

Location

Wood Buffalo, AB

Client

Imperial Oil Resources Limited

Status

Start date: November 2018

Completion date: June 2020

Project Description

The Aspen Project is a green field in situ SAGD oil sands development area that began construction in November 2018. Spanning over 400 hectares, this development proves to be the provinces newest area since 2013.

Our Approach

- Provide advanced surveying technologies to accurately plan, document, and construct a large development area efficiently.
- Provide 24/7 survey support with 24hr UAV file package turnaround time consistently throughout the busy production winter with no issues. Innovation in means of obtaining survey data increases efficiencies, reduces risk to field crews, and reduces environmental impact.

List Of Primary Services

- Machine control file supply and verification
- Civil Support
- Disposition Plan creation and registration
- Plan amendments and recommendations
- Construction support
- Quantity surveys at regular intervals
- UAV flights as requested – 24hr turnaround time
- Provide site control and base station for other subcontracting companies
- QA/QC layout and design work by subcontracting companies
- File creation from IFC drawings and independent field checks

Innovations

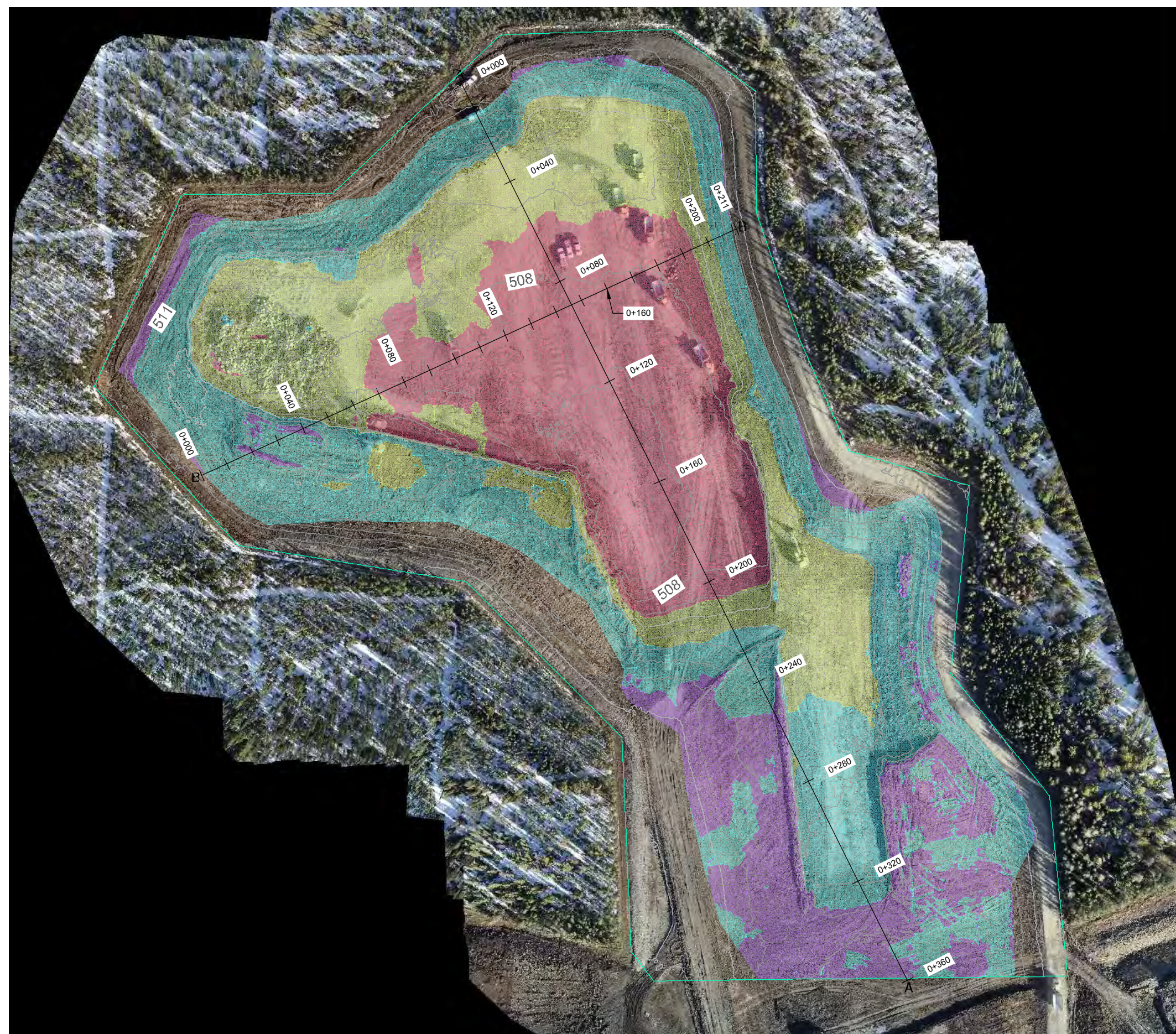
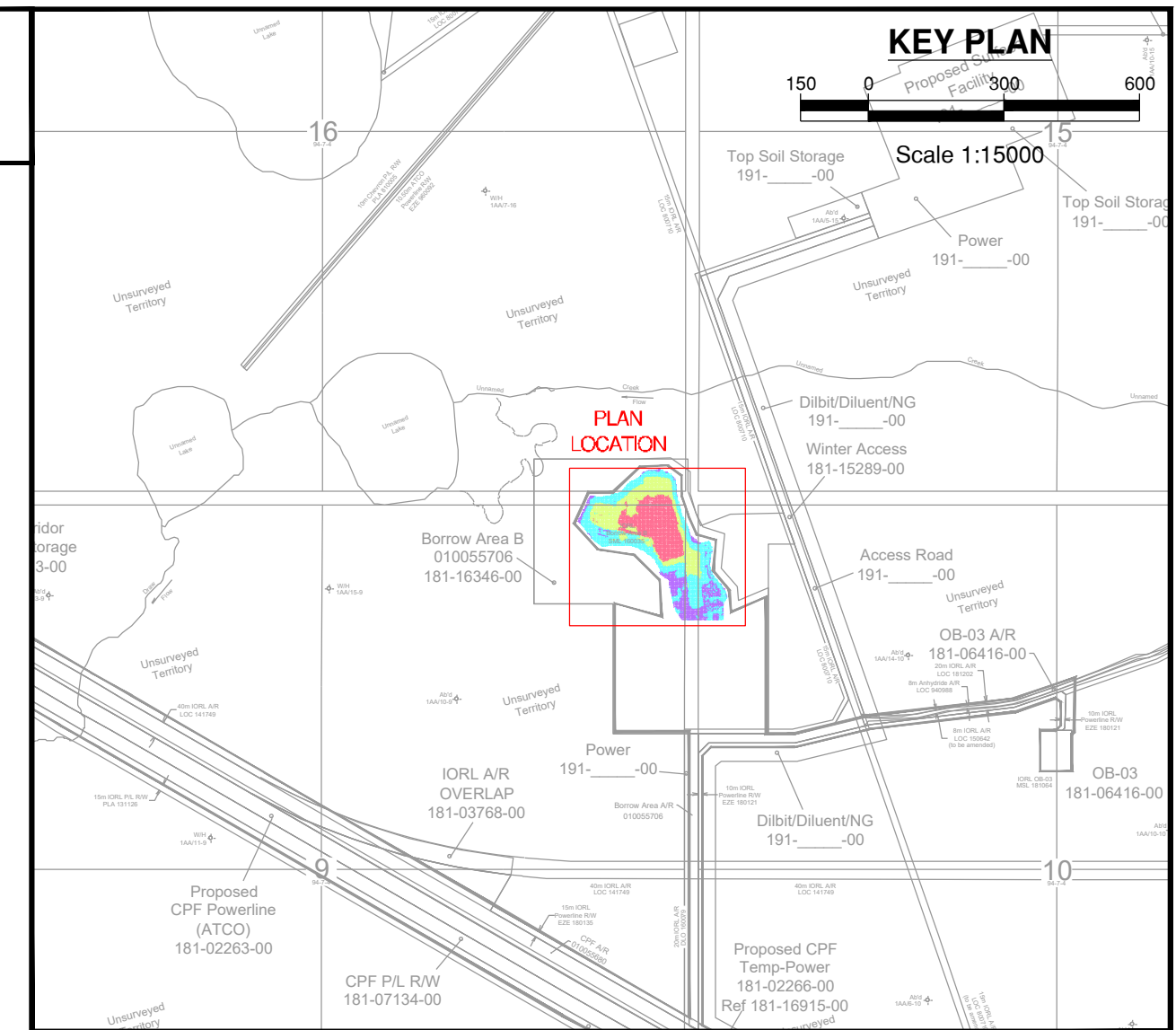
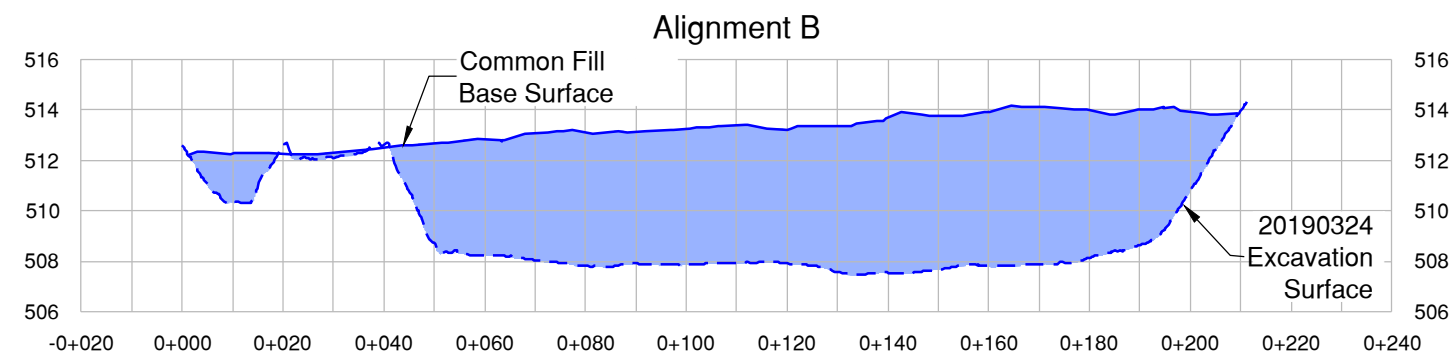
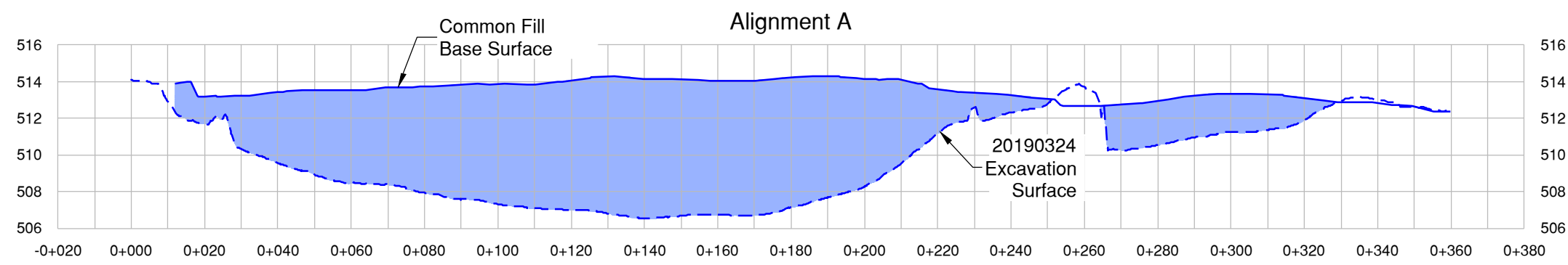
- UAV and drone use to safely access areas previously unavailable for volume calculations and as-builds
 - UAV also reduces time required to survey areas and exponentially increases the data returns
- Machine control use to precisely clear new dispositions
 - Reduces man hours for crews to flag intricate disposition boundaries in hazardous terrain
 - Poor GPS signal in tree covered areas gives less precise initializations – more susceptible to error
 - Eliminates the need for lath/flagging, lessening the impact to the environment
- Greatly increases the rate of production



HORIZONTAL SCALE 1:1500 VERTICAL SCALE: 1:200

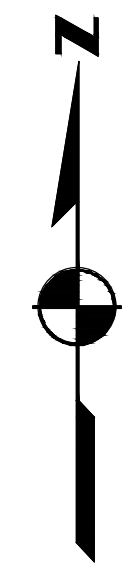
NOTES:

- Distances are in metres and decimals thereof.
- Contours shown at 1.0m intervals
- Date of survey: March 24, 2019



Excavation Volume
 Base Surface: BASE Borrow B Common Fill
 Comparison Surface: 20190324-UAV
 Cut Volume: 143882.18 m³
 Fill Volume: 1276.63 m³
 Net Volume: 142605.56 m³ <CUT>

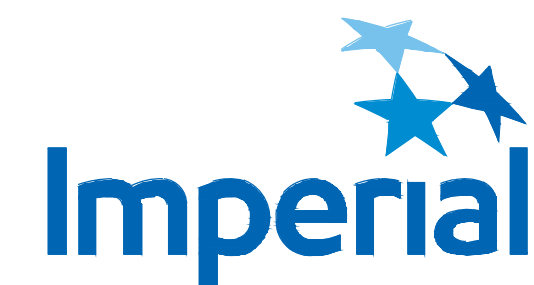
Total Borrow B Excavation Volume as of March 24, 2019: 142605.56 m³



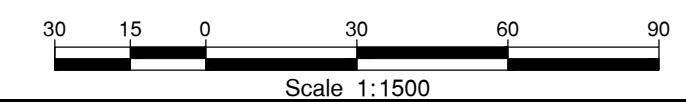
VOLUME TABLE

Number	Min Elev	Max Elev	Volume (m ³)	Color
1	-7.98	-5.00	14797.97	Red
2	-5.00	-2.50	46472.28	Yellow
3	-2.50	0.00	82611.94	Cyan
4	0.00	1.31	1276.63	Purple

Note: Colors shown in table above are also shown in plan view to the left. Colors shown indicate the amount or cut (below baseline) and fill (higher than baseline) from the original surface. Red, yellow and cyan indicates cut, while purple indicates fill.



PLAN SHOWING COMMON FILL EXCAVATION AS OF MARCH 24, 2019 BORROW B



Rev	Revision Description	Date(Y/M/D)	By
0	Original Plan Prepared	2019/04/03	MLA

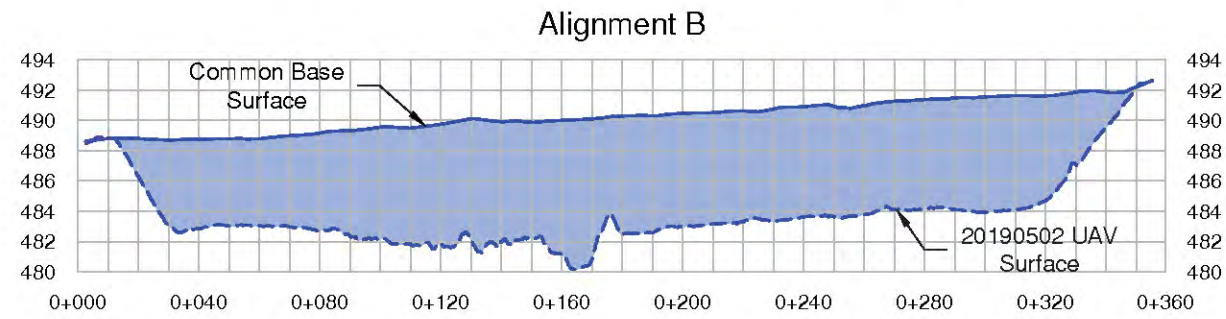
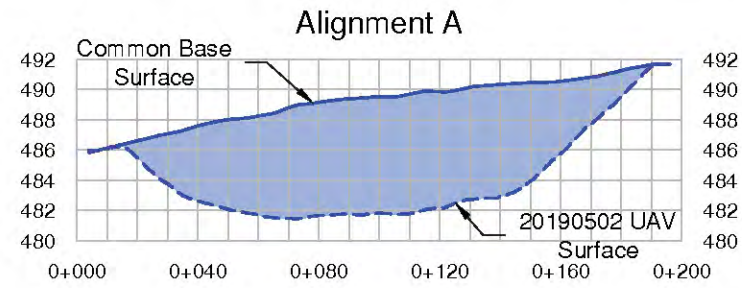


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WSP: 181-16346-00-000-00-MSCAB010-R0 Sheet 11

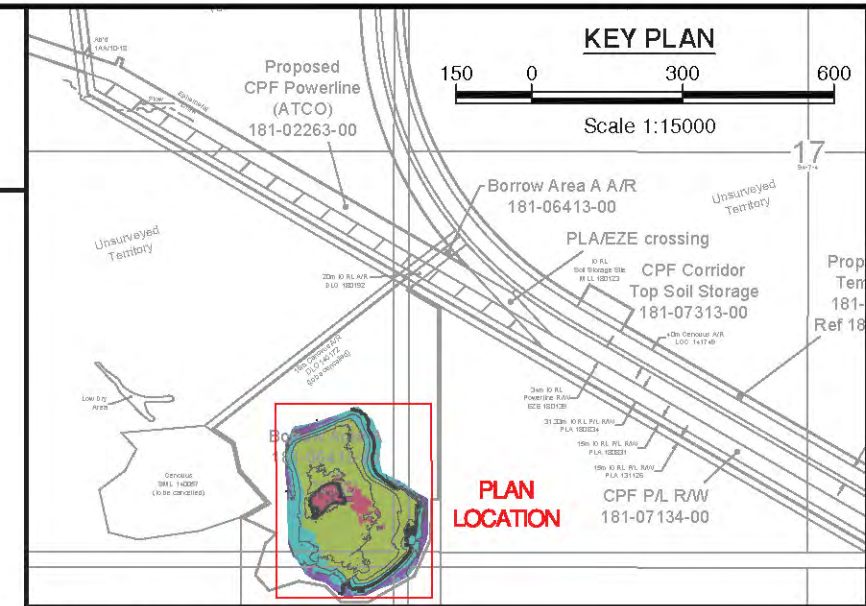
REV. **0**

HORIZONTAL SCALE 1:2500 VERTICAL SCALE 1:500



NOTES:

- Distances are in metres and decimals thereof.
- Contours shown at 2m intervals
- Date of Survey: May 02, 2019



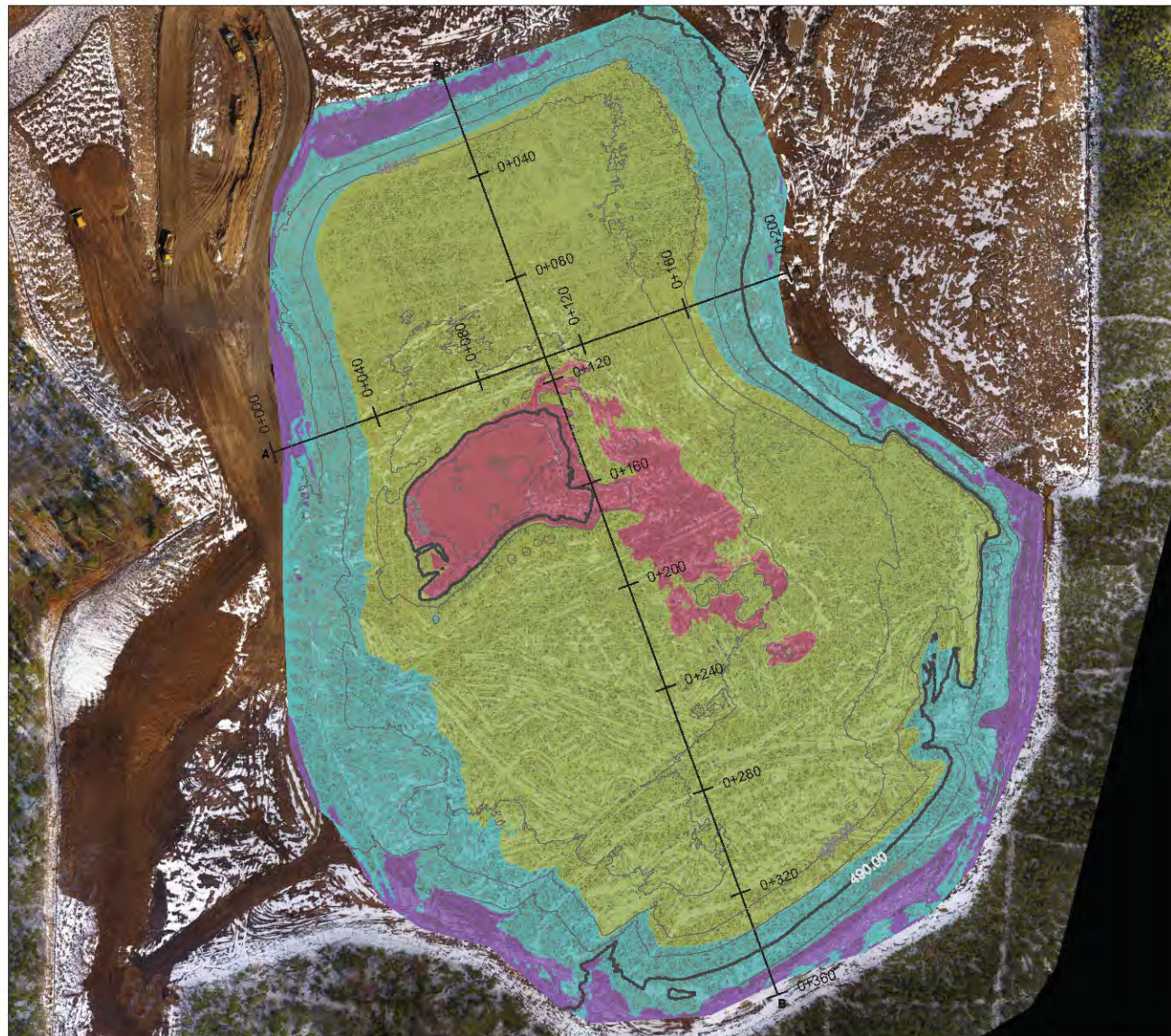
Excavation Volume


Base Surface: Borrow A Common Base
 Comparison Surface: 20190502 UAV Surface
 Cut Volume: 367040.04m³
 Fill Volume: 1970.94m³
 Net Volume: 356069.10 m³ Cut

Total Borrow A Excavation Volume as of May 02, 2019: 365069.10 m³

VOLUME TABLE				
Number	Min Elev	Max Elev	Volume (m³)	Colour
1	-12.635	-8.000	7556.08	Red
2	-8.000	-4.000	126643.96	Green
3	-4.000	0.000	232840.00	Blue
4	0.000	3.493	1970.94	Purple


Note: Colors shown in tables above are also shown in plan view to the left. Colors shown indicate the amount of cut (below baseline) and fill (higher than baseline) from the original surface. Red, yellow and green colors indicate cut, while purple indicates fill.






**PLAN SHOWING PIT EXCAVATION
MAY 02, 2019
BORROW A OVERVIEW**

Scale 1:2500



Rev	Revision Description	Date(Y/M/D)	By
0	Original Plan Prepared	2019/05/03	MLA

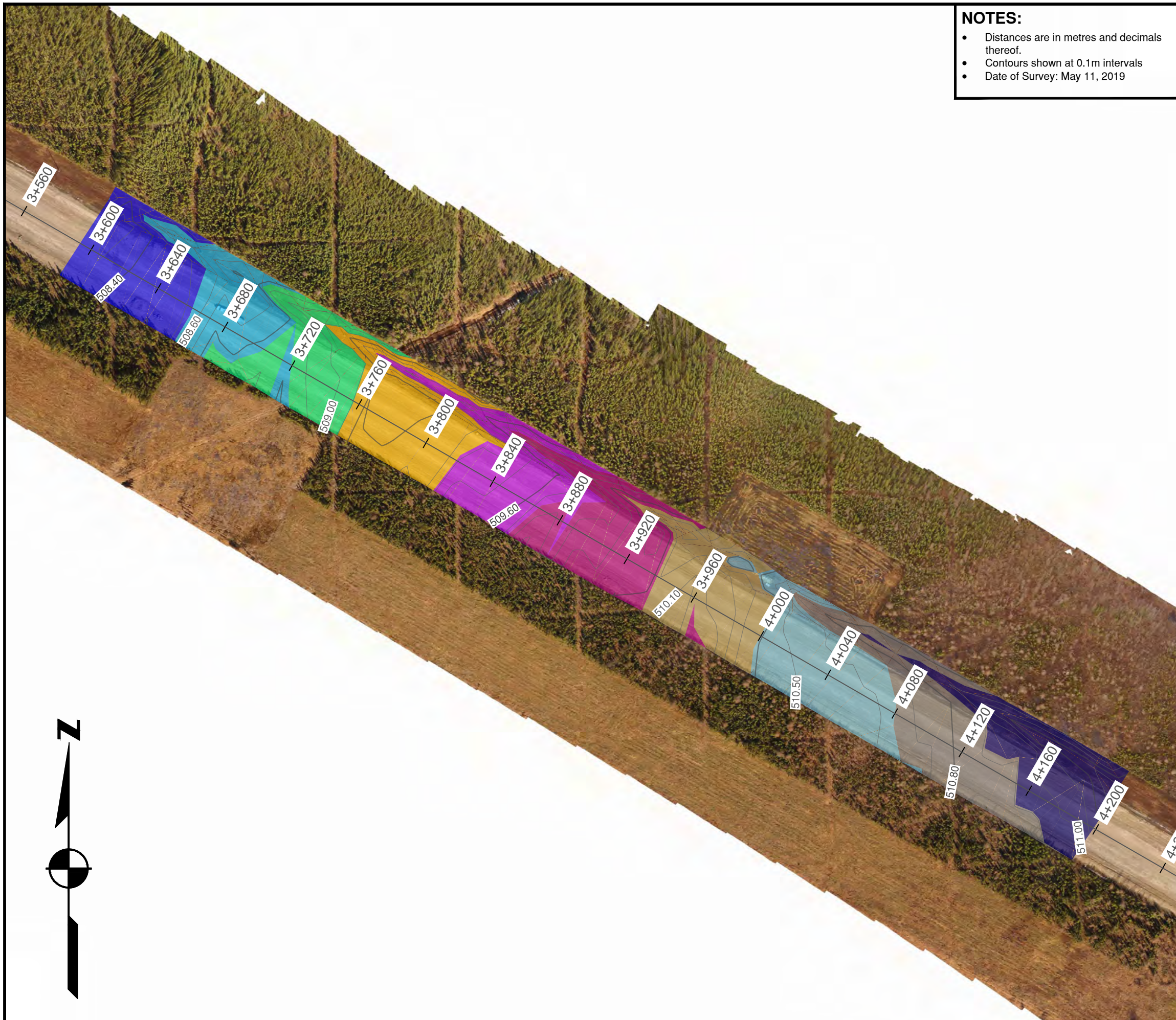


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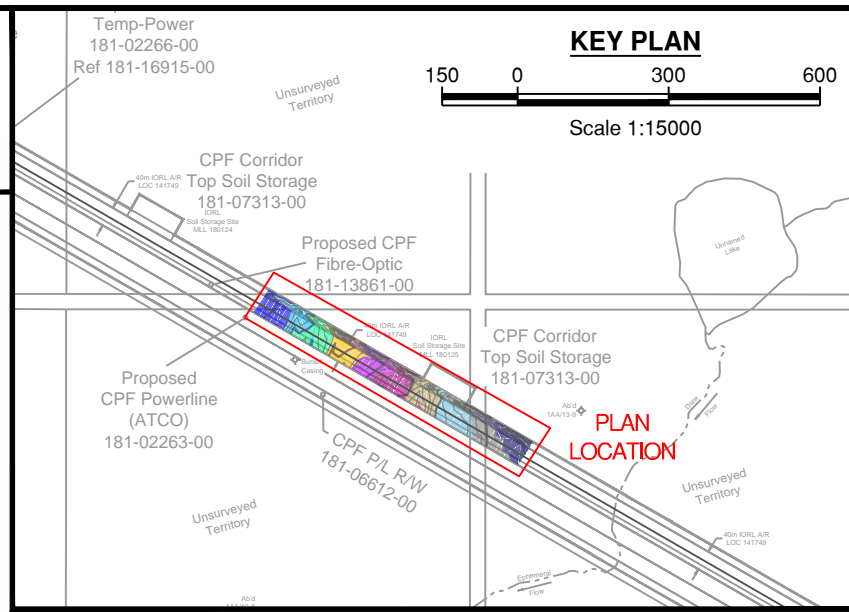
REV. 0

Sheet 6

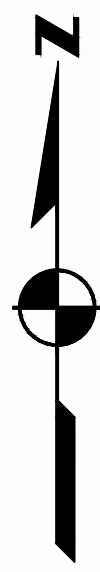



NOTES:

- Distances are in metres and decimals thereof.
- Contours shown at 0.1m intervals
- Date of Survey: May 11, 2019




Elevations Table				
Number	Minimum Elevation	Maximum Elevation	Area	Color
1	508.25	508.53	3201.20	Blue
2	508.53	508.83	2649.19	Light Blue
3	508.83	509.11	2695.05	Green
4	509.11	509.38	3349.61	Yellow
5	509.38	509.74	3086.82	Purple
6	509.74	510.05	3509.42	Magenta
7	510.05	510.38	3168.74	Olive
8	510.38	510.65	3634.14	Light Blue
9	510.65	510.90	3983.19	Grey
10	510.90	511.39	3371.56	Dark Blue






PLAN SHOWING SURVEYED ELEVATIONS
MAY 08, 2019
MAR (3+600 - 4+200)



Scale 1:2000

Rev	Revision Description	Date(Y/M/D)	By
0	Original Plan Prepared	2019/05/13	MLA



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REV. 0