



# ExtractX™

Stantec.io

**100% ASSESSMENT,  
QUICKLY AND ACCURATELY  
WITH ExtractX™**

## HOW IT WORKS

Stantec analyzes imagery and elevation data collected by satellites, planes or unmanned aerial vehicles (UAVs) using OBIA. OBIA is a form of artificial intelligence, automatically breaking down images into objects using color, texture, shape, size and proximity characteristics. Properly-configured OBIA segmentation does in mere seconds what would take a photo interpreter hundreds of hours to hand digitize. Unlike traditional remote sensing classification, OBIA

allows for highly sophisticated decision-tree classification processes, resulting in a finite and detailed class generation. It essentially does what the human brain does instantaneously by clustering image pixels with similar properties to form a series of objects. ExtractX™ uses statistical geospatial information for accurate and precise image classifications in a scientifically repeatable manner eliminating human bias.

REMOTE SENSING

**OUR CLIENTS USE  
ExtractX™ TO INCREASE  
THE SPATIAL SCALE  
AND EXTENT OF  
ASSESSMENTS WHILE  
REDUCING COSTS AND  
HEALTH AND SAFETY  
RISKS FOR THEIR  
FIELD STAFF.**



## BENEFITS OF ExtractX™

- Process vast landscapes and isolated areas of interest quickly with remotely-sensed data and increase study area coverage from only a fraction (field teams) to full coverage (ExtractX™)
- Increase environmental detail of remotely-sensed data in a reliable, scientifically repeatable manner that is defensible to regulatory authorities
- Ideal for change detection analysis as the ExtractX™ method can be run automatically on multiple locations over time without human bias
- Reduce time in the field with just minimal groundtruthing, lowering cost and safety risk



**ExtractX allows for massive geospatial datasets to be analyzed quickly and effectively to generate detailed knowledge and understanding for our clients"**

GRANT WISEMAN  
REMOTE SENSING  
TECHNOLOGY MANAGER

	UAV	PLANE	SATELLITE
Example Application	Water Body Delineations, Vegetation Community Assessment and Management, Mitigation Feasibilities and Monitoring, T&E and Wildlife Habitat Assessment, Utilities Monitoring, Construction Progress, Park, Agricultural and Silvicultural Management.		Water Body Delineations, T&E and Wildlife Habitat Assessment, Natural Resources Management, Water Quality, and Atmospheric Studies.
Horizontal Resolution	1-20 cm	5-50 cm	30 cm to 30 km
Frequency	Weekly	Weekly	Daily
Horizontal Accuracy	High (mm to cm)	High (mm to cm)	Moderate (cm)
Scale	0-5 sq. km	0-250 sq. km	25-10,000 sq. km
Comparison to Traditional Methods	Traditional methods to collect these data include putting personnel in the field for several days. Remote sensing can cover large areas quickly and safely with a high degree of accuracy. Increased value when access creates concerns. Cost-effective for both short and long-term projects. Can be done in remote locations, avoiding travel costs/risks.		
Estimated Cost	<b>\$100 to \$200 per sq. km</b> Cost subject to Stantec pilot availability, location of project site, federal/state airspace restrictions.	<b>\$50 to \$150 per sq. km</b> Cost subject to plane mobilization costs, sub-contractor availability, federal/state airspace restrictions.	<b>Free to \$70 per sq. km</b> Cost subject to imagery resolution, number of coverages required, frequency of coverages, duration of coverages.
Ground Truth Requirements	Low: 4-5 examples per feature type per imagery acquisition. Feature types can be as detailed as vegetation species, building type, transmission tower, etc. UAV imagery can vary greatly based on flying height, atmospheric conditions, time of day.	Low to Moderate: 5-8 examples per feature type per imagery acquisition. Feature types are slightly less detailed than UAV types, but the imagery is more consistent than UAV imagery and can cover larger areas.	Moderate: 8-15 examples per feature type. Features are a more general vegetation community type, urban vs. rural, Row vs. Non-Row. Imagery is the most consistent and field data can be used at multiple locations.
Limitations	Pilot line-of-sight restrictions, Airspace restrictions	Airspace restrictions, Some atmospheric	Atmospheric, Minimum required areas & widths acquisition increase costs
Automation	Difficult to achieve due to variability of imagery	Moderately difficult to achieve due to variability of imagery	Easiest to achieve due to imagery consistency
Data Delivery Timeline	Days to Weeks	Weeks	Days



## RELATED ITEMS

[Bipole III Transmission Complex Barrow Island](#)

## CONTACT US

Ask our ExtractX™ experts:

[Grant Wiseman](#)  
[Jocelyn Hiebert](#)

## CONNECT WITH US



STANTEC.COM