 27.7m radius
- Bell site

▶ Layers

Earth Gallery &gt;&gt;

Visit [https://www.youtube.com/watch?v=-r\\_Py8q\\_z\\_4](https://www.youtube.com/watch?v=-r_Py8q_z_4)  
to watch a 3-D fly-through

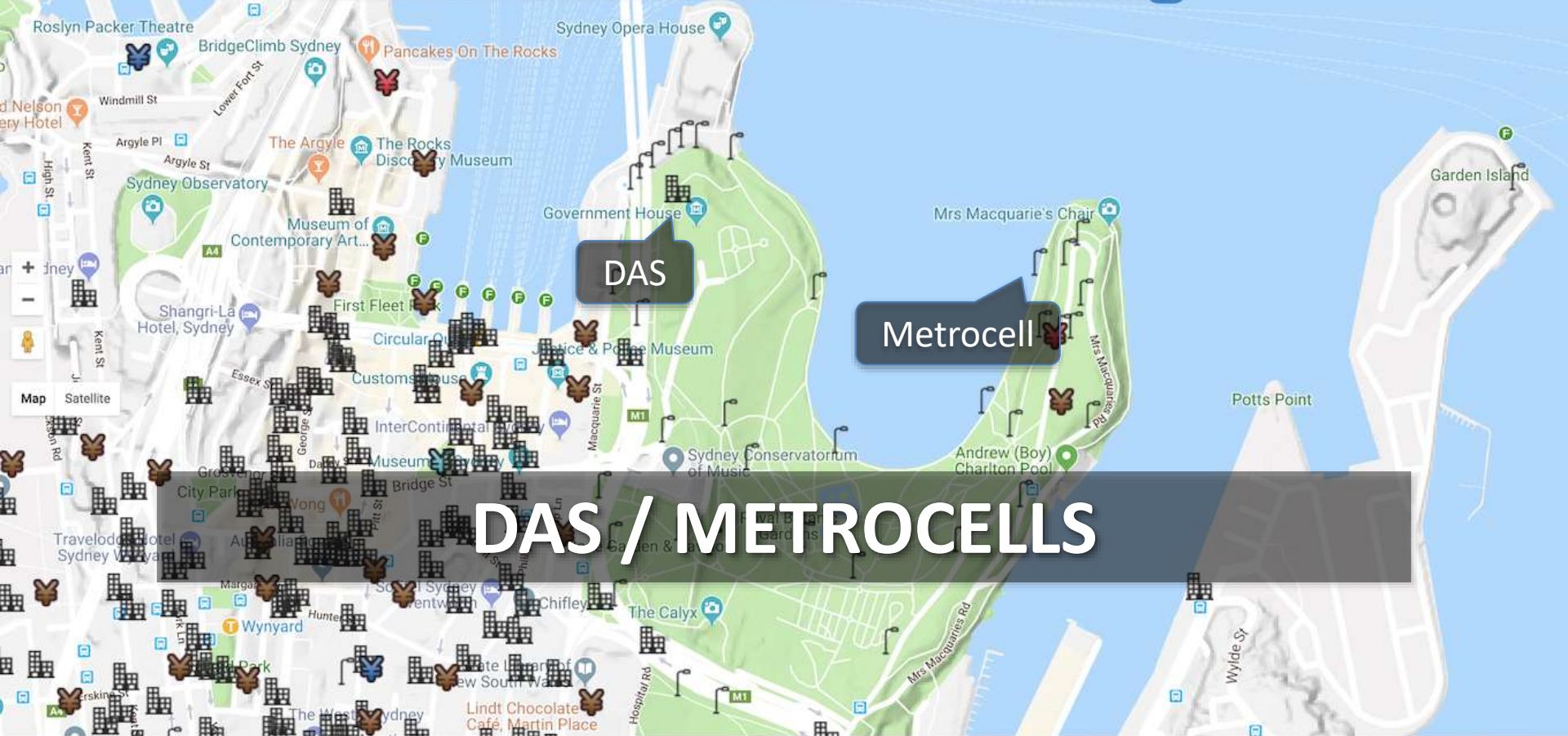
Obstructions are clearly visible,  
from inside Fresnel zone

Line-of-Sight

Find Best Cellular sites with clear LoS from May 2018 ranked by Path loss

Show Bullseye Antenna: 11 m Foliage: 0 m 60% Fresnel No Overshot

Enter a location -33.8612, 151.2165 Sign In 208 sites on map



# DAS / METROCELLS

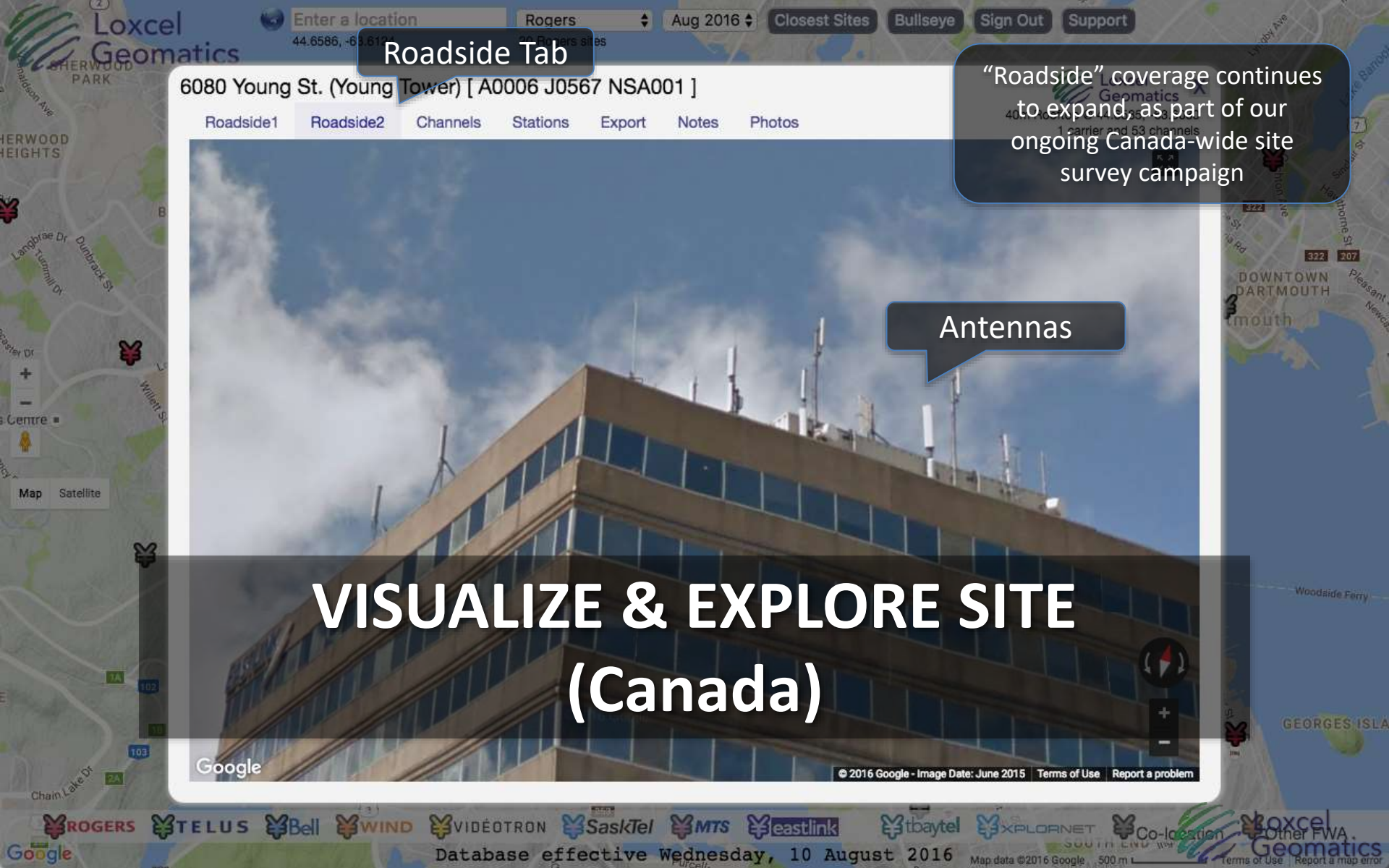
Peter Van Hasselt Park off Palmyra Avenue SHALVEY

Loxcel Geomatics X  
41m / -33.730, 150.797  
2 licensees / 16 channels

Channels															
Stations															
Export															
HAnt	Tx	Rx	Horiz	Vert	Gain	Loss	Power	Bw	Service	Licensee	Mod	Last	Antenna	Radio	
(m)	(MHz)	(MHz)	Azim	Elev	(dBi)	(dB)	(dBm)	(MHz)	Type			Modified	Model	Model	
41	763.0	708.0	85°	0.0°	16.1	0.0	52.0	10.0	Macrocell	Optus	LTE	2018-May-5	Huawei ASI4517R1	0.7	
41	763.0	708.0	180°	0.0°	16.1	0.0	52.0	10.0	Macrocell	Optus	LTE	2018-May-5	Huawei ASI4517R1	0.7	
41	763.0	708.0	310°	0.0°	16.1	0.0	52.0	10.0	Macrocell	Optus	LTE	2018-May-5	Huawei ASI4517R1	0.7	
41	947.6	902.6	Omn	0.0°	16.1	0.0	52.0	10.0	Macrocell	Optus	4G	2018-May-6	Huawei ASI4517R1	0.9	
41	1857.5	1762.5	85°	0.0°	16.8	0.0	54.0	15.0	Macrocell	Optus	LTE	2018-May-5	Huawei ASI4517R1	1.8	
41	1857.5	1762.5	180°	0.0°	16.8	0.0	54.0	15.0	Macrocell	Optus	LTE	2018-May-5	Huawei ASI4517R1	1.8	
41	1857.5	1762.5	310°	0.0°	16.8	0.0	54.0	15.0	Macrocell	Optus	LTE	2018-May-5	Huawei ASI4517R1	1.8	
41	2140.0	1950.0	85°	0.0°	17.0	0.0	52.0	20.0	Macrocell	Optus	LTE	2018-May-6	Huawei ASI4517R1	2.1	
41	2140.0	1950.0	180°	0.0°	17.0	0.0	52.0	20.0	Macrocell	Optus	LTE	2018-May-6	Huawei ASI4517R1	2.1	
41	2140.0	1950.0	310°	0.0°	17.0	0.0	52.0	20.0	Macrocell	Optus	LTE	2018-May-6	Huawei ASI4517R1	2.1	
41	2680.0	2560.0	85°	0.0°	17.5	0.0	52.0	20.0	Macrocell	Optus	LTE	2018-May-6	Huawei ASI4517R1	2.5	
41	2680.0	2560.0	180°	0.0°	17.5	0.0	52.0	20.0	Macrocell	Optus	LTE	2018-May-6	Huawei ASI4517R1	2.5	
41	2680.0	2560.0	310°	0.0°	17.5	0.0	52.0	20.0	Macrocell	Optus	LTE	2018-May-6	Huawei ASI4517R1	2.5	
41	2342.0	2342.0	85°	0.0°	17.2	1.0	53.8	80.0	Broadband	Vividwireless		2018-May-6	Huawei ASI4517R1	2.3	
41	2342.0	2342.0	180°	0.0°	17.2	1.0	53.8	80.0	Broadband	Vividwireless		2018-May-6	Huawei ASI4517R1	2.3	
41	2342.0	2342.0	310°	0.0°	17.2	1.0	53.8	80.0	Broadband	Vividwireless		2018-May-6	Huawei ASI4517R1	2.3	

Radio power / EIRP

CLICK SITE ICON  
TO SEE DETAILED INFO



## Roadside Tab

6080 Young St. (Young Tower) [ A0006 J0567 NSA001 ]

Roadside1 Roadside2 Channels Stations Export Notes Photos

“Roadside” coverage continues to expand, as part of our ongoing Canada-wide site survey campaign

Antennas

# VISUALIZE & EXPLORE SITE (Canada)

Google

© 2016 Google - Image Date: June 2015 Terms of Use Report a problem

Stations Tab

6080 Young St [ A0006 J0567 NSA001 ]

45m / Rooftop / 44.658, -63.603  
3 licensees / 79 channels

	Roadside1	Roadside2	Channels	Backhaul	Stations	Export	Notes	Photos
Licensee	Address		Site Code	Channels	Bands			
Rogers	6080, YOUNG ST, 9TH FLOOR HA		A0006	24	700MHz, 850MHz, 1.9GHz, 2.1GHz, 2.5GHz			
Bell	6080 YOUNG STREET		J0567	44	700MHz, 850MHz, 1.9GHz, 2.1GHz, 2.5GHz			
Eastlink	6080 Young Street, Halifax		NSA001	11	700MHz, 2.1GHz, 2.5GHz			

# LICENSEE ADDRESSES, SITE CODES, # CHANNELS & FREQ BANDS

6080 Young St [ A0006 J0567 NSA001 ]

45m / Rooftop / 44.658, -63.603  
3 licenses / 79 channels

Roadside1 Roadside2 Channels Backhaul Stations **Export** Notes Photos

EXPORT this site to a Google Earth KML file with these parameters:

- Km — Length of beam (from 0.1 to 99.9 kilometers).
- deg — Width of beam, for unidirectional antenna (from 1 to 120 degrees).

# EXPORT SITE TO GOOGLE EARTH, FOR IMMERSIVE 3-D PERSPECTIVE

Search

▼ Places

▼ My Places

- ▶  Sightseeing Tour  
Make sure 3D Buildings layer is checked

▼ Temporary Places

- ▶  Cellular Site @ 51.039, -114.086, by I  
Loxcel Geomatics works in Spectrum Management, providing consulting services to industry and government, concerning the growth, distribution & efficient use of cellular & fixed wireless assets across Canada.  
Visit us on the web at [loxcel.com](http://loxcel.com)  
Email us at [sales@loxcel.com](mailto:sales@loxcel.com).

▼  Rogers W5607

- MBS 700
- AWS 2100
- BRS 2500

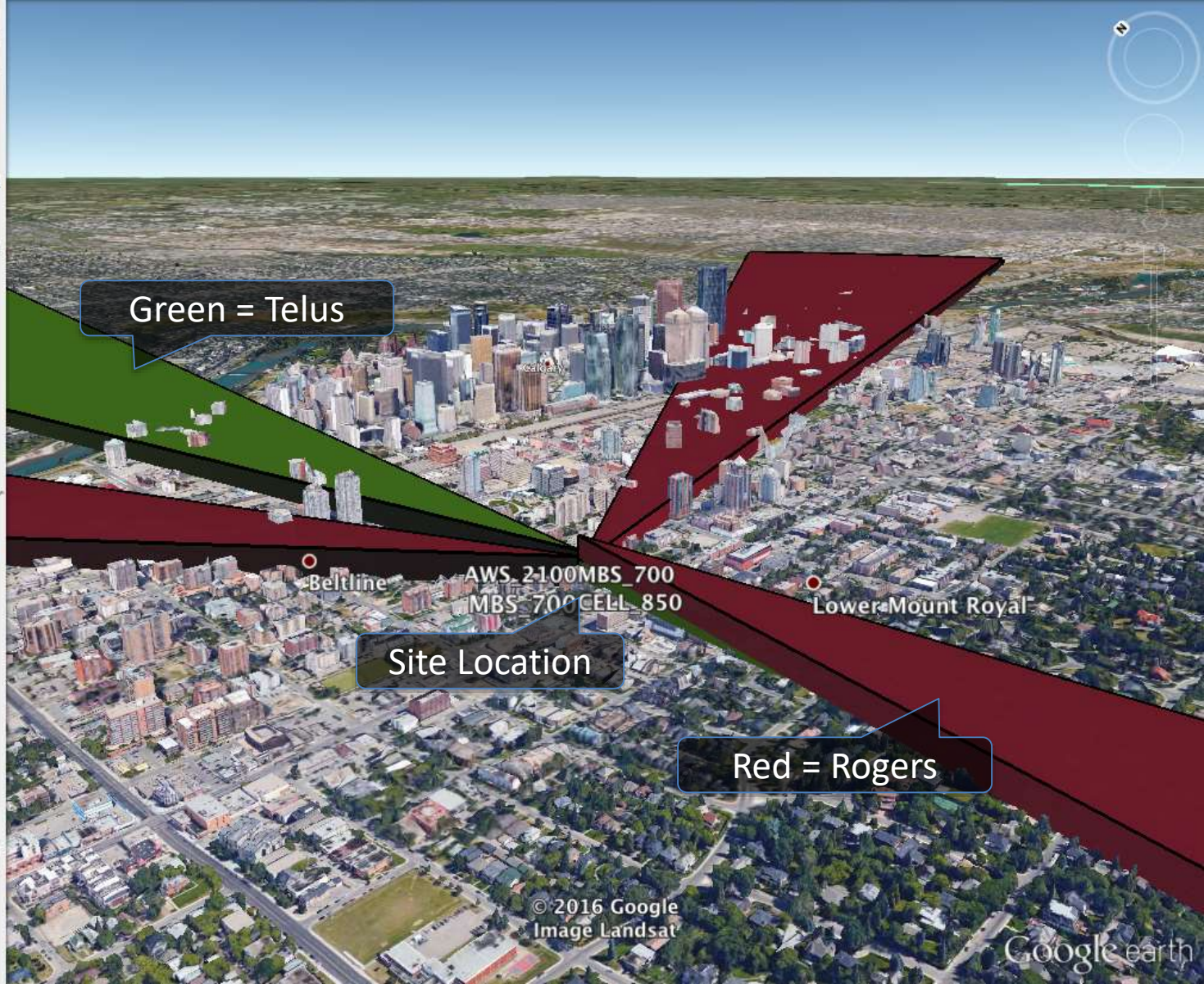
▼  Telus

- MBS 700
- CELL 850
- PCS 1900
- AWS 2100

▼  Wind ACA0149

- AWS 2100

Filter by Carrier & Band



Layers Earth Gallery >>

- ▶ Primary Database

Notes Tab

WNPIMBXG-1525 Dakota Street

Loxcel Geomatics X  
22m / 49.811, -97.092  
1 licensee / 3 channels

Channels Stations Export **Notes** Photos

Submit Note

Submitted by KMAC on 2015-02-22T22:23:34

Winnipeg No. 26 Fire Station

Notes visible to team members only

# SHARE SITE-SPECIFIC NOTES WITH YOUR TEAM (Canada)



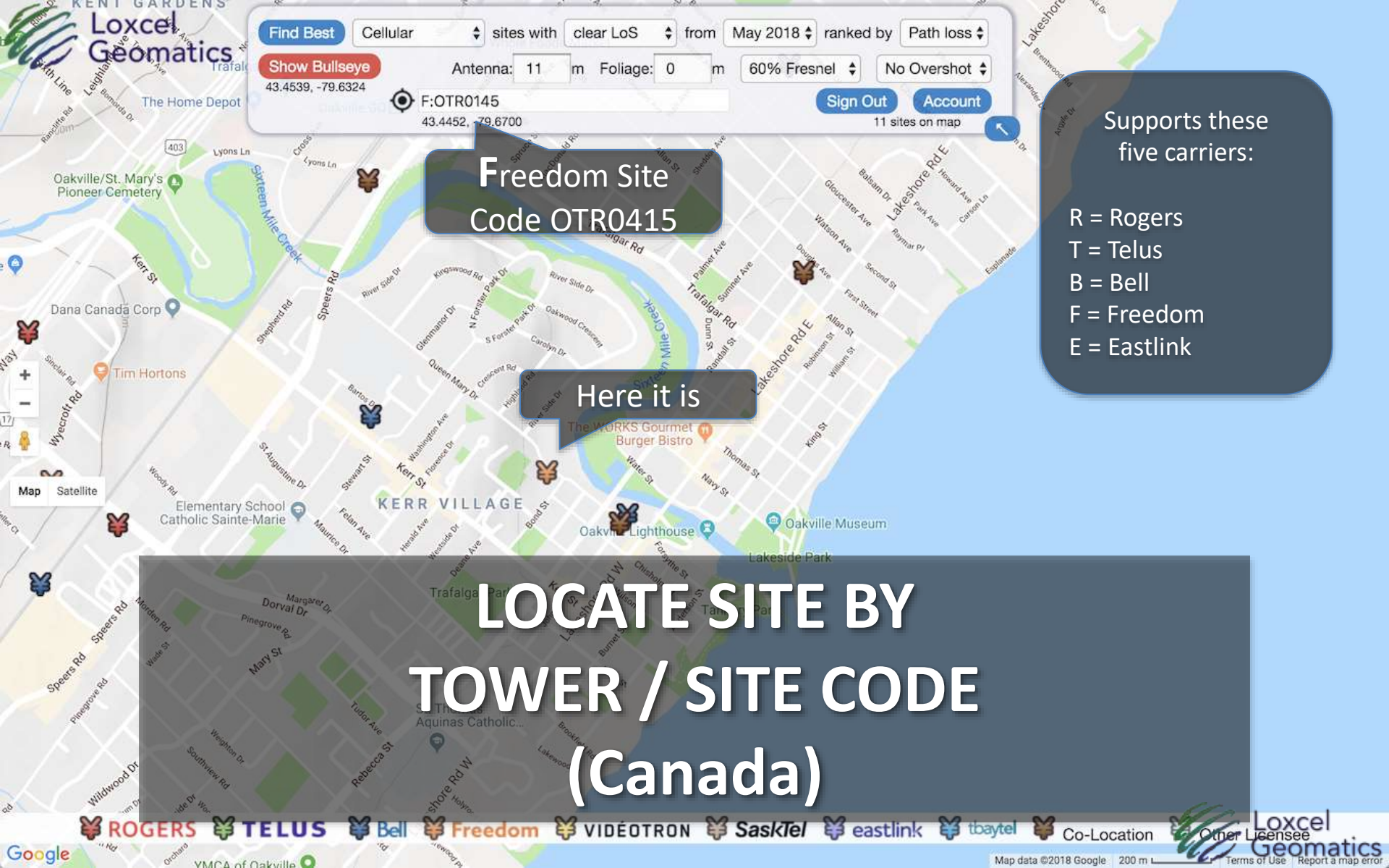
4680 Kimbermount Ave., Mississauga (Kimbermount Place) [ C4844 W4463 ]

34m / Rooftop / 43.551, -79.715  
2 licenses / 60 channels

Roadside1 Roadside2 Channels Stations Export Notes Photos



# SHARE HIGH QUALITY SITE PHOTOS WITH YOUR TEAM (Canada)



Cellular   from  ranked by

Antenna:  m Foliage:  m

11 sites on map

**Freedom Site  
Code OTR0145**

**Here it is**

Supports these five carriers:

- R = Rogers
- T = Telus
- B = Bell
- F = Freedom
- E = Eastlink

# LOCATE SITE BY TOWER / SITE CODE (Canada)

- ROGERS
- TELUS
- Bell
- Freedom
- VIDÉOTRON
- SaskTel
- eastlink
- tbaytel
- Co-Location
- Other Licensee

Find Best Cellular sites with clear LoS from May 2018 ranked by Path loss

Show Bullseye 43.4539, -79.6324

Antenna: 11 m Foliage: 0 m 60% Fresnel No Overshot

5 10 8 21 W4  
49.6307 -112.7764

Sign Out Account  
40 sites on map

- Meridian (W4, W5, W6)
- Range (1 – 30)
- Township (1 – 126)
- Section (1 - 36)
- Quarter (NW, NE, SW, SE) or LSD (1 - 16)

# LOCATE SITE BY ALBERTA TOWNSHIP SYSTEM (ATS)

Find Best Cellular sites with clear LoS from May 2018 ranked by Path loss

Show Bullseye 43.4539, -79.6324

Antenna: 11 m Foliage: 0 m 60% Fresnel No Overshot

Sign Out Account 54 sites on map

302 880 10 10217  
50.4513, -104.6372

CID

LAC

MNC

MCC (302 = Canada)

# LOCATE SITE BY CELL ID

Find Best Cellular sites with clear LoS from May 2018 ranked by Path loss

Show Bullseye 43.4539, -79.6324

Antenna: 11 m Foliage: 0 m 60% Fresnel No Overshot

452500 -754233  
45.4167, -75.7092

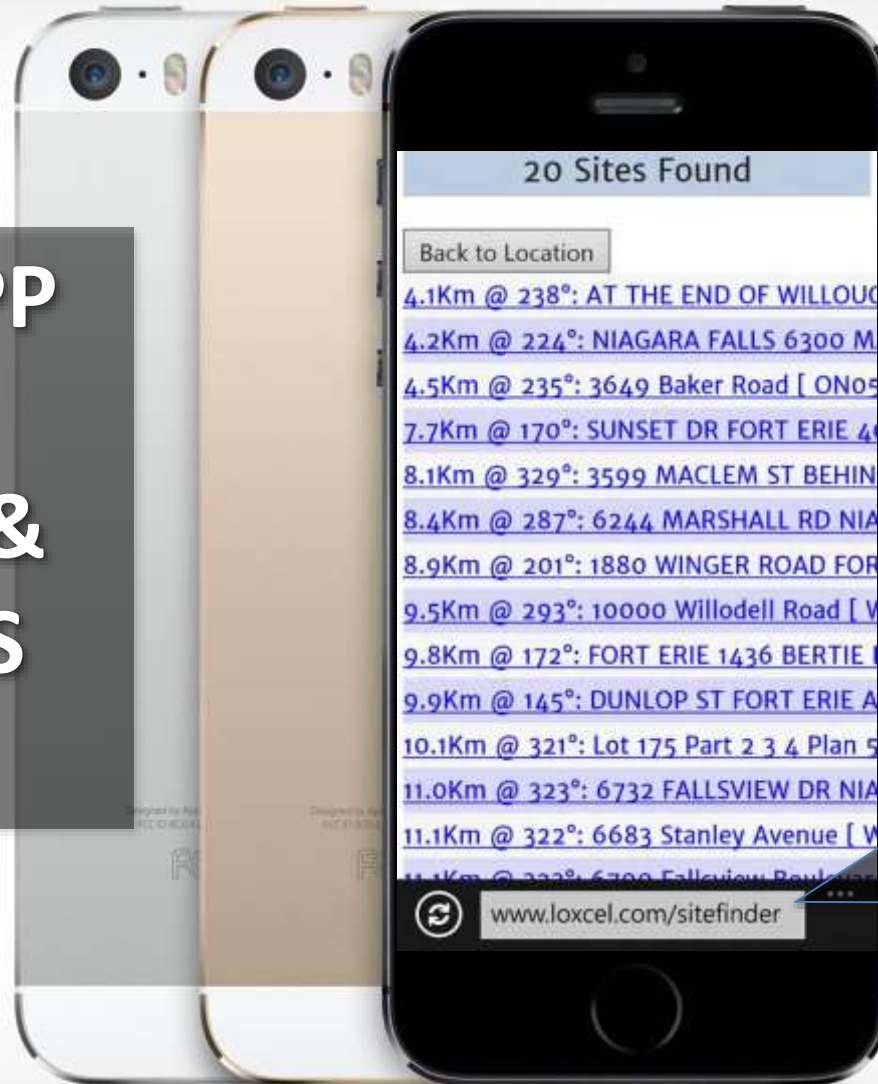
Sign Out Account 89 sites on map

DDMMSS  
format

Also accepts decimal  
degrees. Eg:  
45.41667, -75.70917

# LOCATE SITE BY LATITUDE / LONGITUDE

# MOBILE APP FOR iOS, ANDROID & WINDOWS PHONE



Nothing to  
install. Just visit  
this URL from  
your mobile  
browser

## 3-D Fresnel Zone & Radio Interference

Click the *Download* button (below) to receive a 3-D KML file that models the 1st Fresnel zone between *SITE 1* and *SITE 2*. View this file in [Google Earth](#), optionally with a [3DConnexion SpaceNavigator](#), to identify topography, buildings and other obstructions that intersect this Fresnel zone, and that may cause radio interference. Watch [this fly-through video](#) for an example.

Is this your first visit? Click *Download* and the default values will create a sample 3-D KML file. You're welcome to experiment and change anything in the green area. Purchase one of these subscriptions to change site information in the blue area:

- Lite: \$9.95 USD — expires in 4 days or after 4 KML files have been downloaded, whichever comes first.
- Regular: \$99.95 USD — expires in 12 months or after 100 KML files have been downloaded, whichever comes first.

## Generate 3-D Fresnel Zone KML File

[Sign Out](#)

**Title:**

**Frequency:**   **Ratio:**  of 1st Fresnel zone

**Color:**  **Opacity:**

**Name:**

**Latitude:**  °    °

**Longitude:**  °   °

**Altitude:** (    )  m  m

[Download](#)

97 downloads remaining. Subscription expires on 2100-Jan-01 00:00:00

# 3-D FRESNEL ZONE TOOL

# Summary

- Loxcel Geomatics works in RF / Spectrum Management
- Canada, Australia and New Zealand Cellular Services simplify pre-site planning, color identification, site acquisition, etc
- Please contact us at [sales@loxcel.com](mailto:sales@loxcel.com)