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NOVA SCOTIA
Public Works

Community Liaison Committee

Highway 102 Connector Road Project

9 May 2022

woodplc.com

Agenda

- Review action items from Minutes of previous meeting
- Project Update
- Issues and Concerns

Review from CLC Meeting No. 1

- Pre-blast survey
- Monthly status reports to CLC
- Engine braking restrictions
- Access for future developments
- Wetland compensation in watershed
- Water quality

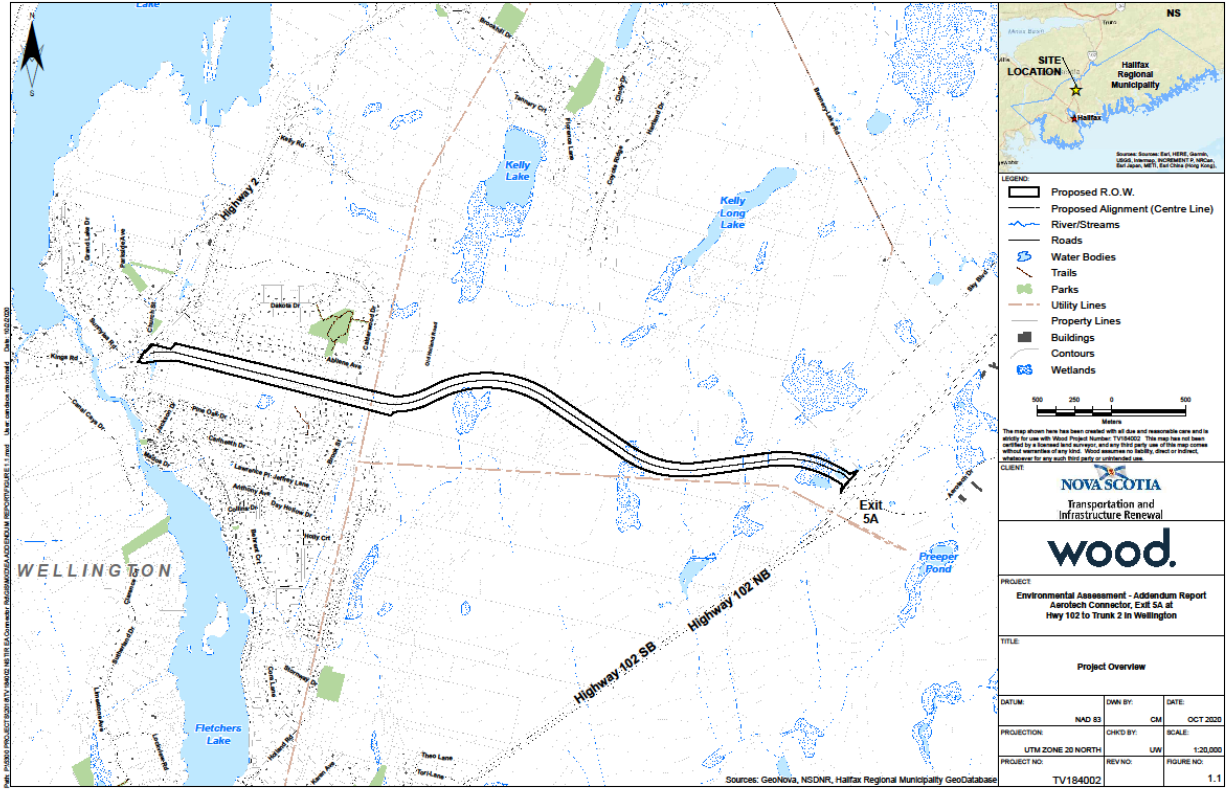
Project Update

- Environmental Approvals
- Layout/Design
- Schedule
- Monitoring

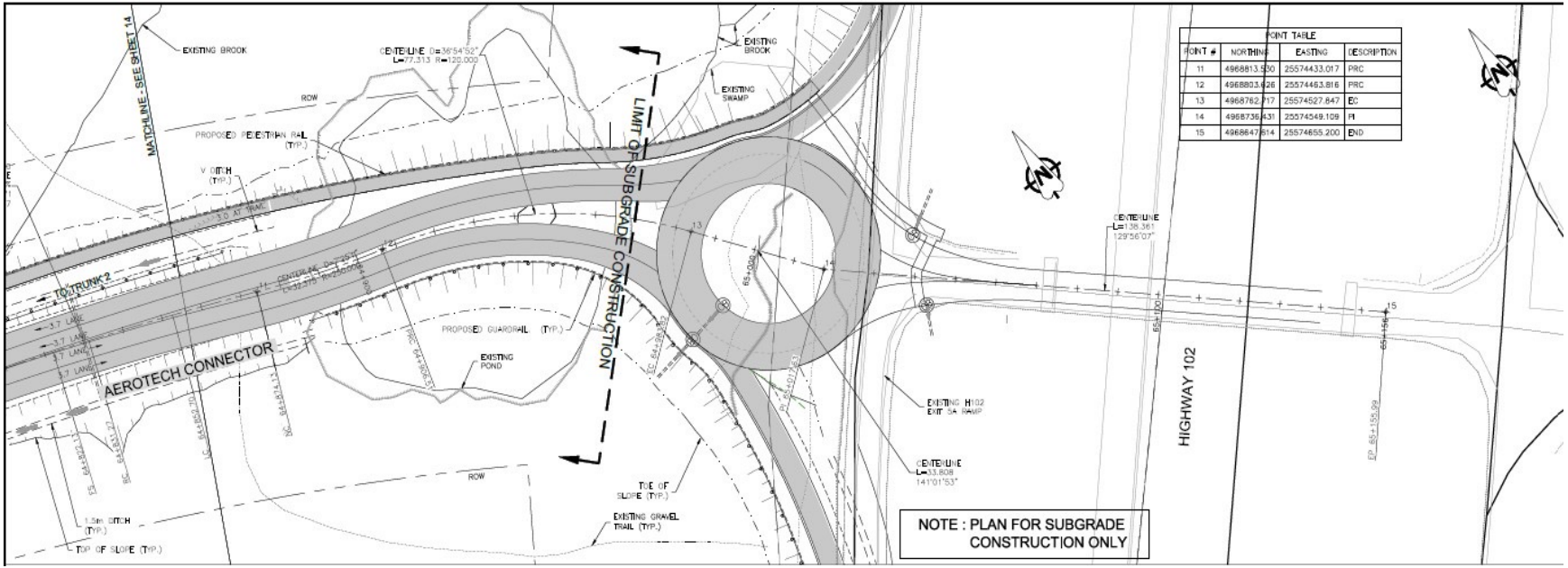
Environmental Approvals

- Groundwater Monitoring Plan
  - Submitted to NSE and approved March 2022
- Surface Water Management Plan
  - Submitted to NSE and approved March 2022
- Wildlife Management Plan
  - Submitted to DNR and approved March 2022
- Wildlife Crossing Plan
  - Pending
- Sulphide Bearing Materials Management Plan
  - Pending
- Erosion and Sedimentation Control Plan
  - Pending

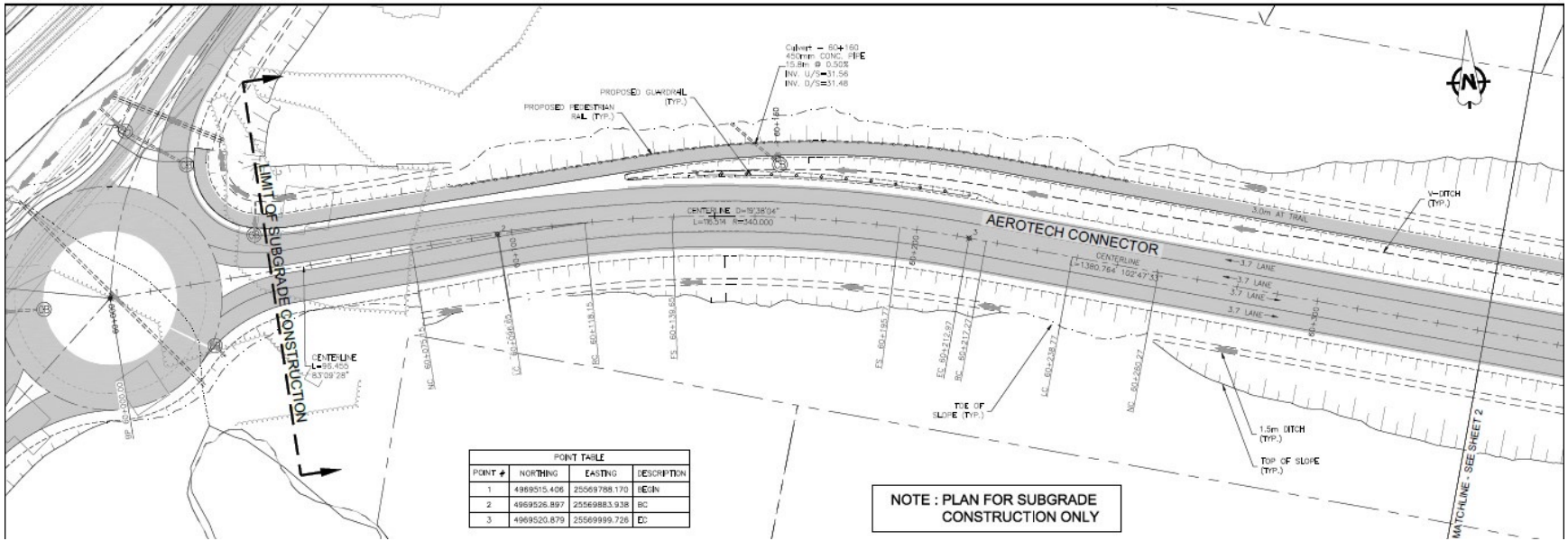
Road Layout/Design



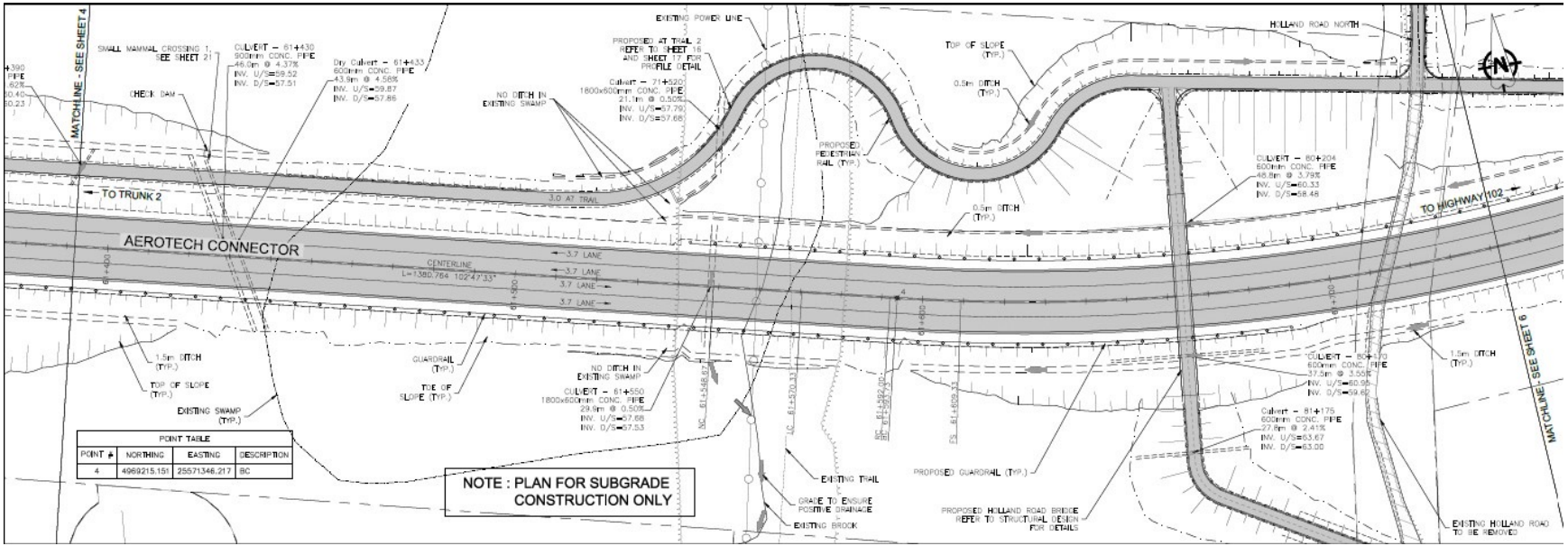
Highway 2 Roundabout



Trunk 2 Roundabout



AT Trail Crossing



Schedule

- Commence Project:
  - Clearing — Spring 2021
  - Construction start — June 2022
  - Construction complete — End 2023

Surface Water Resources

- **Planned watercourse crossing locations and diversions**
  - Cross-drainage culverts for all 15 watercourse crossings along the Connector
  - No watercourse diversions are required
- **Impacts to local drainage/wetland hydrology**
  - Culverts will preserve the minor local drainage features and their hydrological characteristics
- **Management of surface water runoff**
  - Surface water ditches at top of slope to intercept run off over open cut faces (ARD potential)
  - Surface water ditches at base of cut slopes and alongside of the Connector Road to collect run off from open cut faces
  - For the duration of the construction: run off monitoring; passive treatment prior to discharge, if necessary

Surface Water Monitoring - Construction

Objective	Location	Parameters	Duration and Frequency	Reporting

Establish pre-construction (baseline) and effects monitoring	• Receiving watercourses and ponds:
	  ○ Watercourses 01-15
	  ○ Ponds 1-3
		• Field parameters
		• SWA (including total metals)
		• Dissolved metals
		• Total suspended solids
		• Acidity
			• 3 times prior to construction (Fall, Winter, Spring)	• GWMP

Monitor the effectiveness of mitigation measures	• Watercourses and ponds upstream and downstream of the ROW:
	  ○ Watercourses 01-15
	  ○ Ponds 1-3
	• Drainage ditches located along the ROW / AT trail
		• Field parameters (pH, conductivity, temperature, DO, ORP)
		• Turbidity
		• Standard water analysis (RCAp-MS) (includes total metals)
		• Total suspended solids
			• Event-based sampling (field parameters, turbidity, TSS)
			• Monthly for duration of construction phase (field parameters, RCAp-MS)
				• Results reported Quarterly
				• Annual Monitoring Report

Monitor proper functioning of erosion and sediment control measures	• Same as above plus:
	  ○ Sampling locations associated with erosion and sediment control features (e.g., outlet points of sedimentation ponds)
	  ○ additional locations detailed in Erosion and Sediment Control Plan (ESCP)
		• Onset of rain events
		• Time of sample collection
		• Field parameters (pH, conductivity, temperature)
		• Turbidity
			• Event-based sampling (field parameters, turbidity)
			• Weekly during clearing and construction (field parameters, turbidity)
				• Results reported as collected
				• Summary in Annual Monitoring Report

Monitor for compliance with provincial criteria (SBM)	• Drainage ditches located along the ROW / AT trail • Receiving watercourses • Additional locations detailed in Sulphide Bearing Rock Management Plan (SBRMP)	• Field parameters (pH, conductivity, temperature, ORP, DO) • Acidity • Metals	• Precipitation events (field parameters) • Monthly for duration of construction phase (metals)	• Results reported monthly • Annual Monitoring Report

Surface Water Monitoring - Operation

Objective	Location	Parameters	Duration and Frequency	Reporting

Monitor the effectiveness of mitigation measures	• Watercourses and ponds upstream and downstream of the ROW (Figure 2):
	  ○ Watercourses 01-15
	  ○ Ponds 1-3
	• Drainage/collection ditches
		• Field parameters (pH, conductivity, temperature, DO, ORP)
		• Standard water analysis (RCAp-MS) (includes total metals)
		• Dissolved metals
		• Total suspended solids
			• Year 1: Monthly
			• Beyond Year 1: tbd, dependent on analytical outcomes
				• Results reported Quarterly
				• Annual Monitoring Report(s)

Monitor proper functioning of erosion and sediment control measures	• Drainage/collection ditches
	• Watercourses and ponds upstream and downstream of the ROW (Figure 2):
	  ○ Watercourses 01-15
	  ○ Ponds 1-3
		• Field parameters (pH, conductivity, temperature)
		• Turbidity
			• Year 1: monthly (field parameters, turbidity)
			• Beyond Year 1: tbd, dependent on analytical outcomes
				• Results reported as collected
				• Summary in Annual Monitoring Report

Monitor for compliance with provincial criteria (SBM)	• Drainage ditches located along the ROW / AT trail • Receiving watercourses • Additional locations detailed in SBRMP	• Field parameters (pH, conductivity, temperature, ORP, DO) • Acidity • Metals	• Precipitation events (field parameters) • Monthly for duration of construction phase (metals)	• Year 1: Monthly • Year 2-5: Quarterly • Beyond year 5: tbd, dependent on outcomes, subject to NSECC approval

Groundwater Monitoring

Groundwater Monitoring during Construction and Operation

Medium/Subject	Objective	Location	Parameters	Duration and Frequency	Reporting
PRE- AND DURING CONSTRUCTION					
Groundwater	Baseline and to monitor the effectiveness of mitigation measures: • water quality	• 12 permanent monitoring wells: 6 shallow/deep monitoring well pairs and 6 monitoring wells installed prior to start of construction	• SWA plus total metals; • Total suspended solids; • Diss. metals, pH, acidity • Total coliforms (MPN) and E. Coli (MPN) • Water level	• MW1 and 2; and MW 3 and 4 once prior to construction (completed 2020) • MW1 through MW12 once prior to construction and bi-annually during construction	• Results presented in the Groundwater Monitoring Plan and in bi-annual monitoring reports
Drinking Water	Establish baseline conditions and to monitor the effectiveness of mitigation measures: • water quality • water yield	• Drinking water supply wells within 500 metres of the centreline of the Connector Road	• SWA plus metals (incl Li); • Total suspended solids; • Total coliforms (MPN) and E. Coli (MPN)	• Once prior to construction • In response to complaint	• Results detailed in the Baseline Well Survey Report and bi-annually (as needed)
OPERATION					
Groundwater	Monitor the effectiveness of mitigation measures	• 12 permanent monitoring wells	• SWA plus total metals; • Total suspended solids; • Diss. metals, pH, acidity • Total coliforms (MPN) and E. Coli (MPN) • Water level	• Every 2 years post-construction (or until monitoring results demonstrate no changes over background)	• Every 2 years
Drinking Water	monitor the effectiveness of mitigation measures: • water quality • water yield	• Drinking water supply wells within 500 metres of the centreline of the Connector Road	• SWA plus metals (incl Li); • Total suspended solids; • Total coliforms (MPN) and E. Coli (MPN)	• In response to complaint	• As needed


MW 10
MW 11 & 12 (Pair)
MW 9
MW 7
MW 5
MW 3 & 4 (Pair)
MW 8
(Background)
MW 1 & 2 (Pair)
MW 6
Fletchers
Lake
N
S
NS
Truro
Minas Basin
SITE
LOCATION
Halifax
Regional
Municipality
Halifax
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China
LEGEND:
Proposed R.O.W.
Baseline Monitoring Well Locations
Additional Monitoring Well Locations
Proposed Alignment (Centre Line)
Roads
Water Bodies
River/Streams
Wetland
Contours
500
250
0
Meters
The map shown here has been created with all due and reasonable care and is strictly for use with Wood Project Number: TE211303 This map has not been certified by a licensed land surveyor, and any third party use of this map comes without warranties of any kind. Wood assumes no liability, direct or indirect, whatsoever for any such third party or unintended use.
CLIENT:
NOVA SCOTIA
Transportation and Infrastructure Renewal
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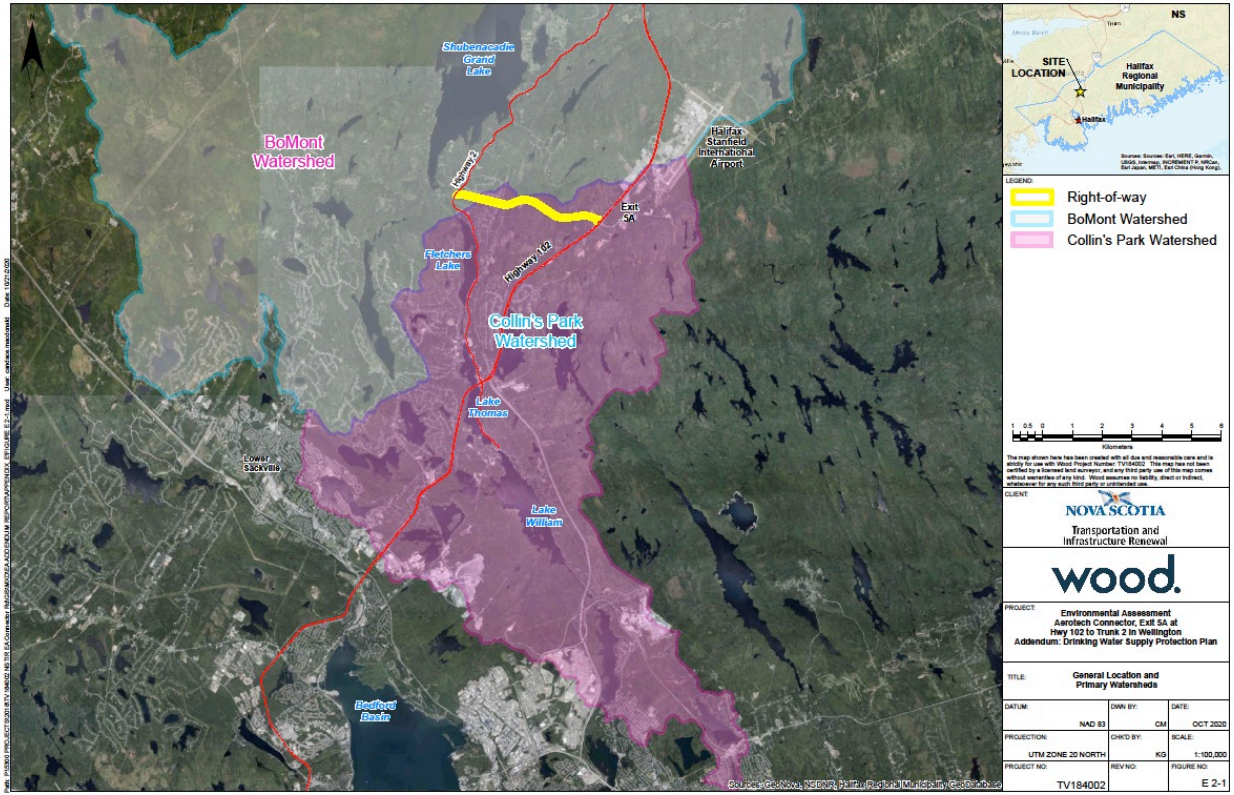
PROJECT:
Environmental Assessment
Aerotech Connector, Exit 5A at
Hwy 102 to Trunk 2 in Wellington
Cond. 7.8 Groundwater Monitoring Plan
TITLE:
Construction Groundwater Monitoring Locations
DATUM: NAD 83
DWN BY: ER
DATE: FEB 2022
PROJECTION: UTM ZONE 20 NORTH
CHK'D BY: KG
SCALE: 1:10,000
PROJECT NO: TE211303
REV NO:
FIGURE NO: 2

Discussion – Issues and Concerns

Additional Information (if needed)

Watershed


Shubenacadie Grand Lake
BoMont Watershed
Highway 2
Halifax Stanfield International Airport
Exit 5A
Fletchers Lake
Highway 102
Collin's Park Watershed
Lake Thomas
Lower Sackville
Lake William
Bedford Basin
Sources: GeoNova, NSDNR, Halifax Regional Municipality, GeoBase, ©
NS
SITE LOCATION
Halifax Regional Municipality
Halifax
LEGEND:
Right-of-way
BoMont Watershed
Collin's Park Watershed
Kilometers
CLIENT:
NOVA SCOTIA
Transportation and Infrastructure Renewal
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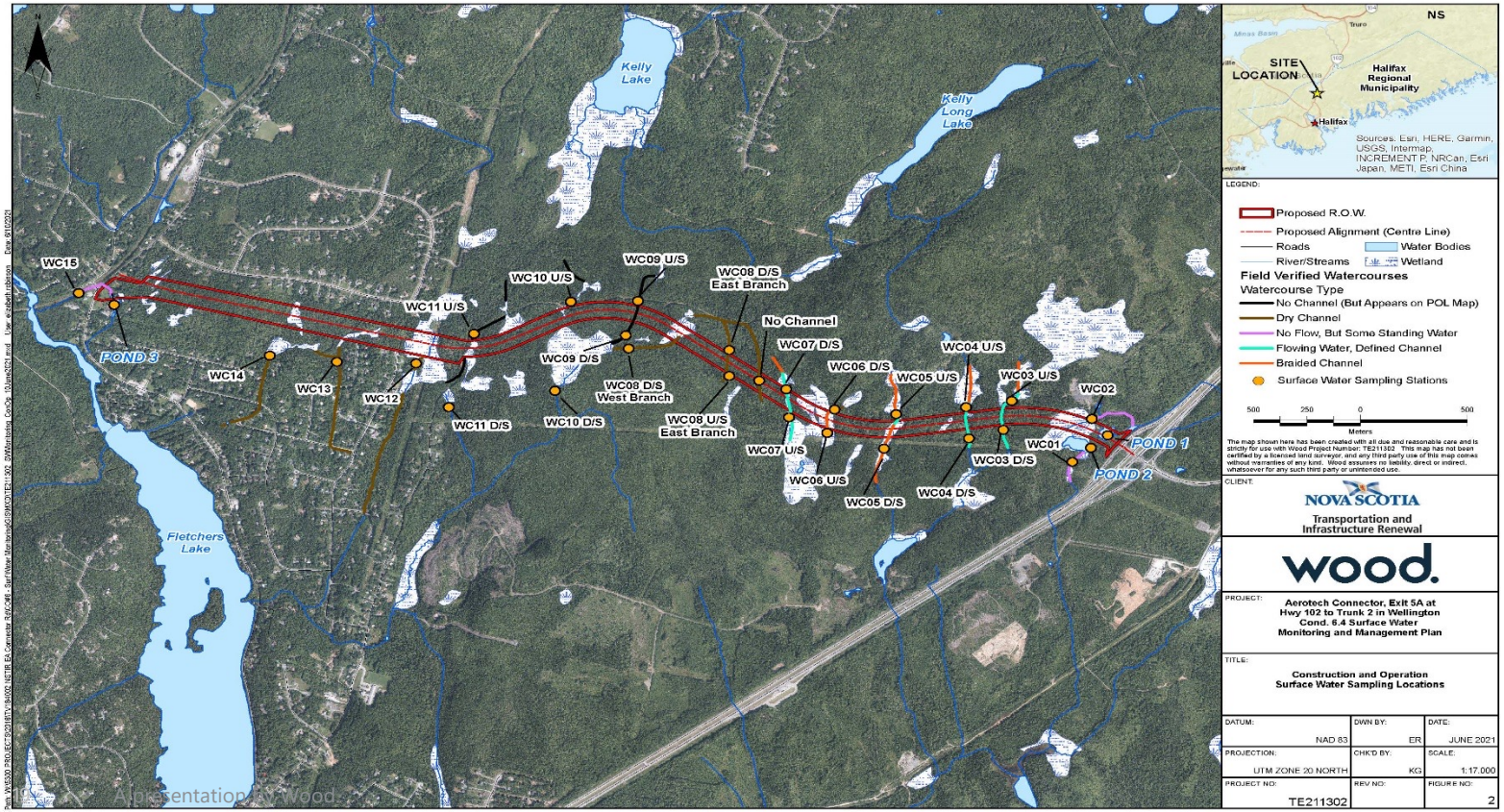
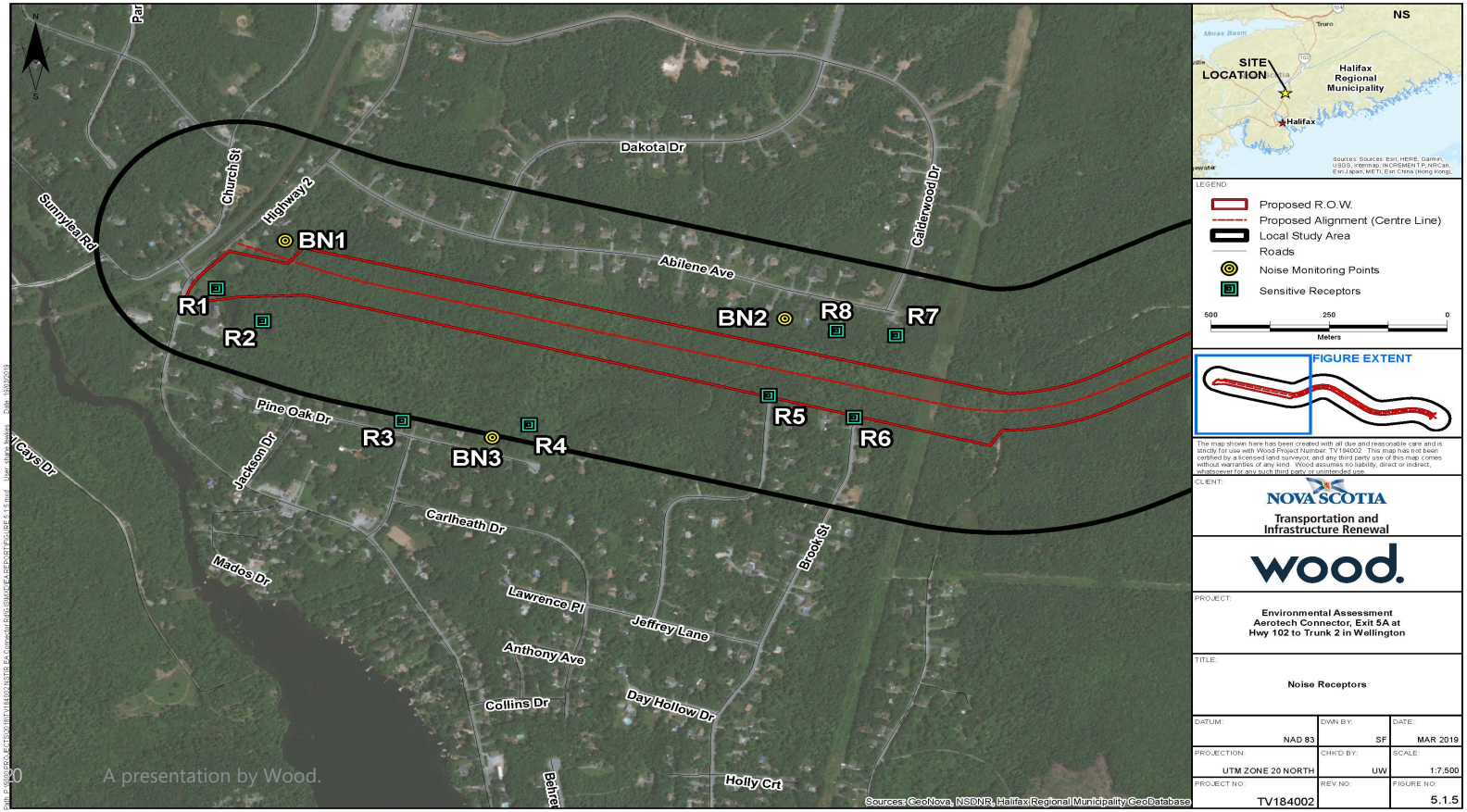
PROJECT:
Environmental Assessment
Aerotech Connector, Exit 5A at
Hwy 102 to Trunk 2 in Wellington
Addendum: Drinking Water Supply Protection Plan
TITLE:
General Location and Primary Watersheds
DATUM: NAD 83
DWN BY: CM
DATE: OCT 2020
PROJECTION: UTM ZONE 20 NORTH
CHK'D BY: KG
SCALE: 1:100,000
PROJECT NO: TV184002
REV NO:
FIGURE NO: E 2-1

Surface Water Baseline Sampling



Noise


N
S
Par
Church St
Highway 2
Sunnylea Rd
Dakota Dr
Calderwood Dr
Abilene Ave
BN1
BN2
R1
R2
R3
R4
R5
R6
R7
R8
BN3
Pine Oak Dr
Jackson Dr
Carlheath Dr
Brook St
Lawrence Pl
Jeffrey Lane
Anthony Ave
Collins Dr
Day Hollow Dr
Holly Crt
Mados Dr
Sources: GeoNova, NSDNR, Halifax Regional Municipality GeoDatabase
NS
Truro
Minas Basin
SITE LOCATION
Halifax Regional Municipality
Halifax
LEGEND:
Proposed R.O.W.
Proposed Alignment (Centre Line)
Local Study Area
Roads
Noise Monitoring Points
Sensitive Receptors
500
250
0
Meters
FIGURE EXTENT
The map shown here has been created with all due and reasonable care and is strictly for use with Wood Project Number: TV184002. This map has not been certified by a licensed land surveyor, and any third party use of this map comes without warranties of any kind. Wood assumes no liability, direct or indirect, whatsoever for any such third party or unintended use.
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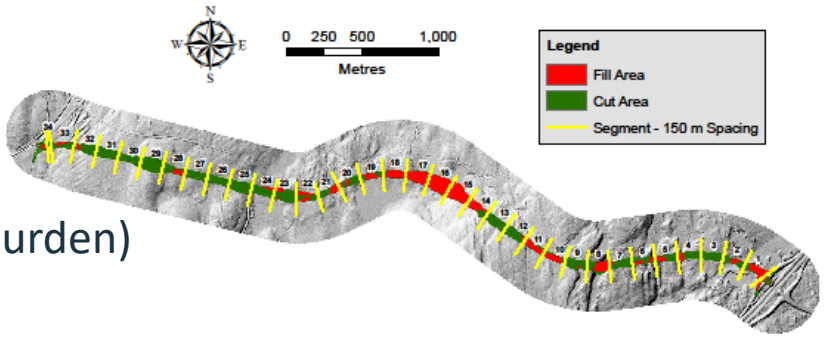
PROJECT:
Environmental Assessment
Aerotech Connector, Exit 5A at
Hwy 102 to Trunk 2 in Wellington
TITLE:
Noise Receptors
DATUM: NAD 83
DWN BY: SF
DATE: MAR 2019
PROJECTION: UTM ZONE 20 NORTH
CHK'D BY: UW
SCALE: 1:7,500
PROJECT NO: TV184002
REV NO:
FIGURE NO: 5.1.5

Baseline Data Collection

- Watercourse sampling
  - Water quality
  - Sediment quality
- Water well survey
  - Chemical analysis
- Hydrogeological/Geotechnical
  - Groundwater
  - Overburden, Bedrock
  - Geochemistry
  - Quantity estimates (SBR and overburden)



ARD Management

- Disposal of excavated SBR materials in an approved marine disposal site in the Bedford Basin
- Minimize ARD drainage during construction
    - Scheduling to minimize the exposure of SBR
    - Monitoring of runoff
    - Passive treatment of run off if prior to discharge, if required (monitoring)
    - Diversion ditches at the top of the cuts
    - Surface water monitoring (metals, pH, conductivity) during construction
- Reclamation of exposed rock faces in the backslope cuts
    - Cover system to minimize oxygen ingress / water infiltration

Water Supply Protection

Drinking Water Supply Protection Plan

- Potential impacts during construction:
  - temporary siltation and increased turbidity
  - acidic runoff
  - temporary reduction in well or water levels
- Potential impacts during operation and maintenance:
  - petroleum hydrocarbons, hazardous materials, or other substances in stormwater runoff,
  - road salt runoff and salt leachate,
  - changes in the local drainage, and
  - residual acid drainage.