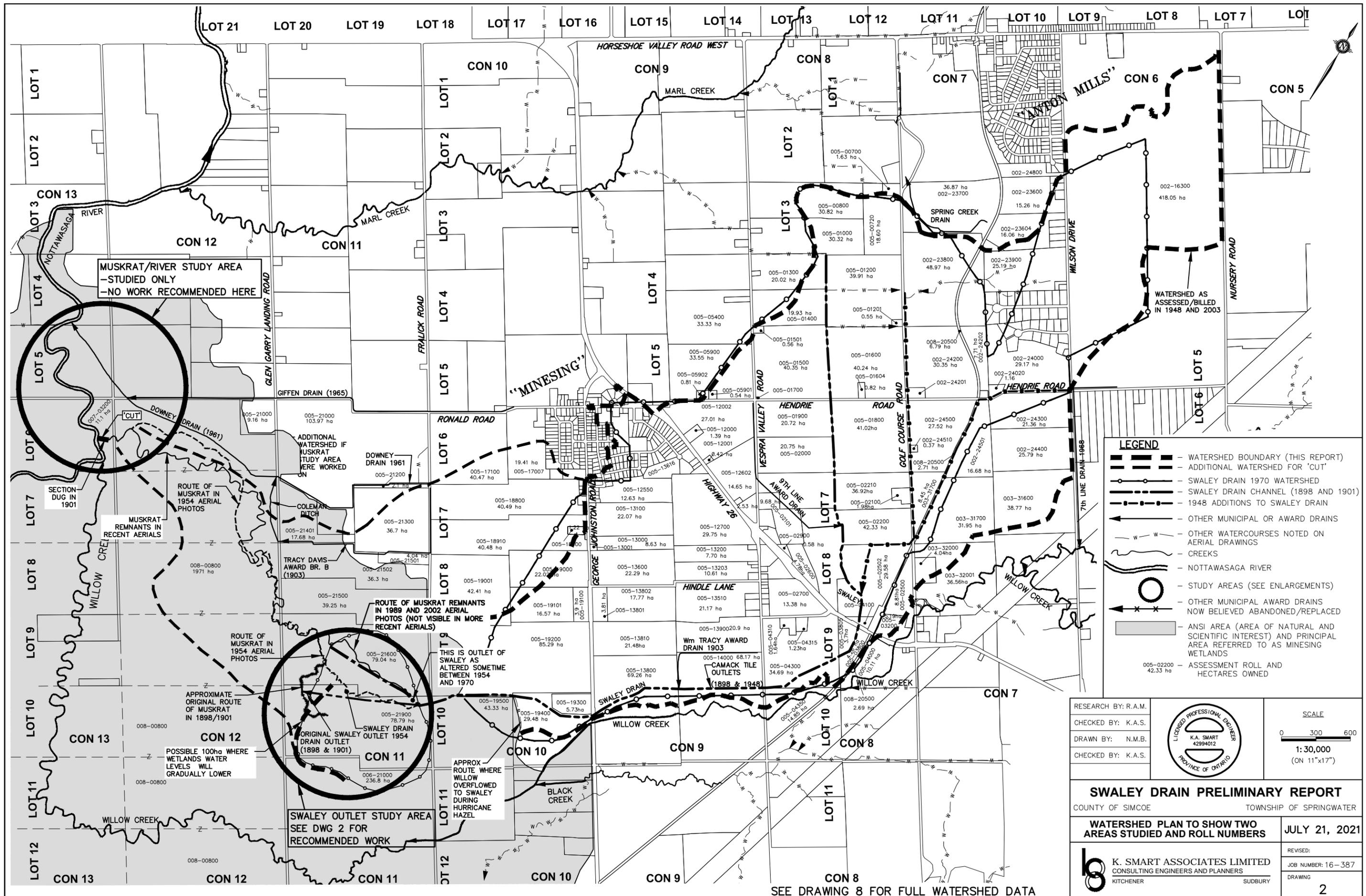


- LEGEND**
- SWALEY DRAIN (CHANNEL)
 - MAJOR WATERSHED
 - ADDITIONAL WATERSHED IF MUSKRAT AREA WERE INCLUDED
 - ALTERED ROUTE (1970'S ±)
 - HISTORIC ROUTES NOW INUNDATED
 - WHERE NEW WORK IS RECOMMENDED NOW (IF 950m LENGTH USED)

RESEARCH BY: R.A.M.		SCALE
CHECKED BY: K.A.S.		0 250 500m
DRAWN BY: N.M.B.		1:25,000
CHECKED BY: K.A.S.		(ON 11"x17")

SWALEY DRAIN PRELIMINARY REPORT	
COUNTY OF SIMCOE	TOWNSHIP OF SPRINGWATER
WATERSHED PLAN OF SWALEY DRAIN ON AERIAL BASE	JULY 21, 2021
K. SMART ASSOCIATES LIMITED CONSULTING ENGINEERS AND PLANNERS KITCHENER SUDBURY	REVISED: JOB NUMBER: 16-387 DRAWING 1

SEE DRAWING 2 FOR MORE DATA SEE DRAWING 8 FOR FULL WATERSHED DATA



- LEGEND**
- WATERSHED BOUNDARY (THIS REPORT)
 - - - ADDITIONAL WATERSHED FOR 'CUT'
 - SWALEY DRAIN 1970 WATERSHED
 - - - SWALEY DRAIN CHANNEL (1898 AND 1901)
 - - - 1948 ADDITIONS TO SWALEY DRAIN
 - OTHER MUNICIPAL OR AWARD DRAINS
 - W W — OTHER WATERCOURSES NOTED ON AERIAL DRAWINGS
 - CREEKS
 - NOTTAWASAGA RIVER
 - — STUDY AREAS (SEE ENLARGEMENTS)
 - OTHER MUNICIPAL AWARD DRAINS NOW BELIEVED ABANDONED/REPLACED
 - — ANSI AREA (AREA OF NATURAL AND SCIENTIFIC INTEREST) AND PRINCIPAL AREA REFERRED TO AS MINESING WETLANDS
 - 005-02200 42.33 ha — ASSESSMENT ROLL AND HECTARES OWNED

RESEARCH BY: R.A.M.
 CHECKED BY: K.A.S.
 DRAWN BY: N.M.B.
 CHECKED BY: K.A.S.



SCALE
 0 300 600
 1:30,000
 (ON 11"x17")

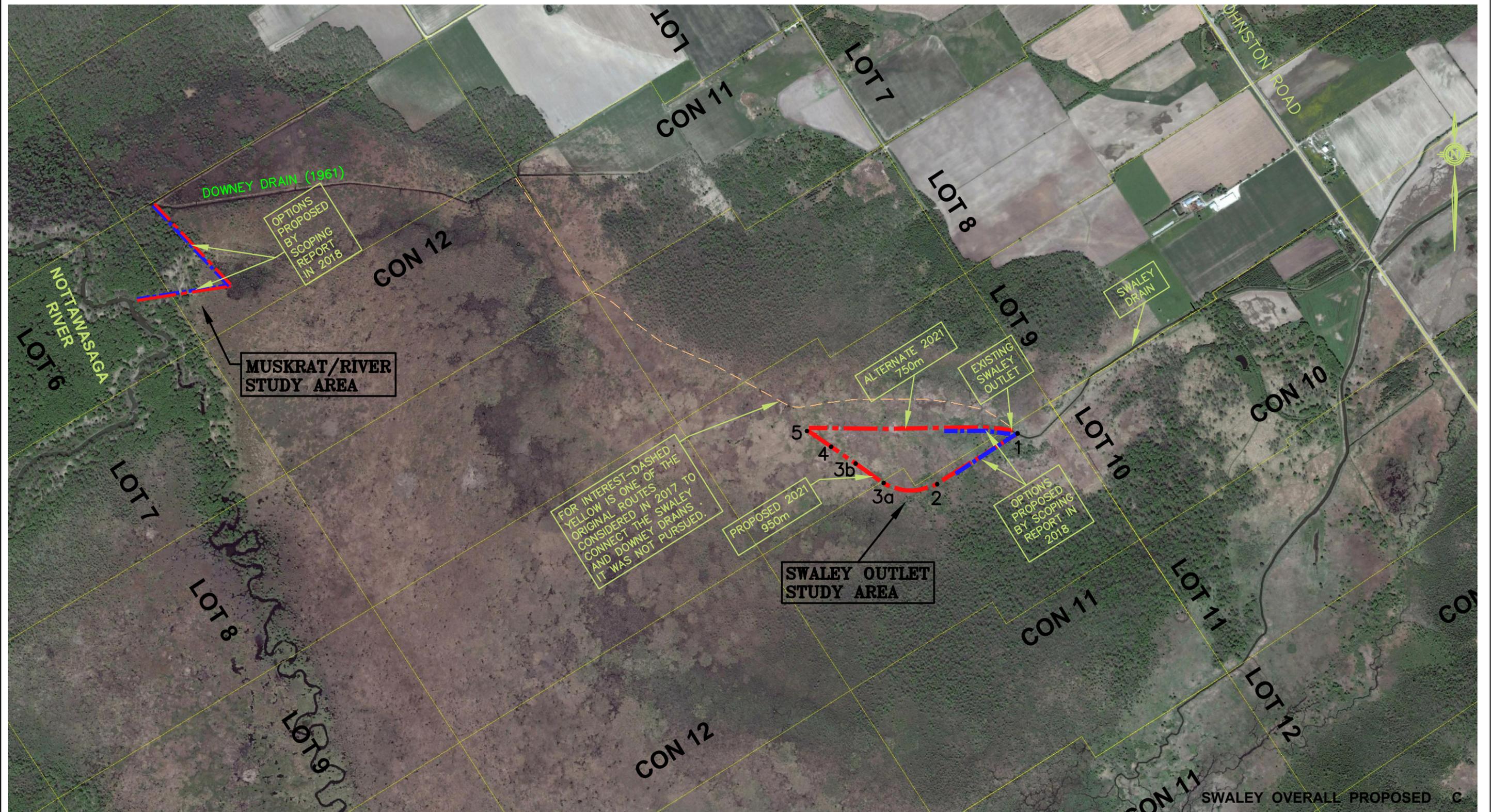
SWALEY DRAIN PRELIMINARY REPORT
 COUNTY OF SIMCOE TOWNSHIP OF SPRINGWATER

WATERSHED PLAN TO SHOW TWO AREAS STUDIED AND ROLL NUMBERS JULY 21, 2021

K. SMART ASSOCIATES LIMITED
 CONSULTING ENGINEERS AND PLANNERS
 KITCHENER SUDBURY

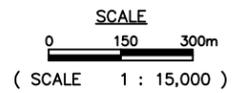
REVISED:
 JOB NUMBER: 16-387
 DRAWING
2

SEE DRAWING 8 FOR FULL WATERSHED DATA



NOTE: ALL RED AND BLUE ROUTES WERE STUDIED BY NATURAL ENVIRONMENTAL REPORT

2 DENOTES LOCATION OF SURVEY POINTS BY K. SMART ASSOCIATES LTD.



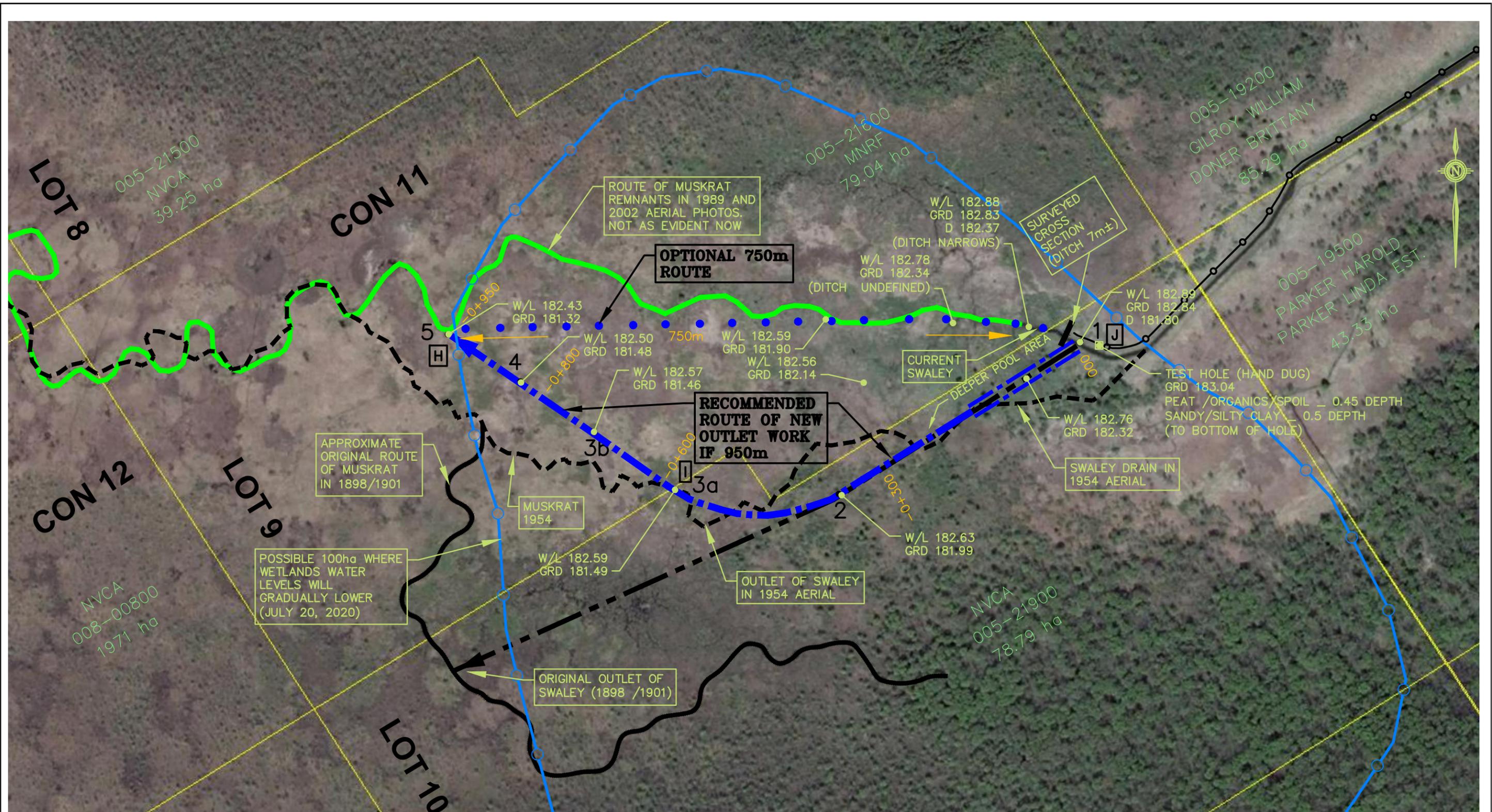
(1:15,000 ON 11"x17")

SWALEY DRAIN PRELIMINARY REPORT
TOWNSHIP OF SPRINGWATER

ROUTES STUDIED ON AERIAL BASE

K. SMART ASSOCIATES LIMITED
CONSULTING ENGINEERS AND PLANNERS
KITCHENER SUDBURY

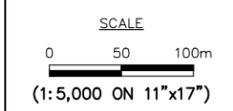
JULY 21, 2021
JOB NUMBER: 16-387
DRAWING 3



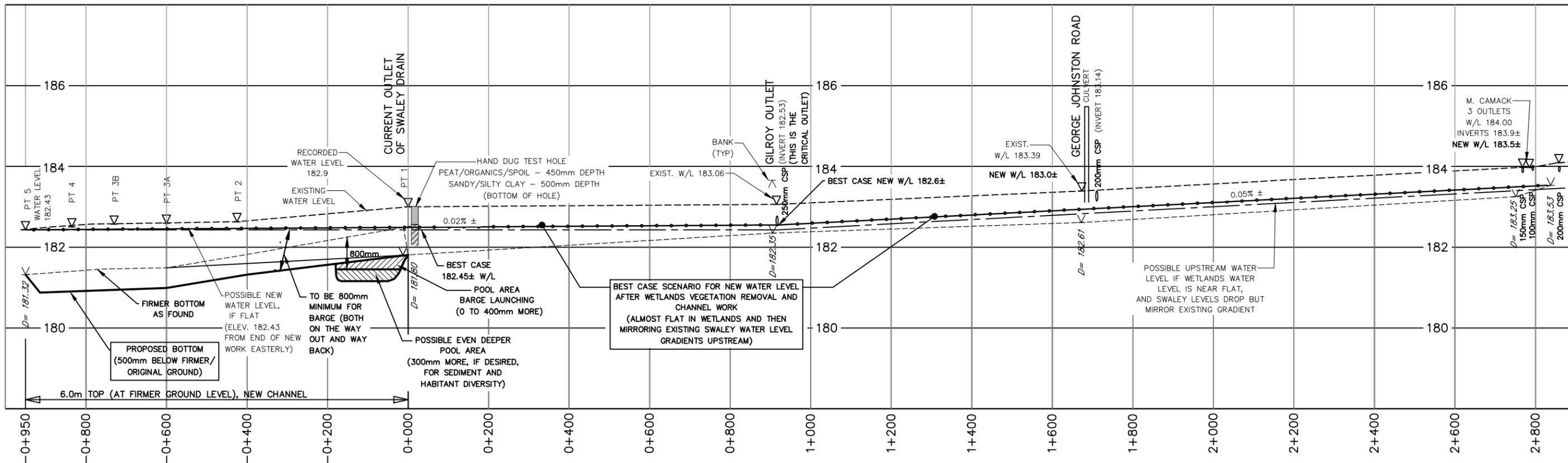
- NOTE:**
- GROUND SHOTS IN WETLANDS ARE ELEVATIONS AT WHICH THE SURVEY ROD TOUCHED FIRMER GROUND
 - ELEVATIONS AT POINTS 1 TO 5 WERE TAKEN FEB 2019. OTHERS TAKEN DEC 2017. BUT CLOSE AGREEMENT EXISTS.
 - GILROY TILE INVERT IS 182.53

LEGEND

- W/L 181.05
BK 181.24
D 179.34
- DENOTES ELEVATIONS TAKEN BY GPS SURVEYS
 - W/L - WATERLEVEL
 - BK - DITCH BANK
 - GRD - FIRMER GROUND IN WETLAND
 - D - DITCH BOTTOM IN A DRAIN
- GPS IS GLOBAL POSITIONING SYSTEM
- ACCESS ROUTE
- 2 DENOTES LOCATION OF SURVEY POINTS
- J DENOTES LOCATION OF VARIOUS POINTS DESCRIBED IN APPENDIX WHERE ELEVATIONS WERE OBTAINED



SWALEY DRAIN PRELIMINARY REPORT	
TOWNSHIP OF SPRINGWATER	
SWALEY OUTLET STUDY AREA ENLARGEMENT	
K. SMART ASSOCIATES LIMITED CONSULTING ENGINEERS AND PLANNERS KITCHENER SUDBURY	JULY 21, 2021 JOB NUMBER: 16-387 DRAWING 4

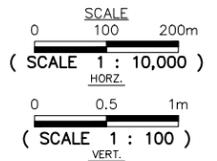


**950m ROUTE
RECOMMENDED WORK AREA
(750m OPTIONAL ROUTE
WOULD BE SIMILAR)**

LEGEND

- PT 2 — DENOTES SURVEYED GROUND LOCATION
- ▽ — DENOTES WATER LEVEL
- ▽ — DENOTES APPROXIMATE DITCH OR WETLAND BOTTOM (ELEVATION AT WHICH SURVEY ROD TOUCHED FIRMER GROUND)

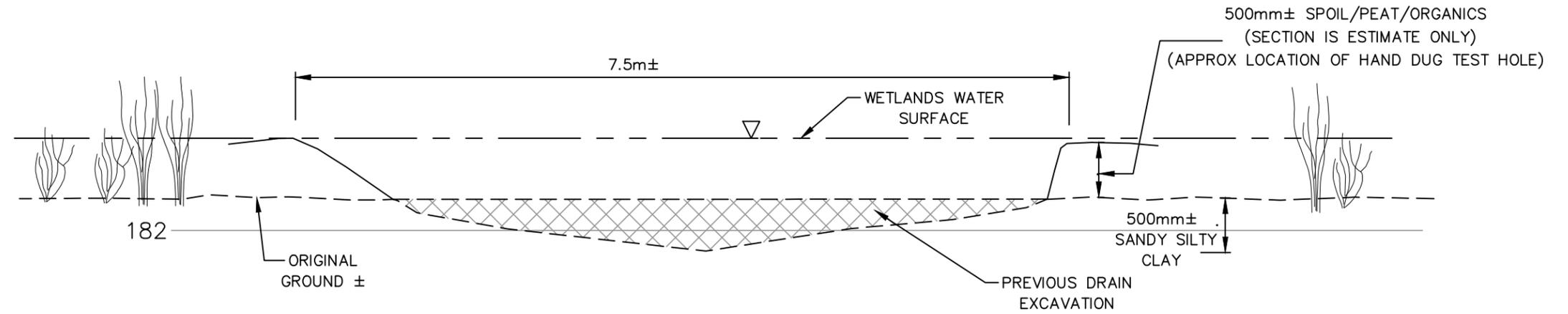
NOTES:
 -WATER LEVELS WERE RECORDED BY GPS SURVEY.
 -DISTANCES/STATIONS IN METERS ARE WHAT HAVE BEEN SCALED BETWEEN LOCATIONS OF RECORDED ELEVATIONS.



SWALEY DRAIN PRELIMINARY REPORT
TOWNSHIP OF SPRINGWATER

**SWALEY OUTLET STUDY AREA
SKETCH TO SHOW RECORDED
AND POSSIBLE WATER LEVELS
AND EXISTING TILE OUTLETS**

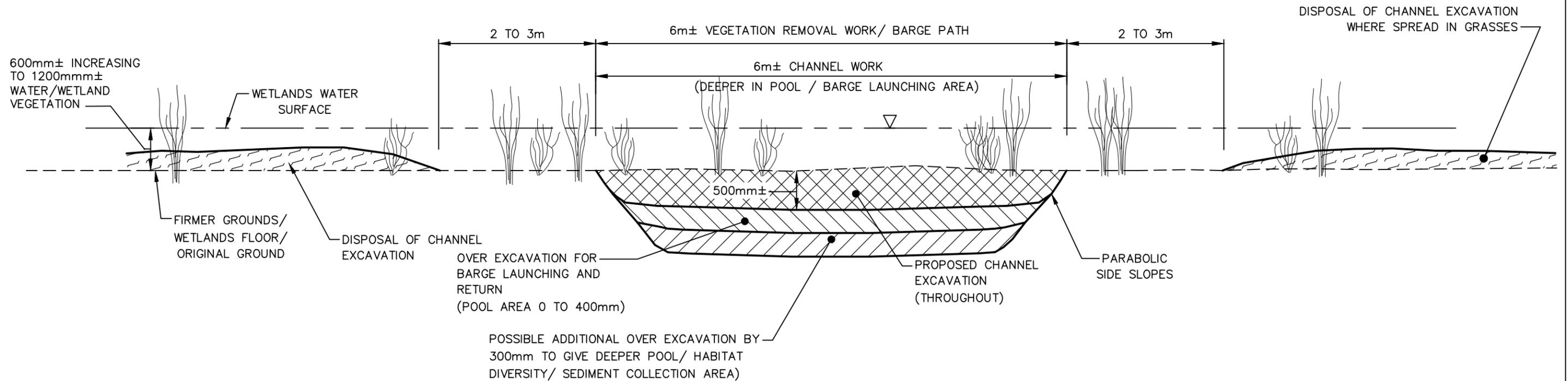
K. SMART ASSOCIATES LIMITED CONSULTING ENGINEERS AND PLANNERS KITCHENER SUDBURY	JULY 21, 2021
	JOB NUMBER: 16-387 DRAWING: 5



**SWALEY DRAIN EXISTING CROSS SECTION
AT EXISTING OUTLET**

----- AS MEASURED NOW BY GPS

- NOTE: 1. CHANNEL AS DESCRIBED IN 1898, 1901 WAS TO HAVE 12FT TOP, 4FT BOTTOM, 3.5 FT DEPTH AT LOCATIONS OF GREATER DEPTH FURTHER UPSTREAM
 2. DITCH WAS WIDENED IN 1948, BUT NO SPECIFICS ARE AVAILABLE
 3. BANK FULL DITCH AS EXISTING IS CLOSE TO 7.5m WIDE.

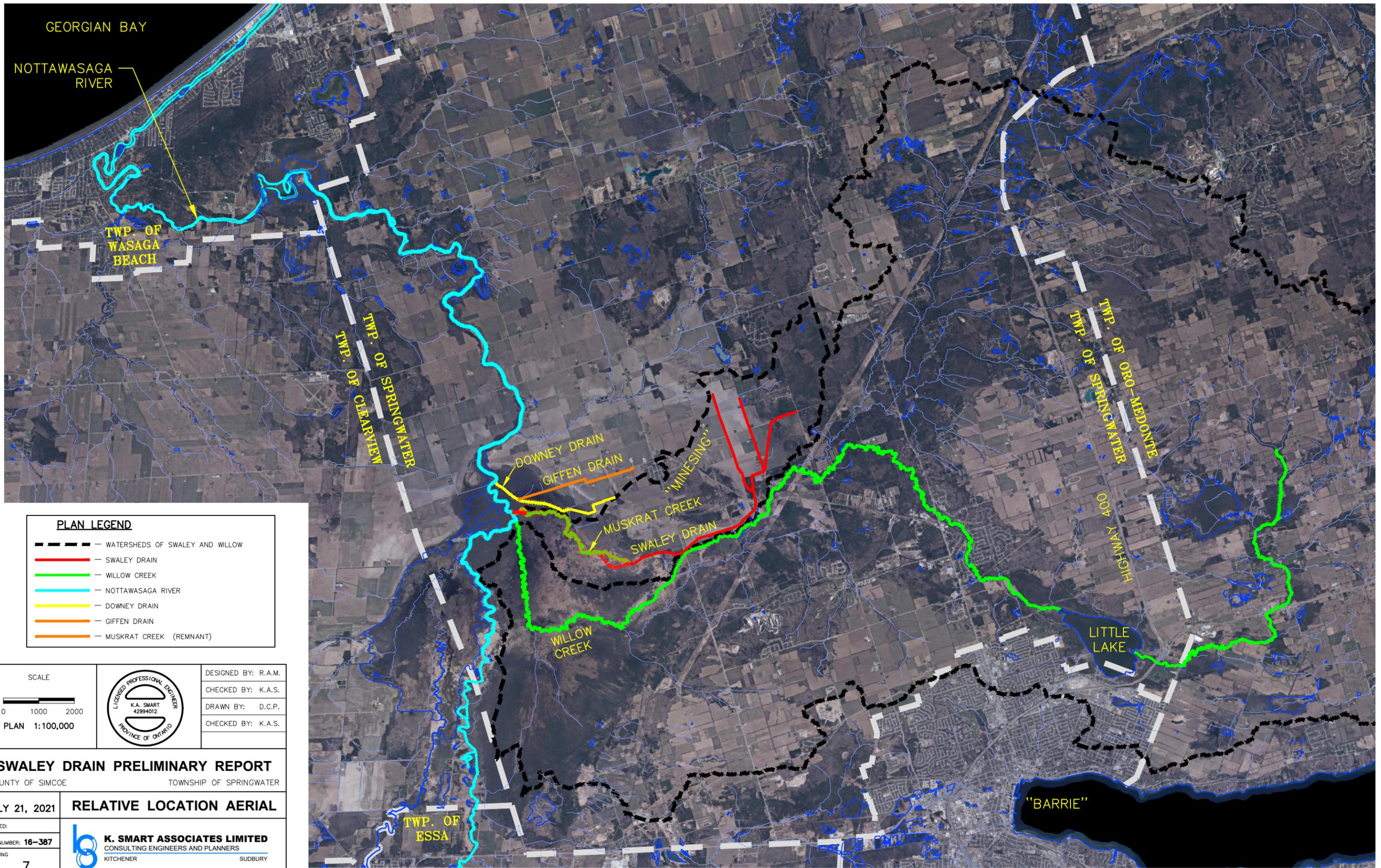


**WETLANDS VEGETATION REMOVAL
AND
CHANNEL PROPOSED FOR SWALEY DRAIN
OUTLET AREA**



SCALE
0 0.5 1.0m
(1:50 ON 11"x17")

SWALEY DRAIN PRELIMINARY REPORT TOWNSHIP OF SPRINGWATER	
SWALEY OUTLET STUDY AREA CROSS SECTIONS	
JULY 21, 2021	JOB NUMBER: 16-387
 K. SMART ASSOCIATES LIMITED CONSULTING ENGINEERS AND PLANNERS SUDBURY	DRAWING 6



PLAN LEGEND

- WATERSHEDS OF SWALEY AND WILLOW
- SWALEY DRAIN
- WILLOW CREEK
- NOTTAWASAGA RIVER
- DOWNEY DRAIN
- GIFFEN DRAIN
- MUSKRAT CREEK (REMNANT)

SCALE
 0 1000 2000
 PLAN 1:100,000



DESIGNED BY: R.A.M.
 CHECKED BY: K.A.S.
 DRAWN BY: D.C.P.
 CHECKED BY: K.A.S.

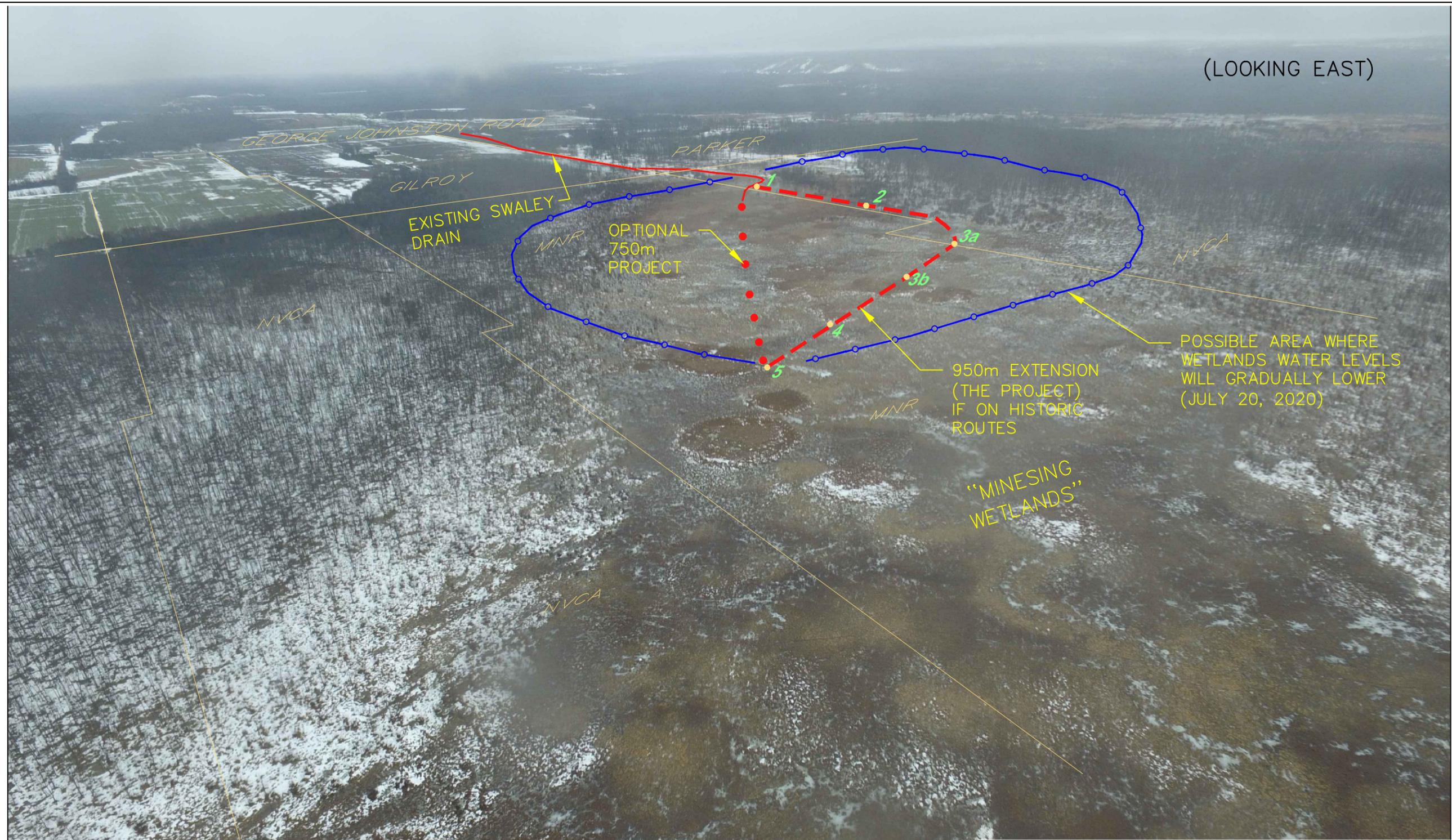
SWALEY DRAIN PRELIMINARY REPORT
 COUNTY OF SIMCOE TOWNSHIP OF SPRINGWATER

JULY 21, 2021 **RELATIVE LOCATION AERIAL**

REVISED:
 JOB NUMBER: 16-387
 DRAWING: 7

K. SMART ASSOCIATES LIMITED
 CONSULTING ENGINEERS AND PLANNERS
 KITCHENER SUDBURY

(LOOKING EAST)



SWALEY DRAIN PRELIMINARY REPORT

TOWNSHIP OF SPRINGWATER

SWALEY DRAIN - DRONE PHOTO OF RECOMMENDED WORK ROUTES



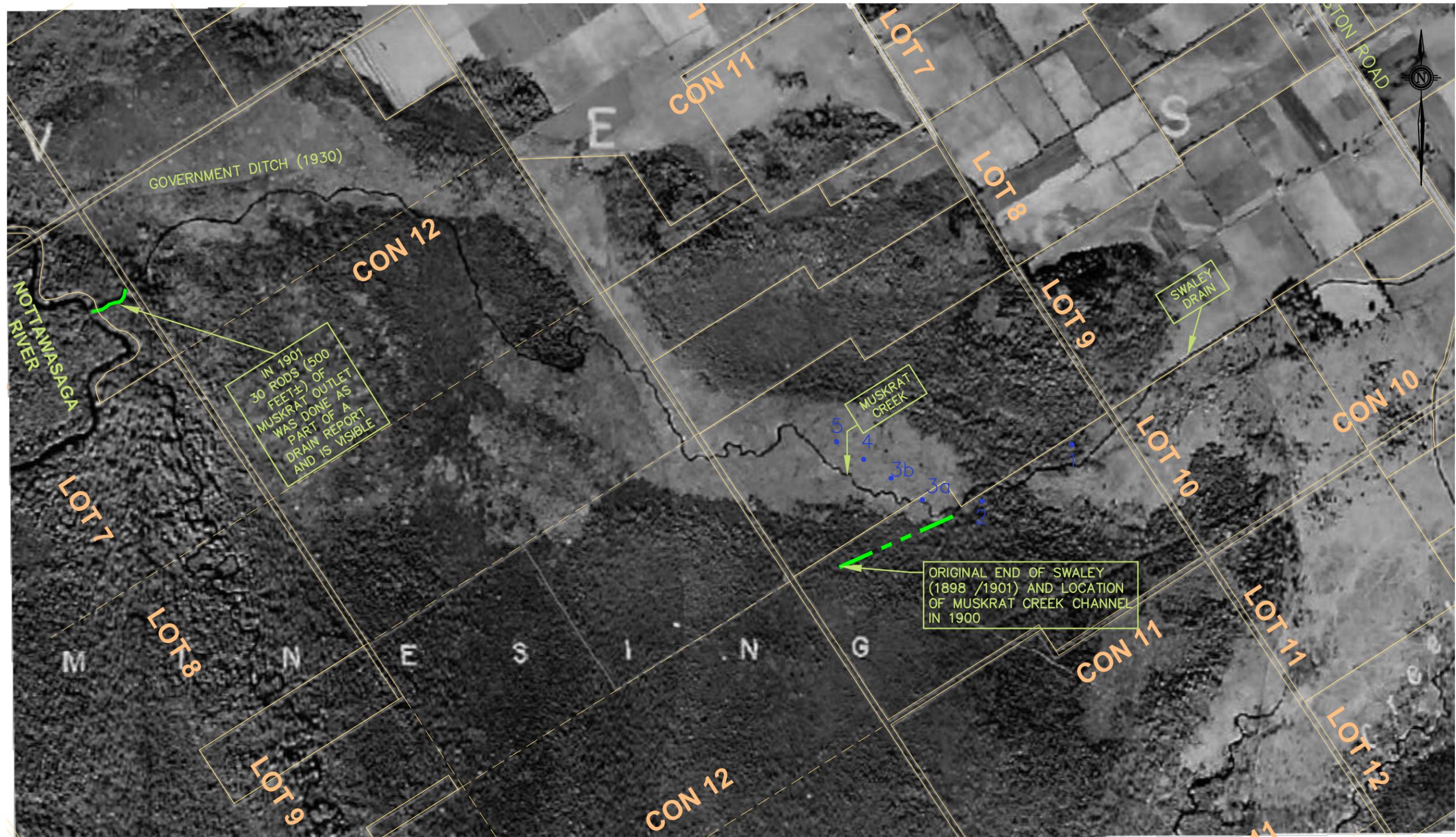
K. SMART ASSOCIATES LIMITED
 CONSULTING ENGINEERS AND PLANNERS
 KITCHENER SUDBURY

JULY 21, 2021

JOB NUMBER: 16-387

DRAWING

9



2 DENOTES LOCATION OF SURVEY POINTS BY K. SMART ASSOCIATES LTD.



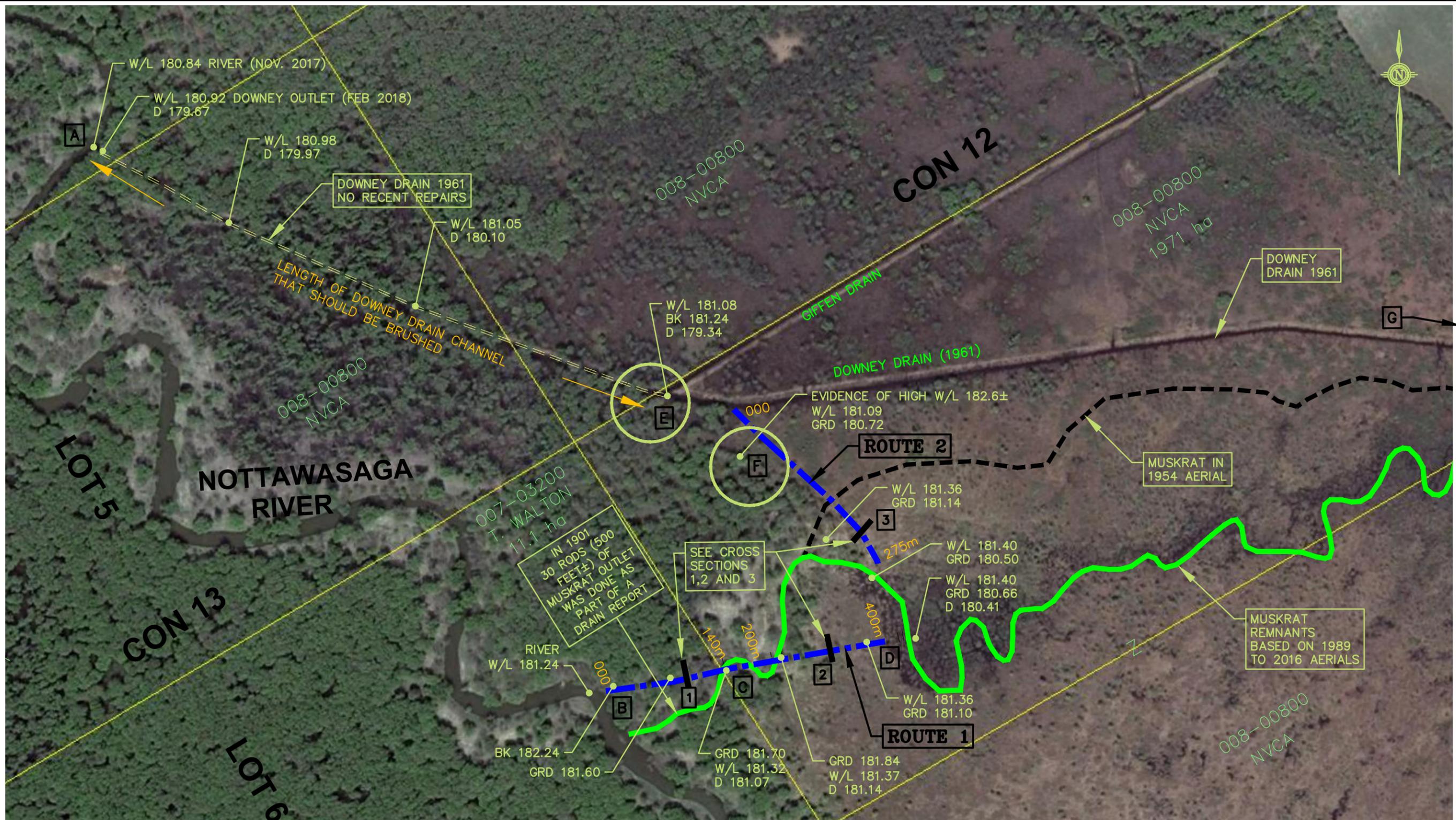
SCALE
0 150 300m
(SCALE 1 : 15,000)

SWALEY DRAIN PRELIMINARY REPORT
TOWNSHIP OF SPRINGWATER

SWALEY DRAIN - 1954 AERIAL



JULY 21, 2021
JOB NUMBER: 16-387
DRAWING 10A



ROUTE 1 ROUTE IF MUSKRAT REMNANTS WERE GIVEN NEW OUTLET TO THE RIVER

ROUTE 2 ROUTE IF MUSKRAT REMNANTS WERE IMPROVED TO DOWNEY DRAIN

NOTE: ELEVATIONS ALONG DOWNEY FROM THE RIVER UPSTREAM AND THEN TO MUSKRAT ARE FEB 2018. OTHERS WERE TAKEN NOV. 2017. BUT CLOSE AGREEMENT EXISTS.

LEGEND

● W/L 181.05 BK 181.24 D 179.34 DENOTES ELEVATIONS TAKEN BY GPS SURVEYS
 W/L – WATERLEVEL
 BK – DITCH BANK
 GRD – FIRMER GROUND IN WETLAND
 D – DITCH BOTTOM IN A DRAIN

GPS IS GLOBAL POSITIONING SYSTEM

○ DENOTES THE TWO ELEVATIONS THAT INDICATE WETLANDS NOW OVERFLOW TO / ARE CONTROLLED BY DOWNEY (JULY 20, 2020)

J DENOTES LOCATION OF VARIOUS POINTS DESCRIBED IN REPORT WHERE ELEVATIONS WERE OBTAINED



SCALE
 0 50 100m
 (1:5,000 ON 11"x17")

SWALEY DRAIN PRELIMINARY REPORT

TOWNSHIP OF SPRINGWATER

MUSKRAT /RIVER STUDY AREA ENLARGEMENT

AS STUDIED – NO WORK RECOMMENDED

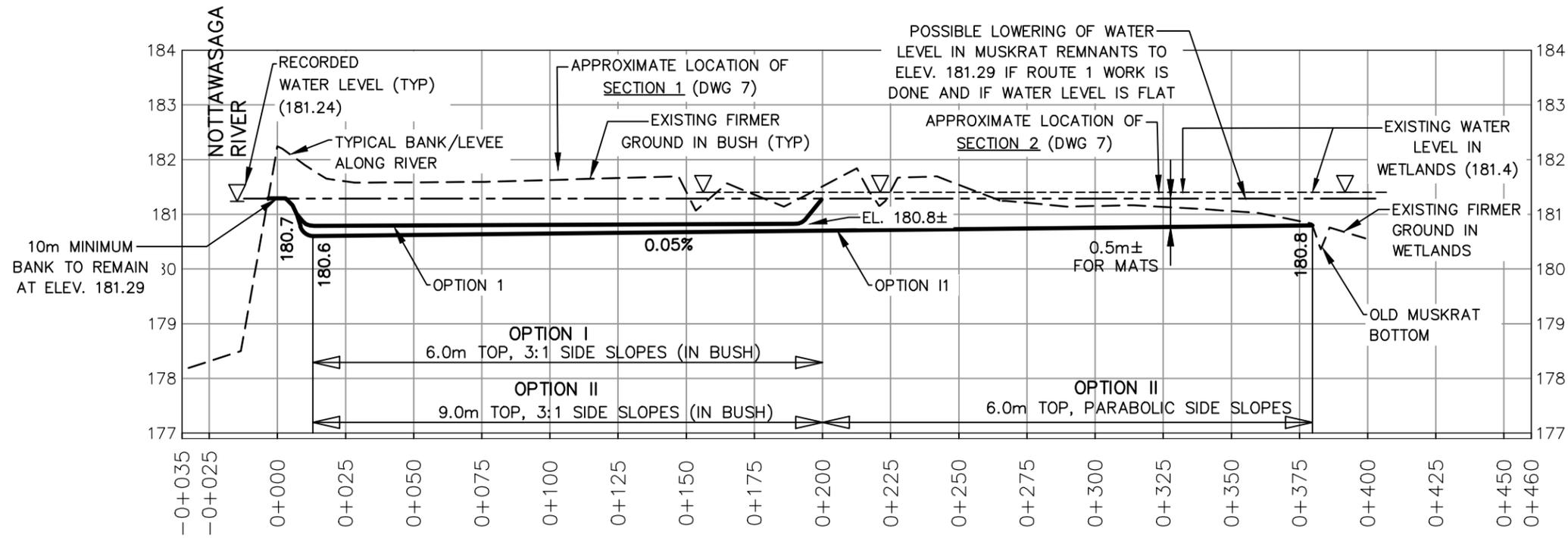


JULY 21, 2021

JOB NUMBER: 16-387

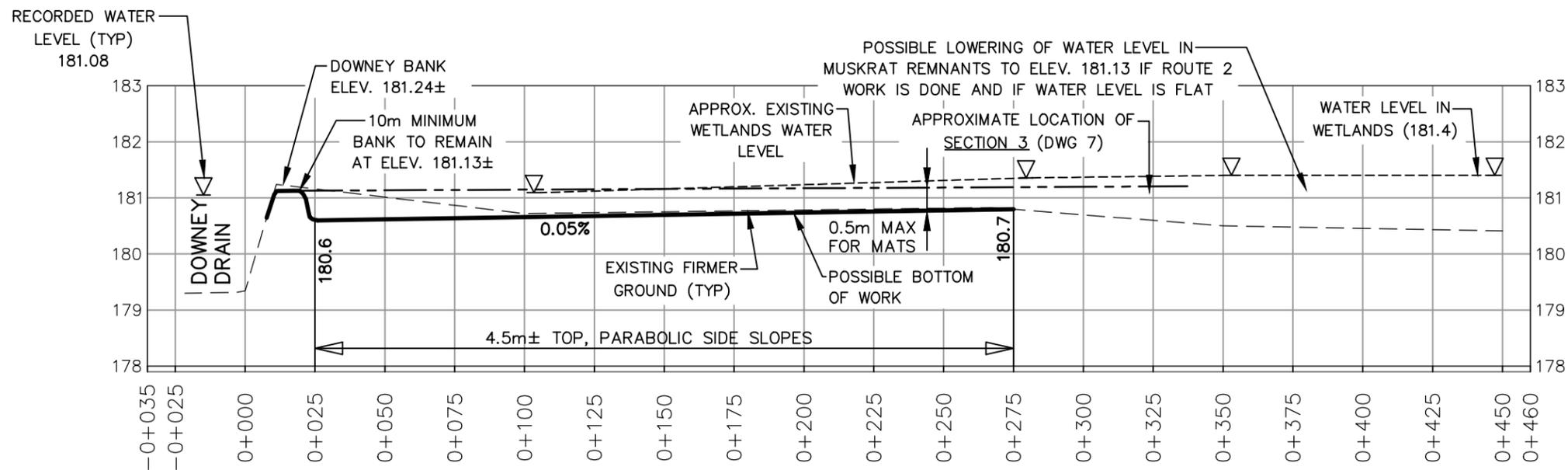
DRAWING

11A



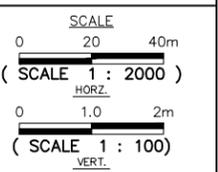
ROUTE 1
 (CONNECTING TO RIVER)
 OPTIONS I AND II
 (OPTION I IS IN BUSH ONLY)

NO LONGER BEING CONSIDERED
 JULY 20, 2020



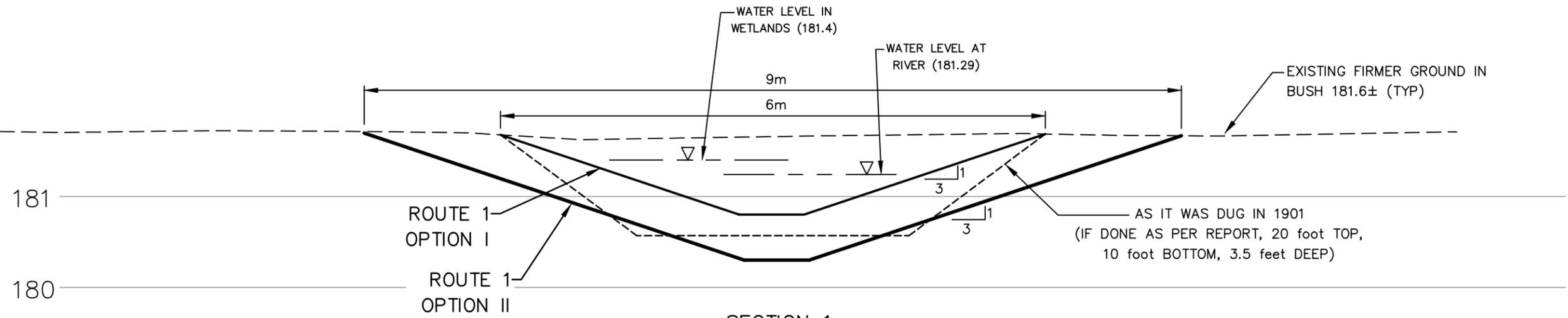
ROUTE 2
 (CONNECTING TO DOWNEY)

NO LONGER BEING CONSIDERED
 JULY 20, 2020



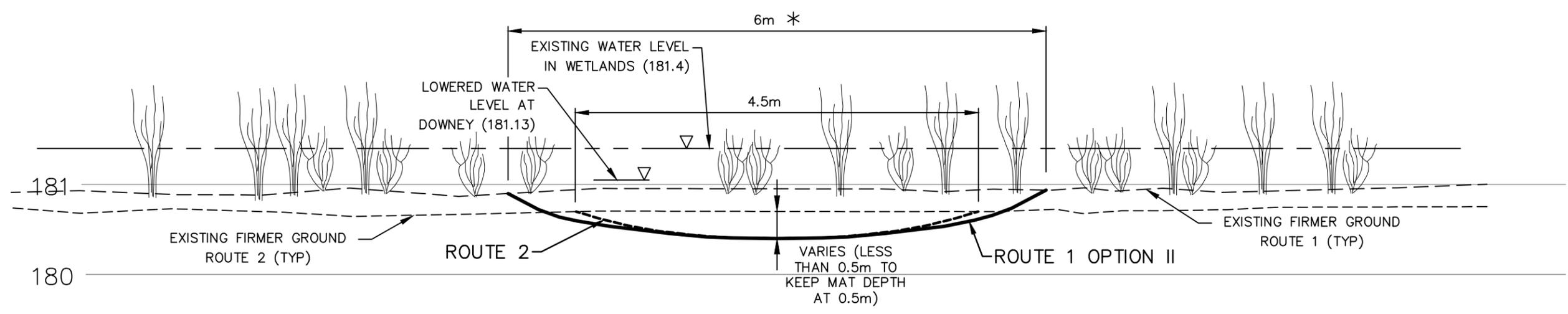
SWALEY DRAIN PRELIMINARY REPORT
 TOWNSHIP OF SPRINGWATER
MUSKRAT / RIVER STUDY AREA
SKETCHES TO SHOW RECORDED AND POSSIBLE WATER LEVELS ALONG ROUTE 1 AND ROUTE 2
 AS STUDIED - NO WORK RECOMMENDED

K. SMART ASSOCIATES LIMITED
 CONSULTING ENGINEERS AND PLANNERS
 KITCHENER SUDBURY
JULY 21, 2021
 JOB NUMBER: 16-387
 DRAWING: 12A



**SECTION 1
MUSKRAT OUTLET
ROUTE 1 (TO RIVER)
OPTIONS I AND II**

**NO LONGER BEING CONSIDERED
JULY 20, 2020**



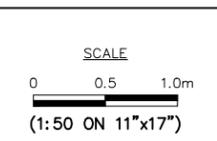
SECTION 2 ROUTE 1 (TO RIVER) OPTION II (6m TOP) IN WETLANDS

**NO LONGER BEING CONSIDERED
JULY 20, 2020**

SECTION 3 ROUTE 2 (TO DOWNEY) (4.5m TOP)

**NO LONGER BEING CONSIDERED
JULY 20, 2020**

* THIS WORK CAN BE DONE FROM "MATS" AS OPPOSED TO USE OF BARGE AS AT SWALEY OUTLET AREA



SWALEY DRAIN PRELIMINARY REPORT TOWNSHIP OF SPRINGWATER	
MUSKRAT STUDY AREA CROSS SECTIONS AS STUDIED - NO WORK RECOMMENDED	
 K. SMART ASSOCIATES LIMITED CONSULTING ENGINEERS AND PLANNERS KITCHENER SUDBURY	JULY 21, 2021 JOB NUMBER: 16-387 DRAWING: 13A



NOTE:
1. AERIAL PHOTO – SIMCOE COUNTY 2016

LEGEND
 ○—○—○ DENOTES ACCESS ROUTE THROUGH YARD AND FIELD



SCALE
 0 30 60m
 1:3,000
 (ON 11"x17")

SWALEY DRAIN PRELIMINARY REPORT TOWNSHIP OF SPRINGWATER	
ACCESS ROUTE RECOMMENDED	
K. SMART ASSOCIATES LIMITED CONSULTING ENGINEERS AND PLANNERS KITCHENER SUDBURY	JULY 21, 2021 JOB NUMBER: 16-387 DRAWING: 14A



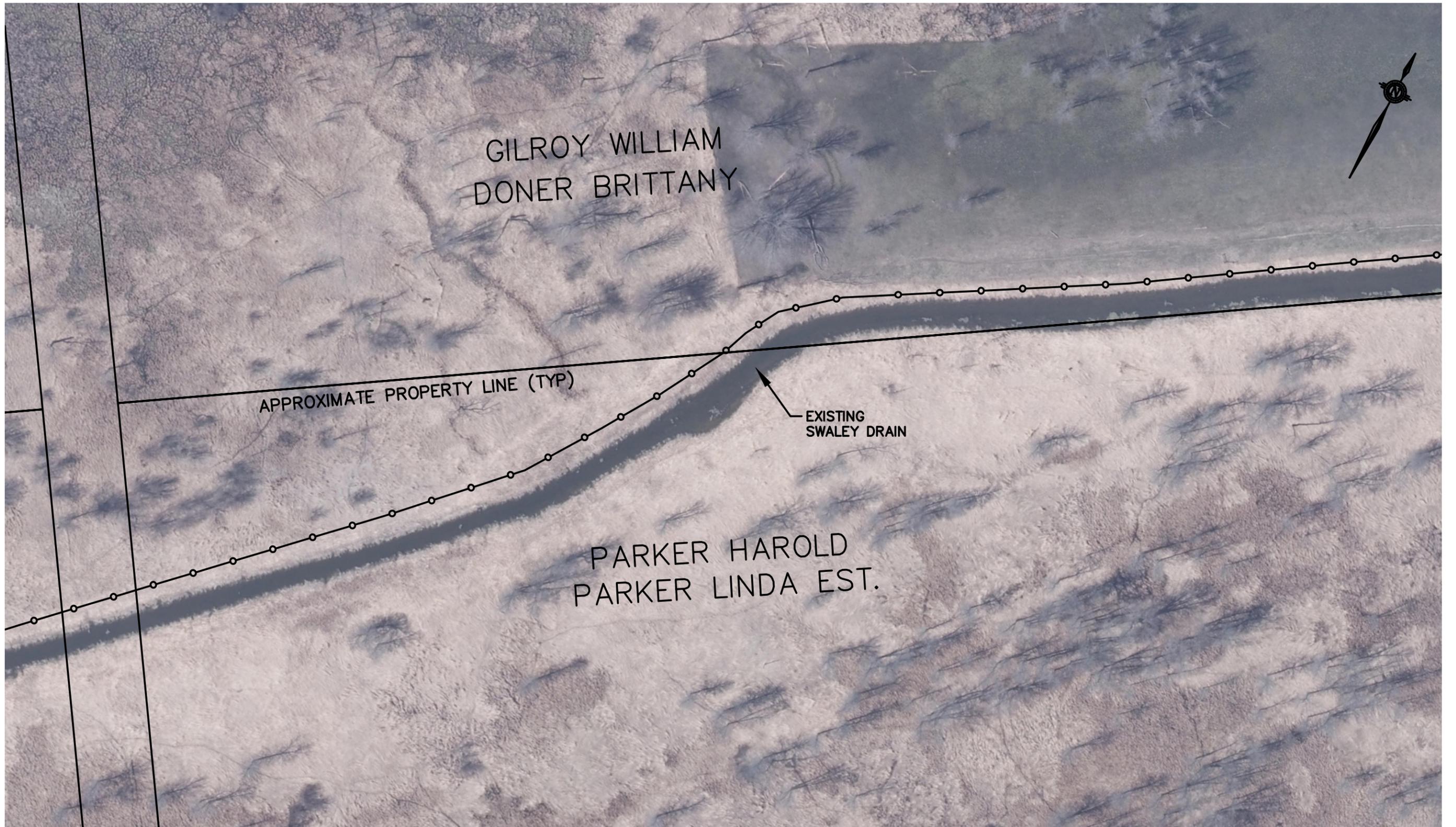
LEGEND

—○—○— DENOTES ACCESS ROUTE
ALONG EXISTING SPOIL
BERM



SCALE
0 10 20m
1:1,000
(ON 11"x17")

SWALEY DRAIN PRELIMINARY REPORT	
TOWNSHIP OF SPRINGWATER	
ACCESS ROUTE CONTINUED	
K. SMART ASSOCIATES LIMITED CONSULTING ENGINEERS AND PLANNERS SUDBURY	JULY 21, 2021 JOB NUMBER: 16-387 DRAWING: 15A



LEGEND

—○—○— DENOTES ACCESS ROUTE
ALONG EXISTING SPOIL
BERM

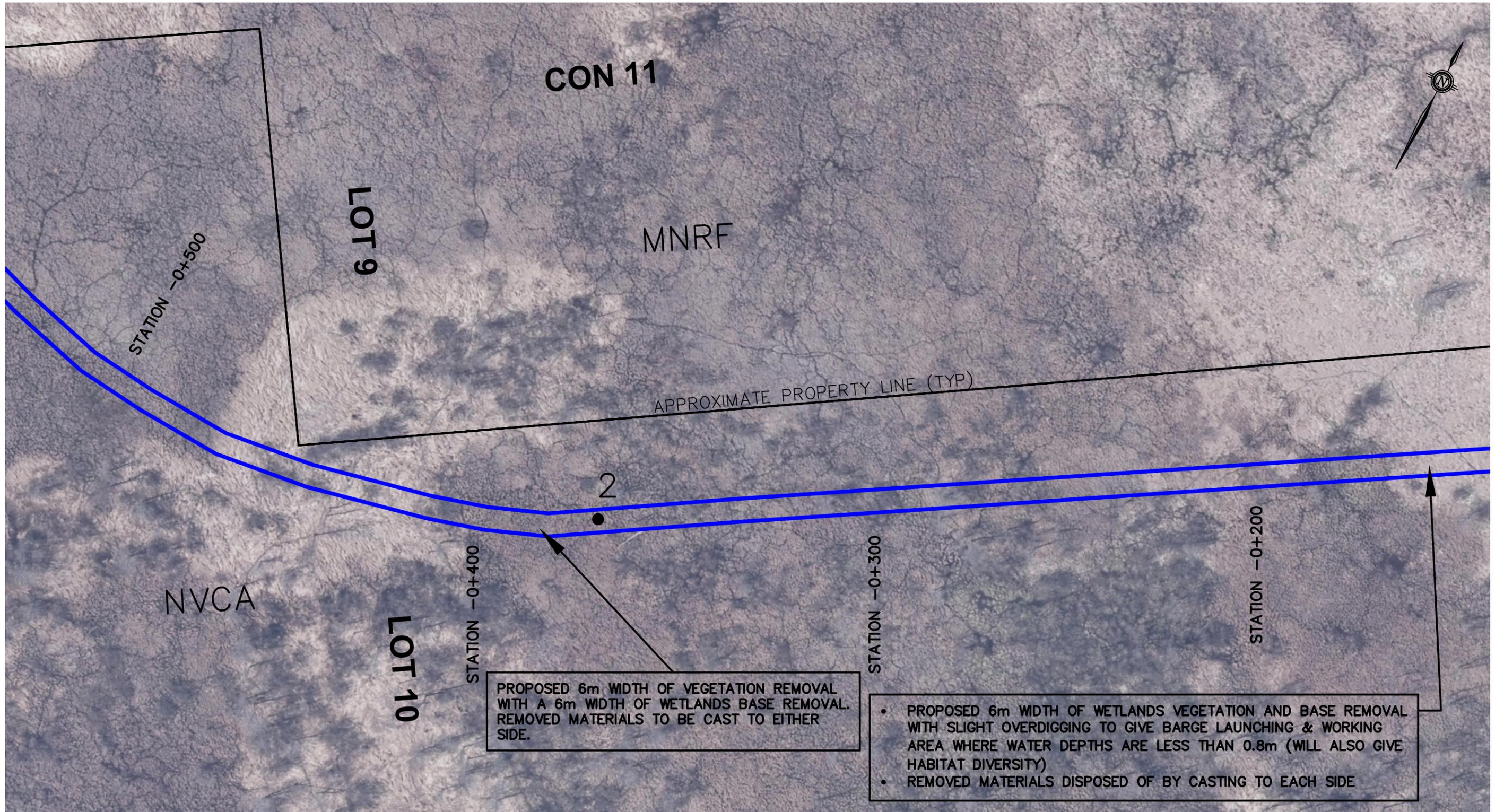


SCALE
0 10 20m
1:1,000
(ON 11"x17")

SWALEY DRAIN PRELIMINARY REPORT
TOWNSHIP OF SPRINGWATER

ACCESS ROUTE CONTINUED

K. SMART ASSOCIATES LIMITED CONSULTING ENGINEERS AND PLANNERS KITCHENER SUDBURY	JULY 21, 2021 JOB NUMBER: 16-387
	DRAWING 16A

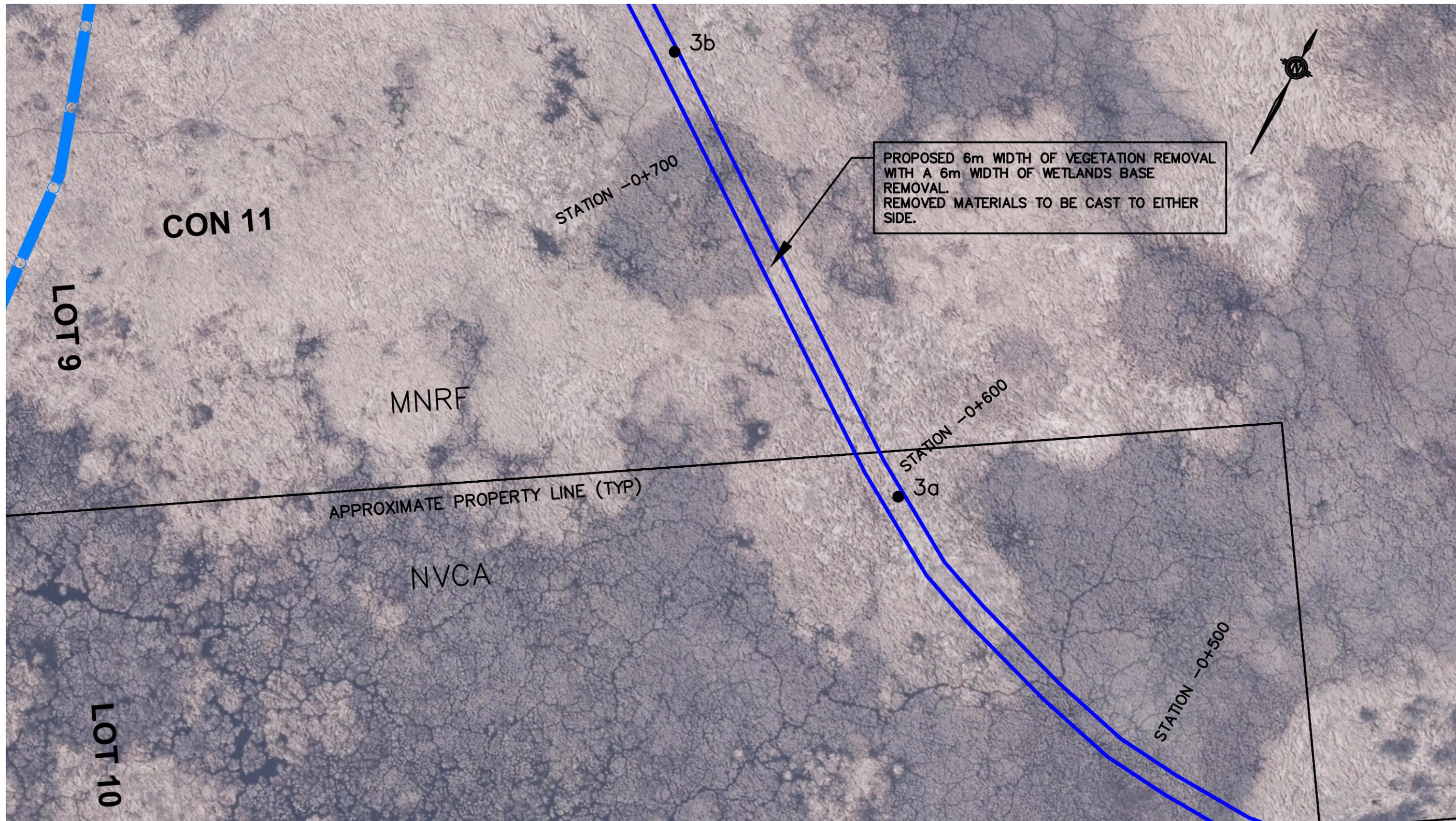


● 1 DENOTES LOCATION OF SURVEY POINTS (BY GPS)



SCALE
0 10 20m
1:1,000
(ON 11"x17")

SWALEY DRAIN PRELIMINARY REPORT TOWNSHIP OF SPRINGWATER	
WORKING AREA (950m ROUTE)	
JULY 21, 2021	JOB NUMBER: 16-387
K. SMART ASSOCIATES LIMITED CONSULTING ENGINEERS AND PLANNERS KITCHENER SUDBURY	DRAWING 18A

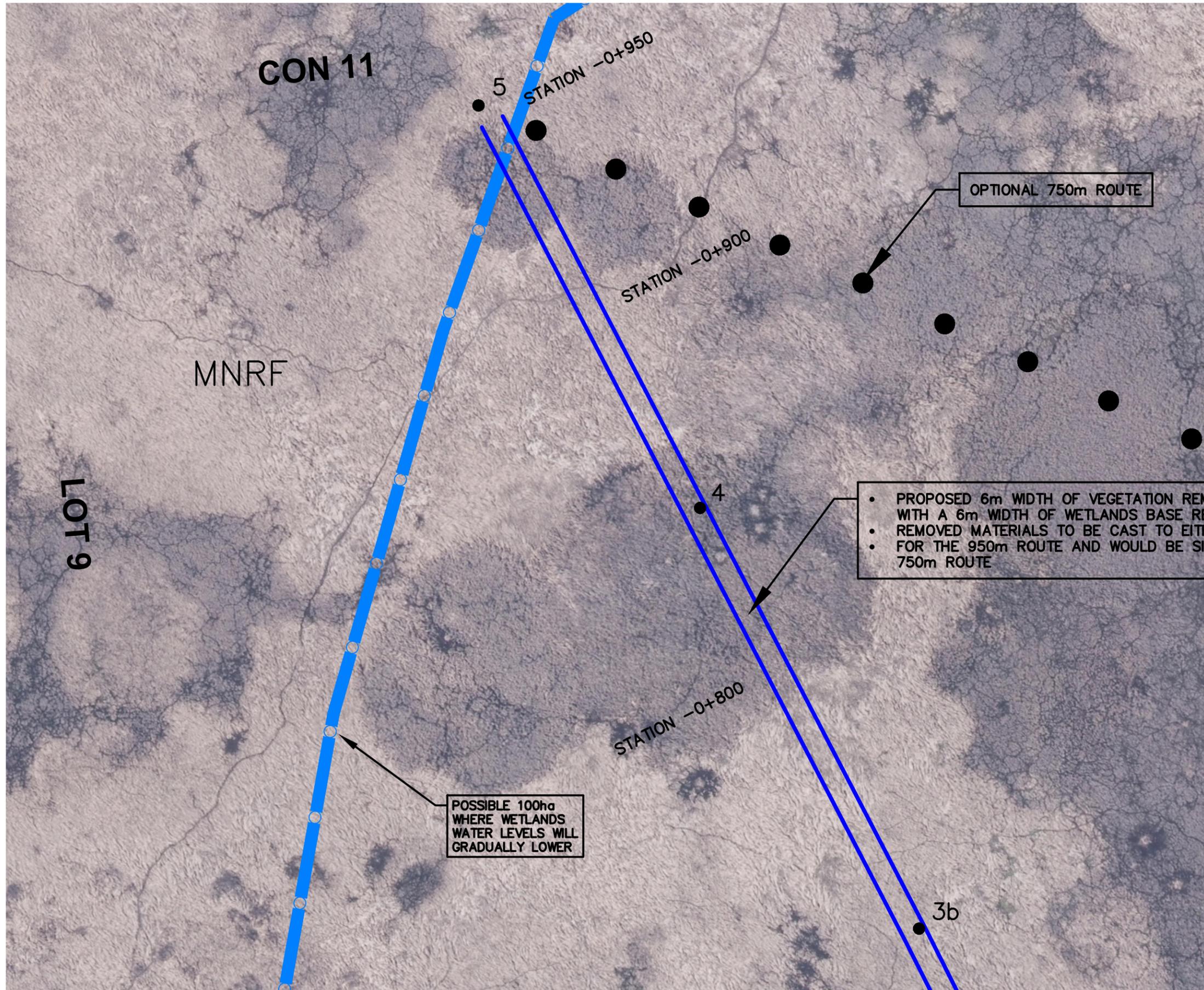


● 1 DENOTES LOCATION OF SURVEY POINTS (BY GPS)



SCALE
0 10 20m
1:1,000
(ON 11"x17")

SWALEY DRAIN PRELIMINARY REPORT	
WORKING AREA (950m ROUTE)	
JULY 21, 2021	JOB NUMBER: 16-387
K. SMART ASSOCIATES LIMITED CONSULTING ENGINEERS AND PLANNERS KITCHENER SUDBURY	DRAWING 19A



CON 11

MNRF

LOT 9

STATION -0+950

STATION -0+900

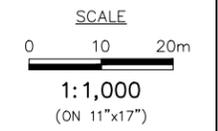
STATION -0+800

OPTIONAL 750m ROUTE

POSSIBLE 100ha
WHERE WETLANDS
WATER LEVELS WILL
GRADUALLY LOWER

• PROPOSED 6m WIDTH OF VEGETATION REMOVAL
WITH A 6m WIDTH OF WETLANDS BASE REMOVAL.
• REMOVED MATERIALS TO BE CAST TO EITHER SIDE.
• FOR THE 950m ROUTE AND WOULD BE SIMILAR ON THE OPTIONAL
750m ROUTE

● 1 DENOTES LOCATION OF
SURVEY POINTS (BY GPS)



SWALEY DRAIN PRELIMINARY REPORT

TOWNSHIP OF SPRINGWATER

WORKING AREA (950m ROUTE)

K. SMART ASSOCIATES LIMITED
CONSULTING ENGINEERS AND PLANNERS
KITCHENER SUDBURY

JULY 21, 2021
JOB NUMBER: 16-387
DRAWING
20A