APPENDIX

F

WETLAND ASSESSMENTS

WETLAND DELINEATION DATA FORM – NOVA SCOTIA

Project/Site: Uniacke Quarry WL-1 Municipality/County: Hants County Sampling Date: 26 July, 2021

Applicant/Owner: Maritime Aggregates Sampling Point: WL-1 Wet

Investigator(s): BL, TTM Affiliation: WSP Canada Inc.

Landform (hillslope, terrace, etc.): Crater Local relief (concave, convex, none): Concave

Slope (%): <2% Lat: 435797 Long: 4973791 Datum: UTM 20 T

Soil Map Unit Name/Type: Wetland Type: Graminoid / Shrub Swamp

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ____ (If no, explain in Remarks.)

Are Vegetation X, Soil ____, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X	No ____	If yes, optional Wetland Site ID: Uniacke WL-1 Wet
Wetland Hydrology Present?	Yes X	No ____	

Remarks: (Explain alternative procedures here or in a separate report.)

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 10 M)	Absolute % Cover	Dominant Species?	Indicator Status
1. N/A			
2.			
3.			
4.			
5.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1. Balsam Fir (Abies balsamea)	5%		FAC
2. Red Maple (Acer rubrum)	10%	X	FAC
3. A Serviceberry (Amelanchier spp.)	5%		FAC
4.			
5.			
	20% = Total Cover		
Herb Stratum (Plot size: ____)			
1. Canada Mannagrass (Glyceria canadensis)	10%		OBL
2. Woolgrass (Scirpus cyperinus)	60%	X	FACW
3. Blueflag Iris (Iris veriscolor)	10%		FACW+
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	80% = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	10	x 1 =	10
FACW species	70	x 2 =	140
FAC species	20	x 3 =	60
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	100 (A)		210 (B)

Prevalence Index = B/A = 2.10

Hydrophytic Vegetation Indicators:

- X Rapid Test for Hydrophytic Vegetation
- X Dominance Test is >50%
- X Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-25 cm	Organic / Histosol							Hit rock after 25 cm

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- [x] Histosol (A1)
- [ ] Histic Epipedon (A2)
- [ ] Black Histic (A3)
- [ ] Hydrogen Sulfide (A4)
- [ ] Stratified Layers (A5)
- [ ] Depleted Below Dark Surface (A11)
- [ ] Thick Dark Surface (A12)
- [ ] Sandy Mucky Mineral (S1)
- [ ] Sandy Gleyed Matrix (S4)
- [ ] Sandy Redox (S5)
- [ ] Polyvalue Below Surface (S8)
- [ ] Thin Dark Surface (S9)
- [ ] Loamy Gleyed Matrix (F2)
- [ ] Depleted Matrix (F3)
- [ ] Redox Dark Surface (F6)
- [ ] Depleted Dark Surface (F7)
- [ ] Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- [ ] Coast Prairie Redox (A16)
- [ ] 5 cm Mucky Peat or Peat (S3)
- [ ] Iron-Manganese Masses (F12)
- [ ] Piedmont Floodplain Soils (F19)
- [ ] Red Parent Material (TF2)
- [ ] Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Rock

Depth (inches): 25 cm

Hydric Soil Present? **Yes** X **No** _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- [ ] Surface Water (A1)
- [ ] High Water Table (A2)
- [x] Saturation (A3)
- [ ] Water Marks (B1)
- [ ] Sediment Deposits (B2)
- [ ] Drift Deposits (B3)
- [ ] Algal Mat or Crust (B4)
- [ ] Iron Deposits (B5)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [ ] Sparsely Vegetated Concave Surface (B8)
- [ ] Water-Stained Leaves (B9)
- [ ] Aquatic Fauna (B13)
- [ ] Marl Deposits (B15)
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres on Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Tilled Soils (C6)
- [ ] Thin Muck Surface (C7)
- [ ] Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- [ ] Surface Soil Cracks (B6)
- [ ] Drainage Patterns (B10)
- [ ] Moss Trim Lines (B16)
- [ ] Dry-Season Water Table (C2)
- [ ] Saturation Visible on Aerial Imagery (C9)
- [ ] Stunted or Stressed Plants (D1)
- [ ] Geomorphic Position (D2)
- [ ] Shallow Aquitard (D3)
- [ ] Microtopographic Relief (D4)
- [ ] FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

Wetland Hydrology Present? **Yes** X **No** _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Photo 1: Wetland 1 July 26, 2021.

Photo 2: Wetland 1 July 26, 2021.

Photo 3: Wetland 1 July 26, 2021.

Photo 4: Wetland 1 upland area July 26, 2021.

Photo 5: Wetland 1 wetland soil, July 26, 2021.

Photo 6: Wetland 1 upland soil, July 26, 2021.

WETLAND DELINEATION DATA FORM – NOVA SCOTIA

Project/Site: Uniacke Quarry Wetland 2 Municipality/County: Hants Sampling Date: 26 July 2021

Applicant/Owner: Maritime Aggregates Sampling Point: WL-2 Wet

Investigator(s): BL, TTM Affiliation: WSP Canada Inc.

Landform (hillslope, terrace, etc.): hillslope / terrace Local relief (concave, convex, none): slight concave

Slope (%): _____ Lat: 435571 Long: 4973749 Datum: UTM 20 T

Soil Map Unit Name/Type: _____ Wetland Type: Shrub / Graminoid Swamp

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation X, Soil X, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes X No _____ Hydric Soil Present? Yes X No _____ Wetland Hydrology Present? Yes X No _____	**Is the Sampled Area within a Wetland?** **Yes** X **No** _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.)	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 10m)	Absolute % Cover	Dominant Species?	Indicator Status
1. Gray Birch (Betula populifolia)	10%	X	FAC
2.			
3.			
4.			
5.			
	10% = Total Cover		
Sapling/Shrub Stratum (Plot size: 5m)			
1. Red Maple (Acer rubrum)	20%	X	FAC
2. White Birch (Betula papyrifera)	2%		FACU
3. Gray Birch (Betula populifolia)	10%		FAC
4.			
5.			
	35% = Total Cover		
Herb Stratum (Plot size: 2m)			
1. Canada Mannagrass (Glyceria canadensis)	60%	X	OBL
2. Nodding Sedge (Carex Gynandra)	15%		FACW
3. New York Fern (Parathelypteris noveboracensis)	5%		FAC
4. Red Raspberry (Rubus ideaus)	10%		FAC
5. Wool Sedge (Scirpus cyperinus)	10%		FACW
6.			
7.			
8.			
9.			
10.			
	100% = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	60	x 1 =	60
FACW species	25	x 2 =	50
FAC species	37	x 3 =	111
FACU species	2	x 4 =	8
UPL species		x 5 =	
Column Totals:	124 (A)		229 (B)

Prevalence Index = B/A = 1.84

Hydrophytic Vegetation Indicators:

X Rapid Test for Hydrophytic Vegetation

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-20 cm	organic / peat							

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- X Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Polyvalue Below Surface (S8)
- ___ Thin Dark Surface (S9)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Iron-Manganese Masses (F12)
- ___ Piedmont Floodplain Soils (F19)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: rock

Depth (inches): 20 cm

Hydric Soil Present? Yes Yes **No** _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No _____ Depth (inches): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

Wetland Hydrology Present? Yes _____ **No** _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Photo 1: Wetland 2 July 26, 2021.

Photo 2: Wetland 2 July 26, 2021..

Photo 3: Wetland 2 July 26, 2021.

Photo 4: Wetland 2 July 26, 2021..

Photo 5: Wetland 2 wetland soil, July 26, 2021.

Photo 6: Wetland 2 upland soil, July 26, 2021.

WETLAND DELINEATION DATA FORM – NOVA SCOTIA

Project/Site: Uniacke Quarry Wetland 3 Municipality/County: Hants Sampling Date: 26 July 2021

Applicant/Owner: Maritime Aggregates Sampling Point: WL-3 Wet

Investigator(s): BL, TTM Affiliation: WSP Canada Inc.

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____

Slope (%): _____ Lat: 435611 Long: 4973940 Datum: UTM 20 T

Soil Map Unit Name/Type: _____ Wetland Type: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes Yes No _____ (If no, explain in Remarks.)

Are Vegetation x, Soil _____, or Hydrology x significantly disturbed? Are "Normal Circumstances" present? Yes Yes No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes Yes No _____ Hydric Soil Present? Yes Yes No _____ Wetland Hydrology Present? Yes Yes No _____	**Is the Sampled Area within a Wetland?** **Yes** Yes **No** _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.)	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 10m)	Absolute % Cover	Dominant Species?	Indicator Status
1. Balsam Fir (Abies balsamea)	10%	X	FAC
2.			
3.			
4.			
5.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 5m)			
1. Red Maple (Acer rubrum)	20%	X	FAC
2. Gray Birch (Betula populifolia)	15%	X	FAC
3.			
4.			
5.			
	35% = Total Cover		
Herb Stratum (Plot size: 2m)			
1. Canada Mannagrass (Glyceria canadensis)	20%	X	OBL
2. Lady Fern (Athyrium filix-femina)	5%		FAC
3. Bristly Dewberry (Rubus hispidus)	10%	X	FACW
4. Woolsedge (Scirpus cyperinus)	15%	X	FACW
5.			
6.			
7.			
8.			
9.			
10.			
	50% = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	20	x 1 =	20
FACW species	35	x 2 =	70
FAC species	50	x 3 =	150
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	105 (A)		240 (B)

Prevalence Index = B/A = 2.28

Hydrophytic Vegetation Indicators:

___ Rapid Test for Hydrophytic Vegetation

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** _____ **No** _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-25 cm	organic / histosol							

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- X Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Polyvalue Below Surface (S8)
- ___ Thin Dark Surface (S9)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Iron-Manganese Masses (F12)
- ___ Piedmont Floodplain Soils (F19)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Rock

Depth (inches): 25 cm

Hydric Soil Present? Yes X **No** _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes X No _____ Depth (inches): Surface

Wetland Hydrology Present? Yes X **No** _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Photo 1: Wetland 3 July 26, 2021.

Photo 2: Wetland 3 July 26, 2021.

Photo 3: Wetland 3 July 26, 2021.

Photo 4: Wetland 3 soil July 26, 2021.

Photo 5: Wetland 3 upland soil, July 26, 2021.

WETLAND DELINEATION DATA FORM – NOVA SCOTIA

Project/Site: Uniacke Quarry Wetland 4 Municipality/County: Hants Sampling Date: 26 July 2021

Applicant/Owner: Maritime Aggregates Sampling Point: WL-4 Wet

Investigator(s): BL, TTM Affiliation: WSP Canada Inc.

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): concave

Slope (%): <2% Lat: 435590 Long: 4974086 Datum: UTM 20 T

Soil Map Unit Name/Type: Wetland Type: Forested Swamp

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes X No _____ Hydric Soil Present? Yes X No _____ Wetland Hydrology Present? Yes X No _____	**Is the Sampled Area within a Wetland?** **Yes** X **No** _____ If yes, optional Wetland Site ID: Wetland 4 - Wet
Remarks: (Explain alternative procedures here or in a separate report.)	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 10m)	Absolute % Cover	Dominant Species?	Indicator Status
1. Red Maple (Acer rubrum)	35%	X	FAC
2. Black Spruce (Picea mariana)	20%	X	FACW
3. Yellow Birch (Betula alleghaniensis)	5%		FAC
4.			
5.			
	60% = Total Cover		
Sapling/Shrub Stratum (Plot size: 5m)			
1. Red Maple (Acer Rubrum)	10%	X	FAC
2. Common Winterberry (Ilex verticillata)	10%	X	FACW+
3. Speckled Alder (Alnus incana)	10%	X	FACW
4. Black Spruce (Picea mariana)	5%		FACW
5.			
	35% = Total Cover		
Herb Stratum (Plot size: 2m)			
1. Tawny Cottongrass (Eriophorum virginicum)	15%	X	OBL
2. Bunchberry (Cornus canadensis)	25%	X	FAC
3. New York Fern (Parathelypteris noveboracensis)	15%	X	FAC
4. Partidgeberry (Mitchella repens)	1%		FACU
5. Cinnamon Fern (Osmunda cinnamomea)	2%		FAC
6.			
7.			
8.			
9.			
10.			
	58 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 8 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	15	x 1 =	15
FACW species	40	x 2 =	80
FAC species	90	x 3 =	270
FACU species	1	x 4 =	4
UPL species		x 5 =	
Column Totals:	146 (A)		369 (B)

Prevalence Index = B/A = 2.52

Hydrophytic Vegetation Indicators:

- X Rapid Test for Hydrophytic Vegetation
- X Dominance Test is >50%
- X Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-40+ cm	Organic / Histosol	100						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- X Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Polyvalue Below Surface (S8)
- ___ Thin Dark Surface (S9)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Iron-Manganese Masses (F12)
- ___ Piedmont Floodplain Soils (F19)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: n/a

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes X No _____ Depth (inches): Surface

Wetland Hydrology Present? **Yes** X **No** _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Photo 1: Wetland 4 July 26, 2021.

Photo 2: Wetland 4 July 26, 2021.

Photo 3: Wetland 4 July 26, 2021.

Photo 4: Wetland 4 upland area July 26, 2021.

Photo 5: Wetland 4 wetland soil, July 26, 2021.

Photo 6: Wetland 4 upland soil, July 26, 2021.

WETLAND DELINEATION DATA FORM – NOVA SCOTIA

Project/Site: Uniacke Quarry Wetland 5 Municipality/County: Hants Sampling Date: 26 July 2021

Applicant/Owner: Maritime Aggregates Sampling Point: Wetland 5 Wet

Investigator(s): BL, TTM Affiliation: WSP Canada Inc.

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____

Slope (%): _____ Lat: 435587 Long: 4973849 Datum: UTM 20 T

Soil Map Unit Name/Type: _____ Wetland Type: Graminoid / Shrub Swamp

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation X, Soil _____, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation X, Soil _____, or Hydrology X naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	**Is the Sampled Area within a Wetland?** **Yes** X **No** _____
Hydric Soil Present?	Yes X No _____	If yes, optional Wetland Site ID: Wetland 5 Wet
Wetland Hydrology Present?	Yes X No _____	

Remarks: (Explain alternative procedures here or in a separate report.)

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 10m)	Absolute % Cover	Dominant Species?	Indicator Status
1. Red Maple (Acer rubrum)	20%	X	FAC
2. Black Cherry (Prunus serotina)	10%	X	FAC
3. Gray Birch (Betula populifolia)	5%		FAC
4.			
5.			
	35% = Total Cover		
Sapling/Shrub Stratum (Plot size: 5m)			
1. Black Cherry (Prunus serotina)	15%	X	FAC
2. Red Maple (Acer rubrum)	30%	X	FAC
3. Gray Birch (Betula populifolia)	5%		FAC
4.			
5.			
	50% = Total Cover		
Herb Stratum (Plot size: 2m)			
1. Canada Mannagrass (Glyceria Canadensis)	85%	X	OBL
2. Red Raspberry (Rubus ideaus)	5%		FAC
3. Wool-Sedge (Scirpus cyperinus)	5%		FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	95% = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	85	x 1 =	85
FACW species	5	x 2 =	10
FAC species	90	x 3 =	270
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	180 (A)		365 (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

X Rapid Test for Hydrophytic Vegetation

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** _____ **No** _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-30 cm	7.5 yr 2/1	100						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- _X_ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Polyvalue Below Surface (S8)
- ___ Thin Dark Surface (S9)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Iron-Manganese Masses (F12)
- ___ Piedmont Floodplain Soils (F19)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Rock

Depth (inches): 30 cm

Hydric Soil Present? Yes _X_ **No** _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- _X_ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No _X_ Depth (inches): _____

Water Table Present? Yes _____ No _X_ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _X_ No _____ Depth (inches): _____

Wetland Hydrology Present? Yes _X_ **No** _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Photo 1: Wetland 5 July 26, 2021.

Photo 2: Wetland 5 July 26, 2021.

Photo 3: Wetland 5 July 26, 2021.

Photo 4: Wetland 5 upland area July 26, 2021.

Photo 5: Wetland 5 wetland soil, July 26, 2021.

Photo 6: Wetland 5 upland soil, July 26, 2021.

WETLAND DELINEATION DATA FORM – NOVA SCOTIA

Project/Site: Uniacke Quarry Wetland 6 Municipality/County: Hants Sampling Date: 26 July 2021

Applicant/Owner: Maritime Aggregates Sampling Point: WL-6 Wet

Investigator(s): BL, TTM Affiliation: WSP Canada Inc.

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Concave

Slope (%): _____ Lat: 435597 Long: 4973908 Datum: UTM 20 T

Soil Map Unit Name/Type: _____ Wetland Type: Shrub / Graminoid Swamp

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation X, Soil _____, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes X No _____ Hydric Soil Present? Yes X No _____ Wetland Hydrology Present? Yes X No _____	**Is the Sampled Area within a Wetland?** **Yes** X **No** _____ If yes, optional Wetland Site ID: WL-6 Wet
Remarks: (Explain alternative procedures here or in a separate report.)	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 10m)	Absolute % Cover	Dominant Species?	Indicator Status
1. Red Maple (Acer rubrum)	20%	X	FAC
2. Balsam Fir (Abies balsamea)	5%		FAC
3.			
4.			
5.			
	25% = Total Cover		
Sapling/Shrub Stratum (Plot size: 5m)			
1. Gray Birch (Betula populifolia)	15%	X	FAC
2. Red Maple (Acer rubrum)	10%	X	FAC
3.			
4.			
5.			
	25% = Total Cover		
Herb Stratum (Plot size: 2m)			
1. Canada Mannagrass (Glyceria candensis)	25%	X	OBL
2. Wool-Sedge (Scirpus cyperinus)	35%	X	FACW
3. Sensitive Fern (Osmunda sensibilis)	5%		FACW
4. Bristly Dewberry (Rubus hispidus)	3%		FACW
5.			
6.			
7.			
8.			
9.			
10.			
	68% = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	25	x 1 =	25
FACW species	43	x 2 =	86
FAC species	50	x 3 =	150
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	118 (A)		261 (B)

Prevalence Index = B/A = 2.21

Hydrophytic Vegetation Indicators:

- X Rapid Test for Hydrophytic Vegetation
- X Dominance Test is >50%
- X Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: WL-6 Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-15 cm	Organic / histosol	100%						
15 + cm	Refusal - Rock							

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- X Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Polyvalue Below Surface (S8)
- ___ Thin Dark Surface (S9)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Iron-Manganese Masses (F12)
- ___ Piedmont Floodplain Soils (F19)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Rock

Depth (inches): 15 cm

Hydric Soil Present? Yes Yes **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): Surface

Wetland Hydrology Present? Yes X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Photo 1: Wetland 6 July 26, 2021.

Photo 2: Wetland 6 July 26, 2021.

Photo 3: Wetland 6 July 26, 2021.

Photo 4: Wetland 6 upland area July 26, 2021.

Photo 5: Wetland 6 wetland soil, July 26, 2021.

Photo 6: Wetland 6 upland soil, July 26, 2021.

WETLAND DELINEATION DATA FORM – NOVA SCOTIA

Project/Site: Uniacke Quarry Wetland 7 Municipality/County: Hants Sampling Date: July 27 2021

Applicant/Owner: Maritime Aggregates Sampling Point: WL-7 Wet

Investigator(s): BL, TTM Affiliation: WSP Canada Inc.

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Concave

Slope (%): <2% Lat: 436062 Long: 4973783 Datum: UTM 20 T

Soil Map Unit Name/Type: Wetland Type: Shrub / Graminoid Swamp

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes X No	**Is the Sampled Area within a Wetland?** **Yes** X **No**
Hydric Soil Present? Yes X No	
Wetland Hydrology Present? Yes X No	If yes, optional Wetland Site ID: Wetland 7 Wet

Remarks: (Explain alternative procedures here or in a separate report.)

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 10m)	Absolute % Cover	Dominant Species?	Indicator Status
1. N/A			
2.			
3.			
4.			
5.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 5m)			
1. Balsam Fir (Abies balsamea)	30%	X	FAC
2. Larch (Larix laricina)	5%		FAC
3.			
4.			
5.			
	35% = Total Cover		
Herb Stratum (Plot size: 2m)			
1. Bristly Dewberry (Rubus hispidus)	40%	X	FACW
2. Small-fruited Bulrush (Scirpus microcarpus)	30%	X	OBL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	70% = Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	30	x 1 =	30
FACW species	40	x 2 =	80
FAC species	35	x 3 =	105
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	105 (A)		215 (B)

Prevalence Index = B/A = 1.95

Hydrophytic Vegetation Indicators:

X Rapid Test for Hydrophytic Vegetation

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No**

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: WL-7 Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-3 cm	organic / duff layer	100%						
3-20 cm	10 YR 2/1	100%						
20+ cm	Refusal - Rock							

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- X Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Polyvalue Below Surface (S8)
- ___ Thin Dark Surface (S9)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Iron-Manganese Masses (F12)
- ___ Piedmont Floodplain Soils (F19)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Rock

Depth (inches): 20 cm

Hydric Soil Present? **Yes** X **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): Surface

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Photo 1: Wetland 7 July 27, 2021.

Photo 2: Wetland 7 July 27, 2021.

Photo 3: Wetland 7 July 27, 2021.

Photo 4: Wetland 7 July 27, 2021.

Photo 5: Wetland 7 wetland soil, July 27, 2021.

WETLAND DELINEATION DATA FORM – NOVA SCOTIA

Project/Site: Uniacke Quarry Wetland 8 Municipality/County: Hants Sampling Date: 27 July 2021

Applicant/Owner: Maritime Aggregates Sampling Point: WL-8 Wet

Investigator(s): BL, TTM Affiliation: WSP Canada Inc.

Landform (hillslope, terrace, etc.): Toe of slope Local relief (concave, convex, none): Concave

Slope (%): <2% Lat: 436005 Long: 4973842 Datum: UTM 20 T

Soil Map Unit Name/Type: Wetland Type: Forested Swamp

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes X No _____ Hydric Soil Present? Yes X No _____ Wetland Hydrology Present? Yes X No _____	**Is the Sampled Area within a Wetland?** **Yes** X **No** _____ If yes, optional Wetland Site ID: _____

Remarks: (Explain alternative procedures here or in a separate report.)

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 10m)	Absolute % Cover	Dominant Species?	Indicator Status
1. Black Spruce (Picea mariana)	20%	X	FACW
2. Red Maple (Acer rubrum)	25%	X	FAC
3.			
4.			
5.			
	45% = Total Cover		
Sapling/Shrub Stratum (Plot size: 5m)			
1. Common Winterberry (Ilex verticillata)	25%	X	FACW
2. Red Maple (Acer rubrum)	10%		FAC
3.			
4.			
5.			
	35% = Total Cover		
Herb Stratum (Plot size: 2m)			
1. Northern Beech Fern (Phegopteris connectilis)	35%	X	FAC
2. Northern Blueflag (Iris versicolor)	5%		FACW+
3. Tawny Cottongrass (Eriophorum virginicum)	10%		OBL
4. Three-seeded Sedge (Carex trisperma)	10%		OBL
5.			
6.			
7.			
8.			
9.			
10.			
	60% = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	20	x 1 =	20
FACW species	85	x 2 =	170
FAC species	70	x 3 =	210
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	175 (A)		400 (B)

Prevalence Index = B/A = 2.28

Hydrophytic Vegetation Indicators:

- X Rapid Test for Hydrophytic Vegetation
- X Dominance Test is >50%
- X Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-40+ cm	organic / peat							sphagnum / partially decomposed peat

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Polyvalue Below Surface (S8)
- ___ Thin Dark Surface (S9)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Iron-Manganese Masses (F12)
- ___ Piedmont Floodplain Soils (F19)
- ___ Red Parent Material (TF2)
- X Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: n/a

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes X No _____ Depth (inches): Surface

Wetland Hydrology Present? **Yes** X **No** _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Photo 1: Wetland 8 July 27, 2021.

Photo 2: Wetland 8 July 27, 2021.

Photo 3: Wetland 8 July 27, 2021.

Photo 4: Wetland 8 upland area July 27, 2021.

WETLAND DELINEATION DATA FORM – NOVA SCOTIA

Project/Site: Uniacke Quarry Expansion Wetland 9 Municipality/County: Hants Sampling Date: 27 July, 2021

Applicant/Owner: Maritime Aggregates Sampling Point: WL-9 Wet

Investigator(s): BL, TTM Affiliation: WSP Canada Inc.

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____

Slope (%): <2% Lat: 435792 Long: 4973968 Datum: UTM 20 T

Soil Map Unit Name/Type: _____ Wetland Type: Forested Swamp

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes X No _____ Hydric Soil Present? Yes X No _____ Wetland Hydrology Present? Yes X No _____	**Is the Sampled Area within a Wetland?** **Yes** X **No** _____ If yes, optional Wetland Site ID: Wetland 9 Wet
Remarks: (Explain alternative procedures here or in a separate report.)	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 10m)	Absolute % Cover	Dominant Species?	Indicator Status
1. Red Maple (Acer rubrum)	25%	X	FAC
2. Black Spruce (Picea mariana)	5%		FACW
3. Balsam Fir (Abies Balsamea)	15%		FAC
4.			
5.			
	45% = Total Cover		
Sapling/Shrub Stratum (Plot size: 5m)			
1. Balsam Fir (Abies balsamea)	10%	X	FAC
2. Red Maple (Acer rubrum)	5%		FAC
3. Yellow Birch (Betula alleghaniensis)	5%		FAC
4.			
5.			
	20% = Total Cover		
Herb Stratum (Plot size: 2m)			
1. Three-seeded Sedge (Carex trisperma)	10%	X	OBL
2. Canada mannagrass (Glyceria candensis)	5%		OBL
3. Sensitive Fern (Onoclea sensibilis)	10%	X	FACW
4. Red Respberry (Rubus ideaus)	5%		FAC
5.			
6.			
7.			
8.			
9.			
10.			
	30% = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	15	x 1 =	15
FACW species	15	x 2 =	30
FAC species	65	x 3 =	195
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	95 (A)		240 (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- X Rapid Test for Hydrophytic Vegetation
- X Dominance Test is >50%
- X Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-40+ cm	Histosol	100%						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- [X] Histosol (A1)
- [ ] Histic Epipedon (A2)
- [ ] Black Histic (A3)
- [ ] Hydrogen Sulfide (A4)
- [ ] Stratified Layers (A5)
- [ ] Depleted Below Dark Surface (A11)
- [ ] Thick Dark Surface (A12)
- [ ] Sandy Mucky Mineral (S1)
- [ ] Sandy Gleyed Matrix (S4)
- [ ] Sandy Redox (S5)
- [ ] Polyvalue Below Surface (S8)
- [ ] Thin Dark Surface (S9)
- [ ] Loamy Gleyed Matrix (F2)
- [ ] Depleted Matrix (F3)
- [ ] Redox Dark Surface (F6)
- [ ] Depleted Dark Surface (F7)
- [ ] Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- [ ] Coast Prairie Redox (A16)
- [ ] 5 cm Mucky Peat or Peat (S3)
- [ ] Iron-Manganese Masses (F12)
- [ ] Piedmont Floodplain Soils (F19)
- [ ] Red Parent Material (TF2)
- [ ] Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: n/a

Depth (inches): _____

Hydric Soil Present? Yes X **No** _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- [ ] Surface Water (A1)
- [ ] High Water Table (A2)
- [X] Saturation (A3)
- [ ] Water Marks (B1)
- [ ] Sediment Deposits (B2)
- [ ] Drift Deposits (B3)
- [ ] Algal Mat or Crust (B4)
- [ ] Iron Deposits (B5)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [ ] Sparsely Vegetated Concave Surface (B8)
- [ ] Water-Stained Leaves (B9)
- [ ] Aquatic Fauna (B13)
- [ ] Marl Deposits (B15)
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres on Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Tilled Soils (C6)
- [ ] Thin Muck Surface (C7)
- [ ] Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- [ ] Surface Soil Cracks (B6)
- [ ] Drainage Patterns (B10)
- [ ] Moss Trim Lines (B16)
- [ ] Dry-Season Water Table (C2)
- [ ] Saturation Visible on Aerial Imagery (C9)
- [ ] Stunted or Stressed Plants (D1)
- [ ] Geomorphic Position (D2)
- [ ] Shallow Aquitard (D3)
- [ ] Microtopographic Relief (D4)
- [ ] FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes X No _____ Depth (inches): Surface

Wetland Hydrology Present? Yes X **No** _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Photo 1: Wetland 9 July 27, 2021.

Photo 2: Wetland 9 July 27, 2021.

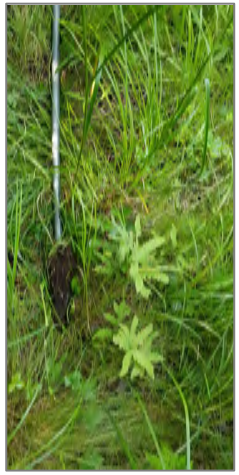

Photo 3: Wetland 9 July 27, 2021.

Photo 4: Wetland 9 July 27, 2021.

WETLAND DELINEATION DATA FORM – NOVA SCOTIA

Project/Site: Uniacke Quarry Expansion Wetland 10 Municipality/County: Hants Sampling Date: 27 July, 2021

Applicant/Owner: Maritime Aggregates Sampling Point: WL-10 Wet

Investigator(s): BL, TTM Affiliation: WSP Canada Inc.

Landform (hillslope, terrace, etc.): flat/ hilltop Local relief (concave, convex, none): concave

Slope (%): ~2% Lat: 435673 Long: 4974096 Datum: UTM 20 T

Soil Map Unit Name/Type: Wetland Type: Shrub swamp

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** **Yes** X **No** _____
Hydric Soil Present?	Yes X	No _____	If yes, optional Wetland Site ID: Wetland 10 Wet
Wetland Hydrology Present?	Yes X	No _____	

Remarks: (Explain alternative procedures here or in a separate report.)

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 10m)	Absolute % Cover	Dominant Species?	Indicator Status
1. White Birch (Betula papyrifera)	5%	X	FACU
2.			
3.			
4.			
5.			
	5% = Total Cover		
Sapling/Shrub Stratum (Plot size: 5m)			
1. Gray Birch (Betula populifolia)	15%	X	FAC
2. Speckled Alder (Alnus incana)	10%	X	FACW
3. Black Cherry (Prunus serotina)	10%	X	FAC
4. Red Maple (Acer rubrum)	5%		FAC
5.			
	40% = Total Cover		
Herb Stratum (Plot size: 2m)			
1. Canada Mannagrass (Glyceria canadensis)	40%	X	OBL
2. Bluejoint Reedgrass (Calamagrostis canadensis)	20%	X	FACW
3. New York Fern (Parathelypteris noveboracensis)	5%		FAC
4. Bristly Dewberry (Rubus hispidus)	5%		FACW
5.			
6.			
7.			
8.			
9.			
10.			
	70% = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 83% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	40	x 1 =	40
FACW species	35	x 2 =	70
FAC species	35	x 3 =	105
FACU species	5	x 4 =	20
UPL species		x 5 =	
Column Totals:	115 (A)		235 (B)

Prevalence Index = B/A = 1.86

Hydrophytic Vegetation Indicators:

X Rapid Test for Hydrophytic Vegetation

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-40+ cm	Organic / histosol	100						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- X Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Polyvalue Below Surface (S8)
- ___ Thin Dark Surface (S9)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Iron-Manganese Masses (F12)
- ___ Piedmont Floodplain Soils (F19)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: n/a

Depth (inches): _____

Hydric Soil Present? Yes X **No** _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes X No _____ Depth (inches): Surface

Wetland Hydrology Present? Yes X **No** _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Photo 1: Wetland 10 July 27, 2021.

Photo 2: Wetland 10 July 27, 2021.

Photo 3: Wetland 10 July 27, 2021.

Photo 4: Wetland 10 July 27, 2021.

Photo 5: Wetland 10 wetland soil, July 27, 2021.

Photo 10: Wetland 10 upland soil, July 27, 2021.

Cover Page: Basic Description of Assessment	**WESP-AC version 2**
Site Name:	Uniacke Quarry WL1
Investigator Name:	Brady Leights and Tiffany MacAulay
Date of Field Assessment:	26 July 2021
Nearest Town:	Mount Uniacke, Nova Scotia
Latitude (decimal degrees):	44.914588
Longitude (decimal degrees):	-63.813368
Is a map based on a formal on-site wetland delineation available?	Yes
Approximate size of the Assessment Area (AA, in hectares):	0.3
AA as percent of entire wetland (approx.). Attach sketch map if AA is smaller than the entire contiguous wetland.	100
What percent (approx.) of the **wetland** were you able to visit?	100
What percent (approx.) of the **AA** were you able to visit?	100
Were you able to ask the site owner/manager about any of the questions?	Yes
Indicate here if you intentionally surveyed for rare plants, calciphile plants, or rare animals:	Yes
Have you attended a WESP-AC training session? If so, indicate approximate month & year.	September 2021
How many wetlands have you assessed previously using WESP-AC? (approx.)	
Comments about the site or this WESP-AC assessment (attach extra page if desired):	

	A	B	C	D	E
1	Date: 26 July 2021		Site Identifier: Uniacke Quarry WL-1	Investigator: Brady Leights	
2	**Form OF (Office). Non-tidal Wetland Data Form. WESP-AC version 2 for Nova Scotia wetlands only.** DIRECTIONS: Conduct an assessment only after reading the accompanying Manual and the Explanations column of the data form. In the Data column, change the 0 (false) to a 1 (true) for the best choice, or for multiple choices where allowed and so indicated. Answering many of the questions below will require using these online map viewers: **Google Earth Pro**: https://www.google.com/earth/download/gep/agree.html **Provincial Landscape Viewer**: https://nsgi.novascotia.ca/plv/ For most wetlands, completing this office data form will require 1-2 hours. For a list of functions to which each question pertains, see bracketed abbreviations in the Definitions/Explanations column. For detailed descriptions of each WESP-AC model, see Appendix B of the accompanying Manual. Codes for functions and values are: WS= Water Storage, SFS= Stream Flow Support, WC= Water Cooling, SR= Sediment Retention & Stabilisation, PR= Phosphorus Retention, NR= Nitrate Removal, CS= Carbon Sequestration, OE= Organic Nutrient Export, INV= Invertebrate Habitat, FA= Anadromous Fish Habitat, FR= Resident Fish Habitat, AM= Amphibian & Reptile Habitat, WBF= Feeding Waterbird Habitat, WBN= Nesting Waterbird Habitat, SBM= Songbird, Raptor, & Mammal Habitat, POL= Pollinator Habitat, PH= Native Plant Habitat, PU= Public Use & Recognition, EC= Ecological Condition, Sen= Wetland Sensitivity, STR= Stressors.			
3	**#**	**Indicators**	**Condition Choices**	**Data**	**Definitions/Explanations**
4	OF1	Province	Mark the province in which the AA is located by changing the 0 in the column next to it to a "1". Mark only one.		This determines to which province's calibration wetlands the raw score of any wetland is normalised. In the function and benefits models, it also triggers the automatic exclusion of indicators for which no spatial data exists in a particular province.
5			New Brunswick	0	
6			Nova Scotia	1	
7			Prince Edward Island	0	
8			Newfoundland-Labrador	0	
9	OF2	Ponded Area Within 1 km.	The area of **surface water** ponded during most of the growing season that is both (1) in or adjacent to the AA and (2) within 1 km is:		**"Adjacent"** means not separated from the AA by a wide expanse (>50 m) of upland (including roads >50 m wide). Include ponded areas likely to be hidden by wetland vegetation. If surface water extends beyond 1 km, include only the part within 1 km. Do not include tidal areas. Measure the area from aerial imagery using Google Earth Pro (click on Ruler icon in toolbar, then Polygon in pop-up menu). [PH, SBM, WBN]
10			<0.01 hectare (about 10 m x 10 m).	0	
11			0.01 - 0.1 hectare.	0	
12			0.1 - 1 hectare.	0	
13			1 to 10 hectares.	1	
14			10 to 100 hectares.	0	
15			>100 hectares.	0	
16	OF3	Ponded Water & Wetland Within 1 km.	The area of **wetlands and surface water** ponded during most of the growing season that is both (1) in or adjacent to the AA and (2) within 1 km is:		See definition of adjacent in OF2. If the AA's wetland vegetation extends beyond 1 km, include only the part within 1 km. "Ponded" means not flowing in rivers or streams. [Sens, WBF]
17			<0.01 hectare (about 10 m x 10 m).	0	
18			0.01 - 0.1 hectare.	0	
19			0.1 - 1 hectare.	0	
20			1 to 10 hectares.	0	
21			10 to 100 hectares.	1	
22			>100 hectares.	0	
23	OF4	Size of Largest Nearby Vegetated Tract or Corridor	The largest vegetated patch or corridor that includes the AA's vegetation plus all **adjacent** upland vegetation that is not lawn, row crops, heavily grazed lands, conifer plantation is:		See definition of adjacent in OF2. Use Google Earth Pro's polygon ruler (as described above). Exclude conifer plantations only if it is obvious that trees were planted in rows. [AM, PH, SBM, Sens]
24			<0.01 hectare (about 10 m x 10 m).	0	
25			0.01 - 0.1 hectare.	0	
26			0.1 - 1 hectare.	0	
27			1 to 10 hectares.	0	
28			10 to 100 hectares.	0	
29			100 to 1000 hectares.	0	
30			>1000 hectares. [*This is nearly always the answer in relatively undeveloped landscapes.*]	1	
31	OF5	Distance to Large Vegetated Tract	The minimum distance from the **edge** of the AA to the edge of the closest ***vegetated land*** (but excluding row crops, lawn, conifer plantation) **larger than 375 hectares** (about 2 km on a side), is:		To measure distance, use Google Earth Pro (Ruler > Line tool). The 375-ha criterion is from the Fundy Model Forest Project. [AM, PH, POL, SBM, Sens]
32			<50 m, and not separated from the 375-ha vegetated area by any width of **paved** roads, stretches of open water, row crops, bare ground, lawn, or impervious surface. Or the AA itself contains >375 ha of vegetation. [This is often the answer in relatively undeveloped landscapes.]	1	
33			<50 m, but completely separated from the 375-ha vegetated area by those features, and AA does not contain >375 ha of vegetation.	0	
34			50-500 m, and **not** separated.	0	
35			50-500 m, but separated by those features.	0	
36			0.5 - 5 km, and **not** separated.	0	
37			0.5 - 5 km, but separated by those features.	0	
38			None of the above (the closest patches or corridors which are that large are >5 km away).	0	
39	OF6	Herbaceous Uniqueness	The AA's vegetation cover is >10% herbaceous* but uplands within 5 km have <10% herbaceous cover. If so, enter "3" and continue to OF7. If not, consider: The AA's vegetation cover is >10% herbaceous* but uplands within 1 km have <10% herbaceous cover. If so enter "2" and continue to OF7. If not, consider: The AA's vegetation cover is >10% herbaceous* but uplands within 100 m of the wetland edge have <10% herbaceous cover. If so, enter "1". [* NOTE: Exclude lawns, row crops, heavily grazed lands, forest, shrublands. Include moss as well as grasslike plants in this use of "herbaceous vegetation"]	1	For this question only, consider moss to be herbaceous vegetation. Determine the score by viewing aerial imagery in Google Earth after successively drawing or estimating the boundaries of the buffers of 5 km, 1 km, and 100 m radius focused on the center of the AA. Circles of specified radius can be drawn in Google Earth Pro by clicking on the Ruler icon, then Circle in the pop-up menu. [AMv, PHv, POLv, SBMv, WBFv, WBNv]
40	OF7	Woody Uniqueness	The AA's vegetation cover is >10% woody* but uplands within 5 km have <10% woody cover. If so, enter "3" and continue to OF8. If not, consider: The AA's vegetation is >10% woody* but uplands within 1 km have <10% woody cover. If so enter "2" and continue to OF8. If not, consider: The AA's vegetation is >10% woody* but uplands within 100 m of the wetland edge have <10% woody cover. If so, enter "1" [* NOTE: woody cover = trees & shrubs taller than 1 m.]	0	See above. Do not consider conifer plantations to be forest if it is obvious that trees were planted in rows. [AMv, PHv, POLv, SBMv]
41	OF8	Local Vegetated Cover Percentage	Draw a 5-km radius circle measured from the center of the AA. Ignoring all permanent water in the circle, the percent of the remaining area that is wooded or unmanaged herbaceous vegetation (NOT lawn, row crops, bare or heavily grazed land, clearcuts, or conifer plantations) is:		In Google Earth, draw the 5 km buffer and then estimate land cover percentages, or do GIS analysis of an appropriate land cover layer. [AM, PH, POL, SBM, Sens]
42			<5% of the land.	0	
43			5 to 20% of the land.	0	
44			20 to 60% of the land.	0	
45			60 to 90% of the land.	1	
46			>90% of the land. SKIP to OF10.	0	
47	OF9	Type of Land Cover Alteration	Within the **5-km** radius circle, and ignoring all permanent water, the land area that is bare or non-perennial cover is mostly:		[AM, SBM]
48			Impervious surface, e.g., paved road, parking lot, building, exposed rock.	0	
49			Bare pervious surface, e.g., lawn, recent (<5 yrs ago) clearcut, dirt or gravel road, cropland, landslide, conifer plantation.	1	
50	OF10	Distance by Road to Nearest Population Center	Measured **along** the maintained road nearest the AA, the distance to the nearest **population center** is:		"Population center" means a settled area with more than about 5 regularly- inhabited structures per square kilometer. In Google Earth Pro, click on the Ruler icon, then Path, and draw and measure the route. [FAv, FRv, NRv, PH, PU, SBM, WBFv]
51			<100 m.	0	
52			100 - 500 m.	0	
53			0.5- 1 km.	0	
54			1 - 5 km.	1	
55			>5 km.	0	

	A	B	C	D	E
56	OF11	Distance to Nearest Maintained Road	From the center of the AA, the distance to the nearest maintained public road (dirt or paved) is:		Determine this by viewing aerial imagery in Google Earth Pro and measuring with the Ruler>Line tool. [AM, FAv, FRv, NRv, PH, PU, SBM, STR, WBN]
57			<10 m.	0	
58			10 - 25 m.	0	
59			25 - 50 m.	0	
60			50 - 100 m.	0	
61			100 - 500 m.	1	
62			>500 m.	0	
63	OF12	Wildlife Access	Draw a circle of radius of 5 km from the center of the AA. If mammals and amphibians can move from the center of the AA to ALL other separate wetlands and ponds located within the circle without being forced to cross pavement (any width), lawns, bare ground, and/or marine waters, mark 1= yes can move to all, 0= no. Change to blank if there are no other wetlands within 5 km.	0	Draw the 5 km circle in Google Earth Pro using the Circle tool and search for roads and wetlands within it, being alert for roads hidden under forest canopy. [AM, SBM, STR]
64	OF13	Distance to Ponded Water	The distance from the AA center to the closest (but separate) ponded water body visible in GoogleEarth imagery is:		In Google Earth Pro, zoom in closely to examine the surrounding landscape for ponds, lakes, and wetlands that appear to be permanently flooded. [AM, PH, SBM, Sens, WBF, WBN]
65			<50 m, and not separated by any width of paved roads, stretches of open water, row crops, lawn, bare ground, or impervious surface.	0	
66			<50 m, but completely separated by those features.	0	
67			50-500 m, and not separated.	0	
68			50-500 m, but separated by those features.	0	
69			0.5 - 1 km, and not separated.	0	
70			0.5 - 1 km, but separated by those features.	1	
71			None of the above (the closest patches or corridors that large are >1 km away).	0	
72	OF14	Distance to Large Ponded Water	The distance from the AA center to the closest (but separate) non-tidal body of water that is ponded during most of the year and is larger than 8 hectares during most of a normal year is:		Determine this by viewing aerial imagery in Google Earth. [Sens, WBF, WBN]
73			<100 m.	0	
74			100 m - 1 km.	0	
75			1 -2 km.	0	
76			2-5 km.	1	
77			5-10 km.	0	
78			>10 km.	0	
79	OF15	Tidal Proximity	The distance from the AA edge to the closest tidal water body (regardless of its salinity) is:		In Google Earth, measure the distance to the ocean (including Bay of Fundy) or tidal river, whichever is closer. If you need to see how far upriver a river is tidal, see the KMZ file provided with this calculator for NS (NS Headtide). Points shown in those files are only an approximation, so local information if available may be preferable. [FA, WBF]
80			<100 m.	0	
81			100 m - 1 km.	0	
82			1 - 5 km.	0	
83			5-10 km.	0	
84			10-40 km.	1	
85			>40 km.	0	
86	OF16	Upland Edge Contact	Select one:		[NR, SBM, Sens]
87			The AA has no upland edge (or upland is <1% of perimeter). The AA is entirely surrounded by (& contiguous with) other wetlands or water.	0	
88			1-25% of the AA's perimeter abuts upland (including filled areas). The rest adjoins other wetlands or water that is mostly wider than the AA.	0	
89			25-50% of the AA's perimeter abuts upland. The rest adjoins other wetlands or water that is mostly wider than the AA.	0	
90			50-75% of the AA's perimeter abuts upland. The rest adjoins other wetlands or water that is mostly wider than the AA.	0	
91			More than 75% of the AA's perimeter abuts upland. Any remainder adjoins other wetlands or water that is mostly wider than the AA. This will be true for most assessments done with WESP-AC.	1	
92	OF17	Flood Damage from Non-tidal Waters	Within 5 km downstream or downslope of the AA (select first true choice):		Contact local authories to determine if such maps exist. Where available, LiDAR imagery can provide finer elevational resolution useful for flood modeling. [WSv]
93			Maps show Flood Zone or Flood Risk areas and there appears to be infrastructure vulnerable to river flooding not caused by tidal storm surges.	0	
94			Maps show Flood Zone or Flood Risk areas, but infrastructure is absent or is not vulnerable to floods from a non-tidal river. In some cases levees, upriver dams, or other measures may partly limit damage or risk from smaller events.	0	
95			Maps do not show Flood Zone or Flood Risk areas (or no such mapping has been done locally) and there appears to be infrastructure vulnerable to river flooding unrelated to tidal storm surges.	0	
96			Maps do not show Flood Zone or Flood Risk areas (or no such mapping has been done locally) and there is no infrastructure vulnerable to river flooding unrelated to tidal storm surges.	1	
97	OF18	Relative Elevation in Watershed	In Google Earth, enable the Terrain layer (lower left menu) and open the NS_Watersheds Secondary KMZ file that accompanies this calculator. Then determine the AA's approximate elevation (bottom right, NOT the "eye alt"). Then move cursor around to determine the watershed's maximum and minimum elevation. Divide the AA's elevation by the (max-min).	0.87	[FA, NR, Sens, SFSv, WCv, WSv]
98	OF19	Water Quality Sensitive Watershed or Area	The AA is in a Protected Water Supply area (Designated Water Supply Area, Natural Watershed Municipal Surface Water Supply Area, or Municipal Water Supply Area) according to the provided KMZ overlay ("NS Protected Water Supply Areas"). Enter 1= yes, 0= no.	0	If an ACCDC report is available for this AA, it also may contain such information. [NRv]
99	OF20	Degraded Water Upstream	Sampling indicates a problem with concentrations of metals, hydrocarbons, nutrients, or other substances (excluding bacteria, acidic water, high temperatures) being present at levels harmful to aquatic life or humans, and:		May use existing data, or sample those waters as part of this wetland assessment. "Harmful" should be evaluated with regard to current federal or provincial water quality standards. [AM, FA, FR, NRv, PRv, SRv, STR, WBF, WBN]
100			The condition is present within the AA.	0	
101			The condition is present in waters within 1 km that flow into the AA, but has not been documented in the AA itself.	0	
102			Sampling during both low water periods and times with high runoff (storms, snowmelt) indicates no problems in either the AA or inflowing waters.	0	
103			Data are insufficient (no or inadequate sampling within 1 km, or condition exists only at >1 km upstream). This is the situation for nearly all wetlands in this region.	1	
104	OF21	Degraded Water Downstream	The problem described above is downslope from the AA, and:		May use existing data, or monitor waters as part of this wetland assessment. [NRv, PRv, SRv]
105			The condition is present within 1 km downslope and connected to the AA by a channel.	0	
106			The condition is present within 5 km downslope and connected to the AA by a channel, or within 1 km but not connected to the AA by a channel.	0	
107			Sampling during both low water periods and times with high runoff (storms, snowmelt) indicates no problems in either the AA or inflowing waters.	0	
108			Data are insufficient (no or inadequate sampling within 1 km, or condition exists only at >1 km upstream). This is the situation for nearly all wetlands in this region.	1	
109	OF22	Wetland as a % of Its Contributing Area (Catchment)	From a topographic map and field observations, estimate the approximate boundaries of the catchment (CA) of the entire wetland of which the AA may be only a part. Then adjust those boundaries if necessary based on your field observations of the surrounding terrain, and/or by using procedures described in the Manual. Divide the area of the wetland (not just the AA) by the approximate area of its catchment excluding the area of the wetland itself. When doing the calculation, if ponded water is adjacent to the wetland, include that in the wetland's area. The result is:		Topographic maps may be viewed online at the National Atlas of Canada (Toporama): http://atlas.gc.ca/toporama/en/index.html [NR, PR, Sens, SR, WS]
110			<0.01, or catchment size unknown due to stormwater pipes that collect water from an indeterminate area.	0	
111			0.01 to 0.1.	1	
112			0.1 to 1.	0	
113			>1 (wetland is larger than its catchment (e.g., wetland with flat surrounding terrain and no inlet, or is entirely isolated by dikes, or is a raised bog).	0	
114	OF23	Unvegetated Surface in the Contributing Area	The proportion of the AA's contributing area (measured to no more than 1000 m upslope) that is comprised of buildings, roads, parking lots, other pavement, exposed bedrock, landslides, and other mostly-bare surface is about :		[FA, INV, NRv, PRv, SRv, STR, WCv, WSv]
115			<10%.	1	
116			10 to 25%.	0	
117			>25%.	0	

	A	B	C	D	E
118	OF24	Transport From Upslope	A relatively large proportion of the precipitation that falls farther upslope in the CA reaches this wetland quickly as runoff (surface water), as indicated by the following: (a) input channel is present, (b) input channels have been straightened, (c) upslope wetlands have been ditched extensively, (d) land cover is mostly non-forest, (e) CA slopes are steep, and/or (f) most CA soils are shallow (bedrock near surface) and/or have high runoff coefficients. This statement is:		[NRv, PRv, SRv, WSv]
119			Mostly true.	1	
120			Somewhat true.	0	
121			Mostly untrue.	0	
122	OF25	Aspect	The overland flow direction of most surface water (in streams, rivers, or runoff) that enters the AA is:		[AM, NR, SFS, WC, WS]
123			Northward (N, NE). north-facing contributing area.	0	
124			Southward (S, SW). south-facing contributing area.	0	
125			Other (E, SE, W, NW), or no detectable uphill slope or input channel (flat).	1	
126	OF26	Internal Flow Distance (Path Length)	The horizontal flow distance from the wetland's inlet to outlet is:		Identify inlets and outlets, if any, from topographic maps (use elevations to determine which are inlets and which are outlets) and augment by field inspection. With the Provincial Landscape Viewer, select Nova Scotia Topo as the Basemap. Also enable the layer Forestry>WAM Predicted Flow. Then measure the inlet-outlet distance. [NR, OE, PR, SR, WS]
127			<10 m.	0	
128			10 - 50 m.	0	
129			50 - 100 m.	0	
130			100 - 1000 m.	0	
131			1- 2 km.	0	
132			>2 km, or wetland lacks an inlet and outlet.	1	
133	OF27	Growing Degree Days	In Google Earth, open the KMZ file that accompanies this calculator, called NS_GrowingDegreeDays. Place your cursor over the AA and left-click. From the pop-up window, enter the GRIDCODE number in the next column.	2000	This layer was provided by Dr. Dan McKenney of the Canadian Forest Service [AM, CS, FR, INV, NR, OE, PH, PR, Sens, SR, WBF, WCv, WS]
134	OF28	Fish Access or Use	According to agency biologists and/or your own observations, the AA. [M*ark just the first choice that is true.]* :		Regarding the last choice, if uncertain if an AA is fishless, consider the possibility its waters have been stocked. [AM, FA, FR, INV, WBF, WBN]
135			Is known to support rearing and/or spawning by Atlantic salmon or other anadromous species or eels. Go to Provincial Landscape Viewer>Wildlife>Significant Habitat>Species at Risk. Contact local fishery biologists, review the ACCDC report, and visit these websites: http://www.salmonatlas.com/atlanticsalmon/canada-east/index.1.html http://atlanticsalmonfederation.org/rivers/introduction.html	0	
136			Has not been documented to support Atlantic salmon rearing and/or spawning, but is connected to nearby waters likely to contain Atlantic salmon or other anadromous species or eels and is probably accessed by those during some conditions.	0	
137			Is probably is not accessed by any anadromous fish species but is known or likely to have other fish at least seasonally.	0	
138			Is known or likely to be fishless (e.g., too small, dry, and/or not accessible even temporarily, and not stocked).	1	
139	OF29	Species of Conservation Concern	Within the past 10 years, in the AA (or in its adjoining waters or wetland), qualified observers have documented *[mark all applicable*]:		Request information from ACCDC and/or conduct your own survey at an appropriate season using an approved protocol. For birds, also check eBird.org. NOTE for NS: If your WESP-AC is being completed for a Wetland Alteration Application to NS-ECC, your ACCDC results and any taxon-specific survey results must be submitted along with your WESP-AC results, and application. [AMv, EC, PHv, POLv, SBMv, Sens, WBFv, WBNv]
140			Presence of one or more of the plant species listed in the Plants_Rare worksheet of the accompanying SuppInfo file, or the AA is within a mapped Atlantic Coastal Plain Flora Buffer (go to Provincial Landscape Viewer> Wildlife> Special Management Practice Zones).	0	
141			Presence of one or more of the amphibian or reptile species (AM) of conservation concern as listed in the Wildlife_Rare worksheet of the accompanying SuppInfo file.	0	
142			Presence of one or more of the waterbird species (WBF, WBN) of conservation concern as listed in the Wildlife_Rare worksheet of the accompanying SuppInfo file.	0	
143			Presence of one or more of the nesting songbird or raptor species (SBM) of conservation concern as listed in the Wildlife_Rare worksheet of the accompanying SuppInfo file, during their nesting season (May-July for most species).	0	
144			None of the above, or no data.	1	
145	OF30	Important Bird Area (IBA)	In Google Earth, open the KMZ file that accompanies this calculator, called IBAs_Canada. The AA is all or part of an officially designated IBA. Enter 1= yes, 0= no.	0	The source of this layer, which should be checked periodically for updates, is: http://www.ibacanada.com/mapviewer.jsp?lang=EN [SBMv, WBFv, WBNv]
146	OF31	Black Duck Nesting Area	In Google Earth, open the KMZ file that accompanies this calculator, called BlackDuck. Adjust its alignment and opacity. Determine the predicted density (pairs per 25 sq. km) of nesting American Black Duck in the AA's vicinity: <10 (enter 0), 10-20 (enter 1), 20-30 (enter 2), >30 (enter 3). If outside of region shown in map, change to blank.	0	This was provided by Dr. David Leske. [WBNv]
147	OF32	Wintering Deer or Moose Concentration Areas	If AA is on private land with no information, change to blank (not 0). Otherwise: With the Provincial Landscape Viewer, for Wintering Moose, go to Wildlife> Significant Habitat. For Mainland Moose Concentration Areas, go to Wildlife> Special Management Practice Zones. Enter: yes= 1, no= 0.		[SBM]
148	OF33	Other Conservation Designation	The AA is all or part of an area designated by government, First Nations, or the Nature Conservancy of Canada (NCC) for its exceptional ecological features or highly intact natural conditions. With Provincial Landscape Viewer, see Protected Areas. Enter: yes= 1, no= 0. If uncertain, consult NCC and agencies for more recent information.	0	See: https://novascotia.ca/parksandprotectedareas/plan/interactive-map/ [PU]
149	OF34	Conservation Investment	The AA is part of or contiguous to a wetland on which public or private organizational funds were spent to preserve, create, restore, or enhance the wetland (excluding mitigation wetlands). Ask the property owner. Enter: yes= 1, no= 0. If no information, change to blank (not 0).	0	[PU]
150	OF35	Mitigation Investment	The AA is all or part of a mitigation site used explicitly to offset impacts elsewhere. Ask the property owner. Enter: yes= 1, no= 0. If no information, change to blank.		[PU]
151	OF36	Sustained Scientific Use	Plants, animals, or water in the AA have been monitored for >2 years, unrelated to any regulatory requirements, and data are available to the public. Or the AA is part of an area that has been designated by an agency or institution as a benchmark, reference, or status-trends monitoring area. Ask the property owner. Enter: yes= 1, no= 0. If no information, change to blank.		[PU]
152	OF37	Calcareous Region	The AA is NOT in a subregion that has been heavily exposed to acid precipitation. Enter "1" if true (green or yellow in map in Appendix A of the Manual). Enter "0" if false. If no information, change to blank.		[AM, FA, FR, INV, PH]
153	OF38	Ownership	Select the ONE ownership that covers the most of the AA. In Google Earth, open KMZ file called NS_Crownlands.Use more recent information if available.		"Private lands" may include those owned or leased by non-governmental organizations, e.g., charitable conservation land trusts, DUC, TNC. [PU, STR]
154			New timber harvest, roads, mineral extraction, and intensive summer recreation (e.g., off-road vehicles) are permanently prohibited. Includes many publicly-owned Protected Lands, and private lands under long-term (30+ year) legal agreements to maintain nearly-unaltered conditions.	0	
155			Ownership is public (e.g., municipal, Crown Reservations/Notations) but some or all of the above activities are allowed.	0	
156			Ownership is private but public access is allowed, and/or a shorter-term conservation easement (whether renewable or not) is in place.	0	
157			Ownership is private and owner does not allow access, or access permission unknown, and not a conservation easement.	1	

	A	B	C	D	E
1	Date: 26 July 2021		Site Identifier: Uniacke Quarry WL-1	Investigator: Brady Leights	
2	**Form F (Field). Non-tidal Wetland Data Form. WESP-AC version 2 for Nova Scotia.** DIRECTIONS: Walk for no less than 10 minutes from the wetland edge towards its core, in the part of the AA that is proposed for alteration. If no alteration is proposed, walk in a portion that appears to be most representative of the wetland overall. Walk only where it is safe and legal to do so. Conduct the assessment only after reading the accompanying Manual and the Explanations column of the data form. In the Data column, change the 0 (false) to a 1 (true) for the best choice, or for multiple choices where allowed and so indicated. Answer these questions primarily based on your onsite observations and interpretations. Do not write in shaded parts of this data form. Answering some questions accurately may require conferring with the landowner or other knowledgable persons, and/or reviewing aerial imagery. For most wetlands, completing this field data form will require 1-2 hours on a site. For a list of functions to which each question pertains, see the accompanying Interpretations form. For detailed descriptions of each WESP-AC model, see Appendix B of the accompanying Manual. Codes for functions and values are: WS= Water Storage & Delay, SFS= Stream Flow Support, WC= Water Cooling, SR= Sediment Retention & Stabilisation, PR= Phosphorus Retention, NR= Nitrate Removal, CS= Carbon Sequestration, OE= Organic Nutrient Export, INV= Invertebrate Habitat, FA= Anadromous Fish Habitat, FR= Resident Fish Habitat, AM= Amphibian & Reptile Habitat, WBF= Feeding Waterbird Habitat, WBN= Nesting Waterbird Habitat, SBM= Songbird, Raptor, & Mammal Habitat, POL= Pollinator Habitat, PH= Native Plant Habitat, PU= Public Use & Recognition, EC= Ecological Condition, Sen= Wetland Sensitivity, STR= Stressors.		
3	**#**	**Indicators**	**Condition Choices**	**Data**	**Definitions/Explanations**
4	F1	Wetland Type	Follow the key below and mark the ONE row that best describes MOST of the vegetated part of the AA:		Ericaceous shrubs are ones in the heather family (Ericaceae). Most have leathery evergreen leaves. They include rhododendron, azalea, swamp laurel, leatherleaf, Labrador tea, and others. Most require acidic soil. Although not in the family Ericaceae, sweetgale (*Myrica gale*) should be counted also. [AM, CS, FA, FR, INV, NR, OE, PH, Sens, SFS, WBF, WBN]
5			A. Moss and/or lichen cover more than 25% of the ground. Often dominated by ericaceous shrubs (e.g., Labrador tea) or other acid-tolerant plants (e.g., bog cranberry, pitcher plant, sundew, orchids). Substrate is mostly undecomposed peat. Choose between A1 and A2 and mark the choice with a 1 in their adjoining column. Otherwise go to B below.		
6			A1. Surface water is usually absent or, if present, pH is typically <4.5 and conductivity is usually <100 µS/cm (<64 ppm TDS). Trees are absent or nearly so. Sedge cover usually sparse or absent but cottongrass and/or lichen cover may be extensive, as well as cloudberry, lingonberry, sheep laurel, and a sedge (*Carex rariflor* a). Wetland surface and surrounding landscape are seldom sloping and wetland often is domed (convex). Inlet and outlet channels are usually absent. If known, pH of peat is <4.0.	0	
7			A2. Not A1. Surface water, if present, has pH typically >4.5 and conductivity is usually >100 µS/cm (>64 ppm TDS). Sedge cover is usually extensive, and/or tree and tall shrub cover is extensive. Sometimes at toe of slope or edge of water body. An exit channel is usually present. Wetter than A1 and peat depth may be shallower (<2 m).	0	
8			B. Moss and/or lichen cover less than 25% of the ground. Soil is mineral or decomposed organic (muck). Choose between B1 and B2 and mark the choice with a 1 in their adjoining column:		
9			B1. Trees and shrubs taller than 1 m comprise more than 25% of the vegetated cover. Surface water is mostly absent or inundates the vegetation only seasonally (e.g., vernal pools or floodplain).	0	
10			B2. Not B1. Tree & tall shrubs comprise less than than 25% of the vegetated cover. Vegetation is mostly herbaceous, e.g., cattail, bulrush, burreed, pond lily, horsetail. Surface water may be extensive and fluctuates seasonally, being either persistent or drying up partly or entirely.	1	
11			*Reminder : For all questions, the AA should include all persistent waters in ponds smaller than 8 hectares (~283 m on a side) that are adjacent to the AA. The AA should also include part of the water area of adjacent ponded water larger than 8 ha and adjacent rivers wider than 20 m. Specifically, the AA should include the open water part adjacent to wetland vegetation and equal in width to the average width of that vegetated zone. Throughout this data form, "* **adjacent** *" is used synonymously with abutting, adjoining, bordering, contiguous -- and means no upland (manmade or natural) completely separates the described features along their directly shared edge. Features joined only by a channel are not necessarily considered to be adjacent -- a large portion of their edges must match. The features do not have to be hydrologically connected in order to be considered adjacent.*		
12	F2	Wetland Types - Adjoining or Subordinate	If the AA is smaller than 1 ha, mark all other types that occupy more than 1% of the vegetated AA. If the AA is larger than 1 ha, mark all other types which are within or adjacent to the AA and occupy more than 1 ha, as visible from the AA or as interpreted from aerial imagery. Do not mark again the type marked in F1.		1 hectare is 10,000 sq. m or about 2.5 acres. It could have dimensions of 100 m by 100 m, 1000 m by 10 m, or similar. [AM, INV, SBM, WBF]
13			A1.	0	
14			A2.	0	
15			B1.	0	
16			B2.	0	
17	F3	Woody Height & Form Diversity	Following EACH row below, indicate with a number code the percentage of the living vegetation in the AA which is occupied by that feature (6 if >95%, 5 if 75-95%, 4 if 50-75%, 3 if 25-50%, 2 if 5-25%, 1 if <5%, 0 if none). If the vegetated part of the AA is largely herbaceous (non-woody) vegetation, these percentages should not sum to 100%.		Deciduous shrubs in this region usually include buttonbush, Labrador tea, bayberry (*Morella*), huckleberry, cranberry, cloudberry, sweetgale, alder, willow, birch, ash, dogwood, and a few others. If you assigned a code of 3 or higher to any of the first four choices and the ground cover beneath the trees/shrubs is <25% moss, then question F1 might be "B1". [CS, INV, NR, PH, POL, SBM, Sens]
18			coniferous trees (may include tamarack) taller than 3 m.	1	
19			deciduous trees taller than 3 m.	1	
20			coniferous or ericaceous shrubs or trees 1-3 m tall not directly below the canopy of trees.	2	
21			deciduous shrubs or trees 1-3 m tall not directly below the canopy of trees.	2	
22			coniferous or ericaceous shrubs <1 m tall not directly below the canopy of taller vegetation.	2	
23			deciduous shrubs or trees <1 m tall (e.g., deciduous seedlings) not directly below the canopy of taller vegetation.	2	
24			*Note : If none of top 4 rows in F3 was marked 2 or greater , SKIP to F9 (N fixers).*		
25	F4	Dominance of Most Abundant Shrub Species	Determine which two woody plant species comprise the greatest portion of the low (<3 m) woody cover . Then choose one:		[PH, POL, SBM, Sens]
26			those species together comprise > 50% of such cover.	1	
27			those species together do not comprise > 50% of such cover.	0	
28	F5	Woody Diameter Classes	Mark ALL the types that comprise >5% of the woody canopy cover in the AA or >5% of the wooded areas (if any) along its upland edge (perimeter). The edge should include only the trees whose canopies extend into the AA.		Estimate the diameters at chest height. If small-diameter trees are overtopped (shaded) by larger ones, visualise a "subcanopy" at the average height of the smaller-dbh trees, to serve as a basis for the minimum 5% canopy requirement in this question. The trees and shrubs need not be wetland species. [AM, CS, POL, SBM, Sens, WBN]
29			coniferous, 1-9 cm diameter and >1 m tall.	1	
30			broad-leaved deciduous 1-9 cm diameter and >1 m tall.	1	
31			coniferous, 10-19 cm diameter.	0	
32			broad-leaved deciduous 10-19 cm diameter.	0	
33			coniferous, 20-40 cm diameter.	0	
34			broad-leaved deciduous 20-40 cm diameter.	0	
35			coniferous, >40 cm diameter.	0	
36			broad-leaved deciduous >40 cm diameter.	0	
37	F6	Height Class Interspersion	Follow the key below and mark the ONE row that best describes MOST of the AA:		[AM, INV, NR, PH, SBM, Sens]
38			A. Neither the vegetation taller than 1 m nor the vegetation shorter than that comprise >70% of the vegetated part of the AA. They each comprise 30-70%. Choose between A1 and A2 and mark the choice with a 1 in the adjoining column. Otherwise go to B below.		
39			A1. The two height classes are mostly scattered and intermixed throughout the AA.	0	
40			A2. Not A1. The two height classes are mostly in separate zones or bands, or in proportionately large clumps.	0	
41			B. Either the vegetation shorter than 1 m comprises >70% of the vegetated part of the AA, or the vegetation taller than that does. One size class might even be totally absent. Choose between B1 and B2 and mark the choice with a 1 in the adjoining column:		
42			B1. The less prevalent height class is mostly scattered and intermixed within the prevalent one.	0	
43			B2. Not B1. The less prevalent height class is mostly located apart from the prevalent one, in separate zones or clumps, or is completely absent.	1	
44	F7	Large Snags (Dead Standing Trees)	The number of large snags (diameter >20 cm) in the AA plus adjacent upland area within 10 m of the wetland edge is:		Snags are dead standing trees that often (not always) lack bark and foliage. Include only ones that are at least 2 m tall. [POL, SBM, WBN]
45			None, or fewer than 8/ hectare which exceed this diameter.	1	
46			Several (>8/hectare) and a pond, lake, or slow-flowing water wider than 10 m is within 1 km.	0	

	A	B	C	D	E
47			Several (>8/hectare) but above not true.	0	
48	F8	Downed Wood	The number of downed wood pieces longer than 2 m and with diameter >10 cm, and not persistently submerged, is:		Exclude temporary "burn piles." [AM, INV, POL, SBM]
49			Few or none that meet these criteria.	1	
50			Several (>5 if AA is >5 hectares, less for smaller AAs) meet these criteria.	0	
51	F9	N Fixers	The percentage of the AA's vegetated cover that contains nitrogen-fixing plants (e.g., alder, sweetgale, clover, lupine, alfalfa, other legumes) is:		Do not include N-fixing algae or lichens. [FA, FR, INV, NRv, OE, PH, SBM, Sens]
52			<1% or none.	0	
53			1-25% of the vegetated cover, in the AA or along its water edge (whichever has more).	1	
54			25-50% of the vegetated cover, in the AA or along its water edge (whichever has more).	0	
55			50-75% of the vegetated cover, in the AA or along its water edge (whichever has more).	0	
56			>75% of the vegetated cover, in the AA or along its water edge (whichever has more).	0	
57	F10	Sphagnum Moss Extent	The cover of Sphagnum moss (or any moss that forms a dense cushion many centimeters thick), including the moss obscured by taller sedges and other plants rooted in it, is:		Exclude moss growing on trees and rocks. [CS, PH]
58			<5% of the vegetated part of the AA.		
59			5-25% of the vegetated part of the AA.	1	
60			25-50% of the vegetated part of the AA.	0	
61			50-95% of the vegetated part of the AA.	0	
62			>95% of the vegetated part of the AA.	0	
63	F11	% Bare Ground & Thatch	Consider the parts of the AA that lack surface water at the driest time of the growing season. Viewed from directly above the ground layer, the predominant condition in those areas at that time is:		Thatch is dead plant material (stems, leaves) resting on the ground surface. Bare ground that is present under a tree or shrub canopy should be counted. Boulders count as bare ground. Wetlands with mineral soils and that are heavily shaded or are dominated by annual plant species tend to have more extensive areas that are bare during the early growing season. [AM, EC, INV, NR, OE, POL, PR, SBM, Sens]
64			Little or no (<5%) *bare ground* is visible between erect stems or under canopy anywhere in the vegetated AA. Ground is extensively blanketed by dense thatch, moss, lichens, graminoids with great stem densities, or plants with ground-hugging foliage.	1	
65			Slightly bare ground (5-20% bare between plants) is visible in places, but those areas comprise less than 5% of the unflooded parts of the AA.	0	
66			Much bare ground (20-50% bare between plants) is visible in places, and those areas comprise more than 5% of the unflooded parts of the AA.	0	
67			Other conditions.	0	
68			Not applicable. Surface water (either open or obscured by emergent plants) covers all of the AA all the time.	0	
69	F12	Ground Irregularity	Imagine the AA without any living vegetation. Excluding the portion of the AA that is always under water, the number of hummocks, small pits, raised mounds, animal burrows, ruts, gullies, natural levees, microdepressions, and other areas of peat or mineral soil that are raised or depressed >10 cm compared to most of the area within a few meters surrounding them is:		The depressions may be of human or natural origin. [AM, EC, INV, NR, PH, POL, PR, SBM, SR, WS]
70			Few or none (minimal microtopography; <1% of the land has such features, or entire AA is always water-covered).	0	
71			Intermediate.	1	
72			Several (extensive micro-topography).	0	
73	F13	Upland Inclusions	Within the AA, inclusions of upland are:		[AM, NR, SBM]
74			Few or none.	1	
75			Intermediate (1 - 10% of vegetated part of the AA).	0	
76			Many (e.g., wetland-upland "mosaic", >10% of the vegetated AA).	0	
77	F14	Soil Texture	In parts of the AA that lack persistent water, the texture of soil in the uppermost layer is mostly: [*To determine this, use a trowel to check in at least 3 widely spaced locations, and use the soil texture key (in Appendix A of the Manual).]*		[CS, NR, OE, PH, PR, Sens, SFS, WS]
78			Loamy: soils that may contain a little fine grit and do not make a "ribbon" longer than 2 cm when moistened, rolled, squeezed, and extended between thumb and forefinger.	0	
79			Fines: includes silt, clay, silt, soils that make a ribbon longer than 2 cm when moistened, rolled, squeezed, and extended between thumb and forefinger.	1	
80			Deep Peat, to 40 cm depth or greater.	0	
81			Shallow Peat or organic <40 cm deep.	0	
82			Coarse: includes sand, loamy sand, gravel, cobble, soils that do not make a ribbon when moistened, rolled, squeezed, and extended between thumb and forefinger.	0	
83	F15	Shorebird Feeding Habitats	During any 2 consecutive weeks of the growing season, the extent of mudflats, bare unshaded saturated areas not covered by thatch, and unshaded waters shallower than 6 cm is: [Include also any area that is adjacent to the AA.]		This addresses needs of many but not all migratory sandpipers, plovers, and related species. [WBF]
84			None, or <100 sq. m.	1	
85			100-1000 sq. m.	0	
86			1000 – 10,000 sq. m.	0	
87			>10,000 sq. m.	0	
88	F16	Herbaceous % of Vegetated Wetland	In aerial ("ducks eye") view, the maximum annual cover of herbaceous vegetation (all non-woody plants except moss) is:		[AM, WBF, WBN]
89			<5% of the vegetated part of the AA or <0.01 hectare (whichever is less). Mark "1" here and SKIP to F20 (Invasive Plant Cover).	0	
90			5-25% of the vegetated part of the AA.	0	
91			25-50% of the vegetated part of the AA.	0	
92			50-95% of the vegetated part of the AA.	1	
93			>95% of the vegetated part of the AA.	0	
94	F17	Forb Cover	Within parts of the AA having herbaceous cover (excluding SAV), the areal cover of forbs reaches an annual maximum of:		Forbs are flowering plants. Do not include grasses, sedges, cattail, other graminoids, ferns, horsetails, or others that lack showy flowers. [POL]
95			<5% of the herbaceous part of the AA.	1	
96			5-25% of the herbaceous part of the AA.	0	
97			25-50% of the herbaceous part of the AA.	0	
98			50-95% of the herbaceous part of the AA.	0	
99			>95% of the herbaceous part of the AA.	0	
100	F18	Sedge Cover	Sedges (*Carex* spp.) and cottongrass (*Eriophorum* spp.) occupy:		[CS]
101			<5% of the vegetated area, or none.	0	
102			5-50% of the vegetated area.	0	
103			50-95% of the vegetated area.	1	
104			>95% of the vegetated area.	0	
105	F19	Dominance of Most Abundant Herbaceous Species	Determine which two herbaceous species comprise the greatest portion of the herbaceous cover (excluding mosses and floating-leaved aquatic plants). Then choose one of the following:		For this question, include ferns as well as graminoids and forbs. [EC, INV, PH, POL, Sens]
106			those species together comprise > 50% of the areal cover of herbaceous plants at any time during the year.	1	
107			those species together do not comprise > 50% of the areal cover of herbaceous plants at any time during the year.	0	
108	F20	Invasive Plant Cover	How extensive is the cover of invasive plant species in the AA? For species, see Plants_invasive worksheet in the accompanying SuppInfo file.		[EC, PH, POL, Sens]
109			invasive species appear to be absent in the AA, or are present only in trace amount (a few individuals).	1	
110			invasive species are present in more than trace amounts, but comprise <5% of herbaceous cover (or woody cover, if the invasives are woody).	0	
111			invasive species comprise 5-20% of the herb cover (or woody cover, if the invasives are woody).	0	
112			invasive species comprise 20-50% of the herb cover (or woody cover, if the invasives are woody).	0	
113			invasive species comprise >50% of the herb cover (or woody cover, if the invasives are woody).	0	

	A	B	C	D	E
114	F21	Invasive Cover Along Upland Edge	Along the wetland-upland boundary, the percent of the upland edge (within 3 m upslope from the wetland) that is occupied by invasive plant species is:		If a plant cannot be identified to species (e.g., winter conditions) but its genus contains an exotic species, assume the unidentified plant to also be exotic. If vegetation is so senesced that exotic species cannot be identified, answer "none". [PH, STR]
115			none of the upland edge (invasives apparently absent), or AA has no upland edge.	1	
116			some (but <5%) of the upland edge.	0	
117			5-50% of the upland edge.	0	
118			most (>50%) of the upland edge.	0	
119	F22	Fringe Wetland	During most of the year, open water within or adjacent to the vegetated part of the wetland is much wider than the maximum width of the vegetated zone within the wetland. Enter "1" if true, "0" if false.	0	[WBF, WBN, WCv]
120	F23	Lacustrine Wetland	The vegetated part of the AA is within or adjacent to a body of non-tidal standing open water whose size exceeds 8 hectares during most of a normal year.	0	[FR, PR, PU, WBF, WBN]
121	F24	% of AA Without Surface Water	The percentage of the AA that never contains surface water during an average year (that is, except perhaps for a few hours after snowmelt or rainstorms), but which is still a wetland, is:		1 hectare is 10,000 sq. m or about 2.5 acres. It could have dimensions of 100 m by 100 m, 1000 m by 10 m, or similar. [AM, FA, FR, INV, NR, PH, PR, SBM, Sens, SRv, WBF, WBN, WC]
122			<1% . In other words, all or nearly all of the AA is covered by water permanently or at least seasonally.	0	
123			1-25% of the AA, or <1% but >0.01 ha never contains surface water.	0	
124			25-50% of the AA never contains surface water.	0	
125			50-75% of the AA never contains surface water.	0	
126			75-99% of the AA never contains surface water, OR >99% and there is at least one persistently ponded water body larger than 1 ha in the AA.	0	
127			99-100%. AND there is no persistently ponded water body larger than 1 ha within the AA. Enter "1" and SKIP to F42 (Channel Connection).	1	
128	F25	% of AA with Persistent Surface Water	Identify the parts of the AA that still contain surface water (flowing or ponded, open or hidden beneath vegetation) even during the driest times of a normal year, i.e., when the AA's surface water is at its lowest annual level. At that time, the percentage of the AA that still contains surface water is:		If you are unable to determine the condition at the driest time of year, ask the land owner or neighbors about it if possible. Indicators of persistence may include fish, some dragonflies, beaver, and muskrat. [AM, CS, FA, FR, INV, NR, POL, PR, SBM, WBF, WBN]
129			None. The AA dries up completely (no water in channels either) or never has surface water during most years. SKIP to F27.	0	
130			1-20% of the AA.	0	
131			20-50% of the AA.	0	
132			50-95% of the AA.	0	
133			>95% of the AA. True for many fringe wetlands.	0	
134	F26	% of Summertime Water that Is Shaded	At mid-day during the warmest time of year, the area of surface water within the AA that is shaded by vegetation and other features that are within the AA at that time is:		[FA, WC]
135			<5% of the water is shaded, or no surface water is present then.	0	
136			5-25% of the water is shaded.	0	
137			25-50% of the water is shaded.	0	
138			50-75% of the water is shaded.	0	
139			>75% of the water is shaded.	0	
140	F27	% of AA that is Flooded Only Seasonally	The percentage of the AA's area that is between the annual high water and the annual low water (surface water) is:		Flood marks (algal mats, adventitious roots, debris lines, ice scour, etc.) are often evident when not fully inundated. Also, such areas often have a larger proportion of upland and annual (vs. perennial) plant species. In riverine systems, the extent of this zone can be estimated by multiplying by 2 the bankful height and visualising where that would intercept the land along the river. [CS, FA, INV, NR, OE, PH, SR, WBF, WBN, WS]
141			None, or <0.01 hectare and <1% of the AA. SKIP to F29.	0	
142			1-20% of the AA, or <1% but >0.01 ha.	0	
143			20-50% of the AA.	0	
144			50-95% of the AA.	0	
145			>95% of the AA.	0	
146	F28	Annual Water Fluctuation Range	The annual fluctuation in surface water level within most of the parts of the AA that contain surface water at least temporarily is:		Look for flood marks (see above). Because the annual range of water levels is difficult to estimate without multiple visits, consider asking the land owner or neighbors about it. [AM, CS, INV, NR, OE, PH, PR, SR, WBN, WS]
147			<10 cm change (stable or nearly so).	0	
148			10 cm - 50 cm change.	0	
149			0.5 - 1 m change.	0	
150			1-2 m change.	0	
151			>2 m change.	0	
152	Is the AA plus adjacent ponded water smaller than 0.01 hectare (about 10m x 10m, or 1m x 100 m)? If so, enter "1" in column D and SKIP TO F42 (Connection).			0	
153	F29	Predominant Depth Class	During most of the time when surface water is present during the growing season, its depth, averaged over the entire inundated part of the AA, is:		If a boat is unavailable, estimate this by considering wetland size and local topography. Or if timing and safety allow, depths may be measured by drilling through winter ice.This question is asking about the spatial median depth that occurs during most of that time, even if inundation is only seasonal or temporary. If inundation in most but not all of the wetland is brief, the answer will be based on the depth of the most persistently inundated part of the wetland. Include surface water in channels and ditches as well as ponded areas. [CS, FA, FR, INV, OE, PH, PR, Sens, SFS, SR, WBF, WBN, WC]
154			<10 cm deep (but >0).	0	
155			10 - 50 cm deep.	0	
156			0.5 - 1 m deep.	0	
157			1 - 2 m deep.	0	
158			>2 m deep. True for many fringe wetlands.	0	
159	F30	Depth Classes - Evenness of Proportions	When present, surface water in most of the AA usually consists of (select one):		Estimate these proportions by considering the gradient and microtopography of the site. [FR, INV, WBF, WBN]
160			One depth class that comprises >90% of the AA's inundated area (use the classes in the question above).	0	
161			One depth class that comprises 50-90% of the AA's inundated area.	0	
162			Neither of above. There are 3 or more depth classes and none occupy >50%.	0	
163	F31	% of Water That Is Ponded (not Flowing)	During most times when surface water is present, the percentage that is (1) ponded (stagnant, or flows so slowly that fine sediment is not held in suspension) AND (2) is likely to be deeper than 0.5 m in some places, is:		Nearly all wetlands with surface water have some ponded water. [AM, CS, INV, NR, OE, PR, Sens, SR, WBF, WBN, WC, WS]
164			<5% of the water, or it occupies <100 sq.m cumulatively. Nearly all the surface water is flowing. SKIP to F34.	0	
165			5-30% of the water.	0	
166			30-70% of the water.	0	
167			70-95% of the water.	0	
168			>95% of the water.	0	
169	F32	Ponded Open Water - Minimum Size	During most of the growing season, the largest patch of open water that is ponded and is in or bordering the AA is >0.01 hectare (about 10 m by 10 m) and mostly deeper than 0.5 m. If true enter "1" and continue, If false, enter "0" and SKIP to F41 (Floating Algae & Duckweed).	0	Open water is not obscured by vegetation in aerial ("duck's eye") view. It includes vegetation floating on the water surface or entirely submersed beneath it.
170	F33	% of Ponded Water that is Open	In ducks-eye aerial view, the percentage of the ponded water that is open (lacking emergent vegetation during most of the growing season, and unhidden by a forest or shrub canopy) is:		[AM, CS, FA, FR, INV, NR, OE, PR, SR, WBF, WBN, WC]
171			None, or <1% of the AA and largest pool occupies <0.01 hectares. Enter "1" and SKIP to F41 (Floating Algae & Duckweed).	0	
172			1-4% of the ponded water. Enter "1" and SKIP to F41 (Floating Algae & Duckweed).	0	
173			5-30% of the ponded water.	0	
174			30-70% of the ponded water.	0	
175			70-99% of the ponded water.	0	
176			100% of the ponded water.	0	
177	F34	Width of Vegetated Zone within Wetland	At the time during the growing season when the AA's water level is lowest, the average width of vegetated area in the AA that separates adjoining uplands from open water within the AA is:		"Vegetated area" does not include underwater or floating-leaved plants, i.e., aquatic bed. Width may include wooded riparian areas if they have wetland soil or plant indicators. [AM, CS, NR, OE, PH, PR, SBM, Sens, SR, WBN]
178			<1 m.	0	
179			1 - 9 m.	0	
180			10 - 29 m.	0	
181			30 - 49 m.	0	
182			50 - 100 m.	0	
183			> 100 m, or open water is absent at that time.	0	

	A	B	C	D	E
184	F35	Flat Shoreline Extent	During most of the part of the growing season when water is present, the percentage of the AA's **water edge** length that is **nearly flat** (a slope less than about 5% measured within 5 m landward of the water) is:		If several isolated pools are present in early summer, estimate the percent of their collective shorelines that has such a gentle slope. [SR, WBN]
185			<1% of the water edge.	0	
186			1-25% of the water edge.	0	
187			25-50% of the water edge.	0	
188			50-75% of the water edge.	0	
189			>75% of the water edge.	0	
190	F36	Robust Emergents	The percentage **of the emergent vegetation** cover in the AA that is cattail (*Typha* spp.), common reed (*Phragmites*), or tall (>1m) bulrush is:		**Emergent vegetation** is herbaceous plants whose stems are partly above and partly below the water surface during most of the time water is present. [WBN]
191			<1% of the emergent vegetation, or emergent vegetation is absent. SKIP to F38.	0	
192			1-25% of the emergent vegetation.	0	
193			25-75% of the emergent vegetation.	0	
194			>75%, of the emergent vegetation.	0	
195	F37	Interspersion of Emergents & Open Water	During most of the part of the growing season when water is present, the spatial pattern of **emergent** vegetation within the water is mostly:		[AM, FA, FR, INV, NR, OE, PH, PR, SBM, SR, WBF, WBN]
196			Scattered. More than 30% of such vegetation forms small islands or corridors surrounded by water.	0	
197			Intermediate.	0	
198			Clumped. More than 70% of such vegetation is in bands along the wetland perimeter or is clumped at one or a few sides of the surface water area.	0	
199	F38	Persistent Deepwater Area	If the deepest patch of surface water (flowing or ponded) in or directly adjacent to the AA is mostly deeper than 0.5 m for >2 weeks during the growing season, enter "1" and continue. If not, enter "0" and SKIP to F42.(Connection).	0	
200	F39	Non-vegetated Aquatic Cover	During most of the growing season and in waters deeper than 0.5 m, the cover for fish, aquatic invertebrates, and/or amphibians that is provided NOT by living vegetation, but by accumulations of **dead wood and undercut banks** is:		For this question, consider only the wood that is at or above the water surface. Estimates of underwater wood based only on observations from terrestrial viewpoints are unreliable so should not be attempted. [AM, FA, FR, INV]
201			Little or none.	0	
202			Intermediate.	0	
203			Extensive.	0	
204	F40	Isolated Island	The AA contains (or is part of) an island or beaver lodge within a lake, pond, or river, and is isolated from the shore **by water depths** >1 m on all sides during an average June. The island may be solid, or it may be a floating vegetation mat that is sufficiently large and dense to support a waterbird nest.	0	[WBN]
205	F41	Floating Algae & Duckweed	At some time of the year, mats of algae and/or duckweed are likely to cover >50% of the AA's otherwise-unshaded water surface, or blanket >50% of the underwater substrate. If true, enter "1" in next column. If untrue or uncertain, enter "0".	0	[EC, PR, WBF]
206	F42	Channel Connection & Outflow Duration	The most persistent surface water connection (outlet channel or pipe, ditch, or overbank water exchange) between the AA and a downslope stream network is: [Note: If the AA represents only part of a wetland, answer this according to whichever is the **least** permanent surface connection: the one between the AA and the rest of the wetland, or the surface connection between the wetland and the downslope stream network.]		Consider the connection regardless of whether the surface water is frozen. The "downslope stream network" could consist of ditches, rivers, ponds, or lakes which eventually connect to the ocean. If this cannot be determined while visiting the AA, consult topographic maps perhaps by viewing these online with Toporama (http://atlas.nrcan.gc.ca/toporama/en/index.html) [CS, FA, FR, NR, OE, PR, Sens, SFS, SR, WCv, WS]
207			Persistent (surface water flows out for >9 months/year).	0	
208			Seasonal (surface water flows out for 14 days to 9 months/year, not necessarily consecutive).	0	
209			Temporary (surface water flows out for <14 days, not necessarily consecutive).	0	
210			None -- but maps show a stream network downslope from the AA and within a distance that is less than the AA's length. SKIP to F47 (pH Measurement).	0	
211			No surface water flows out of the wetland except possibly during extreme events (<once per 10 years). Or, water flows only into a wetland, ditch, or lake that lacks an outlet. SKIP to F47 (pH Measurement).	1	
212	F43	Outflow Confinement	During major runoff events, in the places where **surface** water exits the AA or connected waters nearby, the water:		"Major runoff events" would include biennial high water caused by storms and/or rapid snowmelt. [CS, NR, OE, PR, Sens, SR, STR, WS]
213			Mostly passes through a pipe, culvert, narrowly breached dike, berm, beaver dam, or other partial obstruction (other than natural topography) that does not appear to drain the wetland artificially during most of the growing season.	0	
214			Leaves through natural exits (channels or diffuse outflow), not mainly through artificial or temporary features.	0	
215			Is exported more quickly than usual due to ditches or pipes within the AA or connected to its outlet, or within 10 m of the AA's edge, which drain the wetland artificially, or water is pumped out of the AA.	0	
216	F44	Tributary Channel	At least once annually, surface water from a tributary channel that is >100 m long moves into the AA. Or, surface water from a larger permanent water body adjacent to the AA spills into the AA. If it enters only via a pipe, that pipe must be fed by a mapped stream or lake further upslope. If no, SKIP to F47 (pH Measurement).	0	If inlet tributaries cannot be searched for due to inaccessibility of part of the AA, follow suggestions in F42 above. [NRv, PH, PRv, SRv]
217	F45	**Input** Water Temperature	Based on lack of shade, water source characteristics, or actual temperature measurements, the inflow is likely to be warmer than surface water in the AA during part of most years. Enter 1= yes, 0= no.	0	[WCv]
218	F46	Throughflow Resistance	During its travel through the AA at the time of peak annual flow, water arriving in channels: [select only the ONE encountered by **most** of the incoming water].		[FA, FR, INV, NR, OE, PR, SR, WS]
219			Does not bump into many plant stems as it travels through the AA. Nearly all the water continues to travel in unvegetated (often incised) channels that have minimal contact with wetland vegetation, or through a zone of open water such as an instream pond or lake.	0	
220			Bumps into **herbaceous** vegetation but mostly remains in fairly straight channels.	0	
221			Bumps into **herbaceous** vegetation and mostly spreads throughout, or is in widely meandering, multi-branched, or braided channels.	0	
222			Bumps into **tree trunks and/or shrub stems** but mostly remains in fairly straight channels.	0	
223			Bumps into tree trunks and/or shrub stems and follows a fairly **indirect** path from entrance to exit (meandering, multi-branched, or braided).	0	
224	F47	pH Measurement	The pH in most of the AA's surface water:		Preferably, measure this in larger areas of ponded surface water within the AA, or in streams that have passed through (not along) most of the AA. Unless surface water is completely absent, do not dig holes or make depressions in peat in order to provide water for this measurement. Avoid measuring near roads or in puddles formed only by recent rain. [AM, FA, FR, NR, WBF, PH, PR, Sens, WBF, WBN]
225			Was measured, and is: [*enter the reading in the column to the right.*]		
226			Was not measured but surface water is present and is darkly tea-coloured. Or if no surface water, then mosses and plants that indicate peatland (e.g., Labrador tea) are prevalent. Enter "1".	0	
227			Neither of above. Enter "1".	1	
228	F48	TDS and/or Conductivity	The TDS (total dissolved solids) or conductivity off the AA's surface water is: (select the first true row with information):		See above for measurement guidance. [FR, INV, NRv, PH, PRv, Sens]
229			TDS is: [*Enter the reading* ***in ppm or mg/L*** *in the column to the right, if measured, or answer next row.*]	0	
230			Conductivity is [*Enter the reading* ***in µS/cm*** *in the column to the right.*]		
231			Was not measured, but plants that indicate saline conditions cover much of the vegetated AA. Enter "1".	0	
232			Neither of above	1	
233	F49	Beaver Probability	Use of the AA by beaver during the past 5 years is (select most applicable ONE):		[FA, FR, PH, SBM, Sens, WBF, WBN]
234			**Evident** from direct observation or presence of gnawed limbs, dams, tracks, dens, lodges, or extensive stands of water-killed trees (snags).	0	
235			**Likely** based on known occurrence in the region and proximity to suitable habitat, which may include: (a) a persistent freshwater wetland, pond, or lake, or a perennial low or mid-gradient (<10%) channel, and (b) a corridor or multiple stands of hardwood trees and shrubs in vegetated areas near surface water.	0	
236			Unlikely because site characteristics above are deficient, and/or this is a settled area or other area where beaver are routinely removed.	1	
237	F50	Groundwater Strength of Evidence	Select first applicable choice:		Adhere to these criteria strictly -- do not use personal judgment based on fen conditions, pH, or other evidence. Consult topographic maps to detect breaks in slope described here. Rust deposits associated with groundwater seeps may be most noticeable as orange discoloration in ice formations along streams during early winter. [AM, CS, FA, FR, INV, NR, OE, PH, PRv, SFS, WC, WS]
238			Springs are known to be present within the AA, or if groundwater levels have been monitored, that has demonstrated that groundwater primarily discharges to the wetland for longer periods during the year than periods when the wetland recharges the groundwater.	0	

	A	B	C	D	E
239			Most of the AA has a slope of >5%, or is very close to the base of a natural slope longer than 100 and much steeper than the slope of the AA, AND the pH of surface water, if known, is >5.5.	0	
240			Neither of above is true, although some groundwater may discharge to or flow through the AA. Or groundwater influx is unknown.	1	
241	F51	Internal Gradient	The gradient along most of the flow path **within** the AA is:		This is not the same as the shoreline slope. It is the elevational difference between the AA's inlet and outlet, divided by the flow-distance between them and converted to percent. If available, use a clinometer to measure this. Free clinometer apps can be downloaded to smartphones. If the wetland is large (longer than ~1 km), this may be estimated using Google Earth to determine the minimum and maximum elevation within the AA, then dividing by length and multiplying by 100. [CS, NR, OE, PR, SR, WBF, WBN, WS]
242			<2% **or** the AA has no surface water outlet (not even seasonally).	1	
243			2-5%.	0	
244			6-10%.	0	
245			>10%.	0	
246	Note for the next three questions: If the AA lacks an upland edge, evaluate based on the AA's entire perimeter, and moving outward into whatever areas are adjacent. In many situations, these questions are best answered by measuring from aerial images.				
247	F52	Vegetated Buffer as % of Perimeter	Within a zone extending 30 m laterally from the AA's edge with upland and/or other wetlands, the percentage that contains **perennial vegetation cover** (except lawns, row crops, heavily grazed land, conifer plantations) is:		[AM, FA, FR, INV, NRv, PH, POL, PRv, SBM, Sens, SRv, STR, WBN]
248			<5%.	0	
249			5 to 30%.	0	
250			30 to 60%.	0	
251			60 to 90%.	1	
252			>90%, or all the area within 30 m of the AA edge is other wetlands. **SKIP to F55.**	0	
253	F53	Type of Cover in Buffer	Within 30 m upslope of where the wetland transitions to upland, the upland land cover that is NOT perennial vegetation is mostly (mark ONE):		[AM, FA, INV, NRv, PH, POL, SBM, STR, WBN]
254			Impervious surface, e.g., paved road, parking lot, building, exposed rock.	0	
255			Bare or nearly bare pervious surface or managed vegetation, e.g., lawn, row crops, unpaved road, dike, landslide.	1	
256	F54	Buffer Slope	The steepest and/or most disturbed part of the upland area that is within 30 m of the wetland and occupies >10% of that upland area has a percent slope of:		[NRv, PRv, Sens, SRv]
257			<1% (flat -- almost no noticeable slope) or all the area within 30 m of the AA edge is other wetlands.	0	
258			2-5%.	1	
259			5-30%.	0	
260			>30%.	0	
261	F55	Cliffs or Steep Banks	In the AA or within 100 m, there are elevated terrestrial features such as cliffs, talus slopes, stream banks, or excavated pits (but not riprap) that extend at least 2 m nearly vertically, are unvegetated, and potentially contain crevices or other substrate suitable for nesting or den areas. Enter 1 (yes) or 0 (no).	0	Do not include upturned trees as potential den sites. [POL, SBM]
262	F56	New or Expanded Wetland	**Human** actions within or adjacent to the AA have persistently expanded a naturally occurring wetland or created a wetland where there previously was none (e.g., by excavation, impoundment):		Determine this using historical aerial photography, old maps, soil maps, or permit files as available [CS, NR, OE, PH, Sens]
263			No.	0	
264			Yes, and created or expanded 20 - 100 years ago.	0	
265			Yes, and created or expanded 3-20 years ago.	0	
266			Yes, and created or expanded within last 3 years.	0	
267			Yes, but time of origin or expansion unknown.	0	
268			Unknown if new or expanded within 20 years or not.	1	
269	F57	Burn History	More than 1% of the AA's previously vegetated area:		Look for charred soil or stumps (in multiple widely-spaced locations) or ask landowner. [CS, PH, STR]
270			Burned within past 5 years.	0	
271			Burned 6-10 years ago.	0	
272			Burned 11-30 years ago.	0	
273			Burned >30 years ago, or no evidence of a burn and no data.	1	
274	F58	Visibility	The maximum percentage of the wetland that is visible from the best vantage point on public roads, public parking lots, public buildings, or public maintained trails that intersect, adjoin, or are within 100 m of the AA (select one) is:		[PU, STR, WBFv]
275			<25%.	1	
276			25-50%.	0	
277			>50%.	0	
278	F59	Non-consumptive Uses - Actual or Potential	Assuming access permission was granted, select **ALL** statements that are true of the AA as it currently exists:		[PU, STR]
279			For an average person, walking is physically possible **in** (not just near) >5% of the AA during most of the growing season, e.g., free of deep water and dense shrub thickets.	1	
280			Maintained roads, parking areas, or foot-trails are within 10 m of the AA, or the AA can be accessed part of the year by boats arriving via contiguous waters.	0	
281			Within or near the AA, there is an interpretive center, trails with interpretive signs or brochures, and/or regular guided interpretive tours.	0	
282	F60	Unvisited Core Area	The percentage of the AA almost never visited by humans during an average growing season probably comprises: *[Note: Only include the part actually walked or driven (not simply viewed from) with a vehicle or boat. Do not include visitors on trails outside of the AA unless more than half the wetland is visible from the trails and they are within 30 m of the wetland edge. In that case include only the area occupied by the trail.]*		[AM, FAv, FRv, PH, PU, SBM, STR, WBF, WBN]
283			<5% and no inhabited building is within 100 m of the AA.	0	
284			<5% and inhabited building is within 100 m of the AA.	0	
285			5-50% and no inhabited building is within 100 m of the AA.	0	
286			5-50% and inhabited building is within 100 m of the AA.	0	
287			50-95%, with or without inhabited building nearby.	0	
288			>95% of the AA with or without inhabited building nearby.	1	
289	F61	Frequently Visited Area	The part of the AA visited by humans almost daily for several weeks during an average growing season probably comprises: *[See note above.]*		[AM, PH, PU, SBM, STR, WBF, WBN]
290			<5%. If F60 was answered ">95%" (mostly never visited), **SKIP to F64.**	1	
291			5-50%.	0	
292			50-95%.	0	
293			>95% of the AA.	0	
294	F62	BMP - Soils	Boardwalks, paved trails, fences or other infrastructure and/or well-enforced regulations appear to effectively prevent visitors from walking on soil within nearly all of the AA when the soil is unfrozen. Enter "1" if true.	0	[PH, PU]
295	F63	BMP - Wildlife Protection	Fences, observation blinds, platforms, paved trails, exclusion periods, and/or well-enforced prohibitions on motorised boats, off-leash pets, and off road vehicles appear to effectively exclude or divert visitors and their pets from the AA at critical times in order to minimize disturbance of wildlife (except during hunting seasons). Enter "1" if true.	0	[AM, PU, WBF, WBN]
296	F64	Consumptive Uses (Provisioning Services)	Recent evidence was found within the AA of the following potentially-sustainable consumptive uses. Select ALL that apply.		[FAv, FRv, WBFv]
297			Low-impact commercial timber harvest (e.g., selective thinning).	1	
298			Commercial or traditional-use harvesting of native plants, their fruits, or mushrooms.	0	
299			Waterfowl hunting.	0	
300			Fishing.	0	
301			Trapping of furbearers.	0	
302			None of the above.	0	
303	F65	Domestic Wells	The closest wells or water bodies that currently provide drinking water are:		[NRv]
304			Within 0-100 m. of the AA.	0	

	A	B	C	D	E
305			100-500 m. away.	0	
306			>500 m. away, or no information.	1	
307	F66	Calcareous Fen	The AA is, or is part of, a calcareous fen. See the Plants_Calcar worksheet in the accompanying SuppInfo file for list of plant indicators (calciphiles). Enter 1 If more than two Strong or more than five Moderate calciphile species are present; otherwise enter 0, but if not able to identify those **and** no information, change to **blank**.	0	[PH, PR]
308					

Investigator: BL	**Site Identifier: Uniacke WL-1**	**Date: 26 July 2021**

Stressor (S) Data Form for Non-Tidal Wetlands. WESP-AC for Nova Scotia version 2.

		Data
S1	**Aberrant Timing of Water Inputs**	
	In the last column, place a check mark next to any item that is likely to have caused the timing of water inputs (but not necessarily their volume) to shift by hours, days, or weeks, becoming either more muted (smaller or less frequent peaks spread over longer times, more temporal homogeneity of flow or water levels) or more flashy (larger or more frequent spikes but over shorter times). [FA, FR, INV, PH, STR]	
	Stormwater from impervious surfaces that drains directly to the wetland.	
	Water subsidies from wastewater effluent, septic system leakage, snow storage areas, or irrigation.	
	Regular removal of surface or groundwater for irrigation or other consumptive use.	
	Flow regulation in tributaries or water level regulation in adjoining water body, or other control structure at water entry points that regulates inflow to the wetland.	
	A dam, dike, levee, weir, berm, or fill -- within or downgradient from the wetland -- that interferes with surface or subsurface flow in/out of the AA (e.g., road fill, wellpads, pipelines).	
	Excavation within the wetland, e.g., dugout, artificial pond, dead-end ditch.	
	Artificial drains or ditches in or near the wetland.	
	Accelerated downcutting or channelization of an adjacent or internal channel (incised below the historical water table level).	
	Logging within the wetland.	1
	Subsidence or compaction of the wetland's substrate as a result of machinery, livestock, fire, drainage, or off road vehicles.	
	Straightening, ditching, dredging, and/or lining of tributary channels.	
	If any items were checked above, then for each row of the table below, assign points. However, if you believe the checked items had no measurable effect on the timing of water conditions in any part of the AA, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.	

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Spatial extent of timing shift within the wetland:	>95% of wetland.	5-95% of wetland.	<5% of wetland.	3
When most of the timing shift began:	<3 yrs ago.	3-9 yrs ago.	10-100 yrs ago.	1
Score the following 2 rows only if the altered inputs began within past 10 years, and only for the part of the wetland that experiences those.				
Input timing now vs. previously:	Shift of weeks.	Shift of days.	Shift of hours or minutes.	2
Flashiness or muting:	Became very flashy or controlled.	Intermediate.	Became mildly flashy or controlled.	2
			Sum=	8
			Stressor subscore=	0.67

		Data
S2	**Accelerated Inputs of Contaminants and/or Salts**	
	In the last column, place a check mark next to any item -- occurring in either the wetland or its CA -- that is likely to have accelerated the inputs of contaminants or salts to the AA. [AM, FA, PH, POL, STR]	
	Stormwater or wastewater effluent (including failing septic systems), landfills, industrial facilities.	
	Metals & chemical wastes from mining, shooting ranges, snow storage areas, oil/ gas extraction, other sources (download many locations from National Pollutant Release Inventory and view KMZ overlay in Google Earth. https://www.ec.gc.ca/inrp-npri/default.asp?lang=En&n=B85A1846-1	
	Road salt.	
	Spraying of pesticides, as applied to lawns, croplands, roadsides, or other areas in the CA.	
	If any items were checked above, then for each row of the table below, assign points. However, if you believe the checked items did not cumulatively expose the AA to significantly higher levels of contaminants and/or salts, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.	

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Usual toxicity of most toxic contaminants:	Industrial effluent, mining waste, unmanaged landfill.	Cropland, managed landfill, pipeline or transmission rights-of-way.	Low density residential.	0
Frequency & duration of input:	Frequent and year-round.	Frequent but mostly seasonal.	Infrequent & during high runoff events mainly.	0
AA proximity to main sources (actual or potential):	0 - 15 m.	15-100 m. or in groundwater.	In more distant part of contributing area.	0
			Sum=	0
			Stressor subscore=	0.00

		Data
S3	**Accelerated Inputs of Nutrients**	
	In the last column, place a check mark next to any item -- occurring in either the wetland or its CA -- that is likely to have accelerated the inputs of nutrients to the wetland. [NRv, PRv, STR]	
	Stormwater or wastewater effluent (including failing septic systems), landfills.	
	Fertilizers applied to lawns, ag lands, or other areas in the CA.	
	Livestock, dogs.	
	Artificial drainage of upslope lands.	
	If any items were checked above, then for each row of the table below, assign points. However, if you believe the checked items did not cumulatively expose the AA to significantly more nutrients, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.	

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Type of loading:	High density of unmaintained septic, some types of industrial sources.	Moderate density septic, cropland, secondary wastewater treatment plant.	Livestock, pets, low density residential.	0
Frequency & duration of input:	Frequent and year-round.	Frequent but mostly seasonal.	Infrequent & during high runoff events mainly.	0
AA proximity to main sources (actual or potential):	0 - 15 m.	15-100 m. or in groundwater.	In more distant part of contributing area.	0
			Sum=	0
			Stressor subscore=	0.00

		Data
S4	**Excessive Sediment Loading *from Contributing Area***	
	In the last column, place a check mark next to any item present in the CA that is likely to have elevated the load of waterborne or windborne sediment reaching the wetland from its CA. [FA, FR, INV, PH, SRv, STR]	
	Erosion from plowed fields, fill, timber harvest, dirt roads, vegetation clearing, fires.	1
	Erosion from construction, in-channel machinery in the CA.	
	Erosion from off-road vehicles in the CA.	
	Erosion from livestock or foot traffic in the CA.	
	Stormwater or wastewater effluent.	
	Sediment from road sanding, gravel mining, other mining, oil/ gas extraction.	
	Accelerated channel downcutting or headcutting of tributaries due to altered land use.	
	Other human-related disturbances within the CA.	
	If any items were checked above, then for each row of the table below, assign points (3, 2, or 1 as shown in header) in the last column. However, if you believe the checked items did not cumulatively add significantly more sediment or suspended solids to the AA, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.	

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Erosion in CA:	Extensive evidence, high intensity.*	Potentially (based on high-intensity* land use) or scattered evidence.	Potentially (based on low-intensity* land use) with little or no direct evidence.	2
Recentness of significant soil disturbance in the CA:	Current & ongoing.	1-12 months ago.	>1 yr ago.	1

	Duration of sediment inputs to the wetland:	Frequent and year-round.	Frequent but mostly seasonal.	Infrequent & during high runoff events mainly.	1
	AA proximity to actual or potential sources:	0 - 15 m.	15-100 m.	In more distant part of contributing area.	1
	* high-intensity= extensive off-road vehicle use, plowing, grading, excavation, erosion with or without veg removal; low-intensity= veg removal only with little or no apparent erosion or disturbance of soil or sediment.			Sum=	5
				Stressor subscore=	0.42
S5	**Soil or Sediment Alteration *Within the Assessment Area***				
	In the last column, place a check mark next to any item present in the wetland that is likely to have compacted, eroded, or otherwise altered the wetland's soil. Consider only items occurring within past 100 years or since wetland was created or restored (whichever is less). [CS, INV, NR, PH, SR, STR]				
	Compaction from machinery, off-road vehicles, livestock, or mountain bikes, especially during wetter periods.				1
	Leveling or other grading not to the natural contour.				
	Tillage, plowing (but excluding disking for enhancement of native plants).				
	Fill or riprap, excluding small amounts of upland soils containing organic amendments (compost, etc.) or small amounts of topsoil imported from another wetland.				
	Excavation.				
	Ditch cleaning or dredging in or adjacent to the wetland.				
	Boat traffic in or adjacent to the wetland and sufficient to cause shore erosion or stir bottom sediments.				
	Artificial water level or flow manipulations sufficient to cause erosion or stir bottom sediments.				
	If any items were checked above, then for each row of the table below, assign points. However, if you believe the checked items did not measurably alter the soil structure and/or topography, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.				
		Severe (3 points)	Medium (2 points)	Mild (1 point)	
	Spatial extent of altered soil:	>95% of wetland or >95% of its upland edge (if any).	5-95% of wetland or 5-95% of its upland edge (if any).	<5% of wetland and <5% of its upland edge (if any).	2
	Recentness of significant soil alteration in wetland:	Current & ongoing.	1-12 months ago.	>1 yr ago.	1
	Duration:	Long-lasting, minimal veg recovery.	Long-lasting but mostly revegetated.	Short-term, revegetated, not intense.	1
	Timing of soil alteration:	Frequent and year-round.	Frequent but mostly seasonal.	Mainly during one-time or scattered events.	1
				Sum=	5
				Stressor subscore=	0.42

Assessment Area (AA) Results:

Wetland ID: Uniacke Quarry WL1

Date: 26 July 2021

Observer: Brady Leights and Tiffany MacAulay

Latitude & Longitude (decimal degrees): 44.914588, -63.813368

Scores will appear below after data are entered in worksheets OF, F, and S. See Manual for definitions and descriptions of how scores were computed.

Wetland Functions or Other Attributes:	Function Score (Normalised)	Function Rating	Benefits Score (Normalised)	Benefits Rating	Function Score (raw)	Benefits Score (raw)
Water Storage & Delay (WS)	8.18	Higher	10.00	Higher	8.05	4.68
Stream Flow Support (SFS)	0.00	Lower	0.00	Lower	0.00	0.00
Water Cooling (WC)	0.00	Lower	0.00	Lower	0.00	0.00
Sediment Retention & Stabilisation (SR)	5.85	Moderate	2.84	Moderate	6.76	1.39
Phosphorus Retention (PR)	1.11	Lower	2.41	Moderate	4.44	1.88
Nitrate Removal & Retention (NR)	10.00	Higher	5.50	Moderate	10.00	5.50
Carbon Sequestration (CS)	3.24	Moderate			6.73	
Organic Nutrient Export (OE)	6.01	Moderate			3.93	
Anadromous Fish Habitat (FA)	0.00	Lower	0.00	Lower	0.00	0.00
Resident Fish Habitat (FR)	0.00	Lower	0.00	Lower	0.00	0.00
Aquatic Invertebrate Habitat (INV)	4.93	Moderate	1.25	Moderate	5.50	1.92
Amphibian & Turtle Habitat (AM)	4.66	Moderate	2.29	Lower	5.56	3.65
Waterbird Feeding Habitat (WBF)	0.00	Lower	0.00	Lower	0.00	0.00
Waterbird Nesting Habitat (WBN)	0.00	Lower	0.00	Lower	0.00	0.00
Songbird, Raptor, & Mammal Habitat (SBM)	6.83	Moderate	5.00	Moderate	5.95	5.00
Pollinator Habitat (POL)	6.49	Moderate	3.33	Moderate	5.38	3.33
Native Plant Habitat (PH)	3.33	Lower	4.89	Lower	5.23	4.89
Public Use & Recognition (PU)			1.90	Moderate		1.60
Wetland Sensitivity (Sens)			5.01	Moderate		3.60
Wetland Ecological Condition (EC)			4.78	Moderate		7.50
Wetland Stressors (STR) (higher score means more stress)			10.00	Higher		5.22
Summary Ratings for Grouped Functions:						
HYDROLOGIC Group (WS)	8.18	Higher	10.00	Higher	8.05	4.68
WATER QUALITY SUPPORT Group (max+avg/2 of SR, PR, NR, CS)	7.52	Higher	4.54	Moderate	8.49	4.21
AQUATIC SUPPORT Group (max+avg/2 of SFS, INV, OE, WC)	4.37	Moderate	0.83	Lower	3.93	1.28
AQUATIC HABITAT Group (max+avg/2 of FA, FR, AM, WBF, WBN)	2.80	Lower	1.37	Lower	3.34	2.19
TRANSITION HABITAT Group (max+avg/2 of SBM, PH, POL)	6.19	Moderate	4.70	Lower	5.73	4.70
WETLAND CONDITION (EC)			4.78	Moderate		7.50
WETLAND RISK (average of Sensitivity & Stressors)			7.51	Higher		4.41

NOTE: A score of 0 does not mean the function or benefit is absent from the wetland. It means only that this wetland has a capacity that is equal or less than the lowest-scoring one, for that function or benefit, from among all the NS calibration wetlands that were assessed previously.

NOVA SCOTIA - Functional WSS Interpretation Tool

1. General Description of Tool:

This interpretive tool automatically determines whether the subject wetland will be regulated as a Wetland of Special Significance (WSS). This determination is made based on the WESP-AC functional results, per the Nova Scotia *Wetland Conservation Policy* .

A 'Function-Benefit Product' (FBP) is calculated based upon the Grouped Functions, and has a theoretical maximum of 100. Threshold values for the FBP are applied, in order to categorize the FBP scores into 'Low', 'Moderate' or 'High' scores. Thresholds are determined based upon the statistical distribution of WESP-AC scores compiled from various sites across the Province (N=442). These categories are subsequently used to apply various 'Functional WSS Rules', as described below.

For the purpose of defining and applying the Functional WSS rules, two supergroups are defined based on grouped functions, as follows: **(1) Support Supergroup** - includes Hydrologic, Water Quality Support, and Aquatic Support grouped functions. **(2) Habitat Supergroup** - includes Aquatic Habitat and Transition Habitat grouped functions.

2. Functional WSS Rule Definitions:

Habitat Rule: In consideration of the Habitat Supergroup, the subject wetland is a WSS if either of the following sub-rules are satisfied:

(HAB 1) Two 'High Scores' OR

(HAB 2) One 'High' and one 'Moderate' score

Support Rule: In consideration of the Support Supergroup, the subject wetland is a WSS if either of the following sub-rules are satisfied:

(SUP 1) Three 'High' scores OR

(SUP 2) Two 'High' and one 'Moderate' score

Habitat/Support Hybrid Rule: In consideration of both the Habitat and Support Supergroups, the subject wetland is a WSS if the following is satisfied:

(HYB 1) One 'High' Habitat score **AND** Two or three 'High' Support scores

3. Functional WSS Interpretation Results

Function-Benefit Product (FBP)	FBP SCORE	FBP SCORE CATEGORY
SUPPORT SUPERGROUP - HYDROLOGIC	81.81651632	High
SUPPORT SUPERGROUP - WATER QUALITY SUPPORT	34.16552724	Low
SUPPORT SUPERGROUP - AQUATIC SUPPORT	3.650017527	Low
HABITAT SUPERGROUP - AQUATIC HABITAT	3.840137566	Low
HABITAT SUPERGROUP - TRANSITION HABITAT	29.11698271	Low

3a. Functional WSS Determination: Automatic Method

Habitat Rule Satisfied?	NO
Support Rule Satisfied?	NO
Habitat/Support Hybrid Rule Satisfied?	NO
CONCLUSION:	**Site is not a WSS**

3b. Functional WSS Determination - Manual Method Using Dichotomous Key

1a. (HAB) - One or more 'High' scores for AH or TH.....**2**
2a. (HAB) - Two 'High' scores.....**WSS**
2b. (HAB) - One 'High' score.....**3**
3a. (HAB) - Any combination of 'High' and 'Moderate' scores..... **WSS**
3b. (HAB) - Any combination of 'High' and 'Low' scores.....**4**
4a. (SUP) One or more 'High' Scores for HYD, WQS, or AS.....**5**
5a. (SUP) Two or Three 'High' scores ..... **WSS**
5b. (SUP) One 'High' score **6**
6a. (SUP) Any combo of one 'High', two 'Mod' scores..... **WSS**
6b. (SUP) One 'High', plus any other combo of scores.....**not WSS**
4b. (SUP) Zero 'High' Scores for HYD, WQS, or AS.....**7**
7a. (SUP) Three 'Moderate' scores..... **WSS**
7b. (SUP) Any other combination of scores .....**not WSS**
1b. (HAB) - Zero 'High' Scores for AH or TH.....**8**
8a. (SUP) Three 'High' Scores.....**WSS**
8b. (SUP) Less than three 'High' scores.....**9**
9a. (SUP) Two 'High' and one 'Moderate' score.....**WSS**
9b. (SUP) - Any other combination of scores .....**not WSS**

Cover Page: Basic Description of Assessment	**WESP-AC version 2**
Site Name:	Uniacke Quarry Wetland 2
Investigator Name:	Brady Leights and Tiffany MacAulay
Date of Field Assessment:	July 26, 2021
Nearest Town:	Mount Uniacke
Latitude (decimal degrees):	44.914279
Longitude (decimal degrees):	-63.816340
Is a map based on a formal on-site wetland delineation available?	Yes
Approximate size of the Assessment Area (AA, in hectares):	0.6
AA as percent of entire wetland (approx.). Attach sketch map if AA is smaller than the entire contiguous wetland.	100
What percent (approx.) of the **wetland** were you able to visit?	100
What percent (approx.) of the **AA** were you able to visit?	100
Were you able to ask the site owner/manager about any of the questions?	Yes
Indicate here if you intentionally surveyed for rare plants, calciphile plants, or rare animals:	
Have you attended a WESP-AC training session? If so, indicate approximate month & year.	September 2021
How many wetlands have you assessed previously using WESP-AC? (approx.)	
Comments about the site or this WESP-AC assessment (attach extra page if desired):	

	A	B	C	D	E
1	Date: July 26, 2021		Site Identifier: WL-2	Investigator: Brady Leights and Tiffany MacAulay	
2	**Form OF (Office). Non-tidal Wetland Data Form. WESP-AC version 2 for Nova Scotia wetlands only.** DIRECTIONS: Conduct an assessment only after reading the accompanying Manual and the Explanations column of the data form. In the Data column, change the 0 (false) to a 1 (true) for the best choice, or for multiple choices where allowed and so indicated. Answering many of the questions below will require using these online map viewers: **Google Earth Pro**: https://www.google.com/earth/download/gep/agree.html **Provincial Landscape Viewer**: https://nsgi.novascotia.ca/plv/ For most wetlands, completing this office data form will require 1-2 hours. For a list of functions to which each question pertains, see bracketed abbreviations in the Definitions/Explanations column. For detailed descriptions of each WESP-AC model, see Appendix B of the accompanying Manual. Codes for functions and values are: WS= Water Storage, SFS= Stream Flow Support, WC= Water Cooling, SR= Sediment Retention & Stabilisation, PR= Phosphorus Retention, NR= Nitrate Removal, CS= Carbon Sequestration, OE= Organic Nutrient Export, INV= Invertebrate Habitat, FA= Anadromous Fish Habitat, FR= Resident Fish Habitat, AM= Amphibian & Reptile Habitat, WBF= Feeding Waterbird Habitat, WBN= Nesting Waterbird Habitat, SBM= Songbird, Raptor, & Mammal Habitat, POL= Pollinator Habitat, PH= Native Plant Habitat, PU= Public Use & Recognition, EC= Ecological Condition, Sen= Wetland Sensitivity, STR= Stressors.			
3	**#**	**Indicators**	**Condition Choices**	**Data**	**Definitions/Explanations**
4	OF1	Province	Mark the province in which the AA is located by changing the 0 in the column next to it to a "1". Mark only one.		This determines to which province's calibration wetlands the raw score of any wetland is normalised. In the function and benefits models, it also triggers the automatic exclusion of indicators for which no spatial data exists in a particular province.
5			New Brunswick	0	
6			Nova Scotia	1	
7			Prince Edward Island	0	
8			Newfoundland-Labrador	0	
9	OF2	Ponded Area Within 1 km.	The area of **surface water** ponded during most of the growing season that is both (1) in or adjacent to the AA and (2) within 1 km is:		**"Adjacent"** means not separated from the AA by a wide expanse (>50 m) of upland (including roads >50 m wide). Include ponded areas likely to be hidden by wetland vegetation. If surface water extends beyond 1 km, include only the part within 1 km. Do not include tidal areas. Measure the area from aerial imagery using Google Earth Pro (click on Ruler icon in toolbar, then Polygon in pop-up menu). [PH, SBM, WBN]
10			<0.01 hectare (about 10 m x 10 m).	0	
11			0.01 - 0.1 hectare.	0	
12			0.1 - 1 hectare.	0	
13			1 to 10 hectares.	1	
14			10 to 100 hectares.	0	
15			>100 hectares.	0	
16	OF3	Ponded Water & Wetland Within 1 km.	The area of **wetlands and surface water** ponded during most of the growing season that is both (1) in or adjacent to the AA and (2) within 1 km is:		See definition of adjacent in OF2. If the AA's wetland vegetation extends beyond 1 km, include only the part within 1 km. "Ponded" means not flowing in rivers or streams. [Sens, WBF]
17			<0.01 hectare (about 10 m x 10 m).	0	
18			0.01 - 0.1 hectare.	0	
19			0.1 - 1 hectare.	0	
20			1 to 10 hectares.	0	
21			10 to 100 hectares.	1	
22			>100 hectares.	0	
23	OF4	Size of Largest Nearby Vegetated Tract or Corridor	The largest vegetated patch or corridor that includes the AA's vegetation plus all **adjacent** upland vegetation that is not lawn, row crops, heavily grazed lands, conifer plantation is:		See definition of adjacent in OF2. Use Google Earth Pro's polygon ruler (as described above). Exclude conifer plantations only if it is obvious that trees were planted in rows. [AM, PH, SBM, Sens]
24			<0.01 hectare (about 10 m x 10 m).	0	
25			0.01 - 0.1 hectare.	0	
26			0.1 - 1 hectare.	0	
27			1 to 10 hectares.	0	
28			10 to 100 hectares.	0	
29			100 to 1000 hectares.	0	
30			>1000 hectares. [*This is nearly always the answer in relatively undeveloped landscapes.*]	1	
31	OF5	Distance to Large Vegetated Tract	The minimum distance from the **edge** of the AA to the edge of the closest ***vegetated land*** (but excluding row crops, lawn, conifer plantation) **larger than 375 hectares** (about 2 km on a side), is:		To measure distance, use Google Earth Pro (Ruler > Line tool). The 375-ha criterion is from the Fundy Model Forest Project. [AM, PH, POL, SBM, Sens]
32			<50 m, and not separated from the 375-ha vegetated area by any width of **paved** roads, stretches of open water, row crops, bare ground, lawn, or impervious surface. Or the AA itself contains >375 ha of vegetation. [This is often the answer in relatively undeveloped landscapes.]	1	
33			<50 m, but completely separated from the 375-ha vegetated area by those features, and AA does not contain >375 ha of vegetation.	0	
34			50-500 m, and **not** separated.	0	
35			50-500 m, but separated by those features.	0	
36			0.5 - 5 km, and **not** separated.	0	
37			0.5 - 5 km, but separated by those features.	0	
38			None of the above (the closest patches or corridors which are that large are >5 km away).	0	
39	OF6	Herbaceous Uniqueness	The AA's vegetation cover is >10% herbaceous* but uplands within 5 km have <10% herbaceous cover. If so, enter "3" and continue to OF7. If not, consider: The AA's vegetation cover is >10% herbaceous* but uplands within 1 km have <10% herbaceous cover. If so enter "2" and continue to OF7. If not, consider: The AA's vegetation cover is >10% herbaceous* but uplands within 100 m of the wetland edge have <10% herbaceous cover. If so, enter "1". [* NOTE: Exclude lawns, row crops, heavily grazed lands, forest, shrublands. Include moss as well as grasslike plants in this use of "herbaceous vegetation"]	1	For this question only, consider moss to be herbaceous vegetation. Determine the score by viewing aerial imagery in Google Earth after successively drawing or estimating the boundaries of the buffers of 5 km, 1 km, and 100 m radius focused on the center of the AA. Circles of specified radius can be drawn in Google Earth Pro by clicking on the Ruler icon, then Circle in the pop-up menu. [AMv, PHv, POLv, SBMv, WBFv, WBNv]
40	OF7	Woody Uniqueness	The AA's vegetation cover is >10% woody* but uplands within 5 km have <10% woody cover. If so, enter "3" and continue to OF8. If not, consider: The AA's vegetation is >10% woody* but uplands within 1 km have <10% woody cover. If so enter "2" and continue to OF8. If not, consider: The AA's vegetation is >10% woody* but uplands within 100 m of the wetland edge have <10% woody cover. If so, enter "1" [* NOTE: woody cover = trees & shrubs taller than 1 m.]	0	See above. Do not consider conifer plantations to be forest if it is obvious that trees were planted in rows. [AMv, PHv, POLv, SBMv]
41	OF8	Local Vegetated Cover Percentage	Draw a 5-km radius circle measured from the center of the AA. Ignoring all permanent water in the circle, the percent of the remaining area that is wooded or unmanaged herbaceous vegetation (NOT lawn, row crops, bare or heavily grazed land, clearcuts, or conifer plantations) is:		In Google Earth, draw the 5 km buffer and then estimate land cover percentages, or do GIS analysis of an appropriate land cover layer. [AM, PH, POL, SBM, Sens]
42			<5% of the land.	0	
43			5 to 20% of the land.	0	
44			20 to 60% of the land.	0	
45			60 to 90% of the land.	1	
46			>90% of the land. SKIP to OF10.	0	
47	OF9	Type of Land Cover Alteration	Within the **5-km** radius circle, and ignoring all permanent water, the land area that is bare or non-perennial cover is mostly:		[AM, SBM]
48			Impervious surface, e.g., paved road, parking lot, building, exposed rock.	0	
49			Bare pervious surface, e.g., lawn, recent (<5 yrs ago) clearcut, dirt or gravel road, cropland, landslide, conifer plantation.	1	
50	OF10	Distance by Road to Nearest Population Center	Measured **along** the maintained road nearest the AA, the distance to the nearest **population center** is:		"Population center" means a settled area with more than about 5 regularly- inhabited structures per square kilometer. In Google Earth Pro, click on the Ruler icon, then Path, and draw and measure the route. [FAv, FRv, NRv, PH, PU, SBM, WBFv]
51			<100 m.	0	
52			100 - 500 m.	0	
53			0.5- 1 km.	0	
54			1 - 5 km.	1	
55			>5 km.	0	

	A	B	C	D	E
56	OF11	Distance to Nearest Maintained Road	From the center of the AA, the distance to the nearest maintained public road (dirt or paved) is:		Determine this by viewing aerial imagery in Google Earth Pro and measuring with the Ruler>Line tool. [AM, FAv, FRv, NRv, PH, PU, SBM, STR, WBN]
57			<10 m.	0	
58			10 - 25 m.	0	
59			25 - 50 m.	0	
60			50 - 100 m.	0	
61			100 - 500 m.	0	
62			>500 m.	1	
63	OF12	Wildlife Access	Draw a circle of radius of 5 km from the center of the AA. If mammals and amphibians can move from the center of the AA to ALL other separate wetlands and ponds located within the circle without being forced to cross pavement (any width), lawns, bare ground, and/or marine waters, mark 1= yes can move to all, 0= no. Change to blank if there are no other wetlands within 5 km.	0	Draw the 5 km circle in Google Earth Pro using the Circle tool and search for roads and wetlands within it, being alert for roads hidden under forest canopy. [AM, SBM, STR]
64	OF13	Distance to Ponded Water	The distance from the AA center to the closest (but separate) ponded water body visible in GoogleEarth imagery is:		In Google Earth Pro, zoom in closely to examine the surrounding landscape for ponds, lakes, and wetlands that appear to be permanently flooded. [AM, PH, SBM, Sens, WBF, WBN]
65			<50 m, and not separated by any width of paved roads, stretches of open water, row crops, lawn, bare ground, or impervious surface.	0	
66			<50 m, but completely separated by those features.	0	
67			50-500 m, and not separated.	0	
68			50-500 m, but separated by those features.	0	
69			0.5 - 1 km, and not separated.	0	
70			0.5 - 1 km, but separated by those features.	1	
71			None of the above (the closest patches or corridors that large are >1 km away).	0	
72	OF14	Distance to Large Ponded Water	The distance from the AA center to the closest (but separate) non-tidal body of water that is ponded during most of the year and is larger than 8 hectares during most of a normal year is:		Determine this by viewing aerial imagery in Google Earth. [Sens, WBF, WBN]
73			<100 m.	0	
74			100 m - 1 km.	0	
75			1 -2 km.	0	
76			2-5 km.	1	
77			5-10 km.	0	
78			>10 km.	0	
79	OF15	Tidal Proximity	The distance from the AA edge to the closest tidal water body (regardless of its salinity) is:		In Google Earth, measure the distance to the ocean (including Bay of Fundy) or tidal river, whichever is closer. If you need to see how far upriver a river is tidal, see the KMZ file provided with this calculator for NS (NS Headtide). Points shown in those files are only an approximation, so local information if available may be preferable. [FA, WBF]
80			<100 m.	0	
81			100 m - 1 km.	0	
82			1 - 5 km.	0	
83			5-10 km.	0	
84			10-40 km.	1	
85			>40 km.	0	
86	OF16	Upland Edge Contact	Select one:		[NR, SBM, Sens]
87			The AA has no upland edge (or upland is <1% of perimeter). The AA is entirely surrounded by (& contiguous with) other wetlands or water.	0	
88			1-25% of the AA's perimeter abuts upland (including filled areas). The rest adjoins other wetlands or water that is mostly wider than the AA.	0	
89			25-50% of the AA's perimeter abuts upland. The rest adjoins other wetlands or water that is mostly wider than the AA.	0	
90			50-75% of the AA's perimeter abuts upland. The rest adjoins other wetlands or water that is mostly wider than the AA.	0	
91			More than 75% of the AA's perimeter abuts upland. Any remainder adjoins other wetlands or water that is mostly wider than the AA. This will be true for most assessments done with WESP-AC.	1	
92	OF17	Flood Damage from Non-tidal Waters	Within 5 km downstream or downslope of the AA (select first true choice):		Contact local authories to determine if such maps exist. Where available, LiDAR imagery can provide finer elevational resolution useful for flood modeling. [WSv]
93			Maps show Flood Zone or Flood Risk areas and there appears to be infrastructure vulnerable to river flooding not caused by tidal storm surges.	0	
94			Maps show Flood Zone or Flood Risk areas, but infrastructure is absent or is not vulnerable to floods from a non-tidal river. In some cases levees, upriver dams, or other measures may partly limit damage or risk from smaller events.	0	
95			Maps do not show Flood Zone or Flood Risk areas (or no such mapping has been done locally) and there appears to be infrastructure vulnerable to river flooding unrelated to tidal storm surges.	0	
96			Maps do not show Flood Zone or Flood Risk areas (or no such mapping has been done locally) and there is no infrastructure vulnerable to river flooding unrelated to tidal storm surges.	1	
97	OF18	Relative Elevation in Watershed	In Google Earth, enable the Terrain layer (lower left menu) and open the NS_Watersheds Secondary KMZ file that accompanies this calculator. Then determine the AA's approximate elevation (bottom right, NOT the "eye alt"). Then move cursor around to determine the watershed's maximum and minimum elevation. Divide the AA's elevation by the (max-min).	0.81	[FA, NR, Sens, SFSv, WCv, WSv]
98	OF19	Water Quality Sensitive Watershed or Area	The AA is in a Protected Water Supply area (Designated Water Supply Area, Natural Watershed Municipal Surface Water Supply Area, or Municipal Water Supply Area) according to the provided KMZ overlay ("NS Protected Water Supply Areas"). Enter 1= yes, 0= no.	0	If an ACCDC report is available for this AA, it also may contain such information. [NRv]
99	OF20	Degraded Water Upstream	Sampling indicates a problem with concentrations of metals, hydrocarbons, nutrients, or other substances (excluding bacteria, acidic water, high temperatures) being present at levels harmful to aquatic life or humans, and:		May use existing data, or sample those waters as part of this wetland assessment. "Harmful" should be evaluated with regard to current federal or provincial water quality standards. [AM, FA, FR, NRv, PRv, SRv, STR, WBF, WBN]
100			The condition is present within the AA.	0	
101			The condition is present in waters within 1 km that flow into the AA, but has not been documented in the AA itself.	0	
102			Sampling during both low water periods and times with high runoff (storms, snowmelt) indicates no problems in either the AA or inflowing waters.	0	
103			Data are insufficient (no or inadequate sampling within 1 km, or condition exists only at >1 km upstream). This is the situation for nearly all wetlands in this region.	1	
104	OF21	Degraded Water Downstream	The problem described above is downslope from the AA, and:		May use existing data, or monitor waters as part of this wetland assessment. [NRv, PRv, SRv]
105			The condition is present within 1 km downslope and connected to the AA by a channel.	0	
106			The condition is present within 5 km downslope and connected to the AA by a channel, or within 1 km but not connected to the AA by a channel.	0	
107			Sampling during both low water periods and times with high runoff (storms, snowmelt) indicates no problems in either the AA or inflowing waters.	0	
108			Data are insufficient (no or inadequate sampling within 1 km, or condition exists only at >1 km upstream). This is the situation for nearly all wetlands in this region.	1	
109	OF22	Wetland as a % of Its Contributing Area (Catchment)	From a topographic map and field observations, estimate the approximate boundaries of the catchment (CA) of the entire wetland of which the AA may be only a part. Then adjust those boundaries if necessary based on your field observations of the surrounding terrain, and/or by using procedures described in the Manual. Divide the area of the wetland (not just the AA) by the approximate area of its catchment excluding the area of the wetland itself. When doing the calculation, if ponded water is adjacent to the wetland, include that in the wetland's area. The result is:		Topographic maps may be viewed online at the National Atlas of Canada (Toporama): http://atlas.gc.ca/toporama/en/index.html [NR, PR, Sens, SR, WS]
110			<0.01, or catchment size unknown due to stormwater pipes that collect water from an indeterminate area.	1	
111			0.01 to 0.1.	0	
112			0.1 to 1.	0	
113			>1 (wetland is larger than its catchment (e.g., wetland with flat surrounding terrain and no inlet, or is entirely isolated by dikes, or is a raised bog).	0	
114	OF23	Unvegetated Surface in the Contributing Area	The proportion of the AA's contributing area (measured to no more than 1000 m upslope) that is comprised of buildings, roads, parking lots, other pavement, exposed bedrock, landslides, and other mostly-bare surface is about :		[FA, INV, NRv, PRv, SRv, STR, WCv, WSv]
115			<10%.	1	
116			10 to 25%.	0	
117			>25%.	0	

	A	B	C	D	E
118	OF24	Transport From Upslope	A relatively large proportion of the precipitation that falls farther upslope in the CA reaches this wetland quickly as runoff (surface water), as indicated by the following: (a) input channel is present, (b) input channels have been straightened, (c) upslope wetlands have been ditched extensively, (d) land cover is mostly non-forest, (e) CA slopes are steep, and/or (f) most CA soils are shallow (bedrock near surface) and/or have high runoff coefficients. This statement is:		[NRv, PRv, SRv, WSv]
119			Mostly true.	1	
120			Somewhat true.	0	
121			Mostly untrue.	0	
122	OF25	Aspect	The overland flow direction of most surface water (in streams, rivers, or runoff) that enters the AA is:		[AM, NR, SFS, WC, WS]
123			Northward (N, NE). north-facing contributing area.	0	
124			Southward (S, SW). south-facing contributing area.	0	
125			Other (E, SE, W, NW), or no detectable uphill slope or input channel (flat).	1	
126	OF26	Internal Flow Distance (Path Length)	The horizontal flow distance from the wetland's inlet to outlet is:		Identify inlets and outlets, if any, from topographic maps (use elevations to determine which are inlets and which are outlets) and augment by field inspection. With the Provincial Landscape Viewer, select Nova Scotia Topo as the Basemap. Also enable the layer Forestry>WAM Predicted Flow. Then measure the inlet-outlet distance. [NR, OE, PR, SR, WS]
127			<10 m.	0	
128			10 - 50 m.	1	
129			50 - 100 m.	0	
130			100 - 1000 m.	0	
131			1- 2 km.	0	
132			>2 km, or wetland lacks an inlet and outlet.	0	
133	OF27	Growing Degree Days	In Google Earth, open the KMZ file that accompanies this calculator, called NS_GrowingDegreeDays. Place your cursor over the AA and left-click. From the pop-up window, enter the GRIDCODE number in the next column.	2000	This layer was provided by Dr. Dan McKenney of the Canadian Forest Service [AM, CS, FR, INV, NR, OE, PH, PR, Sens, SR, WBF, WCv, WS]
134	OF28	Fish Access or Use	According to agency biologists and/or your own observations, the AA. [M*ark just the first choice that is true.]* :		Regarding the last choice, if uncertain if an AA is fishless, consider the possibility its waters have been stocked. [AM, FA, FR, INV, WBF, WBN]
135			Is known to support rearing and/or spawning by Atlantic salmon or other anadromous species or eels. Go to Provincial Landscape Viewer>Wildlife>Significant Habitat>Species at Risk. Contact local fishery biologists, review the ACCDC report, and visit these websites: http://www.salmonatlas.com/atlanticsalmon/canada-east/index.1.html http://atlanticsalmonfederation.org/rivers/introduction.html	0	
136			Has not been documented to support Atlantic salmon rearing and/or spawning, but is connected to nearby waters likely to contain Atlantic salmon or other anadromous species or eels and is probably accessed by those during some conditions.	0	
137			Is probably is not accessed by any anadromous fish species but is known or likely to have other fish at least seasonally.	0	
138			Is known or likely to be fishless (e.g., too small, dry, and/or not accessible even temporarily, and not stocked).	1	
139	OF29	Species of Conservation Concern	Within the past 10 years, in the AA (or in its adjoining waters or wetland), qualified observers have documented *[mark all applicable*]:		Request information from ACCDC and/or conduct your own survey at an appropriate season using an approved protocol. For birds, also check eBird.org. NOTE for NS: If your WESP-AC is being completed for a Wetland Alteration Application to NS-ECC, your ACCDC results and any taxon-specific survey results must be submitted along with your WESP-AC results, and application. [AMv, EC, PHv, POLv, SBMv, Sens, WBFv, WBNv]
140			Presence of one or more of the plant species listed in the Plants_Rare worksheet of the accompanying SuppInfo file, or the AA is within a mapped Atlantic Coastal Plain Flora Buffer (go to Provincial Landscape Viewer> Wildlife> Special Management Practice Zones).	0	
141			Presence of one or more of the amphibian or reptile species (AM) of conservation concern as listed in the Wildlife_Rare worksheet of the accompanying SuppInfo file.	0	
142			Presence of one or more of the waterbird species (WBF, WBN) of conservation concern as listed in the Wildlife_Rare worksheet of the accompanying SuppInfo file.	0	
143			Presence of one or more of the nesting songbird or raptor species (SBM) of conservation concern as listed in the Wildlife_Rare worksheet of the accompanying SuppInfo file, during their nesting season (May-July for most species).	0	
144			None of the above, or no data.	1	
145	OF30	Important Bird Area (IBA)	In Google Earth, open the KMZ file that accompanies this calculator, called IBAs_Canada. The AA is all or part of an officially designated IBA. Enter 1= yes, 0= no.	0	The source of this layer, which should be checked periodically for updates, is: http://www.ibacanada.com/mapviewer.jsp?lang=EN [SBMv, WBFv, WBNv]
146	OF31	Black Duck Nesting Area	In Google Earth, open the KMZ file that accompanies this calculator, called BlackDuck. Adjust its alignment and opacity. Determine the predicted density (pairs per 25 sq. km) of nesting American Black Duck in the AA's vicinity: <10 (enter 0), 10-20 (enter 1), 20-30 (enter 2), >30 (enter 3). If outside of region shown in map, change to blank.	0	This was provided by Dr. David Leske. [WBNv]
147	OF32	Wintering Deer or Moose Concentration Areas	If AA is on private land with no information, change to blank (not 0). Otherwise: With the Provincial Landscape Viewer, for Wintering Moose, go to Wildlife> Significant Habitat. For Mainland Moose Concentration Areas, go to Wildlife> Special Management Practice Zones. Enter: yes= 1, no= 0.	0	[SBM]
148	OF33	Other Conservation Designation	The AA is all or part of an area designated by government, First Nations, or the Nature Conservancy of Canada (NCC) for its exceptional ecological features or highly intact natural conditions. With Provincial Landscape Viewer, see Protected Areas. Enter: yes= 1, no= 0. If uncertain, consult NCC and agencies for more recent information.	0	See: https://novascotia.ca/parksandprotectedareas/plan/interactive-map/ [PU]
149	OF34	Conservation Investment	The AA is part of or contiguous to a wetland on which public or private organizational funds were spent to preserve, create, restore, or enhance the wetland (excluding mitigation wetlands). Ask the property owner. Enter: yes= 1, no= 0. If no information, change to blank (not 0).	0	[PU]
150	OF35	Mitigation Investment	The AA is all or part of a mitigation site used explicitly to offset impacts elsewhere. Ask the property owner. Enter: yes= 1, no= 0. If no information, change to blank.	0	[PU]
151	OF36	Sustained Scientific Use	Plants, animals, or water in the AA have been monitored for >2 years, unrelated to any regulatory requirements, and data are available to the public. Or the AA is part of an area that has been designated by an agency or institution as a benchmark, reference, or status-trends monitoring area. Ask the property owner. Enter: yes= 1, no= 0. If no information, change to blank.	0	[PU]
152	OF37	Calcareous Region	The AA is NOT in a subregion that has been heavily exposed to acid precipitation. Enter "1" if true (green or yellow in map in Appendix A of the Manual). Enter "0" if false. If no information, change to blank.		[AM, FA, FR, INV, PH]
153	OF38	Ownership	Select the ONE ownership that covers the most of the AA. In Google Earth, open KMZ file called NS_Crownlands.Use more recent information if available.		"Private lands" may include those owned or leased by non-governmental organizations, e.g., charitable conservation land trusts, DUC, TNC. [PU, STR]
154			New timber harvest, roads, mineral extraction, and intensive summer recreation (e.g., off-road vehicles) are permanently prohibited. Includes many publicly-owned Protected Lands, and private lands under long-term (30+ year) legal agreements to maintain nearly-unaltered conditions.	0	
155			Ownership is public (e.g., municipal, Crown Reservations/Notations) but some or all of the above activities are allowed.	0	
156			Ownership is private but public access is allowed, and/or a shorter-term conservation easement (whether renewable or not) is in place.	0	
157			Ownership is private and owner does not allow access, or access permission unknown, and not a conservation easement.	1	

	A	B	C	D	E
1	Date: July 26, 2021		Site Identifier: WL-2	Investigator: Brady Leights and Tiffany MacAulay	
2	**Form F (Field). Non-tidal Wetland Data Form. WESP-AC version 2 for Nova Scotia.** DIRECTIONS: Walk for no less than 10 minutes from the wetland edge towards its core, in the part of the AA that is proposed for alteration. If no alteration is proposed, walk in a portion that appears to be most representative of the wetland overall. Walk only where it is safe and legal to do so. Conduct the assessment only after reading the accompanying Manual and the Explanations column of the data form. In the Data column, change the 0 (false) to a 1 (true) for the best choice, or for multiple choices where allowed and so indicated. Answer these questions primarily based on your onsite observations and interpretations. Do not write in shaded parts of this data form. Answering some questions accurately may require conferring with the landowner or other knowledgable persons, and/or reviewing aerial imagery. For most wetlands, completing this field data form will require 1-2 hours on a site. For a list of functions to which each question pertains, see the accompanying Interpretations form. For detailed descriptions of each WESP-AC model, see Appendix B of the accompanying Manual. Codes for functions and values are: WS= Water Storage & Delay, SFS= Stream Flow Support, WC= Water Cooling, SR= Sediment Retention & Stabilisation, PR= Phosphorus Retention, NR= Nitrate Removal, CS= Carbon Sequestration, OE= Organic Nutrient Export, INV= Invertebrate Habitat, FA= Anadromous Fish Habitat, FR= Resident Fish Habitat, AM= Amphibian & Reptile Habitat, WBF= Feeding Waterbird Habitat, WBN= Nesting Waterbird Habitat, SBM= Songbird, Raptor, & Mammal Habitat, POL= Pollinator Habitat, PH= Native Plant Habitat, PU= Public Use & Recognition, EC= Ecological Condition, Sen= Wetland Sensitivity, STR= Stressors.		
3	**#**	**Indicators**	**Condition Choices**	**Data**	**Definitions/Explanations**
4	F1	Wetland Type	Follow the key below and mark the ONE row that best describes MOST of the vegetated part of the AA:		Ericaceous shrubs are ones in the heather family (Ericaceae). Most have leathery evergreen leaves. They include rhododendron, azalea, swamp laurel, leatherleaf, Labrador tea, and others. Most require acidic soil. Although not in the family Ericaceae, sweetgale (*Myrica gale*) should be counted also. [AM, CS, FA, FR, INV, NR, OE, PH, Sens, SFS, WBF, WBN]
5			A. Moss and/or lichen cover more than 25% of the ground. Often dominated by ericaceous shrubs (e.g., Labrador tea) or other acid-tolerant plants (e.g., bog cranberry, pitcher plant, sundew, orchids). Substrate is mostly undecomposed peat. Choose between A1 and A2 and mark the choice with a 1 in their adjoining column. Otherwise go to B below.		
6			A1. Surface water is usually absent or, if present, pH is typically <4.5 and conductivity is usually <100 µS/cm (<64 ppm TDS). Trees are absent or nearly so. Sedge cover usually sparse or absent but cottongrass and/or lichen cover may be extensive, as well as cloudberry, lingonberry, sheep laurel, and a sedge (*Carex rariflor* a). Wetland surface and surrounding landscape are seldom sloping and wetland often is domed (convex). Inlet and outlet channels are usually absent. If known, pH of peat is <4.0.	0	
7			A2. Not A1. Surface water, if present, has pH typically >4.5 and conductivity is usually >100 µS/cm (>64 ppm TDS). Sedge cover is usually extensive, and/or tree and tall shrub cover is extensive. Sometimes at toe of slope or edge of water body. An exit channel is usually present. Wetter than A1 and peat depth may be shallower (<2 m).	1	
8			B. Moss and/or lichen cover less than 25% of the ground. Soil is mineral or decomposed organic (muck). Choose between B1 and B2 and mark the choice with a 1 in their adjoining column:		
9			B1. Trees and shrubs taller than 1 m comprise more than 25% of the vegetated cover. Surface water is mostly absent or inundates the vegetation only seasonally (e.g., vernal pools or floodplain).	0	
10			B2. Not B1. Tree & tall shrubs comprise less than than 25% of the vegetated cover. Vegetation is mostly herbaceous, e.g., cattail, bulrush, burreed, pond lily, horsetail. Surface water may be extensive and fluctuates seasonally, being either persistent or drying up partly or entirely.	0	
11			*Reminder : For all questions, the AA should include all persistent waters in ponds smaller than 8 hectares (~283 m on a side) that are adjacent to the AA. The AA should also include part of the water area of adjacent ponded water larger than 8 ha and adjacent rivers wider than 20 m. Specifically, the AA should include the open water part adjacent to wetland vegetation and equal in width to the average width of that vegetated zone. Throughout this data form, " adjacent " is used synonymously with abutting, adjoining, bordering, contiguous -- and means no upland (manmade or natural) completely separates the described features along their directly shared edge. Features joined only by a channel are not necessarily considered to be adjacent -- a large portion of their edges must match. The features do not have to be hydrologically connected in order to be considered adjacent.*		
12	F2	Wetland Types - Adjoining or Subordinate	If the AA is smaller than 1 ha, mark all other types that occupy more than 1% of the vegetated AA. If the AA is larger than 1 ha, mark all other types which are within or adjacent to the AA and occupy more than 1 ha, as visible from the AA or as interpreted from aerial imagery. Do not mark again the type marked in F1.		1 hectare is 10,000 sq. m or about 2.5 acres. It could have dimensions of 100 m by 100 m, 1000 m by 10 m, or similar. [AM, INV, SBM, WBF]
13			A1.	0	
14			A2.	0	
15			B1.	0	
16			B2.	0	
17	F3	Woody Height & Form Diversity	Following EACH row below, indicate with a number code the percentage of the living vegetation in the AA which is occupied by that feature (6 if >95%, 5 if 75-95%, 4 if 50-75%, 3 if 25-50%, 2 if 5-25%, 1 if <5%, 0 if none). If the vegetated part of the AA is largely herbaceous (non-woody) vegetation, these percentages should not sum to 100%.		Deciduous shrubs in this region usually include buttonbush, Labrador tea, bayberry (*Morella*), huckleberry, cranberry, cloudberry, sweetgale, alder, willow, birch, ash, dogwood, and a few others. If you assigned a code of 3 or higher to any of the first four choices and the ground cover beneath the trees/shrubs is <25% moss, then question F1 might be "B1". [CS, INV, NR, PH, POL, SBM, Sens]
18			coniferous trees (may include tamarack) taller than 3 m.	1	
19			deciduous trees taller than 3 m.	1	
20			coniferous or ericaceous shrubs or trees 1-3 m tall not directly below the canopy of trees.	0	
21			deciduous shrubs or trees 1-3 m tall not directly below the canopy of trees.	3	
22			coniferous or ericaceous shrubs <1 m tall not directly below the canopy of taller vegetation.	0	
23			deciduous shrubs or trees <1 m tall (e.g., deciduous seedlings) not directly below the canopy of taller vegetation.	2	
24			*Note : If none of top 4 rows in F3 was marked 2 or greater , SKIP to F9 (N fixers).*		
25	F4	Dominance of Most Abundant Shrub Species	Determine which two woody plant species comprise the greatest portion of the low (<3 m) woody cover . Then choose one:		[PH, POL, SBM, Sens]
26			those species together comprise > 50% of such cover.	1	
27			those species together do not comprise > 50% of such cover.	0	
28	F5	Woody Diameter Classes	Mark ALL the types that comprise >5% of the woody canopy cover in the AA or >5% of the wooded areas (if any) along its upland edge (perimeter). The edge should include only the trees whose canopies extend into the AA.		Estimate the diameters at chest height. If small-diameter trees are overtopped (shaded) by larger ones, visualise a "subcanopy" at the average height of the smaller-dbh trees, to serve as a basis for the minimum 5% canopy requirement in this question. The trees and shrubs need not be wetland species. [AM, CS, POL, SBM, Sens, WBN]
29			coniferous, 1-9 cm diameter and >1 m tall.	0	
30			broad-leaved deciduous 1-9 cm diameter and >1 m tall.	1	
31			coniferous, 10-19 cm diameter.	0	
32			broad-leaved deciduous 10-19 cm diameter.	0	
33			coniferous, 20-40 cm diameter.	0	
34			broad-leaved deciduous 20-40 cm diameter.	0	
35			coniferous, >40 cm diameter.	0	
36			broad-leaved deciduous >40 cm diameter.	0	
37	F6	Height Class Interspersion	Follow the key below and mark the ONE row that best describes MOST of the AA:		[AM, INV, NR, PH, SBM, Sens]
38			A. Neither the vegetation taller than 1 m nor the vegetation shorter than that comprise >70% of the vegetated part of the AA. They each comprise 30-70%. Choose between A1 and A2 and mark the choice with a 1 in the adjoining column. Otherwise go to B below.		
39			A1. The two height classes are mostly scattered and intermixed throughout the AA.	0	
40			A2. Not A1. The two height classes are mostly in separate zones or bands, or in proportionately large clumps.	0	
41			B. Either the vegetation shorter than 1 m comprises >70% of the vegetated part of the AA, or the vegetation taller than that does. One size class might even be totally absent. Choose between B1 and B2 and mark the choice with a 1 in the adjoining column:		
42			B1. The less prevalent height class is mostly scattered and intermixed within the prevalent one.	1	
43			B2. Not B1. The less prevalent height class is mostly located apart from the prevalent one, in separate zones or clumps, or is completely absent.	0	
44	F7	Large Snags (Dead Standing Trees)	The number of large snags (diameter >20 cm) in the AA plus adjacent upland area within 10 m of the wetland edge is:		Snags are dead standing trees that often (not always) lack bark and foliage. Include only ones that are at least 2 m tall. [POL, SBM, WBN]
45			None, or fewer than 8/ hectare which exceed this diameter.	1	
46			Several (>8/hectare) and a pond, lake, or slow-flowing water wider than 10 m is within 1 km.	0	

	A	B	C	D	E
47			Several (>8/hectare) but above not true.	0	
48	F8	Downed Wood	The number of downed wood pieces longer than 2 m and with diameter >10 cm, and not persistently submerged, is:		Exclude temporary "burn piles." [AM, INV, POL, SBM]
49			Few or none that meet these criteria.	1	
50			Several (>5 if AA is >5 hectares, less for smaller AAs) meet these criteria.	0	
51	F9	N Fixers	The percentage of the AA's vegetated cover that contains nitrogen-fixing plants (e.g., alder, sweetgale, clover, lupine, alfalfa, other legumes) is:		Do not include N-fixing algae or lichens. [FA, FR, INV, NRv, OE, PH, SBM, Sens]
52			<1% or none.	0	
53			1-25% of the vegetated cover, in the AA or along its water edge (whichever has more).	1	
54			25-50% of the vegetated cover, in the AA or along its water edge (whichever has more).	0	
55			50-75% of the vegetated cover, in the AA or along its water edge (whichever has more).	0	
56			>75% of the vegetated cover, in the AA or along its water edge (whichever has more).	0	
57	F10	Sphagnum Moss Extent	The cover of Sphagnum moss (or any moss that forms a dense cushion many centimeters thick), including the moss obscured by taller sedges and other plants rooted in it, is:		Exclude moss growing on trees and rocks. [CS, PH]
58			<5% of the vegetated part of the AA.	0	
59			5-25% of the vegetated part of the AA.	0	
60			25-50% of the vegetated part of the AA.	0	
61			50-95% of the vegetated part of the AA.	0	
62			>95% of the vegetated part of the AA.	1	
63	F11	% Bare Ground & Thatch	Consider the parts of the AA that lack surface water at the driest time of the growing season. Viewed from directly above the ground layer, the predominant condition in those areas at that time is:		Thatch is dead plant material (stems, leaves) resting on the ground surface. Bare ground that is present under a tree or shrub canopy should be counted. Boulders count as bare ground. Wetlands with mineral soils and that are heavily shaded or are dominated by annual plant species tend to have more extensive areas that are bare during the early growing season. [AM, EC, INV, NR, OE, POL, PR, SBM, Sens]
64			Little or no (<5%) *bare ground* is visible between erect stems or under canopy anywhere in the vegetated AA. Ground is extensively blanketed by dense thatch, moss, lichens, graminoids with great stem densities, or plants with ground-hugging foliage.	1	
65			Slightly bare ground (5-20% bare between plants) is visible in places, but those areas comprise less than 5% of the unflooded parts of the AA.	0	
66			Much bare ground (20-50% bare between plants) is visible in places, and those areas comprise more than 5% of the unflooded parts of the AA.	0	
67			Other conditions.	0	
68			Not applicable. Surface water (either open or obscured by emergent plants) covers all of the AA all the time.	0	
69	F12	Ground Irregularity	Imagine the AA without any living vegetation. Excluding the portion of the AA that is always under water, the number of hummocks, small pits, raised mounds, animal burrows, ruts, gullies, natural levees, microdepressions, and other areas of peat or mineral soil that are raised or depressed >10 cm compared to most of the area within a few meters surrounding them is:		The depressions may be of human or natural origin. [AM, EC, INV, NR, PH, POL, PR, SBM, SR, WS]
70			Few or none (minimal microtopography; <1% of the land has such features, or entire AA is always water-covered).	1	
71			Intermediate.	0	
72			Several (extensive micro-topography).	0	
73	F13	Upland Inclusions	Within the AA, inclusions of upland are:		[AM, NR, SBM]
74			Few or none.	1	
75			Intermediate (1 - 10% of vegetated part of the AA).	0	
76			Many (e.g., wetland-upland "mosaic", >10% of the vegetated AA).	0	
77	F14	Soil Texture	In parts of the AA that lack persistent water, the texture of soil in the uppermost layer is mostly: [*To determine this, use a trowel to check in at least 3 widely spaced locations, and use the soil texture key (in Appendix A of the Manual).]*		[CS, NR, OE, PH, PR, Sens, SFS, WS]
78			Loamy: soils that may contain a little fine grit and do not make a "ribbon" longer than 2 cm when moistened, rolled, squeezed, and extended between thumb and forefinger.	0	
79			Fines: includes silt, clay, silt, soils that make a ribbon longer than 2 cm when moistened, rolled, squeezed, and extended between thumb and forefinger.	0	
80			Deep Peat, to 40 cm depth or greater.	0	
81			Shallow Peat or organic <40 cm deep.	1	
82			Coarse: includes sand, loamy sand, gravel, cobble, soils that do not make a ribbon when moistened, rolled, squeezed, and extended between thumb and forefinger.	0	
83	F15	Shorebird Feeding Habitats	During any 2 consecutive weeks of the growing season, the extent of mudflats, bare unshaded saturated areas not covered by thatch, and unshaded waters shallower than 6 cm is: [Include also any area that is adjacent to the AA.]		This addresses needs of many but not all migratory sandpipers, plovers, and related species. [WBF]
84			None, or <100 sq. m.	1	
85			100-1000 sq. m.	0	
86			1000 – 10,000 sq. m.	0	
87			>10,000 sq. m.	0	
88	F16	Herbaceous % of Vegetated Wetland	In aerial ("ducks eye") view, the maximum annual cover of herbaceous vegetation (all non-woody plants except moss) is:		[AM, WBF, WBN]
89			<5% of the vegetated part of the AA or <0.01 hectare (whichever is less). Mark "1" here and SKIP to F20 (Invasive Plant Cover).	0	
90			5-25% of the vegetated part of the AA.	0	
91			25-50% of the vegetated part of the AA.	0	
92			50-95% of the vegetated part of the AA.	1	
93			>95% of the vegetated part of the AA.	0	
94	F17	Forb Cover	Within parts of the AA having herbaceous cover (excluding SAV), the areal cover of forbs reaches an annual maximum of:		Forbs are flowering plants. Do not include grasses, sedges, cattail, other graminoids, ferns, horsetails, or others that lack showy flowers. [POL]
95			<5% of the herbaceous part of the AA.	0	
96			5-25% of the herbaceous part of the AA.	1	
97			25-50% of the herbaceous part of the AA.	0	
98			50-95% of the herbaceous part of the AA.	0	
99			>95% of the herbaceous part of the AA.	0	
100	F18	Sedge Cover	Sedges (*Carex* spp.) and cottongrass (*Eriophorum* spp.) occupy:		[CS]
101			<5% of the vegetated area, or none.	0	
102			5-50% of the vegetated area.	0	
103			50-95% of the vegetated area.	1	
104			>95% of the vegetated area.	0	
105	F19	Dominance of Most Abundant Herbaceous Species	Determine which two herbaceous species comprise the greatest portion of the herbaceous cover (excluding mosses and floating-leaved aquatic plants). Then choose one of the following:		For this question, include ferns as well as graminoids and forbs. [EC, INV, PH, POL, Sens]
106			those species together comprise > 50% of the areal cover of herbaceous plants at any time during the year.	1	
107			those species together do not comprise > 50% of the areal cover of herbaceous plants at any time during the year.	0	
108	F20	Invasive Plant Cover	How extensive is the cover of invasive plant species in the AA? For species, see Plants_invasive worksheet in the accompanying SuppInfo file.		[EC, PH, POL, Sens]
109			invasive species appear to be absent in the AA, or are present only in trace amount (a few individuals).	1	
110			invasive species are present in more than trace amounts, but comprise <5% of herbaceous cover (or woody cover, if the invasives are woody).	0	
111			invasive species comprise 5-20% of the herb cover (or woody cover, if the invasives are woody).	0	
112			invasive species comprise 20-50% of the herb cover (or woody cover, if the invasives are woody).	0	
113			invasive species comprise >50% of the herb cover (or woody cover, if the invasives are woody).	0	

	A	B	C	D	E
114	F21	Invasive Cover Along Upland Edge	Along the wetland-upland boundary, the percent of the upland edge (within 3 m upslope from the wetland) that is occupied by invasive plant species is:		If a plant cannot be identified to species (e.g., winter conditions) but its genus contains an exotic species, assume the unidentified plant to also be exotic. If vegetation is so senesced that exotic species cannot be identified, answer "none". [PH, STR]
115			none of the upland edge (invasives apparently absent), or AA has no upland edge.	1	
116			some (but <5%) of the upland edge.	0	
117			5-50% of the upland edge.	0	
118			most (>50%) of the upland edge.	0	
119	F22	Fringe Wetland	During most of the year, open water within or adjacent to the vegetated part of the wetland is much wider than the maximum width of the vegetated zone within the wetland. Enter "1" if true, "0" if false.	0	[WBF, WBN, WCv]
120	F23	Lacustrine Wetland	The vegetated part of the AA is within or adjacent to a body of non-tidal standing open water whose size exceeds 8 hectares during most of a normal year.	0	[FR, PR, PU, WBF, WBN]
121	F24	% of AA Without Surface Water	The percentage of the AA that never contains surface water during an average year (that is, except perhaps for a few hours after snowmelt or rainstorms), but which is still a wetland, is:		1 hectare is 10,000 sq. m or about 2.5 acres. It could have dimensions of 100 m by 100 m, 1000 m by 10 m, or similar. [AM, FA, FR, INV, NR, PH, PR, SBM, Sens, SRv, WBF, WBN, WC]
122			<1% . In other words, all or nearly all of the AA is covered by water permanently or at least seasonally.	0	
123			1-25% of the AA, or <1% but >0.01 ha never contains surface water.	0	
124			25-50% of the AA never contains surface water.	0	
125			50-75% of the AA never contains surface water.	0	
126			75-99% of the AA never contains surface water, OR >99% and there is at least one persistently ponded water body larger than 1 ha in the AA.	0	
127			99-100%. AND there is no persistently ponded water body larger than 1 ha within the AA. Enter "1" and SKIP to F42 (Channel Connection).	1	
128	F25	% of AA with Persistent Surface Water	Identify the parts of the AA that still contain surface water (flowing or ponded, open or hidden beneath vegetation) even during the driest times of a normal year, i.e., when the AA's surface water is at its lowest annual level. At that time, the percentage of the AA that still contains surface water is:		If you are unable to determine the condition at the driest time of year, ask the land owner or neighbors about it if possible. Indicators of persistence may include fish, some dragonflies, beaver, and muskrat. [AM, CS, FA, FR, INV, NR, POL, PR, SBM, WBF, WBN]
129			None. The AA dries up completely (no water in channels either) or never has surface water during most years. SKIP to F27.	0	
130			1-20% of the AA.	0	
131			20-50% of the AA.	0	
132			50-95% of the AA.	0	
133			>95% of the AA. True for many fringe wetlands.	0	
134	F26	% of Summertime Water that Is Shaded	At mid-day during the warmest time of year, the area of surface water within the AA that is shaded by vegetation and other features that are within the AA at that time is:		[FA, WC]
135			<5% of the water is shaded, or no surface water is present then.	0	
136			5-25% of the water is shaded.	0	
137			25-50% of the water is shaded.	0	
138			50-75% of the water is shaded.	0	
139			>75% of the water is shaded.	0	
140	F27	% of AA that is Flooded Only Seasonally	The percentage of the AA's area that is between the annual high water and the annual low water (surface water) is:		Flood marks (algal mats, adventitious roots, debris lines, ice scour, etc.) are often evident when not fully inundated. Also, such areas often have a larger proportion of upland and annual (vs. perennial) plant species. In riverine systems, the extent of this zone can be estimated by multiplying by 2 the bankful height and visualising where that would intercept the land along the river. [CS, FA, INV, NR, OE, PH, SR, WBF, WBN, WS]
141			None, or <0.01 hectare and <1% of the AA. SKIP to F29.	0	
142			1-20% of the AA, or <1% but >0.01 ha.	0	
143			20-50% of the AA.	0	
144			50-95% of the AA.	0	
145			>95% of the AA.	0	
146	F28	Annual Water Fluctuation Range	The annual fluctuation in surface water level within most of the parts of the AA that contain surface water at least temporarily is:		Look for flood marks (see above). Because the annual range of water levels is difficult to estimate without multiple visits, consider asking the land owner or neighbors about it. [AM, CS, INV, NR, OE, PH, PR, SR, WBN, WS]
147			<10 cm change (stable or nearly so).	0	
148			10 cm - 50 cm change.	0	
149			0.5 - 1 m change.	0	
150			1-2 m change.	0	
151			>2 m change.	0	
152	Is the AA plus adjacent ponded water smaller than 0.01 hectare (about 10m x 10m, or 1m x 100 m)? If so, enter "1" in column D and SKIP TO F42 (Connection).			0	
153	F29	Predominant Depth Class	During most of the time when surface water is present during the growing season, its depth, averaged over the entire inundated part of the AA, is:		If a boat is unavailable, estimate this by considering wetland size and local topography. Or if timing and safety allow, depths may be measured by drilling through winter ice.This question is asking about the spatial median depth that occurs during most of that time, even if inundation is only seasonal or temporary. If inundation in most but not all of the wetland is brief, the answer will be based on the depth of the most persistently inundated part of the wetland. Include surface water in channels and ditches as well as ponded areas. [CS, FA, FR, INV, OE, PH, PR, Sens, SFS, SR, WBF, WBN, WC]
154			<10 cm deep (but >0).	0	
155			10 - 50 cm deep.	0	
156			0.5 - 1 m deep.	0	
157			1 - 2 m deep.	0	
158			>2 m deep. True for many fringe wetlands.	0	
159	F30	Depth Classes - Evenness of Proportions	When present, surface water in most of the AA usually consists of (select one):		Estimate these proportions by considering the gradient and microtopography of the site. [FR, INV, WBF, WBN]
160			One depth class that comprises >90% of the AA's inundated area (use the classes in the question above).	0	
161			One depth class that comprises 50-90% of the AA's inundated area.	0	
162			Neither of above. There are 3 or more depth classes and none occupy >50%.	0	
163	F31	% of Water That Is Ponded (not Flowing)	During most times when surface water is present, the percentage that is (1) ponded (stagnant, or flows so slowly that fine sediment is not held in suspension) AND (2) is likely to be deeper than 0.5 m in some places, is:		Nearly all wetlands with surface water have some ponded water. [AM, CS, INV, NR, OE, PR, Sens, SR, WBF, WBN, WC, WS]
164			<5% of the water, or it occupies <100 sq.m cumulatively. Nearly all the surface water is flowing. SKIP to F34.	0	
165			5-30% of the water.	0	
166			30-70% of the water.	0	
167			70-95% of the water.	0	
168			>95% of the water.	0	
169	F32	Ponded Open Water - Minimum Size	During most of the growing season, the largest patch of open water that is ponded and is in or bordering the AA is >0.01 hectare (about 10 m by 10 m) and mostly deeper than 0.5 m. If true enter "1" and continue, If false, enter "0" and SKIP to F41 (Floating Algae & Duckweed).	0	Open water is not obscured by vegetation in aerial ("duck's eye") view. It includes vegetation floating on the water surface or entirely submersed beneath it.
170	F33	% of Ponded Water that is Open	In ducks-eye aerial view, the percentage of the ponded water that is open (lacking emergent vegetation during most of the growing season, and unhidden by a forest or shrub canopy) is:		[AM, CS, FA, FR, INV, NR, OE, PR, SR, WBF, WBN, WC]
171			None, or <1% of the AA and largest pool occupies <0.01 hectares. Enter "1" and SKIP to F41 (Floating Algae & Duckweed).	0	
172			1-4% of the ponded water. Enter "1" and SKIP to F41 (Floating Algae & Duckweed).	0	
173			5-30% of the ponded water.	0	
174			30-70% of the ponded water.	0	
175			70-99% of the ponded water.	0	
176			100% of the ponded water.	0	
177	F34	Width of Vegetated Zone within Wetland	At the time during the growing season when the AA's water level is lowest, the average width of vegetated area in the AA that separates adjoining uplands from open water within the AA is:		"Vegetated area" does not include underwater or floating-leaved plants, i.e., aquatic bed. Width may include wooded riparian areas if they have wetland soil or plant indicators. [AM, CS, NR, OE, PH, PR, SBM, Sens, SR, WBN]
178			<1 m.	0	
179			1 - 9 m.	0	
180			10 - 29 m.	0	
181			30 - 49 m.	0	
182			50 - 100 m.	0	
183			> 100 m, or open water is absent at that time.	0	

	A	B	C	D	E
184	F35	Flat Shoreline Extent	During most of the part of the growing season when water is present, the percentage of the AA's **water edge** length that is **nearly flat** (a slope less than about 5% measured within 5 m landward of the water) is:		If several isolated pools are present in early summer, estimate the percent of their collective shorelines that has such a gentle slope. [SR, WBN]
185			<1% of the water edge.	0	
186			1-25% of the water edge.	0	
187			25-50% of the water edge.	0	
188			50-75% of the water edge.	0	
189			>75% of the water edge.	0	
190	F36	Robust Emergents	The percentage **of the emergent vegetation** cover in the AA that is cattail (*Typha* spp.), common reed (*Phragmites*), or tall (>1m) bulrush is:		**Emergent vegetation** is herbaceous plants whose stems are partly above and partly below the water surface during most of the time water is present. [WBN]
191			<1% of the emergent vegetation, or emergent vegetation is absent. SKIP to F38.	0	
192			1-25% of the emergent vegetation.	0	
193			25-75% of the emergent vegetation.	0	
194			>75%, of the emergent vegetation.	0	
195	F37	Interspersion of Emergents & Open Water	During most of the part of the growing season when water is present, the spatial pattern of **emergent** vegetation within the water is mostly:		[AM, FA, FR, INV, NR, OE, PH, PR, SBM, SR, WBF, WBN]
196			Scattered. More than 30% of such vegetation forms small islands or corridors surrounded by water.	0	
197			Intermediate.	0	
198			Clumped. More than 70% of such vegetation is in bands along the wetland perimeter or is clumped at one or a few sides of the surface water area.	0	
199	F38	Persistent Deepwater Area	If the deepest patch of surface water (flowing or ponded) in or directly adjacent to the AA is mostly deeper than 0.5 m for >2 weeks during the growing season, enter "1" and continue. If not, enter "0" and SKIP to F42.(Connection).	0	
200	F39	Non-vegetated Aquatic Cover	During most of the growing season and in waters deeper than 0.5 m, the cover for fish, aquatic invertebrates, and/or amphibians that is provided NOT by living vegetation, but by accumulations of **dead wood and undercut banks** is:		For this question, consider only the wood that is at or above the water surface. Estimates of underwater wood based only on observations from terrestrial viewpoints are unreliable so should not be attempted. [AM, FA, FR, INV]
201			Little or none.	0	
202			Intermediate.	0	
203			Extensive.	0	
204	F40	Isolated Island	The AA contains (or is part of) an island or beaver lodge within a lake, pond, or river, and is isolated from the shore **by water depths** >1 m on all sides during an average June. The island may be solid, or it may be a floating vegetation mat that is sufficiently large and dense to support a waterbird nest.	0	[WBN]
205	F41	Floating Algae & Duckweed	At some time of the year, mats of algae and/or duckweed are likely to cover >50% of the AA's otherwise-unshaded water surface, or blanket >50% of the underwater substrate. If true, enter "1" in next column. If untrue or uncertain, enter "0".	0	[EC, PR, WBF]
206	F42	Channel Connection & Outflow Duration	The most persistent surface water connection (outlet channel or pipe, ditch, or overbank water exchange) between the AA and a downslope stream network is: [Note: If the AA represents only part of a wetland, answer this according to whichever is the **least** permanent surface connection: the one between the AA and the rest of the wetland, or the surface connection between the wetland and the downslope stream network.]		Consider the connection regardless of whether the surface water is frozen. The "downslope stream network" could consist of ditches, rivers, ponds, or lakes which eventually connect to the ocean. If this cannot be determined while visiting the AA, consult topographic maps perhaps by viewing these online with Toporama (http://atlas.nrcan.gc.ca/toporama/en/index.html) [CS, FA, FR, NR, OE, PR, Sens, SFS, SR, WCv, WS]
207			Persistent (surface water flows out for >9 months/year).	0	
208			Seasonal (surface water flows out for 14 days to 9 months/year, not necessarily consecutive).	0	
209			Temporary (surface water flows out for <14 days, not necessarily consecutive).	0	
210			None -- but maps show a stream network downslope from the AA and within a distance that is less than the AA's length. SKIP to F47 (pH Measurement).	0	
211			No surface water flows out of the wetland except possibly during extreme events (<once per 10 years). Or, water flows only into a wetland, ditch, or lake that lacks an outlet. SKIP to F47 (pH Measurement).	1	
212	F43	Outflow Confinement	During major runoff events, in the places where **surface** water exits the AA or connected waters nearby, the water:		"Major runoff events" would include biennial high water caused by storms and/or rapid snowmelt. [CS, NR, OE, PR, Sens, SR, STR, WS]
213			Mostly passes through a pipe, culvert, narrowly breached dike, berm, beaver dam, or other partial obstruction (other than natural topography) that does not appear to drain the wetland artificially during most of the growing season.	0	
214			Leaves through natural exits (channels or diffuse outflow), not mainly through artificial or temporary features.	0	
215			Is exported more quickly than usual due to ditches or pipes within the AA or connected to its outlet, or within 10 m of the AA's edge, which drain the wetland artificially, or water is pumped out of the AA.	0	
216	F44	Tributary Channel	At least once annually, surface water from a tributary channel that is >100 m long moves into the AA. Or, surface water from a larger permanent water body adjacent to the AA spills into the AA. If it enters only via a pipe, that pipe must be fed by a mapped stream or lake further upslope. If no, SKIP to F47 (pH Measurement).	0	If inlet tributaries cannot be searched for due to inaccessibility of part of the AA, follow suggestions in F42 above. [NRv, PH, PRv, SRv]
217	F45	**Input** Water Temperature	Based on lack of shade, water source characteristics, or actual temperature measurements, the inflow is likely to be warmer than surface water in the AA during part of most years. Enter 1= yes, 0= no.	0	[WCv]
218	F46	Throughflow Resistance	During its travel through the AA at the time of peak annual flow, water arriving in channels: [select only the ONE encountered by **most** of the incoming water].		[FA, FR, INV, NR, OE, PR, SR, WS]
219			Does not bump into many plant stems as it travels through the AA. Nearly all the water continues to travel in unvegetated (often incised) channels that have minimal contact with wetland vegetation, or through a zone of open water such as an instream pond or lake.	0	
220			Bumps into **herbaceous** vegetation but mostly remains in fairly straight channels.	0	
221			Bumps into **herbaceous** vegetation and mostly spreads throughout, or is in widely meandering, multi-branched, or braided channels.	0	
222			Bumps into **tree trunks and/or shrub stems** but mostly remains in fairly straight channels.	0	
223			Bumps into tree trunks and/or shrub stems and follows a fairly **indirect** path from entrance to exit (meandering, multi-branched, or braided).	0	
224	F47	pH Measurement	The pH in most of the AA's surface water:		Preferably, measure this in larger areas of ponded surface water within the AA, or in streams that have passed through (not along) most of the AA. Unless surface water is completely absent, do not dig holes or make depressions in peat in order to provide water for this measurement. Avoid measuring near roads or in puddles formed only by recent rain. [AM, FA, FR, NR, WBF, PH, PR, Sens, WBF, WBN]
225			Was measured, and is: [*enter the reading in the column to the right.*]		
226			Was not measured but surface water is present and is darkly tea-coloured. Or if no surface water, then mosses and plants that indicate peatland (e.g., Labrador tea) are prevalent. Enter "1".	0	
227			Neither of above. Enter "1".	1	
228	F48	TDS and/or Conductivity	The TDS (total dissolved solids) or conductivity off the AA's surface water is: (select the first true row with information):		See above for measurement guidance. [FR, INV, NRv, PH, PRv, Sens]
229			TDS is: [*Enter the reading* ***in ppm or mg/L*** *in the column to the right, if measured, or answer next row.*]		
230			Conductivity is [*Enter the reading* ***in µS/cm*** *in the column to the right.*]		
231			Was not measured, but plants that indicate saline conditions cover much of the vegetated AA. Enter "1".	0	
232			Neither of above	1	
233	F49	Beaver Probability	Use of the AA by beaver during the past 5 years is (select most applicable ONE):		[FA, FR, PH, SBM, Sens, WBF, WBN]
234			**Evident** from direct observation or presence of gnawed limbs, dams, tracks, dens, lodges, or extensive stands of water-killed trees (snags).	0	
235			**Likely** based on known occurrence in the region and proximity to suitable habitat, which may include: (a) a persistent freshwater wetland, pond, or lake, or a perennial low or mid-gradient (<10%) channel, and (b) a corridor or multiple stands of hardwood trees and shrubs in vegetated areas near surface water.	0	
236			Unlikely because site characteristics above are deficient, and/or this is a settled area or other area where beaver are routinely removed.	1	
237	F50	Groundwater Strength of Evidence	Select first applicable choice:		Adhere to these criteria strictly -- do not use personal judgment based on fen conditions, pH, or other evidence. Consult topographic maps to detect breaks in slope described here. Rust deposits associated with groundwater seeps may be most noticeable as orange discoloration in ice formations along streams during early winter. [AM, CS, FA, FR, INV, NR, OE, PH, PRv, SFS, WC, WS]
238			Springs are known to be present within the AA, or if groundwater levels have been monitored, that has demonstrated that groundwater primarily discharges to the wetland for longer periods during the year than periods when the wetland recharges the groundwater.	0	

	A	B	C	D	E
239			Most of the AA has a slope of >5%, or is very close to the base of a natural slope longer than 100 and much steeper than the slope of the AA, AND the pH of surface water, if known, is >5.5.	0	
240			Neither of above is true, although some groundwater may discharge to or flow through the AA. Or groundwater influx is unknown.	1	
241	F51	Internal Gradient	The gradient along most of the flow path **within** the AA is:		This is not the same as the shoreline slope. It is the elevational difference between the AA's inlet and outlet, divided by the flow-distance between them and converted to percent. If available, use a clinometer to measure this. Free clinometer apps can be downloaded to smartphones. If the wetland is large (longer than ~1 km), this may be estimated using Google Earth to determine the minimum and maximum elevation within the AA, then dividing by length and multiplying by 100. [CS, NR, OE, PR, SR, WBF, WBN, WS]
242			<2% **or** the AA has no surface water outlet (not even seasonally).	0	
243			2-5%.	1	
244			6-10%.	0	
245			>10%.	0	
246	Note for the next three questions: If the AA lacks an upland edge, evaluate based on the AA's entire perimeter, and moving outward into whatever areas are adjacent. In many situations, these questions are best answered by measuring from aerial images.				
247	F52	Vegetated Buffer as % of Perimeter	Within a zone extending 30 m laterally from the AA's edge with upland and/or other wetlands, the percentage that contains **perennial vegetation cover** (except lawns, row crops, heavily grazed land, conifer plantations) is:		[AM, FA, FR, INV, NRv, PH, POL, PRv, SBM, Sens, SRv, STR, WBN]
248			<5%.	0	
249			5 to 30%.	0	
250			30 to 60%.	0	
251			60 to 90%.	0	
252			>90%, or all the area within 30 m of the AA edge is other wetlands. **SKIP to F55.**	1	
253	F53	Type of Cover in Buffer	Within 30 m upslope of where the wetland transitions to upland, the upland land cover that is NOT perennial vegetation is mostly (mark ONE):		[AM, FA, INV, NRv, PH, POL, SBM, STR, WBN]
254			Impervious surface, e.g., paved road, parking lot, building, exposed rock.	0	
255			Bare or nearly bare pervious surface or managed vegetation, e.g., lawn, row crops, unpaved road, dike, landslide.	0	
256	F54	Buffer Slope	The steepest and/or most disturbed part of the upland area that is within 30 m of the wetland and occupies >10% of that upland area has a percent slope of:		[NRv, PRv, Sens, SRv]
257			<1% (flat -- almost no noticeable slope) or all the area within 30 m of the AA edge is other wetlands.	0	
258			2-5%.	0	
259			5-30%.	0	
260			>30%.	0	
261	F55	Cliffs or Steep Banks	In the AA or within 100 m, there are elevated terrestrial features such as cliffs, talus slopes, stream banks, or excavated pits (but not riprap) that extend at least 2 m nearly vertically, are unvegetated, and potentially contain crevices or other substrate suitable for nesting or den areas. Enter 1 (yes) or 0 (no).	0	Do not include upturned trees as potential den sites. [POL, SBM]
262	F56	New or Expanded Wetland	**Human** actions within or adjacent to the AA have persistently expanded a naturally occurring wetland or created a wetland where there previously was none (e.g., by excavation, impoundment):		Determine this using historical aerial photography, old maps, soil maps, or permit files as available [CS, NR, OE, PH, Sens]
263			No.	0	
264			Yes, and created or expanded 20 - 100 years ago.	0	
265			Yes, and created or expanded 3-20 years ago.	0	
266			Yes, and created or expanded within last 3 years.	0	
267			Yes, but time of origin or expansion unknown.	1	
268			Unknown if new or expanded within 20 years or not.	0	
269	F57	Burn History	More than 1% of the AA's previously vegetated area:		Look for charred soil or stumps (in multiple widely-spaced locations) or ask landowner. [CS, PH, STR]
270			Burned within past 5 years.	0	
271			Burned 6-10 years ago.	0	
272			Burned 11-30 years ago.	0	
273			Burned >30 years ago, or no evidence of a burn and no data.	1	
274	F58	Visibility	The maximum percentage of the wetland that is visible from the best vantage point on public roads, public parking lots, public buildings, or public maintained trails that intersect, adjoin, or are within 100 m of the AA (select one) is:		[PU, STR, WBFv]
275			<25%.	1	
276			25-50%.	0	
277			>50%.	0	
278	F59	Non-consumptive Uses - Actual or Potential	Assuming access permission was granted, select **ALL** statements that are true of the AA as it currently exists:		[PU, STR]
279			For an average person, walking is physically possible **in** (not just near) >5% of the AA during most of the growing season, e.g., free of deep water and dense shrub thickets.	1	
280			Maintained roads, parking areas, or foot-trails are within 10 m of the AA, or the AA can be accessed part of the year by boats arriving via contiguous waters.	0	
281			Within or near the AA, there is an interpretive center, trails with interpretive signs or brochures, and/or regular guided interpretive tours.	0	
282	F60	Unvisited Core Area	The percentage of the AA almost never visited by humans during an average growing season probably comprises: *[Note: Only include the part actually walked or driven (not simply viewed from) with a vehicle or boat. Do not include visitors on trails outside of the AA unless more than half the wetland is visible from the trails and they are within 30 m of the wetland edge. In that case include only the area occupied by the trail.]*		[AM, FAv, FRv, PH, PU, SBM, STR, WBF, WBN]
283			<5% and no inhabited building is within 100 m of the AA.	0	
284			<5% and inhabited building is within 100 m of the AA.	0	
285			5-50% and no inhabited building is within 100 m of the AA.	0	
286			5-50% and inhabited building is within 100 m of the AA.	0	
287			50-95%, with or without inhabited building nearby.	0	
288			>95% of the AA with or without inhabited building nearby.	1	
289	F61	Frequently Visited Area	The part of the AA visited by humans almost daily for several weeks during an average growing season probably comprises: *[See note above.]*		[AM, PH, PU, SBM, STR, WBF, WBN]
290			<5%. If F60 was answered ">95%" (mostly never visited), **SKIP to F64.**	1	
291			5-50%.	0	
292			50-95%.	0	
293			>95% of the AA.	0	
294	F62	BMP - Soils	Boardwalks, paved trails, fences or other infrastructure and/or well-enforced regulations appear to effectively prevent visitors from walking on soil within nearly all of the AA when the soil is unfrozen. Enter "1" if true.	0	[PH, PU]
295	F63	BMP - Wildlife Protection	Fences, observation blinds, platforms, paved trails, exclusion periods, and/or well-enforced prohibitions on motorised boats, off-leash pets, and off road vehicles appear to effectively exclude or divert visitors and their pets from the AA at critical times in order to minimize disturbance of wildlife (except during hunting seasons). Enter "1" if true.	0	[AM, PU, WBF, WBN]
296	F64	Consumptive Uses (Provisioning Services)	Recent evidence was found within the AA of the following potentially-sustainable consumptive uses. Select ALL that apply.		[FAv, FRv, WBFv]
297			Low-impact commercial timber harvest (e.g., selective thinning).	1	
298			Commercial or traditional-use harvesting of native plants, their fruits, or mushrooms.	0	
299			Waterfowl hunting.	0	
300			Fishing.	0	
301			Trapping of furbearers.	0	
302			None of the above.	0	
303	F65	Domestic Wells	The closest wells or water bodies that currently provide drinking water are:		[NRv]
304			Within 0-100 m. of the AA.	0	

	A	B	C	D	E
305			100-500 m. away.	0	
306			>500 m. away, or no information.	1	
307	F66	Calcareous Fen	The AA is, or is part of, a calcareous fen. See the Plants_Calcar worksheet in the accompanying SuppInfo file for list of plant indicators (calciphiles). Enter 1 If more than two Strong or more than five Moderate calciphile species are present; otherwise enter 0, but if not able to identify those **and** no information, change to **blank**.	0	[PH, PR]
308					

Investigator: Brady Leights and Tiffany MacAulay	**Site Identifier: WL-2**	**Date: July 6, 2021**

Stressor (S) Data Form for Non-Tidal Wetlands. WESP-AC for Nova Scotia version 2.

		Data
S1	**Aberrant Timing of Water Inputs**	
	In the last column, place a check mark next to any item that is likely to have caused the timing of water inputs (but not necessarily their volume) to shift by hours, days, or weeks, becoming either more muted (smaller or less frequent peaks spread over longer times, more temporal homogeneity of flow or water levels) or more flashy (larger or more frequent spikes but over shorter times). [FA, FR, INV, PH, STR]	
	Stormwater from impervious surfaces that drains directly to the wetland.	
	Water subsidies from wastewater effluent, septic system leakage, snow storage areas, or irrigation.	
	Regular removal of surface or groundwater for irrigation or other consumptive use.	
	Flow regulation in tributaries or water level regulation in adjoining water body, or other control structure at water entry points that regulates inflow to the wetland.	
	A dam, dike, levee, weir, berm, or fill -- within or downgradient from the wetland -- that interferes with surface or subsurface flow in/out of the AA (e.g., road fill, wellpads, pipelines).	
	Excavation within the wetland, e.g., dugout, artificial pond, dead-end ditch.	
	Artificial drains or ditches in or near the wetland.	
	Accelerated downcutting or channelization of an adjacent or internal channel (incised below the historical water table level).	
	Logging within the wetland.	1
	Subsidence or compaction of the wetland's substrate as a result of machinery, livestock, fire, drainage, or off road vehicles.	
	Straightening, ditching, dredging, and/or lining of tributary channels.	
	If any items were checked above, then for each row of the table below, assign points. However, if you believe the checked items had no measurable effect on the timing of water conditions in any part of the AA, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.	

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Spatial extent of timing shift within the wetland:	>95% of wetland.	5-95% of wetland.	<5% of wetland.	3
When most of the timing shift began:	<3 yrs ago.	3-9 yrs ago.	10-100 yrs ago.	1
Score the following 2 rows only if the altered inputs began within past 10 years, and only for the part of the wetland that experiences those.				
Input timing now vs. previously:	Shift of weeks.	Shift of days.	Shift of hours or minutes.	1
Flashiness or muting:	Became very flashy or controlled.	Intermediate.	Became mildly flashy or controlled.	1
			Sum=	6
			Stressor subscore=	0.50

		Data
S2	**Accelerated Inputs of Contaminants and/or Salts**	
	In the last column, place a check mark next to any item -- occurring in either the wetland or its CA -- that is likely to have accelerated the inputs of contaminants or salts to the AA. [AM, FA, PH, POL, STR]	
	Stormwater or wastewater effluent (including failing septic systems), landfills, industrial facilities.	
	Metals & chemical wastes from mining, shooting ranges, snow storage areas, oil/ gas extraction, other sources (download many locations from National Pollutant Release Inventory and view KMZ overlay in Google Earth. https://www.ec.gc.ca/inrp-npri/default.asp?lang=En&n=B85A1846-1	
	Road salt.	
	Spraying of pesticides, as applied to lawns, croplands, roadsides, or other areas in the CA.	
	If any items were checked above, then for each row of the table below, assign points. However, if you believe the checked items did not cumulatively expose the AA to significantly higher levels of contaminants and/or salts, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.	

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Usual toxicity of most toxic contaminants:	Industrial effluent, mining waste, unmanaged landfill.	Cropland, managed landfill, pipeline or transmission rights-of-way.	Low density residential.	0
Frequency & duration of input:	Frequent and year-round.	Frequent but mostly seasonal.	Infrequent & during high runoff events mainly.	0
AA proximity to main sources (actual or potential):	0 - 15 m.	15-100 m. or in groundwater.	In more distant part of contributing area.	0
			Sum=	0
			Stressor subscore=	0.00

		Data
S3	**Accelerated Inputs of Nutrients**	
	In the last column, place a check mark next to any item -- occurring in either the wetland or its CA -- that is likely to have accelerated the inputs of nutrients to the wetland. [NRv, PRv, STR]	
	Stormwater or wastewater effluent (including failing septic systems), landfills.	
	Fertilizers applied to lawns, ag lands, or other areas in the CA.	
	Livestock, dogs.	
	Artificial drainage of upslope lands.	
	If any items were checked above, then for each row of the table below, assign points. However, if you believe the checked items did not cumulatively expose the AA to significantly more nutrients, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.	

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Type of loading:	High density of unmaintained septic, some types of industrial sources.	Moderate density septic, cropland, secondary wastewater treatment plant.	Livestock, pets, low density residential.	0
Frequency & duration of input:	Frequent and year-round.	Frequent but mostly seasonal.	Infrequent & during high runoff events mainly.	0
AA proximity to main sources (actual or potential):	0 - 15 m.	15-100 m. or in groundwater.	In more distant part of contributing area.	0
			Sum=	0
			Stressor subscore=	0.00

		Data
S4	**Excessive Sediment Loading *from Contributing Area***	
	In the last column, place a check mark next to any item present in the CA that is likely to have elevated the load of waterborne or windborne sediment reaching the wetland from its CA. [FA, FR, INV, PH, SRv, STR]	
	Erosion from plowed fields, fill, timber harvest, dirt roads, vegetation clearing, fires.	1
	Erosion from construction, in-channel machinery in the CA.	
	Erosion from off-road vehicles in the CA.	
	Erosion from livestock or foot traffic in the CA.	
	Stormwater or wastewater effluent.	
	Sediment from road sanding, gravel mining, other mining, oil/ gas extraction.	
	Accelerated channel downcutting or headcutting of tributaries due to altered land use.	
	Other human-related disturbances within the CA.	
	If any items were checked above, then for each row of the table below, assign points (3, 2, or 1 as shown in header) in the last column. However, if you believe the checked items did not cumulatively add significantly more sediment or suspended solids to the AA, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.	

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Erosion in CA:	Extensive evidence, high intensity.*	Potentially (based on high-intensity* land use) or scattered evidence.	Potentially (based on low-intensity* land use) with little or no direct evidence.	2
Recentness of significant soil disturbance in the CA:	Current & ongoing.	1-12 months ago.	>1 yr ago.	1

	Duration of sediment inputs to the wetland:	Frequent and year-round.	Frequent but mostly seasonal.	Infrequent & during high runoff events mainly.	1
	AA proximity to actual or potential sources:	0 - 15 m.	15-100 m.	In more distant part of contributing area.	1
	* high-intensity= extensive off-road vehicle use, plowing, grading, excavation, erosion with or without veg removal; low-intensity= veg removal only with little or no apparent erosion or disturbance of soil or sediment.			Sum=	5
				Stressor subscore=	0.42
S5	**Soil or Sediment Alteration *Within the Assessment Area***				
	In the last column, place a check mark next to any item present in the wetland that is likely to have compacted, eroded, or otherwise altered the wetland's soil. Consider only items occurring within past 100 years or since wetland was created or restored (whichever is less). [CS, INV, NR, PH, SR, STR]				
	Compaction from machinery, off-road vehicles, livestock, or mountain bikes, especially during wetter periods.				
	Leveling or other grading not to the natural contour.				
	Tillage, plowing (but excluding disking for enhancement of native plants).				
	Fill or riprap, excluding small amounts of upland soils containing organic amendments (compost, etc.) or small amounts of topsoil imported from another wetland.				
	Excavation.				
	Ditch cleaning or dredging in or adjacent to the wetland.				
	Boat traffic in or adjacent to the wetland and sufficient to cause shore erosion or stir bottom sediments.				
	Artificial water level or flow manipulations sufficient to cause erosion or stir bottom sediments.				
	If any items were checked above, then for each row of the table below, assign points. However, if you believe the checked items did not measurably alter the soil structure and/or topography, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.				
		Severe (3 points)	Medium (2 points)	Mild (1 point)	
	Spatial extent of altered soil:	>95% of wetland or >95% of its upland edge (if any).	5-95% of wetland or 5-95% of its upland edge (if any).	<5% of wetland and <5% of its upland edge (if any).	0
	Recentness of significant soil alteration in wetland:	Current & ongoing.	1-12 months ago.	>1 yr ago.	0
	Duration:	Long-lasting, minimal veg recovery.	Long-lasting but mostly revegetated.	Short-term, revegetated, not intense.	0
	Timing of soil alteration:	Frequent and year-round.	Frequent but mostly seasonal.	Mainly during one-time or scattered events.	0
				Sum=	0
				Stressor subscore=	0.00

Assessment Area (AA) Results:

Wetland ID: Uniacke Quarry WL-2

Date: July 26, 2021

Observer: Brady Leights and Tiffany MacAulay

Latitude & Longitude (decimal degrees): 44.914279, -63.816340

Scores will appear below after data are entered in worksheets OF, F, and S. See Manual for definitions and descriptions of how scores were computed.

Wetland Functions or Other Attributes:	Function Score (Normalised)	Function Rating	Benefits Score (Normalised)	Benefits Rating	Function Score (raw)	Benefits Score (raw)
Water Storage & Delay (WS)	7.23	Moderate	10.00	Higher	7.34	4.53
Stream Flow Support (SFS)	0.00	Lower	0.00	Lower	0.00	0.00
Water Cooling (WC)	0.00	Lower	0.00	Lower	0.00	0.00
Sediment Retention & Stabilisation (SR)	2.17	Lower	3.29	Higher	3.89	1.61
Phosphorus Retention (PR)	0.00	Lower	2.57	Moderate	3.26	2.00
Nitrate Removal & Retention (NR)	10.00	Higher	6.67	Moderate	10.00	6.67
Carbon Sequestration (CS)	5.11	Moderate			7.61	
Organic Nutrient Export (OE)	6.57	Moderate			4.29	
Anadromous Fish Habitat (FA)	0.00	Lower	0.00	Lower	0.00	0.00
Resident Fish Habitat (FR)	0.00	Lower	0.00	Lower	0.00	0.00
Aquatic Invertebrate Habitat (INV)	3.98	Moderate	0.73	Lower	5.11	1.64
Amphibian & Turtle Habitat (AM)	2.54	Lower	2.06	Lower	4.46	3.46
Waterbird Feeding Habitat (WBF)	0.00	Lower	0.00	Lower	0.00	0.00
Waterbird Nesting Habitat (WBN)	0.00	Lower	0.00	Lower	0.00	0.00
Songbird, Raptor, & Mammal Habitat (SBM)	6.18	Moderate	5.00	Moderate	5.38	5.00
Pollinator Habitat (POL)	5.64	Moderate	3.33	Moderate	4.67	3.33
Native Plant Habitat (PH)	3.76	Moderate	4.46	Lower	5.40	4.46
Public Use & Recognition (PU)			1.82	Moderate		1.54
Wetland Sensitivity (Sens)			6.43	Moderate		4.00
Wetland Ecological Condition (EC)			3.04	Lower		6.67
Wetland Stressors (STR) (higher score means more stress)			7.69	Higher		3.87
Summary Ratings for Grouped Functions:						
HYDROLOGIC Group (WS)	7.23	Moderate	10.00	Higher	7.34	4.53
WATER QUALITY SUPPORT Group (max+avg/2 of SR, PR, NR, CS)	7.16	Higher	5.42	Moderate	8.10	5.05
AQUATIC SUPPORT Group (max+avg/2 of SFS, INV, OE, WC)	4.60	Moderate	0.49	Lower	3.73	1.09
AQUATIC HABITAT Group (max+avg/2 of FA, FR, AM, WBF, WBN)	1.53	Lower	1.24	Lower	2.67	2.08
TRANSITION HABITAT Group (max+avg/2 of SBM, PH, POL)	5.68	Moderate	4.63	Lower	5.28	4.63
WETLAND CONDITION (EC)			3.04	Lower		6.67
WETLAND RISK (average of Sensitivity & Stressors)			7.06	Higher		3.94

NOTE: A score of 0 does not mean the function or benefit is absent from the wetland. It means only that this wetland has a capacity that is equal or less than the lowest-scoring one, for that function or benefit, from among all the NS calibration wetlands that were assessed previously.

NOVA SCOTIA - Functional WSS Interpretation Tool

1. General Description of Tool:

This interpretive tool automatically determines whether the subject wetland will be regulated as a Wetland of Special Significance (WSS). This determination is made based on the WESP-AC functional results, per the Nova Scotia *Wetland Conservation Policy* .

A 'Function-Benefit Product' (FBP) is calculated based upon the Grouped Functions, and has a theoretical maximum of 100. Threshold values for the FBP are applied, in order to categorize the FBP scores into 'Low', 'Moderate' or 'High' scores. Thresholds are determined based upon the statistical distribution of WESP-AC scores compiled from various sites across the Province (N=442). These categories are subsequently used to apply various 'Functional WSS Rules', as described below.

For the purpose of defining and applying the Functional WSS rules, two supergroups are defined based on grouped functions, as follows: **(1) Support Supergroup** - includes Hydrologic, Water Quality Support, and Aquatic Support grouped functions. **(2) Habitat Supergroup** - includes Aquatic Habitat and Transition Habitat grouped functions.

2. Functional WSS Rule Definitions:

Habitat Rule: In consideration of the Habitat Supergroup, the subject wetland is a WSS if either of the following sub-rules are satisfied:

(HAB 1) Two 'High Scores' OR

(HAB 2) One 'High' and one 'Moderate' score

Support Rule: In consideration of the Support Supergroup, the subject wetland is a WSS if either of the following sub-rules are satisfied:

(SUP 1) Three 'High' scores OR

(SUP 2) Two 'High' and one 'Moderate' score

Habitat/Support Hybrid Rule: In consideration of both the Habitat and Support Supergroups, the subject wetland is a WSS if the following is satisfied:

(HYB 1) One 'High' Habitat score **AND** Two or three 'High' Support scores

3. Functional WSS Interpretation Results

Function-Benefit Product (FBP)	FBP SCORE	FBP SCORE CATEGORY
SUPPORT SUPERGROUP - HYDROLOGIC	72.32233966	High
SUPPORT SUPERGROUP - WATER QUALITY SUPPORT	38.81378551	Low
SUPPORT SUPERGROUP - AQUATIC SUPPORT	2.248966186	Low
HABITAT SUPERGROUP - AQUATIC HABITAT	1.885972252	Low
HABITAT SUPERGROUP - TRANSITION HABITAT	26.32723421	Low

3a. Functional WSS Determination: Automatic Method

Habitat Rule Satisfied?	NO
Support Rule Satisfied?	NO
Habitat/Support Hybrid Rule Satisfied?	NO
CONCLUSION:	**Site is not a WSS**

3b. Functional WSS Determination - Manual Method Using Dichotomous Key

1a. (HAB) - One or more 'High' scores for AH or TH.....**2**
2a. (HAB) - Two 'High' scores.....**WSS**
2b. (HAB) - One 'High' score.....**3**
3a. (HAB) - Any combination of 'High' and 'Moderate' scores..... **WSS**
3b. (HAB) - Any combination of 'High' and 'Low' scores.....**4**
4a. (SUP) One or more 'High' Scores for HYD, WQS, or AS.....**5**
5a. (SUP) Two or Three 'High' scores ..... **WSS**
5b. (SUP) One 'High' score **6**
6a. (SUP) Any combo of one 'High', two 'Mod' scores..... **WSS**
6b. (SUP) One 'High', plus any other combo of scores.....**not WSS**
4b. (SUP) Zero 'High' Scores for HYD, WQS, or AS.....**7**
7a. (SUP) Three 'Moderate' scores..... **WSS**
7b. (SUP) Any other combination of scores .....**not WSS**
1b. (HAB) - Zero 'High' Scores for AH or TH.....**8**
8a. (SUP) Three 'High' Scores.....**WSS**
8b. (SUP) Less than three 'High' scores.....**9**
9a. (SUP) Two 'High' and one 'Moderate' score.....**WSS**
9b. (SUP) - Any other combination of scores .....**not WSS**

Cover Page: Basic Description of Assessment	**WESP-AC version 2**
Site Name:	Uniacke Quarry Wetland 3
Investigator Name:	Brady Leights and Tiffany MacAulay
Date of Field Assessment:	July 26 2021
Nearest Town:	Mount Uniacke, NS
Latitude (decimal degrees):	44.916001
Longitude (decimal degrees):	-63.815870
Is a map based on a formal on-site wetland delineation available?	Yes
Approximate size of the Assessment Area (AA, in hectares):	0.1
AA as percent of entire wetland (approx.). Attach sketch map if AA is smaller than the entire contiguous wetland.	100
What percent (approx.) of the **wetland** were you able to visit?	100
What percent (approx.) of the **AA** were you able to visit?	100
Were you able to ask the site owner/manager about any of the questions?	
Indicate here if you intentionally surveyed for rare plants, calciphile plants, or rare animals:	
Have you attended a WESP-AC training session? If so, indicate approximate month & year.	September, 2021
How many wetlands have you assessed previously using WESP-AC? (approx.)	<50
Comments about the site or this WESP-AC assessment (attach extra page if desired):	

	A	B	C	D	E
1	Date: 21 July 2021		Site Identifier: WL-3	Investigator: Brady Leights and Tiffany MacAulay	
2	**Form OF (Office). Non-tidal Wetland Data Form. WESP-AC version 2 for Nova Scotia wetlands only.** DIRECTIONS: Conduct an assessment only after reading the accompanying Manual and the Explanations column of the data form. In the Data column, change the 0 (false) to a 1 (true) for the best choice, or for multiple choices where allowed and so indicated. Answering many of the questions below will require using these online map viewers: **Google Earth Pro**: https://www.google.com/earth/download/gep/agree.html **Provincial Landscape Viewer**: https://nsgi.novascotia.ca/plv/ For most wetlands, completing this office data form will require 1-2 hours. For a list of functions to which each question pertains, see bracketed abbreviations in the Definitions/Explanations column. For detailed descriptions of each WESP-AC model, see Appendix B of the accompanying Manual. Codes for functions and values are: WS= Water Storage, SFS= Stream Flow Support, WC= Water Cooling, SR= Sediment Retention & Stabilisation, PR= Phosphorus Retention, NR= Nitrate Removal, CS= Carbon Sequestration, OE= Organic Nutrient Export, INV= Invertebrate Habitat, FA= Anadromous Fish Habitat, FR= Resident Fish Habitat, AM= Amphibian & Reptile Habitat, WBF= Feeding Waterbird Habitat, WBN= Nesting Waterbird Habitat, SBM= Songbird, Raptor, & Mammal Habitat, POL= Pollinator Habitat, PH= Native Plant Habitat, PU= Public Use & Recognition, EC= Ecological Condition, Sen= Wetland Sensitivity, STR= Stressors.			
3	**#**	**Indicators**	**Condition Choices**	**Data**	**Definitions/Explanations**
4	OF1	Province	Mark the province in which the AA is located by changing the 0 in the column next to it to a "1". Mark only one.		This determines to which province's calibration wetlands the raw score of any wetland is normalised. In the function and benefits models, it also triggers the automatic exclusion of indicators for which no spatial data exists in a particular province.
5			New Brunswick	0	
6			Nova Scotia	1	
7			Prince Edward Island	0	
8			Newfoundland-Labrador	0	
9	OF2	Ponded Area Within 1 km.	The area of **surface water** ponded during most of the growing season that is both (1) in or adjacent to the AA and (2) within 1 km is:		**"Adjacent"** means not separated from the AA by a wide expanse (>50 m) of upland (including roads >50 m wide). Include ponded areas likely to be hidden by wetland vegetation. If surface water extends beyond 1 km, include only the part within 1 km. Do not include tidal areas. Measure the area from aerial imagery using Google Earth Pro (click on Ruler icon in toolbar, then Polygon in pop-up menu). [PH, SBM, WBN]
10			<0.01 hectare (about 10 m x 10 m).	0	
11			0.01 - 0.1 hectare.	0	
12			0.1 - 1 hectare.	0	
13			1 to 10 hectares.	1	
14			10 to 100 hectares.	0	
15			>100 hectares.	0	
16	OF3	Ponded Water & Wetland Within 1 km.	The area of **wetlands and surface water** ponded during most of the growing season that is both (1) in or adjacent to the AA and (2) within 1 km is:		See definition of adjacent in OF2. If the AA's wetland vegetation extends beyond 1 km, include only the part within 1 km. "Ponded" means not flowing in rivers or streams. [Sens, WBF]
17			<0.01 hectare (about 10 m x 10 m).	0	
18			0.01 - 0.1 hectare.	0	
19			0.1 - 1 hectare.	0	
20			1 to 10 hectares.	0	
21			10 to 100 hectares.	1	
22			>100 hectares.	0	
23	OF4	Size of Largest Nearby Vegetated Tract or Corridor	The largest vegetated patch or corridor that includes the AA's vegetation plus all **adjacent** upland vegetation that is not lawn, row crops, heavily grazed lands, conifer plantation is:		See definition of adjacent in OF2. Use Google Earth Pro's polygon ruler (as described above). Exclude conifer plantations only if it is obvious that trees were planted in rows. [AM, PH, SBM, Sens]
24			<0.01 hectare (about 10 m x 10 m).	0	
25			0.01 - 0.1 hectare.	0	
26			0.1 - 1 hectare.	0	
27			1 to 10 hectares.	0	
28			10 to 100 hectares.	0	
29			100 to 1000 hectares.	0	
30			>1000 hectares. [*This is nearly always the answer in relatively undeveloped landscapes.*]	1	
31	OF5	Distance to Large Vegetated Tract	The minimum distance from the **edge** of the AA to the edge of the closest ***vegetated land*** (but excluding row crops, lawn, conifer plantation) **larger than 375 hectares** (about 2 km on a side), is:		To measure distance, use Google Earth Pro (Ruler > Line tool). The 375-ha criterion is from the Fundy Model Forest Project. [AM, PH, POL, SBM, Sens]
32			<50 m, and not separated from the 375-ha vegetated area by any width of **paved** roads, stretches of open water, row crops, bare ground, lawn, or impervious surface. Or the AA itself contains >375 ha of vegetation. [This is often the answer in relatively undeveloped landscapes.]	1	
33			<50 m, but completely separated from the 375-ha vegetated area by those features, and AA does not contain >375 ha of vegetation.	0	
34			50-500 m, and **not** separated.	0	
35			50-500 m, but separated by those features.	0	
36			0.5 - 5 km, and **not** separated.	0	
37			0.5 - 5 km, but separated by those features.	0	
38			None of the above (the closest patches or corridors which are that large are >5 km away).	0	
39	OF6	Herbaceous Uniqueness	The AA's vegetation cover is >10% herbaceous* but uplands within 5 km have <10% herbaceous cover. If so, enter "3" and continue to OF7. If not, consider: The AA's vegetation cover is >10% herbaceous* but uplands within 1 km have <10% herbaceous cover. If so enter "2" and continue to OF7. If not, consider: The AA's vegetation cover is >10% herbaceous* but uplands within 100 m of the wetland edge have <10% herbaceous cover. If so, enter "1". [* NOTE: Exclude lawns, row crops, heavily grazed lands, forest, shrublands. Include moss as well as grasslike plants in this use of "herbaceous vegetation"]	1	For this question only, consider moss to be herbaceous vegetation. Determine the score by viewing aerial imagery in Google Earth after successively drawing or estimating the boundaries of the buffers of 5 km, 1 km, and 100 m radius focused on the center of the AA. Circles of specified radius can be drawn in Google Earth Pro by clicking on the Ruler icon, then Circle in the pop-up menu. [AMv, PHv, POLv, SBMv, WBFv, WBNv]
40	OF7	Woody Uniqueness	The AA's vegetation cover is >10% woody* but uplands within 5 km have <10% woody cover. If so, enter "3" and continue to OF8. If not, consider: The AA's vegetation is >10% woody* but uplands within 1 km have <10% woody cover. If so enter "2" and continue to OF8. If not, consider: The AA's vegetation is >10% woody* but uplands within 100 m of the wetland edge have <10% woody cover. If so, enter "1" [* NOTE: woody cover = trees & shrubs taller than 1 m.]	0	See above. Do not consider conifer plantations to be forest if it is obvious that trees were planted in rows. [AMv, PHv, POLv, SBMv]
41	OF8	Local Vegetated Cover Percentage	Draw a 5-km radius circle measured from the center of the AA. Ignoring all permanent water in the circle, the percent of the remaining area that is wooded or unmanaged herbaceous vegetation (NOT lawn, row crops, bare or heavily grazed land, clearcuts, or conifer plantations) is:		In Google Earth, draw the 5 km buffer and then estimate land cover percentages, or do GIS analysis of an appropriate land cover layer. [AM, PH, POL, SBM, Sens]
42			<5% of the land.	0	
43			5 to 20% of the land.	0	
44			20 to 60% of the land.	0	
45			60 to 90% of the land.	1	
46			>90% of the land. SKIP to OF10.	0	
47	OF9	Type of Land Cover Alteration	Within the **5-km** radius circle, and ignoring all permanent water, the land area that is bare or non-perennial cover is mostly:		[AM, SBM]
48			Impervious surface, e.g., paved road, parking lot, building, exposed rock.	0	
49			Bare pervious surface, e.g., lawn, recent (<5 yrs ago) clearcut, dirt or gravel road, cropland, landslide, conifer plantation.	1	
50	OF10	Distance by Road to Nearest Population Center	Measured **along** the maintained road nearest the AA, the distance to the nearest **population center** is:		"Population center" means a settled area with more than about 5 regularly- inhabited structures per square kilometer. In Google Earth Pro, click on the Ruler icon, then Path, and draw and measure the route. [FAv, FRv, NRv, PH, PU, SBM, WBFv]
51			<100 m.	0	
52			100 - 500 m.	0	
53			0.5- 1 km.	0	
54			1 - 5 km.	1	
55			>5 km.	0	

	A	B	C	D	E
56	OF11	Distance to Nearest Maintained Road	From the center of the AA, the distance to the nearest maintained public road (dirt or paved) is:		Determine this by viewing aerial imagery in Google Earth Pro and measuring with the Ruler>Line tool. [AM, FAv, FRv, NRv, PH, PU, SBM, STR, WBN]
57			<10 m.	0	
58			10 - 25 m.	0	
59			25 - 50 m.	0	
60			50 - 100 m.	0	
61			100 - 500 m.	0	
62			>500 m.	1	
63	OF12	Wildlife Access	Draw a circle of radius of 5 km from the center of the AA. If mammals and amphibians can move from the center of the AA to ALL other separate wetlands and ponds located within the circle without being forced to cross pavement (any width), lawns, bare ground, and/or marine waters, mark 1= yes can move to all, 0= no. Change to blank if there are no other wetlands within 5 km.	0	Draw the 5 km circle in Google Earth Pro using the Circle tool and search for roads and wetlands within it, being alert for roads hidden under forest canopy. [AM, SBM, STR]
64	OF13	Distance to Ponded Water	The distance from the AA center to the closest (but separate) ponded water body visible in GoogleEarth imagery is:		In Google Earth Pro, zoom in closely to examine the surrounding landscape for ponds, lakes, and wetlands that appear to be permanently flooded. [AM, PH, SBM, Sens, WBF, WBN]
65			<50 m, and not separated by any width of paved roads, stretches of open water, row crops, lawn, bare ground, or impervious surface.	0	
66			<50 m, but completely separated by those features.	0	
67			50-500 m, and not separated.	0	
68			50-500 m, but separated by those features.	0	
69			0.5 - 1 km, and not separated.	1	
70			0.5 - 1 km, but separated by those features.	0	
71			None of the above (the closest patches or corridors that large are >1 km away).	0	
72	OF14	Distance to Large Ponded Water	The distance from the AA center to the closest (but separate) non-tidal body of water that is ponded during most of the year and is larger than 8 hectares during most of a normal year is:		Determine this by viewing aerial imagery in Google Earth. [Sens, WBF, WBN]
73			<100 m.	0	
74			100 m - 1 km.	0	
75			1 -2 km.	0	
76			2-5 km.	1	
77			5-10 km.	0	
78			>10 km.	0	
79	OF15	Tidal Proximity	The distance from the AA edge to the closest tidal water body (regardless of its salinity) is:		In Google Earth, measure the distance to the ocean (including Bay of Fundy) or tidal river, whichever is closer. If you need to see how far upriver a river is tidal, see the KMZ file provided with this calculator for NS (NS Headtide). Points shown in those files are only an approximation, so local information if available may be preferable. [FA, WBF]
80			<100 m.	0	
81			100 m - 1 km.	0	
82			1 - 5 km.	0	
83			5-10 km.	0	
84			10-40 km.	1	
85			>40 km.	0	
86	OF16	Upland Edge Contact	Select one:		[NR, SBM, Sens]
87			The AA has no upland edge (or upland is <1% of perimeter). The AA is entirely surrounded by (& contiguous with) other wetlands or water.	0	
88			1-25% of the AA's perimeter abuts upland (including filled areas). The rest adjoins other wetlands or water that is mostly wider than the AA.	0	
89			25-50% of the AA's perimeter abuts upland. The rest adjoins other wetlands or water that is mostly wider than the AA.	0	
90			50-75% of the AA's perimeter abuts upland. The rest adjoins other wetlands or water that is mostly wider than the AA.	0	
91			More than 75% of the AA's perimeter abuts upland. Any remainder adjoins other wetlands or water that is mostly wider than the AA. This will be true for most assessments done with WESP-AC.	1	
92	OF17	Flood Damage from Non-tidal Waters	Within 5 km downstream or downslope of the AA (select first true choice):		Contact local authories to determine if such maps exist. Where available, LiDAR imagery can provide finer elevational resolution useful for flood modeling. [WSv]
93			Maps show Flood Zone or Flood Risk areas and there appears to be infrastructure vulnerable to river flooding not caused by tidal storm surges.	0	
94			Maps show Flood Zone or Flood Risk areas, but infrastructure is absent or is not vulnerable to floods from a non-tidal river. In some cases levees, upriver dams, or other measures may partly limit damage or risk from smaller events.	0	
95			Maps do not show Flood Zone or Flood Risk areas (or no such mapping has been done locally) and there appears to be infrastructure vulnerable to river flooding unrelated to tidal storm surges.	0	
96			Maps do not show Flood Zone or Flood Risk areas (or no such mapping has been done locally) and there is no infrastructure vulnerable to river flooding unrelated to tidal storm surges.	1	
97	OF18	Relative Elevation in Watershed	In Google Earth, enable the Terrain layer (lower left menu) and open the NS_Watersheds Secondary KMZ file that accompanies this calculator. Then determine the AA's approximate elevation (bottom right, NOT the "eye alt"). Then move cursor around to determine the watershed's maximum and minimum elevation. Divide the AA's elevation by the (max-min).	0.87	[FA, NR, Sens, SFSv, WCv, WSv]
98	OF19	Water Quality Sensitive Watershed or Area	The AA is in a Protected Water Supply area (Designated Water Supply Area, Natural Watershed Municipal Surface Water Supply Area, or Municipal Water Supply Area) according to the provided KMZ overlay ("NS Protected Water Supply Areas"). Enter 1= yes, 0= no.	0	If an ACCDC report is available for this AA, it also may contain such information. [NRv]
99	OF20	Degraded Water Upstream	Sampling indicates a problem with concentrations of metals, hydrocarbons, nutrients, or other substances (excluding bacteria, acidic water, high temperatures) being present at levels harmful to aquatic life or humans, and:		May use existing data, or sample those waters as part of this wetland assessment. "Harmful" should be evaluated with regard to current federal or provincial water quality standards. [AM, FA, FR, NRv, PRv, SRv, STR, WBF, WBN]
100			The condition is present within the AA.	0	
101			The condition is present in waters within 1 km that flow into the AA, but has not been documented in the AA itself.	0	
102			Sampling during both low water periods and times with high runoff (storms, snowmelt) indicates no problems in either the AA or inflowing waters.	0	
103			Data are insufficient (no or inadequate sampling within 1 km, or condition exists only at >1 km upstream). This is the situation for nearly all wetlands in this region.	1	
104	OF21	Degraded Water Downstream	The problem described above is downslope from the AA, and:		May use existing data, or monitor waters as part of this wetland assessment. [NRv, PRv, SRv]
105			The condition is present within 1 km downslope and connected to the AA by a channel.	0	
106			The condition is present within 5 km downslope and connected to the AA by a channel, or within 1 km but not connected to the AA by a channel.	0	
107			Sampling during both low water periods and times with high runoff (storms, snowmelt) indicates no problems in either the AA or inflowing waters.	0	
108			Data are insufficient (no or inadequate sampling within 1 km, or condition exists only at >1 km upstream). This is the situation for nearly all wetlands in this region.	1	
109	OF22	Wetland as a % of Its Contributing Area (Catchment)	From a topographic map and field observations, estimate the approximate boundaries of the catchment (CA) of the entire wetland of which the AA may be only a part. Then adjust those boundaries if necessary based on your field observations of the surrounding terrain, and/or by using procedures described in the Manual. Divide the area of the wetland (not just the AA) by the approximate area of its catchment excluding the area of the wetland itself. When doing the calculation, if ponded water is adjacent to the wetland, include that in the wetland's area. The result is:		Topographic maps may be viewed online at the National Atlas of Canada (Toporama): http://atlas.gc.ca/toporama/en/index.html [NR, PR, Sens, SR, WS]
110			<0.01, or catchment size unknown due to stormwater pipes that collect water from an indeterminate area.	1	
111			0.01 to 0.1.	0	
112			0.1 to 1.	0	
113			>1 (wetland is larger than its catchment (e.g., wetland with flat surrounding terrain and no inlet, or is entirely isolated by dikes, or is a raised bog).	0	
114	OF23	Unvegetated Surface in the Contributing Area	The proportion of the AA's contributing area (measured to no more than 1000 m upslope) that is comprised of buildings, roads, parking lots, other pavement, exposed bedrock, landslides, and other mostly-bare surface is about :		[FA, INV, NRv, PRv, SRv, STR, WCv, WSv]
115			<10%.	1	
116			10 to 25%.	0	
117			>25%.	0	

	A	B	C	D	E
118	OF24	Transport From Upslope	A relatively large proportion of the precipitation that falls farther upslope in the CA reaches this wetland quickly as runoff (surface water), as indicated by the following: (a) input channel is present, (b) input channels have been straightened, (c) upslope wetlands have been ditched extensively, (d) land cover is mostly non-forest, (e) CA slopes are steep, and/or (f) most CA soils are shallow (bedrock near surface) and/or have high runoff coefficients. This statement is:		[NRv, PRv, SRv, WSv]
119			Mostly true.	1	
120			Somewhat true.	0	
121			Mostly untrue.	0	
122	OF25	Aspect	The overland flow direction of most surface water (in streams, rivers, or runoff) that enters the AA is:		[AM, NR, SFS, WC, WS]
123			Northward (N, NE). north-facing contributing area.	0	
124			Southward (S, SW). south-facing contributing area.	0	
125			Other (E, SE, W, NW), or no detectable uphill slope or input channel (flat).	1	
126	OF26	Internal Flow Distance (Path Length)	The horizontal flow distance from the wetland's inlet to outlet is:		Identify inlets and outlets, if any, from topographic maps (use elevations to determine which are inlets and which are outlets) and augment by field inspection. With the Provincial Landscape Viewer, select Nova Scotia Topo as the Basemap. Also enable the layer Forestry>WAM Predicted Flow. Then measure the inlet-outlet distance. [NR, OE, PR, SR, WS]
127			<10 m.	1	
128			10 - 50 m.	0	
129			50 - 100 m.	0	
130			100 - 1000 m.	0	
131			1- 2 km.	0	
132			>2 km, or wetland lacks an inlet and outlet.	0	
133	OF27	Growing Degree Days	In Google Earth, open the KMZ file that accompanies this calculator, called NS_GrowingDegreeDays. Place your cursor over the AA and left-click. From the pop-up window, enter the GRIDCODE number in the next column.	2000	This layer was provided by Dr. Dan McKenney of the Canadian Forest Service [AM, CS, FR, INV, NR, OE, PH, PR, Sens, SR, WBF, WCv, WS]
134	OF28	Fish Access or Use	According to agency biologists and/or your own observations, the AA. [M*ark just the first choice that is true.]* :		Regarding the last choice, if uncertain if an AA is fishless, consider the possibility its waters have been stocked. [AM, FA, FR, INV, WBF, WBN]
135			Is known to support rearing and/or spawning by Atlantic salmon or other anadromous species or eels. Go to Provincial Landscape Viewer>Wildlife>Significant Habitat>Species at Risk. Contact local fishery biologists, review the ACCDC report, and visit these websites: http://www.salmonatlas.com/atlanticsalmon/canada-east/index.1.html http://atlanticsalmonfederation.org/rivers/introduction.html	0	
136			Has not been documented to support Atlantic salmon rearing and/or spawning, but is connected to nearby waters likely to contain Atlantic salmon or other anadromous species or eels and is probably accessed by those during some conditions.	0	
137			Is probably is not accessed by any anadromous fish species but is known or likely to have other fish at least seasonally.	0	
138			Is known or likely to be fishless (e.g., too small, dry, and/or not accessible even temporarily, and not stocked).	1	
139	OF29	Species of Conservation Concern	Within the past 10 years, in the AA (or in its adjoining waters or wetland), qualified observers have documented *[mark all applicable*]:		Request information from ACCDC and/or conduct your own survey at an appropriate season using an approved protocol. For birds, also check eBird.org. NOTE for NS: If your WESP-AC is being completed for a Wetland Alteration Application to NS-ECC, your ACCDC results and any taxon-specific survey results must be submitted along with your WESP-AC results, and application. [AMv, EC, PHv, POLv, SBMv, Sens, WBFv, WBNv]
140			Presence of one or more of the plant species listed in the Plants_Rare worksheet of the accompanying SuppInfo file, or the AA is within a mapped Atlantic Coastal Plain Flora Buffer (go to Provincial Landscape Viewer> Wildlife> Special Management Practice Zones).	0	
141			Presence of one or more of the amphibian or reptile species (AM) of conservation concern as listed in the Wildlife_Rare worksheet of the accompanying SuppInfo file.	0	
142			Presence of one or more of the waterbird species (WBF, WBN) of conservation concern as listed in the Wildlife_Rare worksheet of the accompanying SuppInfo file.	0	
143			Presence of one or more of the nesting songbird or raptor species (SBM) of conservation concern as listed in the Wildlife_Rare worksheet of the accompanying SuppInfo file, during their nesting season (May-July for most species).	0	
144			None of the above, or no data.	1	
145	OF30	Important Bird Area (IBA)	In Google Earth, open the KMZ file that accompanies this calculator, called IBAs_Canada. The AA is all or part of an officially designated IBA. Enter 1= yes, 0= no.	0	The source of this layer, which should be checked periodically for updates, is: http://www.ibacanada.com/mapviewer.jsp?lang=EN [SBMv, WBFv, WBNv]
146	OF31	Black Duck Nesting Area	In Google Earth, open the KMZ file that accompanies this calculator, called BlackDuck. Adjust its alignment and opacity. Determine the predicted density (pairs per 25 sq. km) of nesting American Black Duck in the AA's vicinity: <10 (enter 0), 10-20 (enter 1), 20-30 (enter 2), >30 (enter 3). If outside of region shown in map, change to blank.	0	This was provided by Dr. David Leske. [WBNv]
147	OF32	Wintering Deer or Moose Concentration Areas	If AA is on private land with no information, change to blank (not 0). Otherwise: With the Provincial Landscape Viewer, for Wintering Moose, go to Wildlife> Significant Habitat. For Mainland Moose Concentration Areas, go to Wildlife> Special Management Practice Zones. Enter: yes= 1, no= 0.	0	[SBM]
148	OF33	Other Conservation Designation	The AA is all or part of an area designated by government, First Nations, or the Nature Conservancy of Canada (NCC) for its exceptional ecological features or highly intact natural conditions. With Provincial Landscape Viewer, see Protected Areas. Enter: yes= 1, no= 0. If uncertain, consult NCC and agencies for more recent information.	0	See: https://novascotia.ca/parksandprotectedareas/plan/interactive-map/ [PU]
149	OF34	Conservation Investment	The AA is part of or contiguous to a wetland on which public or private organizational funds were spent to preserve, create, restore, or enhance the wetland (excluding mitigation wetlands). Ask the property owner. Enter: yes= 1, no= 0. If no information, change to blank (not 0).	0	[PU]
150	OF35	Mitigation Investment	The AA is all or part of a mitigation site used explicitly to offset impacts elsewhere. Ask the property owner. Enter: yes= 1, no= 0. If no information, change to blank.	0	[PU]
151	OF36	Sustained Scientific Use	Plants, animals, or water in the AA have been monitored for >2 years, unrelated to any regulatory requirements, and data are available to the public. Or the AA is part of an area that has been designated by an agency or institution as a benchmark, reference, or status-trends monitoring area. Ask the property owner. Enter: yes= 1, no= 0. If no information, change to blank.	0	[PU]
152	OF37	Calcareous Region	The AA is NOT in a subregion that has been heavily exposed to acid precipitation. Enter "1" if true (green or yellow in map in Appendix A of the Manual). Enter "0" if false. If no information, change to blank.		[AM, FA, FR, INV, PH]

	A	B	C	D	E
1	Date: 21 July 2021		Site Identifier: WL-3	Investigator: Brady Leights and Tiffany MacAulay	
2	**Form F (Field). Non-tidal Wetland Data Form. WESP-AC version 2 for Nova Scotia.** DIRECTIONS: Walk for no less than 10 minutes from the wetland edge towards its core, in the part of the AA that is proposed for alteration. If no alteration is proposed, walk in a portion that appears to be most representative of the wetland overall. Walk only where it is safe and legal to do so. Conduct the assessment only after reading the accompanying Manual and the Explanations column of the data form. In the Data column, change the 0 (false) to a 1 (true) for the best choice, or for multiple choices where allowed and so indicated. Answer these questions primarily based on your onsite observations and interpretations. Do not write in shaded parts of this data form. Answering some questions accurately may require conferring with the landowner or other knowledgable persons, and/or reviewing aerial imagery. For most wetlands, completing this field data form will require 1-2 hours on a site. For a list of functions to which each question pertains, see the accompanying Interpretations form. For detailed descriptions of each WESP-AC model, see Appendix B of the accompanying Manual. Codes for functions and values are: WS= Water Storage & Delay, SFS= Stream Flow Support, WC= Water Cooling, SR= Sediment Retention & Stabilisation, PR= Phosphorus Retention, NR= Nitrate Removal, CS= Carbon Sequestration, OE= Organic Nutrient Export, INV= Invertebrate Habitat, FA= Anadromous Fish Habitat, FR= Resident Fish Habitat, AM= Amphibian & Reptile Habitat, WBF= Feeding Waterbird Habitat, WBN= Nesting Waterbird Habitat, SBM= Songbird, Raptor, & Mammal Habitat, POL= Pollinator Habitat, PH= Native Plant Habitat, PU= Public Use & Recognition, EC= Ecological Condition, Sen= Wetland Sensitivity, STR= Stressors.		
3	**#**	**Indicators**	**Condition Choices**	**Data**	**Definitions/Explanations**
4	F1	Wetland Type	Follow the key below and mark the ONE row that best describes MOST of the vegetated part of the AA:		Ericaceous shrubs are ones in the heather family (Ericaceae). Most have leathery evergreen leaves. They include rhododendron, azalea, swamp laurel, leatherleaf, Labrador tea, and others. Most require acidic soil. Although not in the family Ericaceae, sweetgale (*Myrica gale*) should be counted also. [AM, CS, FA, FR, INV, NR, OE, PH, Sens, SFS, WBF, WBN]
5			A. Moss and/or lichen cover more than 25% of the ground. Often dominated by ericaceous shrubs (e.g., Labrador tea) or other acid-tolerant plants (e.g., bog cranberry, pitcher plant, sundew, orchids). Substrate is mostly undecomposed peat. Choose between A1 and A2 and mark the choice with a 1 in their adjoining column. Otherwise go to B below.		
6			A1. Surface water is usually absent or, if present, pH is typically <4.5 and conductivity is usually <100 µS/cm (<64 ppm TDS). Trees are absent or nearly so. Sedge cover usually sparse or absent but cottongrass and/or lichen cover may be extensive, as well as cloudberry, lingonberry, sheep laurel, and a sedge (*Carex rariflor* a). Wetland surface and surrounding landscape are seldom sloping and wetland often is domed (convex). Inlet and outlet channels are usually absent. If known, pH of peat is <4.0.	0	
7			A2. Not A1. Surface water, if present, has pH typically >4.5 and conductivity is usually >100 µS/cm (>64 ppm TDS). Sedge cover is usually extensive, and/or tree and tall shrub cover is extensive. Sometimes at toe of slope or edge of water body. An exit channel is usually present. Wetter than A1 and peat depth may be shallower (<2 m).	1	
8			B. Moss and/or lichen cover less than 25% of the ground. Soil is mineral or decomposed organic (muck). Choose between B1 and B2 and mark the choice with a 1 in their adjoining column:		
9			B1. Trees and shrubs taller than 1 m comprise more than 25% of the vegetated cover. Surface water is mostly absent or inundates the vegetation only seasonally (e.g., vernal pools or floodplain).	0	
10			B2. Not B1. Tree & tall shrubs comprise less than than 25% of the vegetated cover. Vegetation is mostly herbaceous, e.g., cattail, bulrush, burreed, pond lily, horsetail. Surface water may be extensive and fluctuates seasonally, being either persistent or drying up partly or entirely.	0	
11			*Reminder : For all questions, the AA should include all persistent waters in ponds smaller than 8 hectares (~283 m on a side) that are adjacent to the AA. The AA should also include part of the water area of adjacent ponded water larger than 8 ha and adjacent rivers wider than 20 m. Specifically, the AA should include the open water part adjacent to wetland vegetation and equal in width to the average width of that vegetated zone. Throughout this data form, " adjacent " is used synonymously with abutting, adjoining, bordering, contiguous -- and means no upland (manmade or natural) completely separates the described features along their directly shared edge. Features joined only by a channel are not necessarily considered to be adjacent -- a large portion of their edges must match. The features do not have to be hydrologically connected in order to be considered adjacent.*		
12	F2	Wetland Types - Adjoining or Subordinate	If the AA is smaller than 1 ha, mark all other types that occupy more than 1% of the vegetated AA. If the AA is larger than 1 ha, mark all other types which are within or adjacent to the AA and occupy more than 1 ha, as visible from the AA or as interpreted from aerial imagery. Do not mark again the type marked in F1.		1 hectare is 10,000 sq. m or about 2.5 acres. It could have dimensions of 100 m by 100 m, 1000 m by 10 m, or similar. [AM, INV, SBM, WBF]
13			A1.	0	
14			A2.	0	
15			B1.	0	
16			B2.	0	
17	F3	Woody Height & Form Diversity	Following EACH row below, indicate with a number code the percentage of the living vegetation in the AA which is occupied by that feature (6 if >95%, 5 if 75-95%, 4 if 50-75%, 3 if 25-50%, 2 if 5-25%, 1 if <5%, 0 if none). If the vegetated part of the AA is largely herbaceous (non-woody) vegetation, these percentages should not sum to 100%.		Deciduous shrubs in this region usually include buttonbush, Labrador tea, bayberry (*Morella*), huckleberry, cranberry, cloudberry, sweetgale, alder, willow, birch, ash, dogwood, and a few others. If you assigned a code of 3 or higher to any of the first four choices and the ground cover beneath the trees/shrubs is <25% moss, then question F1 might be "B1". [CS, INV, NR, PH, POL, SBM, Sens]
18			coniferous trees (may include tamarack) taller than 3 m.	1	
19			deciduous trees taller than 3 m.	1	
20			coniferous or ericaceous shrubs or trees 1-3 m tall not directly below the canopy of trees.	3	
21			deciduous shrubs or trees 1-3 m tall not directly below the canopy of trees.	3	
22			coniferous or ericaceous shrubs <1 m tall not directly below the canopy of taller vegetation.	3	
23			deciduous shrubs or trees <1 m tall (e.g., deciduous seedlings) not directly below the canopy of taller vegetation.	2	
24			*Note : If none of top 4 rows in F3 was marked 2 or greater , SKIP to F9 (N fixers).*		
25	F4	Dominance of Most Abundant Shrub Species	Determine which two woody plant species comprise the greatest portion of the low (<3 m) woody cover . Then choose one:		[PH, POL, SBM, Sens]
26			those species together comprise > 50% of such cover.	1	
27			those species together do not comprise > 50% of such cover.	0	
28	F5	Woody Diameter Classes	Mark ALL the types that comprise >5% of the woody canopy cover in the AA or >5% of the wooded areas (if any) along its upland edge (perimeter). The edge should include only the trees whose canopies extend into the AA.		Estimate the diameters at chest height. If small-diameter trees are overtopped (shaded) by larger ones, visualise a "subcanopy" at the average height of the smaller-dbh trees, to serve as a basis for the minimum 5% canopy requirement in this question. The trees and shrubs need not be wetland species. [AM, CS, POL, SBM, Sens, WBN]
29			coniferous, 1-9 cm diameter and >1 m tall.	1	
30			broad-leaved deciduous 1-9 cm diameter and >1 m tall.	1	
31			coniferous, 10-19 cm diameter.	0	
32			broad-leaved deciduous 10-19 cm diameter.	0	
33			coniferous, 20-40 cm diameter.	0	
34			broad-leaved deciduous 20-40 cm diameter.	0	
35			coniferous, >40 cm diameter.	0	
36			broad-leaved deciduous >40 cm diameter.	0	
37	F6	Height Class Interspersion	Follow the key below and mark the ONE row that best describes MOST of the AA:		[AM, INV, NR, PH, SBM, Sens]
38			A. Neither the vegetation taller than 1 m nor the vegetation shorter than that comprise >70% of the vegetated part of the AA. They each comprise 30-70%. Choose between A1 and A2 and mark the choice with a 1 in the adjoining column. Otherwise go to B below.		
39			A1. The two height classes are mostly scattered and intermixed throughout the AA.	1	
40			A2. Not A1. The two height classes are mostly in separate zones or bands, or in proportionately large clumps.	0	
41			B. Either the vegetation shorter than 1 m comprises >70% of the vegetated part of the AA, or the vegetation taller than that does. One size class might even be totally absent. Choose between B1 and B2 and mark the choice with a 1 in the adjoining column:		
42			B1. The less prevalent height class is mostly scattered and intermixed within the prevalent one.	0	
43			B2. Not B1. The less prevalent height class is mostly located apart from the prevalent one, in separate zones or clumps, or is completely absent.	0	
44	F7	Large Snags (Dead Standing Trees)	The number of large snags (diameter >20 cm) in the AA plus adjacent upland area within 10 m of the wetland edge is:		Snags are dead standing trees that often (not always) lack bark and foliage. Include only ones that are at least 2 m tall. [POL, SBM, WBN]
45			None, or fewer than 8/ hectare which exceed this diameter.	1	
46			Several (>8/hectare) and a pond, lake, or slow-flowing water wider than 10 m is within 1 km.	0	

	A	B	C	D	E
47			Several (>8/hectare) but above not true.	0	
48	F8	Downed Wood	The number of downed wood pieces longer than 2 m and with diameter >10 cm, and not persistently submerged, is:		Exclude temporary "burn piles." [AM, INV, POL, SBM]
49			Few or none that meet these criteria.	0	
50			Several (>5 if AA is >5 hectares, less for smaller AAs) meet these criteria.	1	
51	F9	N Fixers	The percentage of the AA's vegetated cover that contains nitrogen-fixing plants (e.g., alder, sweetgale, clover, lupine, alfalfa, other legumes) is:		Do not include N-fixing algae or lichens. [FA, FR, INV, NRv, OE, PH, SBM, Sens]
52			<1% or none.	0	
53			1-25% of the vegetated cover, in the AA or along its water edge (whichever has more).	1	
54			25-50% of the vegetated cover, in the AA or along its water edge (whichever has more).	0	
55			50-75% of the vegetated cover, in the AA or along its water edge (whichever has more).	0	
56			>75% of the vegetated cover, in the AA or along its water edge (whichever has more).	0	
57	F10	Sphagnum Moss Extent	The cover of Sphagnum moss (or any moss that forms a dense cushion many centimeters thick), including the moss obscured by taller sedges and other plants rooted in it, is:		Exclude moss growing on trees and rocks. [CS, PH]
58			<5% of the vegetated part of the AA.	0	
59			5-25% of the vegetated part of the AA.	0	
60			25-50% of the vegetated part of the AA.	0	
61			50-95% of the vegetated part of the AA.	1	
62			>95% of the vegetated part of the AA.	0	
63	F11	% Bare Ground & Thatch	Consider the parts of the AA that lack surface water at the driest time of the growing season. Viewed from directly above the ground layer, the predominant condition in those areas at that time is:		Thatch is dead plant material (stems, leaves) resting on the ground surface. Bare ground that is present under a tree or shrub canopy should be counted. Boulders count as bare ground. Wetlands with mineral soils and that are heavily shaded or are dominated by annual plant species tend to have more extensive areas that are bare during the early growing season. [AM, EC, INV, NR, OE, POL, PR, SBM, Sens]
64			Little or no (<5%) *bare ground* is visible between erect stems or under canopy anywhere in the vegetated AA. Ground is extensively blanketed by dense thatch, moss, lichens, graminoids with great stem densities, or plants with ground-hugging foliage.	1	
65			Slightly bare ground (5-20% bare between plants) is visible in places, but those areas comprise less than 5% of the unflooded parts of the AA.	0	
66			Much bare ground (20-50% bare between plants) is visible in places, and those areas comprise more than 5% of the unflooded parts of the AA.	0	
67			Other conditions.	0	
68			Not applicable. Surface water (either open or obscured by emergent plants) covers all of the AA all the time.	0	
69	F12	Ground Irregularity	Imagine the AA without any living vegetation. Excluding the portion of the AA that is always under water, the number of hummocks, small pits, raised mounds, animal burrows, ruts, gullies, natural levees, microdepressions, and other areas of peat or mineral soil that are raised or depressed >10 cm compared to most of the area within a few meters surrounding them is:		The depressions may be of human or natural origin. [AM, EC, INV, NR, PH, POL, PR, SBM, SR, WS]
70			Few or none (minimal microtopography; <1% of the land has such features, or entire AA is always water-covered).	0	
71			Intermediate.	1	
72			Several (extensive micro-topography).	0	
73	F13	Upland Inclusions	Within the AA, inclusions of upland are:		[AM, NR, SBM]
74			Few or none.	1	
75			Intermediate (1 - 10% of vegetated part of the AA).	0	
76			Many (e.g., wetland-upland "mosaic", >10% of the vegetated AA).	0	
77	F14	Soil Texture	In parts of the AA that lack persistent water, the texture of soil in the uppermost layer is mostly: [*To determine this, use a trowel to check in at least 3 widely spaced locations, and use the soil texture key (in Appendix A of the Manual).]*		[CS, NR, OE, PH, PR, Sens, SFS, WS]
78			Loamy: soils that may contain a little fine grit and do not make a "ribbon" longer than 2 cm when moistened, rolled, squeezed, and extended between thumb and forefinger.	0	
79			Fines: includes silt, clay, silt, soils that make a ribbon longer than 2 cm when moistened, rolled, squeezed, and extended between thumb and forefinger.	0	
80			Deep Peat, to 40 cm depth or greater.	0	
81			Shallow Peat or organic <40 cm deep.	1	
82			Coarse: includes sand, loamy sand, gravel, cobble, soils that do not make a ribbon when moistened, rolled, squeezed, and extended between thumb and forefinger.	0	
83	F15	Shorebird Feeding Habitats	During any 2 consecutive weeks of the growing season, the extent of mudflats, bare unshaded saturated areas not covered by thatch, and unshaded waters shallower than 6 cm is: [Include also any area that is adjacent to the AA.]		This addresses needs of many but not all migratory sandpipers, plovers, and related species. [WBF]
84			None, or <100 sq. m.	1	
85			100-1000 sq. m.	0	
86			1000 – 10,000 sq. m.	0	
87			>10,000 sq. m.	0	
88	F16	Herbaceous % of Vegetated Wetland	In aerial ("ducks eye") view, the maximum annual cover of herbaceous vegetation (all non-woody plants except moss) is:		[AM, WBF, WBN]
89			<5% of the vegetated part of the AA or <0.01 hectare (whichever is less). Mark "1" here and SKIP to F20 (Invasive Plant Cover).	0	
90			5-25% of the vegetated part of the AA.	0	
91			25-50% of the vegetated part of the AA.	0	
92			50-95% of the vegetated part of the AA.	1	
93			>95% of the vegetated part of the AA.	0	
94	F17	Forb Cover	Within parts of the AA having herbaceous cover (excluding SAV), the areal cover of forbs reaches an annual maximum of:		Forbs are flowering plants. Do not include grasses, sedges, cattail, other graminoids, ferns, horsetails, or others that lack showy flowers. [POL]
95			<5% of the herbaceous part of the AA.	1	
96			5-25% of the herbaceous part of the AA.	0	
97			25-50% of the herbaceous part of the AA.	0	
98			50-95% of the herbaceous part of the AA.	0	
99			>95% of the herbaceous part of the AA.	0	
100	F18	Sedge Cover	Sedges (*Carex* spp.) and cottongrass (*Eriophorum* spp.) occupy:		[CS]
101			<5% of the vegetated area, or none.	0	
102			5-50% of the vegetated area.	1	
103			50-95% of the vegetated area.	0	
104			>95% of the vegetated area.	0	
105	F19	Dominance of Most Abundant Herbaceous Species	Determine which two herbaceous species comprise the greatest portion of the herbaceous cover (excluding mosses and floating-leaved aquatic plants). Then choose one of the following:		For this question, include ferns as well as graminoids and forbs. [EC, INV, PH, POL, Sens]
106			those species together comprise > 50% of the areal cover of herbaceous plants at any time during the year.	1	
107			those species together do not comprise > 50% of the areal cover of herbaceous plants at any time during the year.	0	
108	F20	Invasive Plant Cover	How extensive is the cover of invasive plant species in the AA? For species, see Plants_invasive worksheet in the accompanying SuppInfo file.		[EC, PH, POL, Sens]
109			invasive species appear to be absent in the AA, or are present only in trace amount (a few individuals).	1	
110			invasive species are present in more than trace amounts, but comprise <5% of herbaceous cover (or woody cover, if the invasives are woody).	0	
111			invasive species comprise 5-20% of the herb cover (or woody cover, if the invasives are woody).	0	
112			invasive species comprise 20-50% of the herb cover (or woody cover, if the invasives are woody).	0	
113			invasive species comprise >50% of the herb cover (or woody cover, if the invasives are woody).	0	

	A	B	C	D	E
114	F21	Invasive Cover Along Upland Edge	Along the wetland-upland boundary, the percent of the upland edge (within 3 m upslope from the wetland) that is occupied by invasive plant species is:		If a plant cannot be identified to species (e.g., winter conditions) but its genus contains an exotic species, assume the unidentified plant to also be exotic. If vegetation is so senesced that exotic species cannot be identified, answer "none". [PH, STR]
115			none of the upland edge (invasives apparently absent), or AA has no upland edge.	1	
116			some (but <5%) of the upland edge.	0	
117			5-50% of the upland edge.	0	
118			most (>50%) of the upland edge.	0	
119	F22	Fringe Wetland	During most of the year, open water within or adjacent to the vegetated part of the wetland is much wider than the maximum width of the vegetated zone within the wetland. Enter "1" if true, "0" if false.	0	[WBF, WBN, WCv]
120	F23	Lacustrine Wetland	The vegetated part of the AA is within or adjacent to a body of non-tidal standing open water whose size exceeds 8 hectares during most of a normal year.	0	[FR, PR, PU, WBF, WBN]
121	F24	% of AA Without Surface Water	The percentage of the AA that never contains surface water during an average year (that is, except perhaps for a few hours after snowmelt or rainstorms), but which is still a wetland, is:		1 hectare is 10,000 sq. m or about 2.5 acres. It could have dimensions of 100 m by 100 m, 1000 m by 10 m, or similar. [AM, FA, FR, INV, NR, PH, PR, SBM, Sens, SRv, WBF, WBN, WC]
122			<1% . In other words, all or nearly all of the AA is covered by water permanently or at least seasonally.	0	
123			1-25% of the AA, or <1% but >0.01 ha never contains surface water.	0	
124			25-50% of the AA never contains surface water.	0	
125			50-75% of the AA never contains surface water.	0	
126			75-99% of the AA never contains surface water, OR >99% and there is at least one persistently ponded water body larger than 1 ha in the AA.	0	
127			99-100%. AND there is no persistently ponded water body larger than 1 ha within the AA. Enter "1" and SKIP to F42 (Channel Connection).	1	
128	F25	% of AA with Persistent Surface Water	Identify the parts of the AA that still contain surface water (flowing or ponded, open or hidden beneath vegetation) even during the driest times of a normal year, i.e., when the AA's surface water is at its lowest annual level. At that time, the percentage of the AA that still contains surface water is:		If you are unable to determine the condition at the driest time of year, ask the land owner or neighbors about it if possible. Indicators of persistence may include fish, some dragonflies, beaver, and muskrat. [AM, CS, FA, FR, INV, NR, POL, PR, SBM, WBF, WBN]
129			None. The AA dries up completely (no water in channels either) or never has surface water during most years. SKIP to F27.	0	
130			1-20% of the AA.	0	
131			20-50% of the AA.	0	
132			50-95% of the AA.	0	
133			>95% of the AA. True for many fringe wetlands.	0	
134	F26	% of Summertime Water that Is Shaded	At mid-day during the warmest time of year, the area of surface water within the AA that is shaded by vegetation and other features that are within the AA at that time is:		[FA, WC]
135			<5% of the water is shaded, or no surface water is present then.	0	
136			5-25% of the water is shaded.	0	
137			25-50% of the water is shaded.	0	
138			50-75% of the water is shaded.	0	
139			>75% of the water is shaded.	0	
140	F27	% of AA that is Flooded Only Seasonally	The percentage of the AA's area that is between the annual high water and the annual low water (surface water) is:		Flood marks (algal mats, adventitious roots, debris lines, ice scour, etc.) are often evident when not fully inundated. Also, such areas often have a larger proportion of upland and annual (vs. perennial) plant species. In riverine systems, the extent of this zone can be estimated by multiplying by 2 the bankful height and visualising where that would intercept the land along the river. [CS, FA, INV, NR, OE, PH, SR, WBF, WBN, WS]
141			None, or <0.01 hectare and <1% of the AA. SKIP to F29.	0	
142			1-20% of the AA, or <1% but >0.01 ha.	0	
143			20-50% of the AA.	0	
144			50-95% of the AA.	0	
145			>95% of the AA.	0	
146	F28	Annual Water Fluctuation Range	The annual fluctuation in surface water level within most of the parts of the AA that contain surface water at least temporarily is:		Look for flood marks (see above). Because the annual range of water levels is difficult to estimate without multiple visits, consider asking the land owner or neighbors about it. [AM, CS, INV, NR, OE, PH, PR, SR, WBN, WS]
147			<10 cm change (stable or nearly so).	0	
148			10 cm - 50 cm change.	0	
149			0.5 - 1 m change.	0	
150			1-2 m change.	0	
151			>2 m change.	0	
152	Is the AA plus adjacent ponded water smaller than 0.01 hectare (about 10m x 10m, or 1m x 100 m)? If so, enter "1" in column D and SKIP TO F42 (Connection).			0	
153	F29	Predominant Depth Class	During most of the time when surface water is present during the growing season, its depth, averaged over the entire inundated part of the AA, is:		If a boat is unavailable, estimate this by considering wetland size and local topography. Or if timing and safety allow, depths may be measured by drilling through winter ice.This question is asking about the spatial median depth that occurs during most of that time, even if inundation is only seasonal or temporary. If inundation in most but not all of the wetland is brief, the answer will be based on the depth of the most persistently inundated part of the wetland. Include surface water in channels and ditches as well as ponded areas. [CS, FA, FR, INV, OE, PH, PR, Sens, SFS, SR, WBF, WBN, WC]
154			<10 cm deep (but >0).	0	
155			10 - 50 cm deep.	0	
156			0.5 - 1 m deep.	0	
157			1 - 2 m deep.	0	
158			>2 m deep. True for many fringe wetlands.	0	
159	F30	Depth Classes - Evenness of Proportions	When present, surface water in most of the AA usually consists of (select one):		Estimate these proportions by considering the gradient and microtopography of the site. [FR, INV, WBF, WBN]
160			One depth class that comprises >90% of the AA's inundated area (use the classes in the question above).	0	
161			One depth class that comprises 50-90% of the AA's inundated area.	0	
162			Neither of above. There are 3 or more depth classes and none occupy >50%.	0	
163	F31	% of Water That Is Ponded (not Flowing)	During most times when surface water is present, the percentage that is (1) ponded (stagnant, or flows so slowly that fine sediment is not held in suspension) AND (2) is likely to be deeper than 0.5 m in some places, is:		Nearly all wetlands with surface water have some ponded water. [AM, CS, INV, NR, OE, PR, Sens, SR, WBF, WBN, WC, WS]
164			<5% of the water, or it occupies <100 sq.m cumulatively. Nearly all the surface water is flowing. SKIP to F34.	0	
165			5-30% of the water.	0	
166			30-70% of the water.	0	
167			70-95% of the water.	0	
168			>95% of the water.	0	
169	F32	Ponded Open Water - Minimum Size	During most of the growing season, the largest patch of open water that is ponded and is in or bordering the AA is >0.01 hectare (about 10 m by 10 m) and mostly deeper than 0.5 m. If true enter "1" and continue, If false, enter "0" and SKIP to F41 (Floating Algae & Duckweed).	0	Open water is not obscured by vegetation in aerial ("duck's eye") view. It includes vegetation floating on the water surface or entirely submersed beneath it.
170	F33	% of Ponded Water that is Open	In ducks-eye aerial view, the percentage of the ponded water that is open (lacking emergent vegetation during most of the growing season, and unhidden by a forest or shrub canopy) is:		[AM, CS, FA, FR, INV, NR, OE, PR, SR, WBF, WBN, WC]
171			None, or <1% of the AA and largest pool occupies <0.01 hectares. Enter "1" and SKIP to F41 (Floating Algae & Duckweed).	0	
172			1-4% of the ponded water. Enter "1" and SKIP to F41 (Floating Algae & Duckweed).	0	
173			5-30% of the ponded water.	0	
174			30-70% of the ponded water.	0	
175			70-99% of the ponded water.	0	
176			100% of the ponded water.	0	
177	F34	Width of Vegetated Zone within Wetland	At the time during the growing season when the AA's water level is lowest, the average width of vegetated area in the AA that separates adjoining uplands from open water within the AA is:		"Vegetated area" does not include underwater or floating-leaved plants, i.e., aquatic bed. Width may include wooded riparian areas if they have wetland soil or plant indicators. [AM, CS, NR, OE, PH, PR, SBM, Sens, SR, WBN]
178			<1 m.	0	
179			1 - 9 m.	0	
180			10 - 29 m.	0	
181			30 - 49 m.	0	
182			50 - 100 m.	0	
183			> 100 m, or open water is absent at that time.	0	

	A	B	C	D	E
184	F35	Flat Shoreline Extent	During most of the part of the growing season when water is present, the percentage of the AA's **water edge** length that is **nearly flat** (a slope less than about 5% measured within 5 m landward of the water) is:		If several isolated pools are present in early summer, estimate the percent of their collective shorelines that has such a gentle slope. [SR, WBN]
185			<1% of the water edge.	0	
186			1-25% of the water edge.	0	
187			25-50% of the water edge.	0	
188			50-75% of the water edge.	0	
189			>75% of the water edge.	0	
190	F36	Robust Emergents	The percentage **of the emergent vegetation** cover in the AA that is cattail (*Typha* spp.), common reed (*Phragmites*), or tall (>1m) bulrush is:		**Emergent vegetation** is herbaceous plants whose stems are partly above and partly below the water surface during most of the time water is present. [WBN]
191			<1% of the emergent vegetation, or emergent vegetation is absent. SKIP to F38.	0	
192			1-25% of the emergent vegetation.	0	
193			25-75% of the emergent vegetation.	0	
194			>75%, of the emergent vegetation.	0	
195	F37	Interspersion of Emergents & Open Water	During most of the part of the growing season when water is present, the spatial pattern of **emergent** vegetation within the water is mostly:		[AM, FA, FR, INV, NR, OE, PH, PR, SBM, SR, WBF, WBN]
196			Scattered. More than 30% of such vegetation forms small islands or corridors surrounded by water.	0	
197			Intermediate.	0	
198			Clumped. More than 70% of such vegetation is in bands along the wetland perimeter or is clumped at one or a few sides of the surface water area.	0	
199	F38	Persistent Deepwater Area	If the deepest patch of surface water (flowing or ponded) in or directly adjacent to the AA is mostly deeper than 0.5 m for >2 weeks during the growing season, enter "1" and continue. If not, enter "0" and SKIP to F42.(Connection).	0	
200	F39	Non-vegetated Aquatic Cover	During most of the growing season and in waters deeper than 0.5 m, the cover for fish, aquatic invertebrates, and/or amphibians that is provided NOT by living vegetation, but by accumulations of **dead wood and undercut banks** is:		For this question, consider only the wood that is at or above the water surface. Estimates of underwater wood based only on observations from terrestrial viewpoints are unreliable so should not be attempted. [AM, FA, FR, INV]
201			Little or none.	0	
202			Intermediate.	0	
203			Extensive.	0	
204	F40	Isolated Island	The AA contains (or is part of) an island or beaver lodge within a lake, pond, or river, and is isolated from the shore **by water depths** >1 m on all sides during an average June. The island may be solid, or it may be a floating vegetation mat that is sufficiently large and dense to support a waterbird nest.	0	[WBN]
205	F41	Floating Algae & Duckweed	At some time of the year, mats of algae and/or duckweed are likely to cover >50% of the AA's otherwise-unshaded water surface, or blanket >50% of the underwater substrate. If true, enter "1" in next column. If untrue or uncertain, enter "0".	0	[EC, PR, WBF]
206	F42	Channel Connection & Outflow Duration	The most persistent surface water connection (outlet channel or pipe, ditch, or overbank water exchange) between the AA and a downslope stream network is: [Note: If the AA represents only part of a wetland, answer this according to whichever is the **least** permanent surface connection: the one between the AA and the rest of the wetland, or the surface connection between the wetland and the downslope stream network.]		Consider the connection regardless of whether the surface water is frozen. The "downslope stream network" could consist of ditches, rivers, ponds, or lakes which eventually connect to the ocean. If this cannot be determined while visiting the AA, consult topographic maps perhaps by viewing these online with Toporama (http://atlas.nrcan.gc.ca/toporama/en/index.html) [CS, FA, FR, NR, OE, PR, Sens, SFS, SR, WCv, WS]
207			Persistent (surface water flows out for >9 months/year).	0	
208			Seasonal (surface water flows out for 14 days to 9 months/year, not necessarily consecutive).	0	
209			Temporary (surface water flows out for <14 days, not necessarily consecutive).	0	
210			None -- but maps show a stream network downslope from the AA and within a distance that is less than the AA's length. SKIP to F47 (pH Measurement).	0	
211			No surface water flows out of the wetland except possibly during extreme events (<once per 10 years). Or, water flows only into a wetland, ditch, or lake that lacks an outlet. SKIP to F47 (pH Measurement).	1	
212	F43	Outflow Confinement	During major runoff events, in the places where **surface** water exits the AA or connected waters nearby, the water:		"Major runoff events" would include biennial high water caused by storms and/or rapid snowmelt. [CS, NR, OE, PR, Sens, SR, STR, WS]
213			Mostly passes through a pipe, culvert, narrowly breached dike, berm, beaver dam, or other partial obstruction (other than natural topography) that does not appear to drain the wetland artificially during most of the growing season.	0	
214			Leaves through natural exits (channels or diffuse outflow), not mainly through artificial or temporary features.	0	
215			Is exported more quickly than usual due to ditches or pipes within the AA or connected to its outlet, or within 10 m of the AA's edge, which drain the wetland artificially, or water is pumped out of the AA.	0	
216	F44	Tributary Channel	At least once annually, surface water from a tributary channel that is >100 m long moves into the AA. Or, surface water from a larger permanent water body adjacent to the AA spills into the AA. If it enters only via a pipe, that pipe must be fed by a mapped stream or lake further upslope. If no, SKIP to F47 (pH Measurement).	0	If inlet tributaries cannot be searched for due to inaccessibility of part of the AA, follow suggestions in F42 above. [NRv, PH, PRv, SRv]
217	F45	**Input** Water Temperature	Based on lack of shade, water source characteristics, or actual temperature measurements, the inflow is likely to be warmer than surface water in the AA during part of most years. Enter 1= yes, 0= no.	0	[WCv]
218	F46	Throughflow Resistance	During its travel through the AA at the time of peak annual flow, water arriving in channels: [select only the ONE encountered by **most** of the incoming water].		[FA, FR, INV, NR, OE, PR, SR, WS]
219			Does not bump into many plant stems as it travels through the AA. Nearly all the water continues to travel in unvegetated (often incised) channels that have minimal contact with wetland vegetation, or through a zone of open water such as an instream pond or lake.	0	
220			Bumps into **herbaceous** vegetation but mostly remains in fairly straight channels.	0	
221			Bumps into **herbaceous** vegetation and mostly spreads throughout, or is in widely meandering, multi-branched, or braided channels.	0	
222			Bumps into **tree trunks and/or shrub stems** but mostly remains in fairly straight channels.	0	
223			Bumps into tree trunks and/or shrub stems and follows a fairly **indirect** path from entrance to exit (meandering, multi-branched, or braided).	0	
224	F47	pH Measurement	The pH in most of the AA's surface water:		Preferably, measure this in larger areas of ponded surface water within the AA, or in streams that have passed through (not along) most of the AA. Unless surface water is completely absent, do not dig holes or make depressions in peat in order to provide water for this measurement. Avoid measuring near roads or in puddles formed only by recent rain. [AM, FA, FR, NR, WBF, PH, PR, Sens, WBF, WBN]
225			Was measured, and is: [*enter the reading in the column to the right.*]		
226			Was not measured but surface water is present and is darkly tea-coloured. Or if no surface water, then mosses and plants that indicate peatland (e.g., Labrador tea) are prevalent. Enter "1".	0	
227			Neither of above. Enter "1".	1	
228	F48	TDS and/or Conductivity	The TDS (total dissolved solids) or conductivity off the AA's surface water is: (select the first true row with information):		See above for measurement guidance. [FR, INV, NRv, PH, PRv, Sens]
229			TDS is: [*Enter the reading* ***in ppm or mg/L*** *in the column to the right, if measured, or answer next row.*]		
230			Conductivity is [*Enter the reading* ***in µS/cm*** *in the column to the right.*]		
231			Was not measured, but plants that indicate saline conditions cover much of the vegetated AA. Enter "1".	0	
232			Neither of above	1	
233	F49	Beaver Probability	Use of the AA by beaver during the past 5 years is (select most applicable ONE):		[FA, FR, PH, SBM, Sens, WBF, WBN]
234			**Evident** from direct observation or presence of gnawed limbs, dams, tracks, dens, lodges, or extensive stands of water-killed trees (snags).	0	
235			**Likely** based on known occurrence in the region and proximity to suitable habitat, which may include: (a) a persistent freshwater wetland, pond, or lake, or a perennial low or mid-gradient (<10%) channel, and (b) a corridor or multiple stands of hardwood trees and shrubs in vegetated areas near surface water.	0	
236			Unlikely because site characteristics above are deficient, and/or this is a settled area or other area where beaver are routinely removed.	1	
237	F50	Groundwater Strength of Evidence	Select first applicable choice:		Adhere to these criteria strictly -- do not use personal judgment based on fen conditions, pH, or other evidence. Consult topographic maps to detect breaks in slope described here. Rust deposits associated with groundwater seeps may be most noticeable as orange discoloration in ice formations along streams during early winter. [AM, CS, FA, FR, INV, NR, OE, PH, PRv, SFS, WC, WS]
238			Springs are known to be present within the AA, or if groundwater levels have been monitored, that has demonstrated that groundwater primarily discharges to the wetland for longer periods during the year than periods when the wetland recharges the groundwater.	0	

	A	B	C	D	E
239			Most of the AA has a slope of >5%, or is very close to the base of a natural slope longer than 100 and much steeper than the slope of the AA, AND the pH of surface water, if known, is >5.5.	0	
240			Neither of above is true, although some groundwater may discharge to or flow through the AA. Or groundwater influx is unknown.	1	
241	F51	Internal Gradient	The gradient along most of the flow path **within** the AA is:		This is not the same as the shoreline slope. It is the elevational difference between the AA's inlet and outlet, divided by the flow-distance between them and converted to percent. If available, use a clinometer to measure this. Free clinometer apps can be downloaded to smartphones. If the wetland is large (longer than ~1 km), this may be estimated using Google Earth to determine the minimum and maximum elevation within the AA, then dividing by length and multiplying by 100. [CS, NR, OE, PR, SR, WBF, WBN, WS]
242			<2% **or** the AA has no surface water outlet (not even seasonally).	1	
243			2-5%.	0	
244			6-10%.	0	
245			>10%.	0	
246	Note for the next three questions: If the AA lacks an upland edge, evaluate based on the AA's entire perimeter, and moving outward into whatever areas are adjacent. In many situations, these questions are best answered by measuring from aerial images.				
247	F52	Vegetated Buffer as % of Perimeter	Within a zone extending 30 m laterally from the AA's edge with upland and/or other wetlands, the percentage that contains **perennial vegetation cover** (except lawns, row crops, heavily grazed land, conifer plantations) is:		[AM, FA, FR, INV, NRv, PH, POL, PRv, SBM, Sens, SRv, STR, WBN]
248			<5%.	0	
249			5 to 30%.	0	
250			30 to 60%.	0	
251			60 to 90%.	0	
252			>90%, or all the area within 30 m of the AA edge is other wetlands. **SKIP to F55.**	1	
253	F53	Type of Cover in Buffer	Within 30 m upslope of where the wetland transitions to upland, the upland land cover that is NOT perennial vegetation is mostly (mark ONE):		[AM, FA, INV, NRv, PH, POL, SBM, STR, WBN]
254			Impervious surface, e.g., paved road, parking lot, building, exposed rock.	0	
255			Bare or nearly bare pervious surface or managed vegetation, e.g., lawn, row crops, unpaved road, dike, landslide.	0	
256	F54	Buffer Slope	The steepest and/or most disturbed part of the upland area that is within 30 m of the wetland and occupies >10% of that upland area has a percent slope of:		[NRv, PRv, Sens, SRv]
257			<1% (flat -- almost no noticeable slope) or all the area within 30 m of the AA edge is other wetlands.	0	
258			2-5%.	0	
259			5-30%.	0	
260			>30%.	0	
261	F55	Cliffs or Steep Banks	In the AA or within 100 m, there are elevated terrestrial features such as cliffs, talus slopes, stream banks, or excavated pits (but not riprap) that extend at least 2 m nearly vertically, are unvegetated, and potentially contain crevices or other substrate suitable for nesting or den areas. Enter 1 (yes) or 0 (no).	0	Do not include upturned trees as potential den sites. [POL, SBM]
262	F56	New or Expanded Wetland	**Human** actions within or adjacent to the AA have persistently expanded a naturally occurring wetland or created a wetland where there previously was none (e.g., by excavation, impoundment):		Determine this using historical aerial photography, old maps, soil maps, or permit files as available [CS, NR, OE, PH, Sens]
263			No.	0	
264			Yes, and created or expanded 20 - 100 years ago.	0	
265			Yes, and created or expanded 3-20 years ago.	0	
266			Yes, and created or expanded within last 3 years.	0	
267			Yes, but time of origin or expansion unknown.	1	
268			Unknown if new or expanded within 20 years or not.	0	
269	F57	Burn History	More than 1% of the AA's previously vegetated area:		Look for charred soil or stumps (in multiple widely-spaced locations) or ask landowner. [CS, PH, STR]
270			Burned within past 5 years.	0	
271			Burned 6-10 years ago.	0	
272			Burned 11-30 years ago.	0	
273			Burned >30 years ago, or no evidence of a burn and no data.	1	
274	F58	Visibility	The maximum percentage of the wetland that is visible from the best vantage point on public roads, public parking lots, public buildings, or public maintained trails that intersect, adjoin, or are within 100 m of the AA (select one) is:		[PU, STR, WBFv]
275			<25%.	1	
276			25-50%.	0	
277			>50%.	0	
278	F59	Non-consumptive Uses - Actual or Potential	Assuming access permission was granted, select **ALL** statements that are true of the AA as it currently exists:		[PU, STR]
279			For an average person, walking is physically possible in (not just near) >5% of the AA during most of the growing season, e.g., free of deep water and dense shrub thickets.	1	
280			Maintained roads, parking areas, or foot-trails are within 10 m of the AA, or the AA can be accessed part of the year by boats arriving via contiguous waters.	0	
281			Within or near the AA, there is an interpretive center, trails with interpretive signs or brochures, and/or regular guided interpretive tours.	0	
282	F60	Unvisited Core Area	The percentage of the AA almost never visited by humans during an average growing season probably comprises: *[Note: Only include the part actually walked or driven (not simply viewed from) with a vehicle or boat. Do not include visitors on trails outside of the AA unless more than half the wetland is visible from the trails and they are within 30 m of the wetland edge. In that case include only the area occupied by the trail.]*		[AM, FAv, FRv, PH, PU, SBM, STR, WBF, WBN]
283			<5% and no inhabited building is within 100 m of the AA.	0	
284			<5% and inhabited building is within 100 m of the AA.	0	
285			5-50% and no inhabited building is within 100 m of the AA.	0	
286			5-50% and inhabited building is within 100 m of the AA.	0	
287			50-95%, with or without inhabited building nearby.	0	
288			>95% of the AA with or without inhabited building nearby.	1	
289	F61	Frequently Visited Area	The part of the AA visited by humans almost daily for several weeks during an average growing season probably comprises: *[See note above.]*		[AM, PH, PU, SBM, STR, WBF, WBN]
290			<5%. If F60 was answered ">95%" (mostly never visited), **SKIP to F64.**	1	
291			5-50%.	0	
292			50-95%.	0	
293			>95% of the AA.	0	
294	F62	BMP - Soils	Boardwalks, paved trails, fences or other infrastructure and/or well-enforced regulations appear to effectively prevent visitors from walking on soil within nearly all of the AA when the soil is unfrozen. Enter "1" if true.	0	[PH, PU]
295	F63	BMP - Wildlife Protection	Fences, observation blinds, platforms, paved trails, exclusion periods, and/or well-enforced prohibitions on motorised boats, off-leash pets, and off road vehicles appear to effectively exclude or divert visitors and their pets from the AA at critical times in order to minimize disturbance of wildlife (except during hunting seasons). Enter "1" if true.	0	[AM, PU, WBF, WBN]
296	F64	Consumptive Uses (Provisioning Services)	Recent evidence was found within the AA of the following potentially-sustainable consumptive uses. Select ALL that apply.		[FAv, FRv, WBFv]
297			Low-impact commercial timber harvest (e.g., selective thinning).	1	
298			Commercial or traditional-use harvesting of native plants, their fruits, or mushrooms.	0	
299			Waterfowl hunting.	0	
300			Fishing.	0	
301			Trapping of furbearers.	0	
302			None of the above.	0	
303	F65	Domestic Wells	The closest wells or water bodies that currently provide drinking water are:		[NRv]
304			Within 0-100 m. of the AA.	0	

	A	B	C	D	E
305			100-500 m. away.	0	
306			>500 m. away, or no information.	1	
307	F66	Calcareous Fen	The AA is, or is part of, a calcareous fen. See the Plants_Calcar worksheet in the accompanying SuppInfo file for list of plant indicators (calciphiles). Enter 1 If more than two Strong or more than five Moderate calciphile species are present; otherwise enter 0, but if not able to identify those **and** no information, change to **blank**.	0	[PH, PR]
308					

Investigator: Brady Leights and Tiffany MacAulay	**Site Identifier: WL-3**	**Date: 26 July 2021**

Stressor (S) Data Form for Non-Tidal Wetlands. WESP-AC for Nova Scotia version 2.

		Data
S1	**Aberrant Timing of Water Inputs**	
	In the last column, place a check mark next to any item that is likely to have caused the timing of water inputs (but not necessarily their volume) to shift by hours, days, or weeks, becoming either more muted (smaller or less frequent peaks spread over longer times, more temporal homogeneity of flow or water levels) or more flashy (larger or more frequent spikes but over shorter times). [FA, FR, INV, PH, STR]	
	Stormwater from impervious surfaces that drains directly to the wetland.	
	Water subsidies from wastewater effluent, septic system leakage, snow storage areas, or irrigation.	
	Regular removal of surface or groundwater for irrigation or other consumptive use.	
	Flow regulation in tributaries or water level regulation in adjoining water body, or other control structure at water entry points that regulates inflow to the wetland.	
	A dam, dike, levee, weir, berm, or fill -- within or downgradient from the wetland -- that interferes with surface or subsurface flow in/out of the AA (e.g., road fill, wellpads, pipelines).	
	Excavation within the wetland, e.g., dugout, artificial pond, dead-end ditch.	
	Artificial drains or ditches in or near the wetland.	
	Accelerated downcutting or channelization of an adjacent or internal channel (incised below the historical water table level).	
	Logging within the wetland.	1
	Subsidence or compaction of the wetland's substrate as a result of machinery, livestock, fire, drainage, or off road vehicles.	
	Straightening, ditching, dredging, and/or lining of tributary channels.	
	If any items were checked above, then for each row of the table below, assign points. However, if you believe the checked items had no measurable effect on the timing of water conditions in any part of the AA, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.	

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Spatial extent of timing shift within the wetland:	>95% of wetland.	5-95% of wetland.	<5% of wetland.	3
When most of the timing shift began:	<3 yrs ago.	3-9 yrs ago.	10-100 yrs ago.	1
Score the following 2 rows only if the altered inputs began within past 10 years, and only for the part of the wetland that experiences those.				
Input timing now vs. previously:	Shift of weeks.	Shift of days.	Shift of hours or minutes.	2
Flashiness or muting:	Became very flashy or controlled.	Intermediate.	Became mildly flashy or controlled.	2
			Sum=	8
			Stressor subscore=	0.67

		Data
S2	**Accelerated Inputs of Contaminants and/or Salts**	
	In the last column, place a check mark next to any item -- occurring in either the wetland or its CA -- that is likely to have accelerated the inputs of contaminants or salts to the AA. [AM, FA, PH, POL, STR]	
	Stormwater or wastewater effluent (including failing septic systems), landfills, industrial facilities.	
	Metals & chemical wastes from mining, shooting ranges, snow storage areas, oil/ gas extraction, other sources (download many locations from National Pollutant Release Inventory and view KMZ overlay in Google Earth. https://www.ec.gc.ca/inrp-npri/default.asp?lang=En&n=B85A1846-1	
	Road salt.	
	Spraying of pesticides, as applied to lawns, croplands, roadsides, or other areas in the CA.	
	If any items were checked above, then for each row of the table below, assign points. However, if you believe the checked items did not cumulatively expose the AA to significantly higher levels of contaminants and/or salts, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.	

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Usual toxicity of most toxic contaminants:	Industrial effluent, mining waste, unmanaged landfill.	Cropland, managed landfill, pipeline or transmission rights-of-way.	Low density residential.	0
Frequency & duration of input:	Frequent and year-round.	Frequent but mostly seasonal.	Infrequent & during high runoff events mainly.	0
AA proximity to main sources (actual or potential):	0 - 15 m.	15-100 m. or in groundwater.	In more distant part of contributing area.	0
			Sum=	0
			Stressor subscore=	0.00

		Data
S3	**Accelerated Inputs of Nutrients**	
	In the last column, place a check mark next to any item -- occurring in either the wetland or its CA -- that is likely to have accelerated the inputs of nutrients to the wetland. [NRv, PRv, STR]	
	Stormwater or wastewater effluent (including failing septic systems), landfills.	
	Fertilizers applied to lawns, ag lands, or other areas in the CA.	
	Livestock, dogs.	
	Artificial drainage of upslope lands.	
	If any items were checked above, then for each row of the table below, assign points. However, if you believe the checked items did not cumulatively expose the AA to significantly more nutrients, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.	

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Type of loading:	High density of unmaintained septic, some types of industrial sources.	Moderate density septic, cropland, secondary wastewater treatment plant.	Livestock, pets, low density residential.	0
Frequency & duration of input:	Frequent and year-round.	Frequent but mostly seasonal.	Infrequent & during high runoff events mainly.	0
AA proximity to main sources (actual or potential):	0 - 15 m.	15-100 m. or in groundwater.	In more distant part of contributing area.	0
			Sum=	0
			Stressor subscore=	0.00

		Data
S4	**Excessive Sediment Loading *from Contributing Area***	
	In the last column, place a check mark next to any item present in the CA that is likely to have elevated the load of waterborne or windborne sediment reaching the wetland from its CA. [FA, FR, INV, PH, SRv, STR]	
	Erosion from plowed fields, fill, timber harvest, dirt roads, vegetation clearing, fires.	1
	Erosion from construction, in-channel machinery in the CA.	
	Erosion from off-road vehicles in the CA.	
	Erosion from livestock or foot traffic in the CA.	
	Stormwater or wastewater effluent.	
	Sediment from road sanding, gravel mining, other mining, oil/ gas extraction.	
	Accelerated channel downcutting or headcutting of tributaries due to altered land use.	
	Other human-related disturbances within the CA.	
	If any items were checked above, then for each row of the table below, assign points (3, 2, or 1 as shown in header) in the last column. However, if you believe the checked items did not cumulatively add significantly more sediment or suspended solids to the AA, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.	

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Erosion in CA:	Extensive evidence, high intensity.*	Potentially (based on high-intensity* land use) or scattered evidence.	Potentially (based on low-intensity* land use) with little or no direct evidence.	2
Recentness of significant soil disturbance in the CA:	Current & ongoing.	1-12 months ago.	>1 yr ago.	1

	Duration of sediment inputs to the wetland:	Frequent and year-round.	Frequent but mostly seasonal.	Infrequent & during high runoff events mainly.	1
	AA proximity to actual or potential sources:	0 - 15 m.	15-100 m.	In more distant part of contributing area.	3
	* high-intensity= extensive off-road vehicle use, plowing, grading, excavation, erosion with or without veg removal; low-intensity= veg removal only with little or no apparent erosion or disturbance of soil or sediment.			Sum=	7
				Stressor subscore=	0.58
S5	**Soil or Sediment Alteration *Within the Assessment Area***				
	In the last column, place a check mark next to any item present in the wetland that is likely to have compacted, eroded, or otherwise altered the wetland's soil. Consider only items occurring within past 100 years or since wetland was created or restored (whichever is less). [CS, INV, NR, PH, SR, STR]				
	Compaction from machinery, off-road vehicles, livestock, or mountain bikes, especially during wetter periods.				
	Leveling or other grading not to the natural contour.				
	Tillage, plowing (but excluding disking for enhancement of native plants).				
	Fill or riprap, excluding small amounts of upland soils containing organic amendments (compost, etc.) or small amounts of topsoil imported from another wetland.				
	Excavation.				
	Ditch cleaning or dredging in or adjacent to the wetland.				
	Boat traffic in or adjacent to the wetland and sufficient to cause shore erosion or stir bottom sediments.				
	Artificial water level or flow manipulations sufficient to cause erosion or stir bottom sediments.				
	If any items were checked above, then for each row of the table below, assign points. However, if you believe the checked items did not measurably alter the soil structure and/or topography, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.				
		Severe (3 points)	Medium (2 points)	Mild (1 point)	
	Spatial extent of altered soil:	>95% of wetland or >95% of its upland edge (if any).	5-95% of wetland or 5-95% of its upland edge (if any).	<5% of wetland and <5% of its upland edge (if any).	0
	Recentness of significant soil alteration in wetland:	Current & ongoing.	1-12 months ago.	>1 yr ago.	0
	Duration:	Long-lasting, minimal veg recovery.	Long-lasting but mostly revegetated.	Short-term, revegetated, not intense.	0
	Timing of soil alteration:	Frequent and year-round.	Frequent but mostly seasonal.	Mainly during one-time or scattered events.	0
				Sum=	0
				Stressor subscore=	0.00

Assessment Area (AA) Results:

Wetland ID: Uniacke Quarry Wetland 3

Date: 26 July 2021

Observer: Brady Leights and Tiffany MacAulay

Latitude & Longitude (decimal degrees): 44.916001, -63.815870

Scores will appear below after data are entered in worksheets OF, F, and S. See Manual for definitions and descriptions of how scores were computed.

Wetland Functions or Other Attributes:	Function Score (Normalised)	Function Rating	Benefits Score (Normalised)	Benefits Rating	Function Score (raw)	Benefits Score (raw)
Water Storage & Delay (WS)	8.52	Higher	10.00	Higher	8.30	4.68
Stream Flow Support (SFS)	0.00	Lower	0.00	Lower	0.00	0.00
Water Cooling (WC)	0.00	Lower	0.00	Lower	0.00	0.00
Sediment Retention & Stabilisation (SR)	5.02	Moderate	3.52	Higher	6.11	1.72
Phosphorus Retention (PR)	0.00	Lower	2.57	Moderate	3.54	2.00
Nitrate Removal & Retention (NR)	10.00	Higher	6.67	Moderate	10.00	6.67
Carbon Sequestration (CS)	6.72	Higher			8.38	
Organic Nutrient Export (OE)	4.93	Moderate			3.22	
Anadromous Fish Habitat (FA)	0.00	Lower	0.00	Lower	0.00	0.00
Resident Fish Habitat (FR)	0.00	Lower	0.00	Lower	0.00	0.00
Aquatic Invertebrate Habitat (INV)	4.54	Moderate	1.01	Lower	5.34	1.79
Amphibian & Turtle Habitat (AM)	2.92	Lower	2.35	Lower	4.65	3.69
Waterbird Feeding Habitat (WBF)	0.00	Lower	0.00	Lower	0.00	0.00
Waterbird Nesting Habitat (WBN)	0.00	Lower	0.00	Lower	0.00	0.00
Songbird, Raptor, & Mammal Habitat (SBM)	6.99	Moderate	5.00	Moderate	6.08	5.00
Pollinator Habitat (POL)	7.30	Moderate	3.33	Moderate	6.05	3.33
Native Plant Habitat (PH)	4.60	Moderate	5.15	Lower	5.74	5.15
Public Use & Recognition (PU)			1.82	Moderate		1.54
Wetland Sensitivity (Sens)			6.66	Moderate		4.07
Wetland Ecological Condition (EC)			4.78	Moderate		7.50
Wetland Stressors (STR) (higher score means more stress)			9.95	Higher		4.96
Summary Ratings for Grouped Functions:						
HYDROLOGIC Group (WS)	8.52	Higher	10.00	Higher	8.30	4.68
WATER QUALITY SUPPORT Group (max+avg/2 of SR, PR, NR, CS)	7.72	Higher	5.46	Moderate	8.50	5.06
AQUATIC SUPPORT Group (max+avg/2 of SFS, INV, OE, WC)	3.65	Moderate	0.68	Lower	3.74	1.19
AQUATIC HABITAT Group (max+avg/2 of FA, FR, AM, WBF, WBN)	1.75	Lower	1.41	Lower	2.79	2.22
TRANSITION HABITAT Group (max+avg/2 of SBM, PH, POL)	6.80	Higher	4.83	Lower	6.02	4.83
WETLAND CONDITION (EC)			4.78	Moderate		7.50
WETLAND RISK (average of Sensitivity & Stressors)			8.30	Higher		4.51

NOTE: A score of 0 does not mean the function or benefit is absent from the wetland. It means only that this wetland has a capacity that is equal or less than the lowest-scoring one, for that function or benefit, from among all the NS calibration wetlands that were assessed previously.

NOVA SCOTIA - Functional WSS Interpretation Tool

1. General Description of Tool:

This interpretive tool automatically determines whether the subject wetland will be regulated as a Wetland of Special Significance (WSS). This determination is made based on the WESP-AC functional results, per the Nova Scotia *Wetland Conservation Policy* .

A 'Function-Benefit Product' (FBP) is calculated based upon the Grouped Functions, and has a theoretical maximum of 100. Threshold values for the FBP are applied, in order to categorize the FBP scores into 'Low', 'Moderate' or 'High' scores. Thresholds are determined based upon the statistical distribution of WESP-AC scores compiled from various sites across the Province (N=442). These categories are subsequently used to apply various 'Functional WSS Rules', as described below.

For the purpose of defining and applying the Functional WSS rules, two supergroups are defined based on grouped functions, as follows: **(1) Support Supergroup** - includes Hydrologic, Water Quality Support, and Aquatic Support grouped functions. **(2) Habitat Supergroup** - includes Aquatic Habitat and Transition Habitat grouped functions.

2. Functional WSS Rule Definitions:

Habitat Rule: In consideration of the Habitat Supergroup, the subject wetland is a WSS if either of the following sub-rules are satisfied:

(HAB 1) Two 'High Scores' OR

(HAB 2) One 'High' and one 'Moderate' score

Support Rule: In consideration of the Support Supergroup, the subject wetland is a WSS if either of the following sub-rules are satisfied:

(SUP 1) Three 'High' scores OR

(SUP 2) Two 'High' and one 'Moderate' score

Habitat/Support Hybrid Rule: In consideration of both the Habitat and Support Supergroups, the subject wetland is a WSS if the following is satisfied:

(HYB 1) One 'High' Habitat score **AND** Two or three 'High' Support scores

3. Functional WSS Interpretation Results

Function-Benefit Product (FBP)	FBP SCORE	FBP SCORE CATEGORY
SUPPORT SUPERGROUP - HYDROLOGIC	85.1674022	High
SUPPORT SUPERGROUP - WATER QUALITY SUPPORT	42.12611599	Low
SUPPORT SUPERGROUP - AQUATIC SUPPORT	2.463254229	Low
HABITAT SUPERGROUP - AQUATIC HABITAT	2.462579651	Low
HABITAT SUPERGROUP - TRANSITION HABITAT	32.79539615	Low

3a. Functional WSS Determination: Automatic Method

Habitat Rule Satisfied?	NO
Support Rule Satisfied?	NO
Habitat/Support Hybrid Rule Satisfied?	NO
CONCLUSION:	**Site is not a WSS**

3b. Functional WSS Determination - Manual Method Using Dichotomous Key

1a. (HAB) - One or more 'High' scores for AH or TH.....**2**
2a. (HAB) - Two 'High' scores.....**WSS**
2b. (HAB) - One 'High' score.....**3**
3a. (HAB) - Any combination of 'High' and 'Moderate' scores..... **WSS**
3b. (HAB) - Any combination of 'High' and 'Low' scores.....**4**
4a. (SUP) One or more 'High' Scores for HYD, WQS, or AS.....**5**
5a. (SUP) Two or Three 'High' scores ..... **WSS**
5b. (SUP) One 'High' score **6**
6a. (SUP) Any combo of one 'High', two 'Mod' scores..... **WSS**
6b. (SUP) One 'High', plus any other combo of scores.....**not WSS**
4b. (SUP) Zero 'High' Scores for HYD, WQS, or AS.....**7**
7a. (SUP) Three 'Moderate' scores..... **WSS**
7b. (SUP) Any other combination of scores .....**not WSS**
1b. (HAB) - Zero 'High' Scores for AH or TH.....**8**
8a. (SUP) Three 'High' Scores.....**WSS**
8b. (SUP) Less than three 'High' scores.....**9**
9a. (SUP) Two 'High' and one 'Moderate' score.....**WSS**
9b. (SUP) - Any other combination of scores .....**not WSS**

Cover Page: Basic Description of Assessment	**WESP-AC version 2**
Site Name:	Uniacke Quarry Wetland 4
Investigator Name:	Brady Leights and Tiffany MacAulay
Date of Field Assessment:	17 August 2021
Nearest Town:	Mount Uniacke, NS
Latitude (decimal degrees):	44.917231
Longitude (decimal degrees):	-63.816243
Is a map based on a formal on-site wetland delineation available?	Yes
Approximate size of the Assessment Area (AA, in hectares):	0.14
AA as percent of entire wetland (approx.). Attach sketch map if AA is smaller than the entire contiguous wetland.	100
What percent (approx.) of the **wetland** were you able to visit?	100
What percent (approx.) of the **AA** were you able to visit?	100
Were you able to ask the site owner/manager about any of the questions?	
Indicate here if you intentionally surveyed for rare plants, calciphile plants, or rare animals:	
Have you attended a WESP-AC training session? If so, indicate approximate month & year.	September, 2021
How many wetlands have you assessed previously using WESP-AC? (approx.)	
Comments about the site or this WESP-AC assessment (attach extra page if desired):	

	A	B	C	D	E
1	Date: 17 August 2021		Site Identifier: WL-4	Investigator: Brady Leights and Tiffany MacAulay	
2	**Form OF (Office). Non-tidal Wetland Data Form. WESP-AC version 2 for Nova Scotia wetlands only.** DIRECTIONS: Conduct an assessment only after reading the accompanying Manual and the Explanations column of the data form. In the Data column, change the 0 (false) to a 1 (true) for the best choice, or for multiple choices where allowed and so indicated. Answering many of the questions below will require using these online map viewers: **Google Earth Pro**: https://www.google.com/earth/download/gep/agree.html **Provincial Landscape Viewer**: https://nsgi.novascotia.ca/plv/ For most wetlands, completing this office data form will require 1-2 hours. For a list of functions to which each question pertains, see bracketed abbreviations in the Definitions/Explanations column. For detailed descriptions of each WESP-AC model, see Appendix B of the accompanying Manual. Codes for functions and values are: WS= Water Storage, SFS= Stream Flow Support, WC= Water Cooling, SR= Sediment Retention & Stabilisation, PR= Phosphorus Retention, NR= Nitrate Removal, CS= Carbon Sequestration, OE= Organic Nutrient Export, INV= Invertebrate Habitat, FA= Anadromous Fish Habitat, FR= Resident Fish Habitat, AM= Amphibian & Reptile Habitat, WBF= Feeding Waterbird Habitat, WBN= Nesting Waterbird Habitat, SBM= Songbird, Raptor, & Mammal Habitat, POL= Pollinator Habitat, PH= Native Plant Habitat, PU= Public Use & Recognition, EC= Ecological Condition, Sen= Wetland Sensitivity, STR= Stressors.			
3	**#**	**Indicators**	**Condition Choices**	**Data**	**Definitions/Explanations**
4	OF1	Province	Mark the province in which the AA is located by changing the 0 in the column next to it to a "1". Mark only one.		This determines to which province's calibration wetlands the raw score of any wetland is normalised. In the function and benefits models, it also triggers the automatic exclusion of indicators for which no spatial data exists in a particular province.
5			New Brunswick	0	
6			Nova Scotia	1	
7			Prince Edward Island	0	
8			Newfoundland-Labrador	0	
9	OF2	Ponded Area Within 1 km.	The area of **surface water** ponded during most of the growing season that is both (1) in or adjacent to the AA and (2) within 1 km is:		**"Adjacent"** means not separated from the AA by a wide expanse (>50 m) of upland (including roads >50 m wide). Include ponded areas likely to be hidden by wetland vegetation. If surface water extends beyond 1 km, include only the part within 1 km. Do not include tidal areas. Measure the area from aerial imagery using Google Earth Pro (click on Ruler icon in toolbar, then Polygon in pop-up menu). [PH, SBM, WBN]
10			<0.01 hectare (about 10 m x 10 m).	0	
11			0.01 - 0.1 hectare.	0	
12			0.1 - 1 hectare.	0	
13			1 to 10 hectares.	1	
14			10 to 100 hectares.	0	
15			>100 hectares.	0	
16	OF3	Ponded Water & Wetland Within 1 km.	The area of **wetlands and surface water** ponded during most of the growing season that is both (1) in or adjacent to the AA and (2) within 1 km is:		See definition of adjacent in OF2. If the AA's wetland vegetation extends beyond 1 km, include only the part within 1 km. "Ponded" means not flowing in rivers or streams. [Sens, WBF]
17			<0.01 hectare (about 10 m x 10 m).	0	
18			0.01 - 0.1 hectare.	0	
19			0.1 - 1 hectare.	0	
20			1 to 10 hectares.	0	
21			10 to 100 hectares.	1	
22			>100 hectares.	0	
23	OF4	Size of Largest Nearby Vegetated Tract or Corridor	The largest vegetated patch or corridor that includes the AA's vegetation plus all **adjacent** upland vegetation that is not lawn, row crops, heavily grazed lands, conifer plantation is:		See definition of adjacent in OF2. Use Google Earth Pro's polygon ruler (as described above). Exclude conifer plantations only if it is obvious that trees were planted in rows. [AM, PH, SBM, Sens]
24			<0.01 hectare (about 10 m x 10 m).	0	
25			0.01 - 0.1 hectare.	0	
26			0.1 - 1 hectare.	0	
27			1 to 10 hectares.	0	
28			10 to 100 hectares.	0	
29			100 to 1000 hectares.	0	
30			>1000 hectares. [*This is nearly always the answer in relatively undeveloped landscapes.*]	1	
31	OF5	Distance to Large Vegetated Tract	The minimum distance from the **edge** of the AA to the edge of the closest ***vegetated land*** (but excluding row crops, lawn, conifer plantation) **larger than 375 hectares** (about 2 km on a side), is:		To measure distance, use Google Earth Pro (Ruler > Line tool). The 375-ha criterion is from the Fundy Model Forest Project. [AM, PH, POL, SBM, Sens]
32			<50 m, and not separated from the 375-ha vegetated area by any width of **paved** roads, stretches of open water, row crops, bare ground, lawn, or impervious surface. Or the AA itself contains >375 ha of vegetation. [This is often the answer in relatively undeveloped landscapes.]	1	
33			<50 m, but completely separated from the 375-ha vegetated area by those features, and AA does not contain >375 ha of vegetation.	0	
34			50-500 m, and **not** separated.	0	
35			50-500 m, but separated by those features.	0	
36			0.5 - 5 km, and **not** separated.	0	
37			0.5 - 5 km, but separated by those features.	0	
38			None of the above (the closest patches or corridors which are that large are >5 km away).	0	
39	OF6	Herbaceous Uniqueness	The AA's vegetation cover is >10% herbaceous* but uplands within 5 km have <10% herbaceous cover. If so, enter "3" and continue to OF7. If not, consider: The AA's vegetation cover is >10% herbaceous* but uplands within 1 km have <10% herbaceous cover. If so enter "2" and continue to OF7. If not, consider: The AA's vegetation cover is >10% herbaceous* but uplands within 100 m of the wetland edge have <10% herbaceous cover. If so, enter "1". [* NOTE: Exclude lawns, row crops, heavily grazed lands, forest, shrublands. Include moss as well as grasslike plants in this use of "herbaceous vegetation"]	1	For this question only, consider moss to be herbaceous vegetation. Determine the score by viewing aerial imagery in Google Earth after successively drawing or estimating the boundaries of the buffers of 5 km, 1 km, and 100 m radius focused on the center of the AA. Circles of specified radius can be drawn in Google Earth Pro by clicking on the Ruler icon, then Circle in the pop-up menu. [AMv, PHv, POLv, SBMv, WBFv, WBNv]
40	OF7	Woody Uniqueness	The AA's vegetation cover is >10% woody* but uplands within 5 km have <10% woody cover. If so, enter "3" and continue to OF8. If not, consider: The AA's vegetation is >10% woody* but uplands within 1 km have <10% woody cover. If so enter "2" and continue to OF8. If not, consider: The AA's vegetation is >10% woody* but uplands within 100 m of the wetland edge have <10% woody cover. If so, enter "1" [* NOTE: woody cover = trees & shrubs taller than 1 m.]	0	See above. Do not consider conifer plantations to be forest if it is obvious that trees were planted in rows. [AMv, PHv, POLv, SBMv]
41	OF8	Local Vegetated Cover Percentage	Draw a 5-km radius circle measured from the center of the AA. Ignoring all permanent water in the circle, the percent of the remaining area that is wooded or unmanaged herbaceous vegetation (NOT lawn, row crops, bare or heavily grazed land, clearcuts, or conifer plantations) is:		In Google Earth, draw the 5 km buffer and then estimate land cover percentages, or do GIS analysis of an appropriate land cover layer. [AM, PH, POL, SBM, Sens]
42			<5% of the land.	0	
43			5 to 20% of the land.	0	
44			20 to 60% of the land.	0	
45			60 to 90% of the land.	1	
46			>90% of the land. SKIP to OF10.	0	
47	OF9	Type of Land Cover Alteration	Within the **5-km** radius circle, and ignoring all permanent water, the land area that is bare or non-perennial cover is mostly:		[AM, SBM]
48			Impervious surface, e.g., paved road, parking lot, building, exposed rock.	0	
49			Bare pervious surface, e.g., lawn, recent (<5 yrs ago) clearcut, dirt or gravel road, cropland, landslide, conifer plantation.	1	
50	OF10	Distance by Road to Nearest Population Center	Measured **along** the maintained road nearest the AA, the distance to the nearest **population center** is:		"Population center" means a settled area with more than about 5 regularly- inhabited structures per square kilometer. In Google Earth Pro, click on the Ruler icon, then Path, and draw and measure the route. [FAv, FRv, NRv, PH, PU, SBM, WBFv]
51			<100 m.	0	
52			100 - 500 m.	0	
53			0.5- 1 km.	0	
54			1 - 5 km.	1	
55			>5 km.	0	

	A	B	C	D	E
56	OF11	Distance to Nearest Maintained Road	From the center of the AA, the distance to the nearest maintained public road (dirt or paved) is:		Determine this by viewing aerial imagery in Google Earth Pro and measuring with the Ruler>Line tool. [AM, FAv, FRv, NRv, PH, PU, SBM, STR, WBN]
57			<10 m.	0	
58			10 - 25 m.	0	
59			25 - 50 m.	0	
60			50 - 100 m.	0	
61			100 - 500 m.	0	
62			>500 m.	1	
63	OF12	Wildlife Access	Draw a circle of radius of 5 km from the center of the AA. If mammals and amphibians can move from the center of the AA to ALL other separate wetlands and ponds located within the circle without being forced to cross pavement (any width), lawns, bare ground, and/or marine waters, mark 1= yes can move to all, 0= no. Change to blank if there are no other wetlands within 5 km.	0	Draw the 5 km circle in Google Earth Pro using the Circle tool and search for roads and wetlands within it, being alert for roads hidden under forest canopy. [AM, SBM, STR]
64	OF13	Distance to Ponded Water	The distance from the AA center to the closest (but separate) ponded water body visible in GoogleEarth imagery is:		In Google Earth Pro, zoom in closely to examine the surrounding landscape for ponds, lakes, and wetlands that appear to be permanently flooded. [AM, PH, SBM, Sens, WBF, WBN]
65			<50 m, and not separated by any width of paved roads, stretches of open water, row crops, lawn, bare ground, or impervious surface.	0	
66			<50 m, but completely separated by those features.	0	
67			50-500 m, and not separated.	0	
68			50-500 m, but separated by those features.	0	
69			0.5 - 1 km, and not separated.	1	
70			0.5 - 1 km, but separated by those features.	0	
71			None of the above (the closest patches or corridors that large are >1 km away).	0	
72	OF14	Distance to Large Ponded Water	The distance from the AA center to the closest (but separate) non-tidal body of water that is ponded during most of the year and is larger than 8 hectares during most of a normal year is:		Determine this by viewing aerial imagery in Google Earth. [Sens, WBF, WBN]
73			<100 m.	0	
74			100 m - 1 km.	0	
75			1 -2 km.	0	
76			2-5 km.	1	
77			5-10 km.	0	
78			>10 km.	0	
79	OF15	Tidal Proximity	The distance from the AA edge to the closest tidal water body (regardless of its salinity) is:		In Google Earth, measure the distance to the ocean (including Bay of Fundy) or tidal river, whichever is closer. If you need to see how far upriver a river is tidal, see the KMZ file provided with this calculator for NS (NS Headtide). Points shown in those files are only an approximation, so local information if available may be preferable. [FA, WBF]
80			<100 m.	0	
81			100 m - 1 km.	0	
82			1 - 5 km.	0	
83			5-10 km.	0	
84			10-40 km.	1	
85			>40 km.	0	
86	OF16	Upland Edge Contact	Select one:		[NR, SBM, Sens]
87			The AA has no upland edge (or upland is <1% of perimeter). The AA is entirely surrounded by (& contiguous with) other wetlands or water.	0	
88			1-25% of the AA's perimeter abuts upland (including filled areas). The rest adjoins other wetlands or water that is mostly wider than the AA.	0	
89			25-50% of the AA's perimeter abuts upland. The rest adjoins other wetlands or water that is mostly wider than the AA.	0	
90			50-75% of the AA's perimeter abuts upland. The rest adjoins other wetlands or water that is mostly wider than the AA.	0	
91			More than 75% of the AA's perimeter abuts upland. Any remainder adjoins other wetlands or water that is mostly wider than the AA. This will be true for most assessments done with WESP-AC.	1	
92	OF17	Flood Damage from Non-tidal Waters	Within 5 km downstream or downslope of the AA (select first true choice):		Contact local authories to determine if such maps exist. Where available, LiDAR imagery can provide finer elevational resolution useful for flood modeling. [WSv]
93			Maps show Flood Zone or Flood Risk areas and there appears to be infrastructure vulnerable to river flooding not caused by tidal storm surges.	0	
94			Maps show Flood Zone or Flood Risk areas, but infrastructure is absent or is not vulnerable to floods from a non-tidal river. In some cases levees, upriver dams, or other measures may partly limit damage or risk from smaller events.	0	
95			Maps do not show Flood Zone or Flood Risk areas (or no such mapping has been done locally) and there appears to be infrastructure vulnerable to river flooding unrelated to tidal storm surges.	0	
96			Maps do not show Flood Zone or Flood Risk areas (or no such mapping has been done locally) and there is no infrastructure vulnerable to river flooding unrelated to tidal storm surges.	1	
97	OF18	Relative Elevation in Watershed	In Google Earth, enable the Terrain layer (lower left menu) and open the NS_Watersheds Secondary KMZ file that accompanies this calculator. Then determine the AA's approximate elevation (bottom right, NOT the "eye alt"). Then move cursor around to determine the watershed's maximum and minimum elevation. Divide the AA's elevation by the (max-min).	0.89	[FA, NR, Sens, SFSv, WCv, WSv]
98	OF19	Water Quality Sensitive Watershed or Area	The AA is in a Protected Water Supply area (Designated Water Supply Area, Natural Watershed Municipal Surface Water Supply Area, or Municipal Water Supply Area) according to the provided KMZ overlay ("NS Protected Water Supply Areas"). Enter 1= yes, 0= no.	0	If an ACCDC report is available for this AA, it also may contain such information. [NRv]
99	OF20	Degraded Water Upstream	Sampling indicates a problem with concentrations of metals, hydrocarbons, nutrients, or other substances (excluding bacteria, acidic water, high temperatures) being present at levels harmful to aquatic life or humans, and:		May use existing data, or sample those waters as part of this wetland assessment. "Harmful" should be evaluated with regard to current federal or provincial water quality standards. [AM, FA, FR, NRv, PRv, SRv, STR, WBF, WBN]
100			The condition is present within the AA.	0	
101			The condition is present in waters within 1 km that flow into the AA, but has not been documented in the AA itself.	0	
102			Sampling during both low water periods and times with high runoff (storms, snowmelt) indicates no problems in either the AA or inflowing waters.	0	
103			Data are insufficient (no or inadequate sampling within 1 km, or condition exists only at >1 km upstream). This is the situation for nearly all wetlands in this region.	1	
104	OF21	Degraded Water Downstream	The problem described above is downslope from the AA, and:		May use existing data, or monitor waters as part of this wetland assessment. [NRv, PRv, SRv]
105			The condition is present within 1 km downslope and connected to the AA by a channel.	0	
106			The condition is present within 5 km downslope and connected to the AA by a channel, or within 1 km but not connected to the AA by a channel.	0	
107			Sampling during both low water periods and times with high runoff (storms, snowmelt) indicates no problems in either the AA or inflowing waters.	0	
108			Data are insufficient (no or inadequate sampling within 1 km, or condition exists only at >1 km upstream). This is the situation for nearly all wetlands in this region.	1	
109	OF22	Wetland as a % of Its Contributing Area (Catchment)	From a topographic map and field observations, estimate the approximate boundaries of the catchment (CA) of the entire wetland of which the AA may be only a part. Then adjust those boundaries if necessary based on your field observations of the surrounding terrain, and/or by using procedures described in the Manual. Divide the area of the wetland (not just the AA) by the approximate area of its catchment excluding the area of the wetland itself. When doing the calculation, if ponded water is adjacent to the wetland, include that in the wetland's area. The result is:		Topographic maps may be viewed online at the National Atlas of Canada (Toporama): http://atlas.gc.ca/toporama/en/index.html [NR, PR, Sens, SR, WS]
110			<0.01, or catchment size unknown due to stormwater pipes that collect water from an indeterminate area.	1	
111			0.01 to 0.1.	0	
112			0.1 to 1.	0	
113			>1 (wetland is larger than its catchment (e.g., wetland with flat surrounding terrain and no inlet, or is entirely isolated by dikes, or is a raised bog).	0	
114	OF23	Unvegetated Surface in the Contributing Area	The proportion of the AA's contributing area (measured to no more than 1000 m upslope) that is comprised of buildings, roads, parking lots, other pavement, exposed bedrock, landslides, and other mostly-bare surface is about :		[FA, INV, NRv, PRv, SRv, STR, WCv, WSv]
115			<10%.	1	
116			10 to 25%.	0	
117			>25%.	0	

	A	B	C	D	E
118	OF24	Transport From Upslope	A relatively large proportion of the precipitation that falls farther upslope in the CA reaches this wetland quickly as runoff (surface water), as indicated by the following: (a) input channel is present, (b) input channels have been straightened, (c) upslope wetlands have been ditched extensively, (d) land cover is mostly non-forest, (e) CA slopes are steep, and/or (f) most CA soils are shallow (bedrock near surface) and/or have high runoff coefficients. This statement is:		[NRv, PRv, SRv, WSv]
119			Mostly true.	0	
120			Somewhat true.	0	
121			Mostly untrue.	1	
122	OF25	Aspect	The overland flow direction of most surface water (in streams, rivers, or runoff) that enters the AA is:		[AM, NR, SFS, WC, WS]
123			Northward (N, NE). north-facing contributing area.	0	
124			Southward (S, SW). south-facing contributing area.	1	
125			Other (E, SE, W, NW), or no detectable uphill slope or input channel (flat).	0	
126	OF26	Internal Flow Distance (Path Length)	The horizontal flow distance from the wetland's inlet to outlet is:		Identify inlets and outlets, if any, from topographic maps (use elevations to determine which are inlets and which are outlets) and augment by field inspection. With the Provincial Landscape Viewer, select Nova Scotia Topo as the Basemap. Also enable the layer Forestry>WAM Predicted Flow. Then measure the inlet-outlet distance. [NR, OE, PR, SR, WS]
127			<10 m.	0	
128			10 - 50 m.	1	
129			50 - 100 m.	0	
130			100 - 1000 m.	0	
131			1- 2 km.	0	
132			>2 km, or wetland lacks an inlet and outlet.	0	
133	OF27	Growing Degree Days	In Google Earth, open the KMZ file that accompanies this calculator, called NS_GrowingDegreeDays. Place your cursor over the AA and left-click. From the pop-up window, enter the GRIDCODE number in the next column.	2000	This layer was provided by Dr. Dan McKenney of the Canadian Forest Service [AM, CS, FR, INV, NR, OE, PH, PR, Sens, SR, WBF, WCv, WS]
134	OF28	Fish Access or Use	According to agency biologists and/or your own observations, the AA. [M*ark just the first choice that is true.]* :		Regarding the last choice, if uncertain if an AA is fishless, consider the possibility its waters have been stocked. [AM, FA, FR, INV, WBF, WBN]
135			Is known to support rearing and/or spawning by Atlantic salmon or other anadromous species or eels. Go to Provincial Landscape Viewer>Wildlife>Significant Habitat>Species at Risk. Contact local fishery biologists, review the ACCDC report, and visit these websites: http://www.salmonatlas.com/atlanticsalmon/canada-east/index.1.html http://atlanticsalmonfederation.org/rivers/introduction.html	0	
136			Has not been documented to support Atlantic salmon rearing and/or spawning, but is connected to nearby waters likely to contain Atlantic salmon or other anadromous species or eels and is probably accessed by those during some conditions.	0	
137			Is probably is not accessed by any anadromous fish species but is known or likely to have other fish at least seasonally.	0	
138			Is known or likely to be fishless (e.g., too small, dry, and/or not accessible even temporarily, and not stocked).	1	
139	OF29	Species of Conservation Concern	Within the past 10 years, in the AA (or in its adjoining waters or wetland), qualified observers have documented *[mark all applicable*]:		Request information from ACCDC and/or conduct your own survey at an appropriate season using an approved protocol. For birds, also check eBird.org. NOTE for NS: If your WESP-AC is being completed for a Wetland Alteration Application to NS-ECC, your ACCDC results and any taxon-specific survey results must be submitted along with your WESP-AC results, and application. [AMv, EC, PHv, POLv, SBMv, Sens, WBFv, WBNv]
140			Presence of one or more of the plant species listed in the Plants_Rare worksheet of the accompanying SuppInfo file, or the AA is within a mapped Atlantic Coastal Plain Flora Buffer (go to Provincial Landscape Viewer> Wildlife> Special Management Practice Zones).	0	
141			Presence of one or more of the amphibian or reptile species (AM) of conservation concern as listed in the Wildlife_Rare worksheet of the accompanying SuppInfo file.	0	
142			Presence of one or more of the waterbird species (WBF, WBN) of conservation concern as listed in the Wildlife_Rare worksheet of the accompanying SuppInfo file.	0	
143			Presence of one or more of the nesting songbird or raptor species (SBM) of conservation concern as listed in the Wildlife_Rare worksheet of the accompanying SuppInfo file, during their nesting season (May-July for most species).	0	
144			None of the above, or no data.	1	
145	OF30	Important Bird Area (IBA)	In Google Earth, open the KMZ file that accompanies this calculator, called IBAs_Canada. The AA is all or part of an officially designated IBA. Enter 1= yes, 0= no.	0	The source of this layer, which should be checked periodically for updates, is: http://www.ibacanada.com/mapviewer.jsp?lang=EN [SBMv, WBFv, WBNv]
146	OF31	Black Duck Nesting Area	In Google Earth, open the KMZ file that accompanies this calculator, called BlackDuck. Adjust its alignment and opacity. Determine the predicted density (pairs per 25 sq. km) of nesting American Black Duck in the AA's vicinity: <10 (enter 0), 10-20 (enter 1), 20-30 (enter 2), >30 (enter 3). If outside of region shown in map, change to blank.	0	This was provided by Dr. David Leske. [WBNv]
147	OF32	Wintering Deer or Moose Concentration Areas	If AA is on private land with no information, change to blank (not 0). Otherwise: With the Provincial Landscape Viewer, for Wintering Moose, go to Wildlife> Significant Habitat. For Mainland Moose Concentration Areas, go to Wildlife> Special Management Practice Zones. Enter: yes= 1, no= 0.	0	[SBM]
148	OF33	Other Conservation Designation	The AA is all or part of an area designated by government, First Nations, or the Nature Conservancy of Canada (NCC) for its exceptional ecological features or highly intact natural conditions. With Provincial Landscape Viewer, see Protected Areas. Enter: yes= 1, no= 0. If uncertain, consult NCC and agencies for more recent information.	0	See: https://novascotia.ca/parksandprotectedareas/plan/interactive-map/ [PU]
149	OF34	Conservation Investment	The AA is part of or contiguous to a wetland on which public or private organizational funds were spent to preserve, create, restore, or enhance the wetland (excluding mitigation wetlands). Ask the property owner. Enter: yes= 1, no= 0. If no information, change to blank (not 0).	0	[PU]
150	OF35	Mitigation Investment	The AA is all or part of a mitigation site used explicitly to offset impacts elsewhere. Ask the property owner. Enter: yes= 1, no= 0. If no information, change to blank.	0	[PU]
151	OF36	Sustained Scientific Use	Plants, animals, or water in the AA have been monitored for >2 years, unrelated to any regulatory requirements, and data are available to the public. Or the AA is part of an area that has been designated by an agency or institution as a benchmark, reference, or status-trends monitoring area. Ask the property owner. Enter: yes= 1, no= 0. If no information, change to blank.	0	[PU]
152	OF37	Calcareous Region	The AA is NOT in a subregion that has been heavily exposed to acid precipitation. Enter "1" if true (green or yellow in map in Appendix A of the Manual). Enter "0" if false. If no information, change to blank.		[AM, FA, FR, INV, PH]
153	OF38	Ownership	Select the ONE ownership that covers the most of the AA. In Google Earth, open KMZ file called NS_Crownlands.Use more recent information if available.		"Private lands" may include those owned or leased by non-governmental organizations, e.g., charitable conservation land trusts, DUC, TNC. [PU, STR]
154			New timber harvest, roads, mineral extraction, and intensive summer recreation (e.g., off-road vehicles) are permanently prohibited. Includes many publicly-owned Protected Lands, and private lands under long-term (30+ year) legal agreements to maintain nearly-unaltered conditions.	0	
155			Ownership is public (e.g., municipal, Crown Reservations/Notations) but some or all of the above activities are allowed.	0	
156			Ownership is private but public access is allowed, and/or a shorter-term conservation easement (whether renewable or not) is in place.	0	
157			Ownership is private and owner does not allow access, or access permission unknown, and not a conservation easement.	1	

	A	B	C	D	E
1	Date: 17 August 2021		Site Identifier: WL-4	Investigator: Brady Leights and Tiffany MacAulay	
2	**Form F (Field). Non-tidal Wetland Data Form. WESP-AC version 2 for Nova Scotia.** DIRECTIONS: Walk for no less than 10 minutes from the wetland edge towards its core, in the part of the AA that is proposed for alteration. If no alteration is proposed, walk in a portion that appears to be most representative of the wetland overall. Walk only where it is safe and legal to do so. Conduct the assessment only after reading the accompanying Manual and the Explanations column of the data form. In the Data column, change the 0 (false) to a 1 (true) for the best choice, or for multiple choices where allowed and so indicated. Answer these questions primarily based on your onsite observations and interpretations. Do not write in shaded parts of this data form. Answering some questions accurately may require conferring with the landowner or other knowledgable persons, and/or reviewing aerial imagery. For most wetlands, completing this field data form will require 1-2 hours on a site. For a list of functions to which each question pertains, see the accompanying Interpretations form. For detailed descriptions of each WESP-AC model, see Appendix B of the accompanying Manual. Codes for functions and values are: WS= Water Storage & Delay, SFS= Stream Flow Support, WC= Water Cooling, SR= Sediment Retention & Stabilisation, PR= Phosphorus Retention, NR= Nitrate Removal, CS= Carbon Sequestration, OE= Organic Nutrient Export, INV= Invertebrate Habitat, FA= Anadromous Fish Habitat, FR= Resident Fish Habitat, AM= Amphibian & Reptile Habitat, WBF= Feeding Waterbird Habitat, WBN= Nesting Waterbird Habitat, SBM= Songbird, Raptor, & Mammal Habitat, POL= Pollinator Habitat, PH= Native Plant Habitat, PU= Public Use & Recognition, EC= Ecological Condition, Sen= Wetland Sensitivity, STR= Stressors.		
3	**#**	**Indicators**	**Condition Choices**	**Data**	**Definitions/Explanations**
4	F1	Wetland Type	Follow the key below and mark the ONE row that best describes MOST of the vegetated part of the AA:		Ericaceous shrubs are ones in the heather family (Ericaceae). Most have leathery evergreen leaves. They include rhododendron, azalea, swamp laurel, leatherleaf, Labrador tea, and others. Most require acidic soil. Although not in the family Ericaceae, sweetgale (*Myrica gale*) should be counted also. [AM, CS, FA, FR, INV, NR, OE, PH, Sens, SFS, WBF, WBN]
5			A. Moss and/or lichen cover more than 25% of the ground. Often dominated by ericaceous shrubs (e.g., Labrador tea) or other acid-tolerant plants (e.g., bog cranberry, pitcher plant, sundew, orchids). Substrate is mostly undecomposed peat. Choose between A1 and A2 and mark the choice with a 1 in their adjoining column. Otherwise go to B below.		
6			A1. Surface water is usually absent or, if present, pH is typically <4.5 and conductivity is usually <100 µS/cm (<64 ppm TDS). Trees are absent or nearly so. Sedge cover usually sparse or absent but cottongrass and/or lichen cover may be extensive, as well as cloudberry, lingonberry, sheep laurel, and a sedge (*Carex rariflor* a). Wetland surface and surrounding landscape are seldom sloping and wetland often is domed (convex). Inlet and outlet channels are usually absent. If known, pH of peat is <4.0.	0	
7			A2. Not A1. Surface water, if present, has pH typically >4.5 and conductivity is usually >100 µS/cm (>64 ppm TDS). Sedge cover is usually extensive, and/or tree and tall shrub cover is extensive. Sometimes at toe of slope or edge of water body. An exit channel is usually present. Wetter than A1 and peat depth may be shallower (<2 m).	1	
8			B. Moss and/or lichen cover less than 25% of the ground. Soil is mineral or decomposed organic (muck). Choose between B1 and B2 and mark the choice with a 1 in their adjoining column:		
9			B1. Trees and shrubs taller than 1 m comprise more than 25% of the vegetated cover. Surface water is mostly absent or inundates the vegetation only seasonally (e.g., vernal pools or floodplain).	0	
10			B2. Not B1. Tree & tall shrubs comprise less than than 25% of the vegetated cover. Vegetation is mostly herbaceous, e.g., cattail, bulrush, burreed, pond lily, horsetail. Surface water may be extensive and fluctuates seasonally, being either persistent or drying up partly or entirely.	0	
11			*Reminder : For all questions, the AA should include all persistent waters in ponds smaller than 8 hectares (~283 m on a side) that are adjacent to the AA. The AA should also include part of the water area of adjacent ponded water larger than 8 ha and adjacent rivers wider than 20 m. Specifically, the AA should include the open water part adjacent to wetland vegetation and equal in width to the average width of that vegetated zone. Throughout this data form, " adjacent " is used synonymously with abutting, adjoining, bordering, contiguous -- and means no upland (manmade or natural) completely separates the described features along their directly shared edge. Features joined only by a channel are not necessarily considered to be adjacent -- a large portion of their edges must match. The features do not have to be hydrologically connected in order to be considered adjacent.*		
12	F2	Wetland Types - Adjoining or Subordinate	If the AA is smaller than 1 ha, mark all other types that occupy more than 1% of the vegetated AA. If the AA is larger than 1 ha, mark all other types which are within or adjacent to the AA and occupy more than 1 ha, as visible from the AA or as interpreted from aerial imagery. Do not mark again the type marked in F1.		1 hectare is 10,000 sq. m or about 2.5 acres. It could have dimensions of 100 m by 100 m, 1000 m by 10 m, or similar. [AM, INV, SBM, WBF]
13			A1.	0	
14			A2.	0	
15			B1.	0	
16			B2.	0	
17	F3	Woody Height & Form Diversity	Following EACH row below, indicate with a number code the percentage of the living vegetation in the AA which is occupied by that feature (6 if >95%, 5 if 75-95%, 4 if 50-75%, 3 if 25-50%, 2 if 5-25%, 1 if <5%, 0 if none). If the vegetated part of the AA is largely herbaceous (non-woody) vegetation, these percentages should not sum to 100%.		Deciduous shrubs in this region usually include buttonbush, Labrador tea, bayberry (*Morella*), huckleberry, cranberry, cloudberry, sweetgale, alder, willow, birch, ash, dogwood, and a few others. If you assigned a code of 3 or higher to any of the first four choices and the ground cover beneath the trees/shrubs is <25% moss, then question F1 might be "B1". [CS, INV, NR, PH, POL, SBM, Sens]
18			coniferous trees (may include tamarack) taller than 3 m.	4	
19			deciduous trees taller than 3 m.	2	
20			coniferous or ericaceous shrubs or trees 1-3 m tall not directly below the canopy of trees.	3	
21			deciduous shrubs or trees 1-3 m tall not directly below the canopy of trees.	3	
22			coniferous or ericaceous shrubs <1 m tall not directly below the canopy of taller vegetation.	2	
23			deciduous shrubs or trees <1 m tall (e.g., deciduous seedlings) not directly below the canopy of taller vegetation.	2	
24			*Note : If none of top 4 rows in F3 was marked 2 or greater , SKIP to F9 (N fixers).*		
25	F4	Dominance of Most Abundant Shrub Species	Determine which two woody plant species comprise the greatest portion of the low (<3 m) woody cover . Then choose one:		[PH, POL, SBM, Sens]
26			those species together comprise > 50% of such cover.	1	
27			those species together do not comprise > 50% of such cover.	0	
28	F5	Woody Diameter Classes	Mark ALL the types that comprise >5% of the woody canopy cover in the AA or >5% of the wooded areas (if any) along its upland edge (perimeter). The edge should include only the trees whose canopies extend into the AA.		Estimate the diameters at chest height. If small-diameter trees are overtopped (shaded) by larger ones, visualise a "subcanopy" at the average height of the smaller-dbh trees, to serve as a basis for the minimum 5% canopy requirement in this question. The trees and shrubs need not be wetland species. [AM, CS, POL, SBM, Sens, WBN]
29			coniferous, 1-9 cm diameter and >1 m tall.	1	
30			broad-leaved deciduous 1-9 cm diameter and >1 m tall.	1	
31			coniferous, 10-19 cm diameter.	1	
32			broad-leaved deciduous 10-19 cm diameter.	0	
33			coniferous, 20-40 cm diameter.	1	
34			broad-leaved deciduous 20-40 cm diameter.	0	
35			coniferous, >40 cm diameter.	0	
36			broad-leaved deciduous >40 cm diameter.	0	
37	F6	Height Class Interspersion	Follow the key below and mark the ONE row that best describes MOST of the AA:		[AM, INV, NR, PH, SBM, Sens]
38			A. Neither the vegetation taller than 1 m nor the vegetation shorter than that comprise >70% of the vegetated part of the AA. They each comprise 30-70%. Choose between A1 and A2 and mark the choice with a 1 in the adjoining column. Otherwise go to B below.		
39			A1. The two height classes are mostly scattered and intermixed throughout the AA.	1	
40			A2. Not A1. The two height classes are mostly in separate zones or bands, or in proportionately large clumps.	0	
41			B. Either the vegetation shorter than 1 m comprises >70% of the vegetated part of the AA, or the vegetation taller than that does. One size class might even be totally absent. Choose between B1 and B2 and mark the choice with a 1 in the adjoining column:		
42			B1. The less prevalent height class is mostly scattered and intermixed within the prevalent one.	0	
43			B2. Not B1. The less prevalent height class is mostly located apart from the prevalent one, in separate zones or clumps, or is completely absent.	0	
44	F7	Large Snags (Dead Standing Trees)	The number of large snags (diameter >20 cm) in the AA plus adjacent upland area within 10 m of the wetland edge is:		Snags are dead standing trees that often (not always) lack bark and foliage. Include only ones that are at least 2 m tall. [POL, SBM, WBN]
45			None, or fewer than 8/ hectare which exceed this diameter.	0	
46			Several (>8/hectare) and a pond, lake, or slow-flowing water wider than 10 m is within 1 km.	1	

	A	B	C	D	E
47			Several (>8/hectare) but above not true.	0	
48	F8	Downed Wood	The number of downed wood pieces longer than 2 m and with diameter >10 cm, and not persistently submerged, is:		Exclude temporary "burn piles." [AM, INV, POL, SBM]
49			Few or none that meet these criteria.	1	
50			Several (>5 if AA is >5 hectares, less for smaller AAs) meet these criteria.	0	
51	F9	N Fixers	The percentage of the AA's vegetated cover that contains nitrogen-fixing plants (e.g., alder, sweetgale, clover, lupine, alfalfa, other legumes) is:		Do not include N-fixing algae or lichens. [FA, FR, INV, NRv, OE, PH, SBM, Sens]
52			<1% or none.	0	
53			1-25% of the vegetated cover, in the AA or along its water edge (whichever has more).	1	
54			25-50% of the vegetated cover, in the AA or along its water edge (whichever has more).	0	
55			50-75% of the vegetated cover, in the AA or along its water edge (whichever has more).	0	
56			>75% of the vegetated cover, in the AA or along its water edge (whichever has more).	0	
57	F10	Sphagnum Moss Extent	The cover of Sphagnum moss (or any moss that forms a dense cushion many centimeters thick), including the moss obscured by taller sedges and other plants rooted in it, is:		Exclude moss growing on trees and rocks. [CS, PH]
58			<5% of the vegetated part of the AA.	0	
59			5-25% of the vegetated part of the AA.	0	
60			25-50% of the vegetated part of the AA.	0	
61			50-95% of the vegetated part of the AA.	0	
62			>95% of the vegetated part of the AA.	1	
63	F11	% Bare Ground & Thatch	Consider the parts of the AA that lack surface water at the driest time of the growing season. Viewed from directly above the ground layer, the predominant condition in those areas at that time is:		Thatch is dead plant material (stems, leaves) resting on the ground surface. Bare ground that is present under a tree or shrub canopy should be counted. Boulders count as bare ground. Wetlands with mineral soils and that are heavily shaded or are dominated by annual plant species tend to have more extensive areas that are bare during the early growing season. [AM, EC, INV, NR, OE, POL, PR, SBM, Sens]
64			Little or no (<5%) *bare ground* is visible between erect stems or under canopy anywhere in the vegetated AA. Ground is extensively blanketed by dense thatch, moss, lichens, graminoids with great stem densities, or plants with ground-hugging foliage.	1	
65			Slightly bare ground (5-20% bare between plants) is visible in places, but those areas comprise less than 5% of the unflooded parts of the AA.	0	
66			Much bare ground (20-50% bare between plants) is visible in places, and those areas comprise more than 5% of the unflooded parts of the AA.	0	
67			Other conditions.	0	
68			Not applicable. Surface water (either open or obscured by emergent plants) covers all of the AA all the time.	0	
69	F12	Ground Irregularity	Imagine the AA without any living vegetation. Excluding the portion of the AA that is always under water, the number of hummocks, small pits, raised mounds, animal burrows, ruts, gullies, natural levees, microdepressions, and other areas of peat or mineral soil that are raised or depressed >10 cm compared to most of the area within a few meters surrounding them is:		The depressions may be of human or natural origin. [AM, EC, INV, NR, PH, POL, PR, SBM, SR, WS]
70			Few or none (minimal microtopography; <1% of the land has such features, or entire AA is always water-covered).	1	
71			Intermediate.	0	
72			Several (extensive micro-topography).	0	
73	F13	Upland Inclusions	Within the AA, inclusions of upland are:		[AM, NR, SBM]
74			Few or none.	1	
75			Intermediate (1 - 10% of vegetated part of the AA).	0	
76			Many (e.g., wetland-upland "mosaic", >10% of the vegetated AA).	0	
77	F14	Soil Texture	In parts of the AA that lack persistent water, the texture of soil in the uppermost layer is mostly: [*To determine this, use a trowel to check in at least 3 widely spaced locations, and use the soil texture key (in Appendix A of the Manual).]*		[CS, NR, OE, PH, PR, Sens, SFS, WS]
78			Loamy: soils that may contain a little fine grit and do not make a "ribbon" longer than 2 cm when moistened, rolled, squeezed, and extended between thumb and forefinger.	0	
79			Fines: includes silt, clay, silt, soils that make a ribbon longer than 2 cm when moistened, rolled, squeezed, and extended between thumb and forefinger.	0	
80			Deep Peat, to 40 cm depth or greater.	1	
81			Shallow Peat or organic <40 cm deep.	0	
82			Coarse: includes sand, loamy sand, gravel, cobble, soils that do not make a ribbon when moistened, rolled, squeezed, and extended between thumb and forefinger.	0	
83	F15	Shorebird Feeding Habitats	During any 2 consecutive weeks of the growing season, the extent of mudflats, bare unshaded saturated areas not covered by thatch, and unshaded waters shallower than 6 cm is: [Include also any area that is adjacent to the AA.]		This addresses needs of many but not all migratory sandpipers, plovers, and related species. [WBF]
84			None, or <100 sq. m.	1	
85			100-1000 sq. m.	0	
86			1000 – 10,000 sq. m.	0	
87			>10,000 sq. m.	0	
88	F16	Herbaceous % of Vegetated Wetland	In aerial ("ducks eye") view, the maximum annual cover of herbaceous vegetation (all non-woody plants except moss) is:		[AM, WBF, WBN]
89			<5% of the vegetated part of the AA or <0.01 hectare (whichever is less). Mark "1" here and SKIP to F20 (Invasive Plant Cover).	0	
90			5-25% of the vegetated part of the AA.	0	
91			25-50% of the vegetated part of the AA.	1	
92			50-95% of the vegetated part of the AA.	0	
93			>95% of the vegetated part of the AA.	0	
94	F17	Forb Cover	Within parts of the AA having herbaceous cover (excluding SAV), the areal cover of forbs reaches an annual maximum of:		Forbs are flowering plants. Do not include grasses, sedges, cattail, other graminoids, ferns, horsetails, or others that lack showy flowers. [POL]
95			<5% of the herbaceous part of the AA.	0	
96			5-25% of the herbaceous part of the AA.	1	
97			25-50% of the herbaceous part of the AA.	0	
98			50-95% of the herbaceous part of the AA.	0	
99			>95% of the herbaceous part of the AA.	0	
100	F18	Sedge Cover	Sedges (*Carex* spp.) and cottongrass (*Eriophorum* spp.) occupy:		[CS]
101			<5% of the vegetated area, or none.	0	
102			5-50% of the vegetated area.	1	
103			50-95% of the vegetated area.	0	
104			>95% of the vegetated area.	0	
105	F19	Dominance of Most Abundant Herbaceous Species	Determine which two herbaceous species comprise the greatest portion of the herbaceous cover (excluding mosses and floating-leaved aquatic plants). Then choose one of the following:		For this question, include ferns as well as graminoids and forbs. [EC, INV, PH, POL, Sens]
106			those species together comprise > 50% of the areal cover of herbaceous plants at any time during the year.	1	
107			those species together do not comprise > 50% of the areal cover of herbaceous plants at any time during the year.	0	
108	F20	Invasive Plant Cover	How extensive is the cover of invasive plant species in the AA? For species, see Plants_invasive worksheet in the accompanying SuppInfo file.		[EC, PH, POL, Sens]
109			invasive species appear to be absent in the AA, or are present only in trace amount (a few individuals).	1	
110			invasive species are present in more than trace amounts, but comprise <5% of herbaceous cover (or woody cover, if the invasives are woody).	0	
111			invasive species comprise 5-20% of the herb cover (or woody cover, if the invasives are woody).	0	
112			invasive species comprise 20-50% of the herb cover (or woody cover, if the invasives are woody).	0	
113			invasive species comprise >50% of the herb cover (or woody cover, if the invasives are woody).	0	

	A	B	C	D	E
114	F21	Invasive Cover Along Upland Edge	Along the wetland-upland boundary, the percent of the upland edge (within 3 m upslope from the wetland) that is occupied by invasive plant species is:		If a plant cannot be identified to species (e.g., winter conditions) but its genus contains an exotic species, assume the unidentified plant to also be exotic. If vegetation is so senesced that exotic species cannot be identified, answer "none". [PH, STR]
115			none of the upland edge (invasives apparently absent), or AA has no upland edge.	1	
116			some (but <5%) of the upland edge.	0	
117			5-50% of the upland edge.	0	
118			most (>50%) of the upland edge.	0	
119	F22	Fringe Wetland	During most of the year, open water within or adjacent to the vegetated part of the wetland is much wider than the maximum width of the vegetated zone within the wetland. Enter "1" if true, "0" if false.	0	[WBF, WBN, WCv]
120	F23	Lacustrine Wetland	The vegetated part of the AA is within or adjacent to a body of non-tidal standing open water whose size exceeds 8 hectares during most of a normal year.	0	[FR, PR, PU, WBF, WBN]
121	F24	% of AA Without Surface Water	The percentage of the AA that never contains surface water during an average year (that is, except perhaps for a few hours after snowmelt or rainstorms), but which is still a wetland, is:		1 hectare is 10,000 sq. m or about 2.5 acres. It could have dimensions of 100 m by 100 m, 1000 m by 10 m, or similar. [AM, FA, FR, INV, NR, PH, PR, SBM, Sens, SRv, WBF, WBN, WC]
122			<1% . In other words, all or nearly all of the AA is covered by water permanently or at least seasonally.	0	
123			1-25% of the AA, or <1% but >0.01 ha never contains surface water.	0	
124			25-50% of the AA never contains surface water.	0	
125			50-75% of the AA never contains surface water.	0	
126			75-99% of the AA never contains surface water, OR >99% and there is at least one persistently ponded water body larger than 1 ha in the AA.	0	
127			99-100%. AND there is no persistently ponded water body larger than 1 ha within the AA. Enter "1" and SKIP to F42 (Channel Connection).	1	
128	F25	% of AA with Persistent Surface Water	Identify the parts of the AA that still contain surface water (flowing or ponded, open or hidden beneath vegetation) even during the driest times of a normal year, i.e., when the AA's surface water is at its lowest annual level. At that time, the percentage of the AA that still contains surface water is:		If you are unable to determine the condition at the driest time of year, ask the land owner or neighbors about it if possible. Indicators of persistence may include fish, some dragonflies, beaver, and muskrat. [AM, CS, FA, FR, INV, NR, POL, PR, SBM, WBF, WBN]
129			None. The AA dries up completely (no water in channels either) or never has surface water during most years. SKIP to F27.	0	
130			1-20% of the AA.	0	
131			20-50% of the AA.	0	
132			50-95% of the AA.	0	
133			>95% of the AA. True for many fringe wetlands.	0	
134	F26	% of Summertime Water that Is Shaded	At mid-day during the warmest time of year, the area of surface water within the AA that is shaded by vegetation and other features that are within the AA at that time is:		[FA, WC]
135			<5% of the water is shaded, or no surface water is present then.	0	
136			5-25% of the water is shaded.	0	
137			25-50% of the water is shaded.	0	
138			50-75% of the water is shaded.	0	
139			>75% of the water is shaded.	0	
140	F27	% of AA that is Flooded Only Seasonally	The percentage of the AA's area that is between the annual high water and the annual low water (surface water) is:		Flood marks (algal mats, adventitious roots, debris lines, ice scour, etc.) are often evident when not fully inundated. Also, such areas often have a larger proportion of upland and annual (vs. perennial) plant species. In riverine systems, the extent of this zone can be estimated by multiplying by 2 the bankful height and visualising where that would intercept the land along the river. [CS, FA, INV, NR, OE, PH, SR, WBF, WBN, WS]
141			None, or <0.01 hectare and <1% of the AA. SKIP to F29.	0	
142			1-20% of the AA, or <1% but >0.01 ha.	0	
143			20-50% of the AA.	0	
144			50-95% of the AA.	0	
145			>95% of the AA.	0	
146	F28	Annual Water Fluctuation Range	The annual fluctuation in surface water level within most of the parts of the AA that contain surface water at least temporarily is:		Look for flood marks (see above). Because the annual range of water levels is difficult to estimate without multiple visits, consider asking the land owner or neighbors about it. [AM, CS, INV, NR, OE, PH, PR, SR, WBN, WS]
147			<10 cm change (stable or nearly so).	0	
148			10 cm - 50 cm change.	0	
149			0.5 - 1 m change.	0	
150			1-2 m change.	0	
151			>2 m change.	0	
152	Is the AA plus adjacent ponded water smaller than 0.01 hectare (about 10m x 10m, or 1m x 100 m)? If so, enter "1" in column D and SKIP TO F42 (Connection).			0	
153	F29	Predominant Depth Class	During most of the time when surface water is present during the growing season, its depth, averaged over the entire inundated part of the AA, is:		If a boat is unavailable, estimate this by considering wetland size and local topography. Or if timing and safety allow, depths may be measured by drilling through winter ice.This question is asking about the spatial median depth that occurs during most of that time, even if inundation is only seasonal or temporary. If inundation in most but not all of the wetland is brief, the answer will be based on the depth of the most persistently inundated part of the wetland. Include surface water in channels and ditches as well as ponded areas. [CS, FA, FR, INV, OE, PH, PR, Sens, SFS, SR, WBF, WBN, WC]
154			<10 cm deep (but >0).	0	
155			10 - 50 cm deep.	0	
156			0.5 - 1 m deep.	0	
157			1 - 2 m deep.	0	
158			>2 m deep. True for many fringe wetlands.	0	
159	F30	Depth Classes - Evenness of Proportions	When present, surface water in most of the AA usually consists of (select one):		Estimate these proportions by considering the gradient and microtopography of the site. [FR, INV, WBF, WBN]
160			One depth class that comprises >90% of the AA's inundated area (use the classes in the question above).	0	
161			One depth class that comprises 50-90% of the AA's inundated area.	0	
162			Neither of above. There are 3 or more depth classes and none occupy >50%.	0	
163	F31	% of Water That Is Ponded (not Flowing)	During most times when surface water is present, the percentage that is (1) ponded (stagnant, or flows so slowly that fine sediment is not held in suspension) AND (2) is likely to be deeper than 0.5 m in some places, is:		Nearly all wetlands with surface water have some ponded water. [AM, CS, INV, NR, OE, PR, Sens, SR, WBF, WBN, WC, WS]
164			<5% of the water, or it occupies <100 sq.m cumulatively. Nearly all the surface water is flowing. SKIP to F34.	0	
165			5-30% of the water.	0	
166			30-70% of the water.	0	
167			70-95% of the water.	0	
168			>95% of the water.	0	
169	F32	Ponded Open Water - Minimum Size	During most of the growing season, the largest patch of open water that is ponded and is in or bordering the AA is >0.01 hectare (about 10 m by 10 m) and mostly deeper than 0.5 m. If true enter "1" and continue, If false, enter "0" and SKIP to F41 (Floating Algae & Duckweed).	0	Open water is not obscured by vegetation in aerial ("duck's eye") view. It includes vegetation floating on the water surface or entirely submersed beneath it.
170	F33	% of Ponded Water that is Open	In ducks-eye aerial view, the percentage of the ponded water that is open (lacking emergent vegetation during most of the growing season, and unhidden by a forest or shrub canopy) is:		[AM, CS, FA, FR, INV, NR, OE, PR, SR, WBF, WBN, WC]
171			None, or <1% of the AA and largest pool occupies <0.01 hectares. Enter "1" and SKIP to F41 (Floating Algae & Duckweed).	0	
172			1-4% of the ponded water. Enter "1" and SKIP to F41 (Floating Algae & Duckweed).	0	
173			5-30% of the ponded water.	0	
174			30-70% of the ponded water.	0	
175			70-99% of the ponded water.	0	
176			100% of the ponded water.	0	
177	F34	Width of Vegetated Zone within Wetland	At the time during the growing season when the AA's water level is lowest, the average width of vegetated area in the AA that separates adjoining uplands from open water within the AA is:		"Vegetated area" does not include underwater or floating-leaved plants, i.e., aquatic bed. Width may include wooded riparian areas if they have wetland soil or plant indicators. [AM, CS, NR, OE, PH, PR, SBM, Sens, SR, WBN]
178			<1 m.	0	
179			1 - 9 m.	0	
180			10 - 29 m.	0	
181			30 - 49 m.	0	
182			50 - 100 m.	0	
183			> 100 m, or open water is absent at that time.	0	

	A	B	C	D	E
184	F35	Flat Shoreline Extent	During most of the part of the growing season when water is present, the percentage of the AA's **water edge** length that is **nearly flat** (a slope less than about 5% measured within 5 m landward of the water) is:		If several isolated pools are present in early summer, estimate the percent of their collective shorelines that has such a gentle slope. [SR, WBN]
185			<1% of the water edge.	0	
186			1-25% of the water edge.	0	
187			25-50% of the water edge.	0	
188			50-75% of the water edge.	0	
189			>75% of the water edge.	0	
190	F36	Robust Emergents	The percentage **of the emergent vegetation** cover in the AA that is cattail (*Typha* spp.), common reed (*Phragmites*), or tall (>1m) bulrush is:		**Emergent vegetation** is herbaceous plants whose stems are partly above and partly below the water surface during most of the time water is present. [WBN]
191			<1% of the emergent vegetation, or emergent vegetation is absent. SKIP to F38.	0	
192			1-25% of the emergent vegetation.	0	
193			25-75% of the emergent vegetation.	0	
194			>75%, of the emergent vegetation.	0	
195	F37	Interspersion of Emergents & Open Water	During most of the part of the growing season when water is present, the spatial pattern of **emergent** vegetation within the water is mostly:		[AM, FA, FR, INV, NR, OE, PH, PR, SBM, SR, WBF, WBN]
196			Scattered. More than 30% of such vegetation forms small islands or corridors surrounded by water.	0	
197			Intermediate.	0	
198			Clumped. More than 70% of such vegetation is in bands along the wetland perimeter or is clumped at one or a few sides of the surface water area.	0	
199	F38	Persistent Deepwater Area	If the deepest patch of surface water (flowing or ponded) in or directly adjacent to the AA is mostly deeper than 0.5 m for >2 weeks during the growing season, enter "1" and continue. If not, enter "0" and SKIP to F42.(Connection).	0	
200	F39	Non-vegetated Aquatic Cover	During most of the growing season and in waters deeper than 0.5 m, the cover for fish, aquatic invertebrates, and/or amphibians that is provided NOT by living vegetation, but by accumulations of **dead wood and undercut banks** is:		For this question, consider only the wood that is at or above the water surface. Estimates of underwater wood based only on observations from terrestrial viewpoints are unreliable so should not be attempted. [AM, FA, FR, INV]
201			Little or none.	0	
202			Intermediate.	0	
203			Extensive.	0	
204	F40	Isolated Island	The AA contains (or is part of) an island or beaver lodge within a lake, pond, or river, and is isolated from the shore **by water depths** >1 m on all sides during an average June. The island may be solid, or it may be a floating vegetation mat that is sufficiently large and dense to support a waterbird nest.	0	[WBN]
205	F41	Floating Algae & Duckweed	At some time of the year, mats of algae and/or duckweed are likely to cover >50% of the AA's otherwise-unshaded water surface, or blanket >50% of the underwater substrate. If true, enter "1" in next column. If untrue or uncertain, enter "0".	0	[EC, PR, WBF]
206	F42	Channel Connection & Outflow Duration	The most persistent surface water connection (outlet channel or pipe, ditch, or overbank water exchange) between the AA and a downslope stream network is: [Note: If the AA represents only part of a wetland, answer this according to whichever is the **least** permanent surface connection: the one between the AA and the rest of the wetland, or the surface connection between the wetland and the downslope stream network.]		Consider the connection regardless of whether the surface water is frozen. The "downslope stream network" could consist of ditches, rivers, ponds, or lakes which eventually connect to the ocean. If this cannot be determined while visiting the AA, consult topographic maps perhaps by viewing these online with Toporama (http://atlas.nrcan.gc.ca/toporama/en/index.html) [CS, FA, FR, NR, OE, PR, Sens, SFS, SR, WCv, WS]
207			Persistent (surface water flows out for >9 months/year).	0	
208			Seasonal (surface water flows out for 14 days to 9 months/year, not necessarily consecutive).	0	
209			Temporary (surface water flows out for <14 days, not necessarily consecutive).	0	
210			None -- but maps show a stream network downslope from the AA and within a distance that is less than the AA's length. SKIP to F47 (pH Measurement).	0	
211			No surface water flows out of the wetland except possibly during extreme events (<once per 10 years). Or, water flows only into a wetland, ditch, or lake that lacks an outlet. SKIP to F47 (pH Measurement).	1	
212	F43	Outflow Confinement	During major runoff events, in the places where **surface** water exits the AA or connected waters nearby, the water:		"Major runoff events" would include biennial high water caused by storms and/or rapid snowmelt. [CS, NR, OE, PR, Sens, SR, STR, WS]
213			Mostly passes through a pipe, culvert, narrowly breached dike, berm, beaver dam, or other partial obstruction (other than natural topography) that does not appear to drain the wetland artificially during most of the growing season.	0	
214			Leaves through natural exits (channels or diffuse outflow), not mainly through artificial or temporary features.	0	
215			Is exported more quickly than usual due to ditches or pipes within the AA or connected to its outlet, or within 10 m of the AA's edge, which drain the wetland artificially, or water is pumped out of the AA.	0	
216	F44	Tributary Channel	At least once annually, surface water from a tributary channel that is >100 m long moves into the AA. Or, surface water from a larger permanent water body adjacent to the AA spills into the AA. If it enters only via a pipe, that pipe must be fed by a mapped stream or lake further upslope. If no, SKIP to F47 (pH Measurement).	0	If inlet tributaries cannot be searched for due to inaccessibility of part of the AA, follow suggestions in F42 above. [NRv, PH, PRv, SRv]
217	F45	**Input** Water Temperature	Based on lack of shade, water source characteristics, or actual temperature measurements, the inflow is likely to be warmer than surface water in the AA during part of most years. Enter 1= yes, 0= no.	0	[WCv]
218	F46	Throughflow Resistance	During its travel through the AA at the time of peak annual flow, water arriving in channels: [select only the ONE encountered by **most** of the incoming water].		[FA, FR, INV, NR, OE, PR, SR, WS]
219			Does not bump into many plant stems as it travels through the AA. Nearly all the water continues to travel in unvegetated (often incised) channels that have minimal contact with wetland vegetation, or through a zone of open water such as an instream pond or lake.	0	
220			Bumps into **herbaceous** vegetation but mostly remains in fairly straight channels.	0	
221			Bumps into **herbaceous** vegetation and mostly spreads throughout, or is in widely meandering, multi-branched, or braided channels.	0	
222			Bumps into **tree trunks and/or shrub stems** but mostly remains in fairly straight channels.	0	
223			Bumps into tree trunks and/or shrub stems and follows a fairly **indirect** path from entrance to exit (meandering, multi-branched, or braided).	0	
224	F47	pH Measurement	The pH in most of the AA's surface water:		Preferably, measure this in larger areas of ponded surface water within the AA, or in streams that have passed through (not along) most of the AA. Unless surface water is completely absent, do not dig holes or make depressions in peat in order to provide water for this measurement. Avoid measuring near roads or in puddles formed only by recent rain. [AM, FA, FR, NR, WBF, PH, PR, Sens, WBF, WBN]
225			Was measured, and is: [*enter the reading in the column to the right.*]		
226			Was not measured but surface water is present and is darkly tea-coloured. Or if no surface water, then mosses and plants that indicate peatland (e.g., Labrador tea) are prevalent. Enter "1".	0	
227			Neither of above. Enter "1".	1	
228	F48	TDS and/or Conductivity	The TDS (total dissolved solids) or conductivity off the AA's surface water is: (select the first true row with information):		See above for measurement guidance. [FR, INV, NRv, PH, PRv, Sens]
229			TDS is: [*Enter the reading* ***in ppm or mg/L*** *in the column to the right, if measured, or answer next row.*]		
230			Conductivity is [*Enter the reading* ***in µS/cm*** *in the column to the right.*]		
231			Was not measured, but plants that indicate saline conditions cover much of the vegetated AA. Enter "1".	0	
232			Neither of above	1	
233	F49	Beaver Probability	Use of the AA by beaver during the past 5 years is (select most applicable ONE):		[FA, FR, PH, SBM, Sens, WBF, WBN]
234			**Evident** from direct observation or presence of gnawed limbs, dams, tracks, dens, lodges, or extensive stands of water-killed trees (snags).	0	
235			**Likely** based on known occurrence in the region and proximity to suitable habitat, which may include: (a) a persistent freshwater wetland, pond, or lake, or a perennial low or mid-gradient (<10%) channel, and (b) a corridor or multiple stands of hardwood trees and shrubs in vegetated areas near surface water.	0	
236			Unlikely because site characteristics above are deficient, and/or this is a settled area or other area where beaver are routinely removed.	1	
237	F50	Groundwater Strength of Evidence	Select first applicable choice:		Adhere to these criteria strictly -- do not use personal judgment based on fen conditions, pH, or other evidence. Consult topographic maps to detect breaks in slope described here. Rust deposits associated with groundwater seeps may be most noticeable as orange discoloration in ice formations along streams during early winter. [AM, CS, FA, FR, INV, NR, OE, PH, PRv, SFS, WC, WS]
238			Springs are known to be present within the AA, or if groundwater levels have been monitored, that has demonstrated that groundwater primarily discharges to the wetland for longer periods during the year than periods when the wetland recharges the groundwater.	0	

	A	B	C	D	E
239			Most of the AA has a slope of >5%, or is very close to the base of a natural slope longer than 100 and much steeper than the slope of the AA, AND the pH of surface water, if known, is >5.5.	0	
240			Neither of above is true, although some groundwater may discharge to or flow through the AA. Or groundwater influx is unknown.	1	
241	F51	Internal Gradient	The gradient along most of the flow path **within** the AA is:		This is not the same as the shoreline slope. It is the elevational difference between the AA's inlet and outlet, divided by the flow-distance between them and converted to percent. If available, use a clinometer to measure this. Free clinometer apps can be downloaded to smartphones. If the wetland is large (longer than ~1 km), this may be estimated using Google Earth to determine the minimum and maximum elevation within the AA, then dividing by length and multiplying by 100. [CS, NR, OE, PR, SR, WBF, WBN, WS]
242			<2% **or** the AA has no surface water outlet (not even seasonally).	1	
243			2-5%.	0	
244			6-10%.	0	
245			>10%.	0	
246	Note for the next three questions: If the AA lacks an upland edge, evaluate based on the AA's entire perimeter, and moving outward into whatever areas are adjacent. In many situations, these questions are best answered by measuring from aerial images.				
247	F52	Vegetated Buffer as % of Perimeter	Within a zone extending 30 m laterally from the AA's edge with upland and/or other wetlands, the percentage that contains **perennial vegetation cover** (except lawns, row crops, heavily grazed land, conifer plantations) is:		[AM, FA, FR, INV, NRv, PH, POL, PRv, SBM, Sens, SRv, STR, WBN]
248			<5%.	0	
249			5 to 30%.	0	
250			30 to 60%.	0	
251			60 to 90%.	0	
252			>90%, or all the area within 30 m of the AA edge is other wetlands. **SKIP to F55.**	1	
253	F53	Type of Cover in Buffer	Within 30 m upslope of where the wetland transitions to upland, the upland land cover that is NOT perennial vegetation is mostly (mark ONE):		[AM, FA, INV, NRv, PH, POL, SBM, STR, WBN]
254			Impervious surface, e.g., paved road, parking lot, building, exposed rock.	0	
255			Bare or nearly bare pervious surface or managed vegetation, e.g., lawn, row crops, unpaved road, dike, landslide.	0	
256	F54	Buffer Slope	The steepest and/or most disturbed part of the upland area that is within 30 m of the wetland and occupies >10% of that upland area has a percent slope of:		[NRv, PRv, Sens, SRv]
257			<1% (flat -- almost no noticeable slope) or all the area within 30 m of the AA edge is other wetlands.	0	
258			2-5%.	0	
259			5-30%.	0	
260			>30%.	0	
261	F55	Cliffs or Steep Banks	In the AA or within 100 m, there are elevated terrestrial features such as cliffs, talus slopes, stream banks, or excavated pits (but not riprap) that extend at least 2 m nearly vertically, are unvegetated, and potentially contain crevices or other substrate suitable for nesting or den areas. Enter 1 (yes) or 0 (no).	0	Do not include upturned trees as potential den sites. [POL, SBM]
262	F56	New or Expanded Wetland	**Human** actions within or adjacent to the AA have persistently expanded a naturally occurring wetland or created a wetland where there previously was none (e.g., by excavation, impoundment):		Determine this using historical aerial photography, old maps, soil maps, or permit files as available [CS, NR, OE, PH, Sens]
263			No.	0	
264			Yes, and created or expanded 20 - 100 years ago.	0	
265			Yes, and created or expanded 3-20 years ago.	0	
266			Yes, and created or expanded within last 3 years.	0	
267			Yes, but time of origin or expansion unknown.	0	
268			Unknown if new or expanded within 20 years or not.	1	
269	F57	Burn History	More than 1% of the AA's previously vegetated area:		Look for charred soil or stumps (in multiple widely-spaced locations) or ask landowner. [CS, PH, STR]
270			Burned within past 5 years.	0	
271			Burned 6-10 years ago.	0	
272			Burned 11-30 years ago.	0	
273			Burned >30 years ago, or no evidence of a burn and no data.	1	
274	F58	Visibility	The maximum percentage of the wetland that is visible from the best vantage point on public roads, public parking lots, public buildings, or public maintained trails that intersect, adjoin, or are within 100 m of the AA (select one) is:		[PU, STR, WBFv]
275			<25%.	1	
276			25-50%.	0	
277			>50%.	0	
278	F59	Non-consumptive Uses - Actual or Potential	Assuming access permission was granted, select **ALL** statements that are true of the AA as it currently exists:		[PU, STR]
279			For an average person, walking is physically possible in (not just near) >5% of the AA during most of the growing season, e.g., free of deep water and dense shrub thickets.	1	
280			Maintained roads, parking areas, or foot-trails are within 10 m of the AA, or the AA can be accessed part of the year by boats arriving via contiguous waters.	0	
281			Within or near the AA, there is an interpretive center, trails with interpretive signs or brochures, and/or regular guided interpretive tours.	0	
282	F60	Unvisited Core Area	The percentage of the AA almost never visited by humans during an average growing season probably comprises: *[Note: Only include the part actually walked or driven (not simply viewed from) with a vehicle or boat. Do not include visitors on trails outside of the AA unless more than half the wetland is visible from the trails and they are within 30 m of the wetland edge. In that case include only the area occupied by the trail.]*		[AM, FAv, FRv, PH, PU, SBM, STR, WBF, WBN]
283			<5% and no inhabited building is within 100 m of the AA.	0	
284			<5% and inhabited building is within 100 m of the AA.	0	
285			5-50% and no inhabited building is within 100 m of the AA.	0	
286			5-50% and inhabited building is within 100 m of the AA.	0	
287			50-95%, with or without inhabited building nearby.	0	
288			>95% of the AA with or without inhabited building nearby.	1	
289	F61	Frequently Visited Area	The part of the AA visited by humans almost daily for several weeks during an average growing season probably comprises: *[See note above.]*		[AM, PH, PU, SBM, STR, WBF, WBN]
290			<5%. If F60 was answered ">95%" (mostly never visited), **SKIP to F64.**	1	
291			5-50%.	0	
292			50-95%.	0	
293			>95% of the AA.	0	
294	F62	BMP - Soils	Boardwalks, paved trails, fences or other infrastructure and/or well-enforced regulations appear to effectively prevent visitors from walking on soil within nearly all of the AA when the soil is unfrozen. Enter "1" if true.	0	[PH, PU]
295	F63	BMP - Wildlife Protection	Fences, observation blinds, platforms, paved trails, exclusion periods, and/or well-enforced prohibitions on motorised boats, off-leash pets, and off road vehicles appear to effectively exclude or divert visitors and their pets from the AA at critical times in order to minimize disturbance of wildlife (except during hunting seasons). Enter "1" if true.	0	[AM, PU, WBF, WBN]
296	F64	Consumptive Uses (Provisioning Services)	Recent evidence was found within the AA of the following potentially-sustainable consumptive uses. Select ALL that apply.		[FAv, FRv, WBFv]
297			Low-impact commercial timber harvest (e.g., selective thinning).	0	
298			Commercial or traditional-use harvesting of native plants, their fruits, or mushrooms.	0	
299			Waterfowl hunting.	0	
300			Fishing.	0	
301			Trapping of furbearers.	0	
302			None of the above.	1	
303	F65	Domestic Wells	The closest wells or water bodies that currently provide drinking water are:		[NRv]
304			Within 0-100 m. of the AA.	0	

	A	B	C	D	E
305			100-500 m. away.	0	
306			>500 m. away, or no information.	1	
307	F66	Calcareous Fen	The AA is, or is part of, a calcareous fen. See the Plants_Calcar worksheet in the accompanying SuppInfo file for list of plant indicators (calciphiles). Enter 1 If more than two Strong or more than five Moderate calciphile species are present; otherwise enter 0, but if not able to identify those **and** no information, change to **blank**.	0	[PH, PR]
308					

Investigator: Brady Leights and Tiffany MacAulay	**Site Identifier: WL-4**	Date: 17 August 2021

Stressor (S) Data Form for Non-Tidal Wetlands. WESP-AC for Nova Scotia version 2.

		Data
S1	**Aberrant Timing of Water Inputs**	
	In the last column, place a check mark next to any item that is likely to have caused the timing of water inputs (but not necessarily their volume) to shift by hours, days, or weeks, becoming either more muted (smaller or less frequent peaks spread over longer times, more temporal homogeneity of flow or water levels) or more flashy (larger or more frequent spikes but over shorter times). [FA, FR, INV, PH, STR]	
	Stormwater from impervious surfaces that drains directly to the wetland.	
	Water subsidies from wastewater effluent, septic system leakage, snow storage areas, or irrigation.	
	Regular removal of surface or groundwater for irrigation or other consumptive use.	
	Flow regulation in tributaries or water level regulation in adjoining water body, or other control structure at water entry points that regulates inflow to the wetland.	
	A dam, dike, levee, weir, berm, or fill -- within or downgradient from the wetland -- that interferes with surface or subsurface flow in/out of the AA (e.g., road fill, wellpads, pipelines).	
	Excavation within the wetland, e.g., dugout, artificial pond, dead-end ditch.	
	Artificial drains or ditches in or near the wetland.	
	Accelerated downcutting or channelization of an adjacent or internal channel (incised below the historical water table level).	
	Logging within the wetland.	
	Subsidence or compaction of the wetland's substrate as a result of machinery, livestock, fire, drainage, or off road vehicles.	
	Straightening, ditching, dredging, and/or lining of tributary channels.	
	If any items were checked above, then for each row of the table below, assign points. However, if you believe the checked items had no measurable effect on the timing of water conditions in any part of the AA, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.	

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Spatial extent of timing shift within the wetland:	>95% of wetland.	5-95% of wetland.	<5% of wetland.	0
When most of the timing shift began:	<3 yrs ago.	3-9 yrs ago.	10-100 yrs ago.	0
Score the following 2 rows only if the altered inputs began within past 10 years, and only for the part of the wetland that experiences those.				
Input timing now vs. previously:	Shift of weeks.	Shift of days.	Shift of hours or minutes.	0
Flashiness or muting:	Became very flashy or controlled.	Intermediate.	Became mildly flashy or controlled.	0
			Sum=	0
			Stressor subscore=	0.00

		Data
S2	**Accelerated Inputs of Contaminants and/or Salts**	
	In the last column, place a check mark next to any item -- occurring in either the wetland or its CA -- that is likely to have accelerated the inputs of contaminants or salts to the AA. [AM, FA, PH, POL, STR]	
	Stormwater or wastewater effluent (including failing septic systems), landfills, industrial facilities.	
	Metals & chemical wastes from mining, shooting ranges, snow storage areas, oil/ gas extraction, other sources (download many locations from National Pollutant Release Inventory and view KMZ overlay in Google Earth. https://www.ec.gc.ca/inrp-npri/default.asp?lang=En&n=B85A1846-1	
	Road salt.	
	Spraying of pesticides, as applied to lawns, croplands, roadsides, or other areas in the CA.	
	If any items were checked above, then for each row of the table below, assign points. However, if you believe the checked items did not cumulatively expose the AA to significantly higher levels of contaminants and/or salts, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.	

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Usual toxicity of most toxic contaminants:	Industrial effluent, mining waste, unmanaged landfill.	Cropland, managed landfill, pipeline or transmission rights-of-way.	Low density residential.	0
Frequency & duration of input:	Frequent and year-round.	Frequent but mostly seasonal.	Infrequent & during high runoff events mainly.	0
AA proximity to main sources (actual or potential):	0 - 15 m.	15-100 m. or in groundwater.	In more distant part of contributing area.	0
			Sum=	0
			Stressor subscore=	0.00

		Data
S3	**Accelerated Inputs of Nutrients**	
	In the last column, place a check mark next to any item -- occurring in either the wetland or its CA -- that is likely to have accelerated the inputs of nutrients to the wetland. [NRv, PRv, STR]	
	Stormwater or wastewater effluent (including failing septic systems), landfills.	
	Fertilizers applied to lawns, ag lands, or other areas in the CA.	
	Livestock, dogs.	
	Artificial drainage of upslope lands.	
	If any items were checked above, then for each row of the table below, assign points. However, if you believe the checked items did not cumulatively expose the AA to significantly more nutrients, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.	

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Type of loading:	High density of unmaintained septic, some types of industrial sources.	Moderate density septic, cropland, secondary wastewater treatment plant.	Livestock, pets, low density residential.	0
Frequency & duration of input:	Frequent and year-round.	Frequent but mostly seasonal.	Infrequent & during high runoff events mainly.	0
AA proximity to main sources (actual or potential):	0 - 15 m.	15-100 m. or in groundwater.	In more distant part of contributing area.	0
			Sum=	0
			Stressor subscore=	0.00

		Data
S4	**Excessive Sediment Loading *from Contributing Area***	
	In the last column, place a check mark next to any item present in the CA that is likely to have elevated the load of waterborne or windborne sediment reaching the wetland from its CA. [FA, FR, INV, PH, SRv, STR]	
	Erosion from plowed fields, fill, timber harvest, dirt roads, vegetation clearing, fires.	1
	Erosion from construction, in-channel machinery in the CA.	
	Erosion from off-road vehicles in the CA.	
	Erosion from livestock or foot traffic in the CA.	
	Stormwater or wastewater effluent.	
	Sediment from road sanding, gravel mining, other mining, oil/ gas extraction.	
	Accelerated channel downcutting or headcutting of tributaries due to altered land use.	
	Other human-related disturbances within the CA.	
	If any items were checked above, then for each row of the table below, assign points (3, 2, or 1 as shown in header) in the last column. However, if you believe the checked items did not cumulatively add significantly more sediment or suspended solids to the AA, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.	

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Erosion in CA:	Extensive evidence, high intensity.*	Potentially (based on high-intensity* land use) or scattered evidence.	Potentially (based on low-intensity* land use) with little or no direct evidence.	2
Recentness of significant soil disturbance in the CA:	Current & ongoing.	1-12 months ago.	>1 yr ago.	1

	Duration of sediment inputs to the wetland:	Frequent and year-round.	Frequent but mostly seasonal.	Infrequent & during high runoff events mainly.	1
	AA proximity to actual or potential sources:	0 - 15 m.	15-100 m.	In more distant part of contributing area.	1
	* high-intensity= extensive off-road vehicle use, plowing, grading, excavation, erosion with or without veg removal; low-intensity= veg removal only with little or no apparent erosion or disturbance of soil or sediment.			Sum=	5
				Stressor subscore=	0.42
S5	**Soil or Sediment Alteration *Within the Assessment Area***				
	In the last column, place a check mark next to any item present in the wetland that is likely to have compacted, eroded, or otherwise altered the wetland's soil. Consider only items occurring within past 100 years or since wetland was created or restored (whichever is less). [CS, INV, NR, PH, SR, STR]				
	Compaction from machinery, off-road vehicles, livestock, or mountain bikes, especially during wetter periods.				
	Leveling or other grading not to the natural contour.				
	Tillage, plowing (but excluding disking for enhancement of native plants).				
	Fill or riprap, excluding small amounts of upland soils containing organic amendments (compost, etc.) or small amounts of topsoil imported from another wetland.				
	Excavation.				
	Ditch cleaning or dredging in or adjacent to the wetland.				
	Boat traffic in or adjacent to the wetland and sufficient to cause shore erosion or stir bottom sediments.				
	Artificial water level or flow manipulations sufficient to cause erosion or stir bottom sediments.				
	If any items were checked above, then for each row of the table below, assign points. However, if you believe the checked items did not measurably alter the soil structure and/or topography, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.				
		Severe (3 points)	Medium (2 points)	Mild (1 point)	
	Spatial extent of altered soil:	>95% of wetland or >95% of its upland edge (if any).	5-95% of wetland or 5-95% of its upland edge (if any).	<5% of wetland and <5% of its upland edge (if any).	0
	Recentness of significant soil alteration in wetland:	Current & ongoing.	1-12 months ago.	>1 yr ago.	0
	Duration:	Long-lasting, minimal veg recovery.	Long-lasting but mostly revegetated.	Short-term, revegetated, not intense.	0
	Timing of soil alteration:	Frequent and year-round.	Frequent but mostly seasonal.	Mainly during one-time or scattered events.	0
				Sum=	0
				Stressor subscore=	0.00

Assessment Area (AA) Results:

Wetland ID: Uniacke Quarry Wetland 4

Date: 17 August 2021

Observer: Brady Leights and Tiffany MacAulay

Latitude & Longitude (decimal degrees): 44.917231, -63.816243

Scores will appear below after data are entered in worksheets OF, F, and S. See Manual for definitions and descriptions of how scores were computed.

Wetland Functions or Other Attributes:	Function Score (Normalised)	Function Rating	Benefits Score (Normalised)	Benefits Rating	Function Score (raw)	Benefits Score (raw)
Water Storage & Delay (WS)	8.63	Higher	5.02	Moderate	8.38	2.23
Stream Flow Support (SFS)	0.00	Lower	0.00	Lower	0.00	0.00
Water Cooling (WC)	0.00	Lower	0.00	Lower	0.00	0.00
Sediment Retention & Stabilisation (SR)	4.30	Moderate	1.93	Moderate	5.56	0.94
Phosphorus Retention (PR)	0.20	Lower	1.29	Moderate	3.87	1.00
Nitrate Removal & Retention (NR)	10.00	Higher	3.33	Lower	10.00	3.33
Carbon Sequestration (CS)	7.99	Higher			8.98	
Organic Nutrient Export (OE)	5.68	Moderate			3.71	
Anadromous Fish Habitat (FA)	0.00	Lower	0.00	Lower	0.00	0.00
Resident Fish Habitat (FR)	0.00	Lower	0.00	Lower	0.00	0.00
Aquatic Invertebrate Habitat (INV)	5.06	Moderate	1.17	Moderate	5.56	1.87
Amphibian & Turtle Habitat (AM)	3.06	Lower	2.52	Lower	4.73	3.84
Waterbird Feeding Habitat (WBF)	0.00	Lower	0.00	Lower	0.00	0.00
Waterbird Nesting Habitat (WBN)	0.00	Lower	0.00	Lower	0.00	0.00
Songbird, Raptor, & Mammal Habitat (SBM)	7.47	Moderate	5.00	Moderate	6.51	5.00
Pollinator Habitat (POL)	6.74	Moderate	3.33	Moderate	5.59	3.33
Native Plant Habitat (PH)	4.62	Moderate	5.14	Lower	5.74	5.14
Public Use & Recognition (PU)			1.82	Moderate		1.54
Wetland Sensitivity (Sens)			10.00	Higher		5.19
Wetland Ecological Condition (EC)			3.04	Lower		6.67
Wetland Stressors (STR) (higher score means more stress)			4.64	Moderate		2.41
Summary Ratings for Grouped Functions:						
HYDROLOGIC Group (WS)	8.63	Higher	5.02	Moderate	8.38	2.23
WATER QUALITY SUPPORT Group (max+avg/2 of SR, PR, NR, CS)	7.81	Higher	2.76	Lower	8.55	2.55
AQUATIC SUPPORT Group (max+avg/2 of SFS, INV, OE, WC)	4.18	Moderate	0.78	Lower	3.94	1.25
AQUATIC HABITAT Group (max+avg/2 of FA, FR, AM, WBF, WBN)	1.84	Lower	1.51	Lower	2.84	2.30
TRANSITION HABITAT Group (max+avg/2 of SBM, PH, POL)	6.88	Higher	4.82	Lower	6.23	4.82
WETLAND CONDITION (EC)			3.04	Lower		6.67
WETLAND RISK (average of Sensitivity & Stressors)			7.32	Higher		3.80

NOTE: A score of 0 does not mean the function or benefit is absent from the wetland. It means only that this wetland has a capacity that is equal or less than the lowest-scoring one, for that function or benefit, from among all the NS calibration wetlands that were assessed previously.

NOVA SCOTIA - Functional WSS Interpretation Tool

1. General Description of Tool:

This interpretive tool automatically determines whether the subject wetland will be regulated as a Wetland of Special Significance (WSS). This determination is made based on the WESP-AC functional results, per the Nova Scotia *Wetland Conservation Policy* .

A 'Function-Benefit Product' (FBP) is calculated based upon the Grouped Functions, and has a theoretical maximum of 100. Threshold values for the FBP are applied, in order to categorize the FBP scores into 'Low', 'Moderate' or 'High' scores. Thresholds are determined based upon the statistical distribution of WESP-AC scores compiled from various sites across the Province (N=442). These categories are subsequently used to apply various 'Functional WSS Rules', as described below.

For the purpose of defining and applying the Functional WSS rules, two supergroups are defined based on grouped functions, as follows: **(1) Support Supergroup** - includes Hydrologic, Water Quality Support, and Aquatic Support grouped functions. **(2) Habitat Supergroup** - includes Aquatic Habitat and Transition Habitat grouped functions.

2. Functional WSS Rule Definitions:

Habitat Rule: In consideration of the Habitat Supergroup, the subject wetland is a WSS if either of the following sub-rules are satisfied:

(HAB 1) Two 'High Scores' OR

(HAB 2) One 'High' and one 'Moderate' score

Support Rule: In consideration of the Support Supergroup, the subject wetland is a WSS if either of the following sub-rules are satisfied:

(SUP 1) Three 'High' scores OR

(SUP 2) Two 'High' and one 'Moderate' score

Habitat/Support Hybrid Rule: In consideration of both the Habitat and Support Supergroups, the subject wetland is a WSS if the following is satisfied:

(HYB 1) One 'High' Habitat score **AND** Two or three 'High' Support scores

3. Functional WSS Interpretation Results

Function-Benefit Product (FBP)	FBP SCORE	FBP SCORE CATEGORY
SUPPORT SUPERGROUP - HYDROLOGIC	43.30851007	Moderate
SUPPORT SUPERGROUP - WATER QUALITY SUPPORT	21.54325199	Low
SUPPORT SUPERGROUP - AQUATIC SUPPORT	3.25111015	Low
HABITAT SUPERGROUP - AQUATIC HABITAT	2.772049327	Low
HABITAT SUPERGROUP - TRANSITION HABITAT	33.12168968	Low

3a. Functional WSS Determination: Automatic Method

Habitat Rule Satisfied?	NO
Support Rule Satisfied?	NO
Habitat/Support Hybrid Rule Satisfied?	NO
CONCLUSION:	**Site is not a WSS**

3b. Functional WSS Determination - Manual Method Using Dichotomous Key

1a. (HAB) - One or more 'High' scores for AH or TH.....**2**
2a. (HAB) - Two 'High' scores.....**WSS**
2b. (HAB) - One 'High' score.....**3**
3a. (HAB) - Any combination of 'High' and 'Moderate' scores..... **WSS**
3b. (HAB) - Any combination of 'High' and 'Low' scores.....**4**
4a. (SUP) One or more 'High' Scores for HYD, WQS, or AS.....**5**
5a. (SUP) Two or Three 'High' scores ..... **WSS**
5b. (SUP) One 'High' score **6**
6a. (SUP) Any combo of one 'High', two 'Mod' scores..... **WSS**
6b. (SUP) One 'High', plus any other combo of scores.....**not WSS**
4b. (SUP) Zero 'High' Scores for HYD, WQS, or AS.....**7**
7a. (SUP) Three 'Moderate' scores..... **WSS**
7b. (SUP) Any other combination of scores .....**not WSS**
1b. (HAB) - Zero 'High' Scores for AH or TH.....**8**
8a. (SUP) Three 'High' Scores.....**WSS**
8b. (SUP) Less than three 'High' scores.....**9**
9a. (SUP) Two 'High' and one 'Moderate' score.....**WSS**
9b. (SUP) - Any other combination of scores .....**not WSS**

Cover Page: Basic Description of Assessment	**WESP-AC version 2**
Site Name:	Uniacke Quarry Wetland 5
Investigator Name:	Brady Leights and Tiffany MacAulay
Date of Field Assessment:	26 July, 2021
Nearest Town:	Mount Uniacke
Latitude (decimal degrees):	44.9151
Longitude (decimal degrees):	-63.8161
Is a map based on a formal on-site wetland delineation available?	Yes
Approximate size of the Assessment Area (AA, in hectares):	0.04
AA as percent of entire wetland (approx.). Attach sketch map if AA is smaller than the entire contiguous wetland.	100
What percent (approx.) of the **wetland** were you able to visit?	100
What percent (approx.) of the **AA** were you able to visit?	100
Were you able to ask the site owner/manager about any of the questions?	
Indicate here if you intentionally surveyed for rare plants, calciphile plants, or rare animals:	
Have you attended a WESP-AC training session? If so, indicate approximate month & year.	September, 2021
How many wetlands have you assessed previously using WESP-AC? (approx.)	
Comments about the site or this WESP-AC assessment (attach extra page if desired):	

	A	B	C	D	E
1	Date: 26 July, 2021		Site Identifier: WL-5	Investigator: Brady Leights and Tiffany MacAulay	
2	**Form OF (Office). Non-tidal Wetland Data Form. WESP-AC version 2 for Nova Scotia wetlands only.** DIRECTIONS: Conduct an assessment only after reading the accompanying Manual and the Explanations column of the data form. In the Data column, change the 0 (false) to a 1 (true) for the best choice, or for multiple choices where allowed and so indicated. Answering many of the questions below will require using these online map viewers: **Google Earth Pro**: https://www.google.com/earth/download/gep/agree.html **Provincial Landscape Viewer**: https://nsgi.novascotia.ca/plv/ For most wetlands, completing this office data form will require 1-2 hours. For a list of functions to which each question pertains, see bracketed abbreviations in the Definitions/Explanations column. For detailed descriptions of each WESP-AC model, see Appendix B of the accompanying Manual. Codes for functions and values are: WS= Water Storage, SFS= Stream Flow Support, WC= Water Cooling, SR= Sediment Retention & Stabilisation, PR= Phosphorus Retention, NR= Nitrate Removal, CS= Carbon Sequestration, OE= Organic Nutrient Export, INV= Invertebrate Habitat, FA= Anadromous Fish Habitat, FR= Resident Fish Habitat, AM= Amphibian & Reptile Habitat, WBF= Feeding Waterbird Habitat, WBN= Nesting Waterbird Habitat, SBM= Songbird, Raptor, & Mammal Habitat, POL= Pollinator Habitat, PH= Native Plant Habitat, PU= Public Use & Recognition, EC= Ecological Condition, Sen= Wetland Sensitivity, STR= Stressors.			
3	#	Indicators	Condition Choices	Data	Definitions/Explanations
4	OF1	Province	Mark the province in which the AA is located by changing the 0 in the column next to it to a "1". Mark only one.		This determines to which province's calibration wetlands the raw score of any wetland is normalised. In the function and benefits models, it also triggers the automatic exclusion of indicators for which no spatial data exists in a particular province.
5			New Brunswick	0	
6			Nova Scotia	1	
7			Prince Edward Island	0	
8			Newfoundland-Labrador	0	
9	OF2	Ponded Area Within 1 km.	The area of **surface water** ponded during most of the growing season that is both (1) in or adjacent to the AA and (2) within 1 km is:		**"Adjacent"** means not separated from the AA by a wide expanse (>50 m) of upland (including roads >50 m wide). Include ponded areas likely to be hidden by wetland vegetation. If surface water extends beyond 1 km, include only the part within 1 km. Do not include tidal areas. Measure the area from aerial imagery using Google Earth Pro (click on Ruler icon in toolbar, then Polygon in pop-up menu). [PH, SBM, WBN]
10			<0.01 hectare (about 10 m x 10 m).	0	
11			0.01 - 0.1 hectare.	0	
12			0.1 - 1 hectare.	0	
13			1 to 10 hectares.	1	
14			10 to 100 hectares.	0	
15			>100 hectares.	0	
16	OF3	Ponded Water & Wetland Within 1 km.	The area of **wetlands and surface water** ponded during most of the growing season that is both (1) in or adjacent to the AA and (2) within 1 km is:		See definition of adjacent in OF2. If the AA's wetland vegetation extends beyond 1 km, include only the part within 1 km. "Ponded" means not flowing in rivers or streams. [Sens, WBF]
17			<0.01 hectare (about 10 m x 10 m).	0	
18			0.01 - 0.1 hectare.	0	
19			0.1 - 1 hectare.	0	
20			1 to 10 hectares.	0	
21			10 to 100 hectares.	1	
22			>100 hectares.	0	
23	OF4	Size of Largest Nearby Vegetated Tract or Corridor	The largest vegetated patch or corridor that includes the AA's vegetation plus all **adjacent** upland vegetation that is not lawn, row crops, heavily grazed lands, conifer plantation is:		See definition of adjacent in OF2. Use Google Earth Pro's polygon ruler (as described above). Exclude conifer plantations only if it is obvious that trees were planted in rows. [AM, PH, SBM, Sens]
24			<0.01 hectare (about 10 m x 10 m).	0	
25			0.01 - 0.1 hectare.	0	
26			0.1 - 1 hectare.	0	
27			1 to 10 hectares.	0	
28			10 to 100 hectares.	0	
29			100 to 1000 hectares.	0	
30			>1000 hectares. [*This is nearly always the answer in relatively undeveloped landscapes.*]	1	
31	OF5	Distance to Large Vegetated Tract	The minimum distance from the **edge** of the AA to the edge of the closest ***vegetated land*** (but excluding row crops, lawn, conifer plantation) **larger than 375 hectares** (about 2 km on a side), is:		To measure distance, use Google Earth Pro (Ruler > Line tool). The 375-ha criterion is from the Fundy Model Forest Project. [AM, PH, POL, SBM, Sens]
32			<50 m, and not separated from the 375-ha vegetated area by any width of **paved** roads, stretches of open water, row crops, bare ground, lawn, or impervious surface. Or the AA itself contains >375 ha of vegetation. [This is often the answer in relatively undeveloped landscapes.]	1	
33			<50 m, but completely separated from the 375-ha vegetated area by those features, and AA does not contain >375 ha of vegetation.	0	
34			50-500 m, and **not** separated.	0	
35			50-500 m, but separated by those features.	0	
36			0.5 - 5 km, and **not** separated.	0	
37			0.5 - 5 km, but separated by those features.	0	
38			None of the above (the closest patches or corridors which are that large are >5 km away).	0	
39	OF6	Herbaceous Uniqueness	The AA's vegetation cover is >10% herbaceous* but uplands within 5 km have <10% herbaceous cover. If so, enter "3" and continue to OF7. If not, consider: The AA's vegetation cover is >10% herbaceous* but uplands within 1 km have <10% herbaceous cover. If so enter "2" and continue to OF7. If not, consider: The AA's vegetation cover is >10% herbaceous* but uplands within 100 m of the wetland edge have <10% herbaceous cover. If so, enter "1". [* NOTE: Exclude lawns, row crops, heavily grazed lands, forest, shrublands. Include moss as well as grasslike plants in this use of "herbaceous vegetation"]	1	For this question only, consider moss to be herbaceous vegetation. Determine the score by viewing aerial imagery in Google Earth after successively drawing or estimating the boundaries of the buffers of 5 km, 1 km, and 100 m radius focused on the center of the AA. Circles of specified radius can be drawn in Google Earth Pro by clicking on the Ruler icon, then Circle in the pop-up menu. [AMv, PHv, POLv, SBMv, WBFv, WBNv]
40	OF7	Woody Uniqueness	The AA's vegetation cover is >10% woody* but uplands within 5 km have <10% woody cover. If so, enter "3" and continue to OF8. If not, consider: The AA's vegetation is >10% woody* but uplands within 1 km have <10% woody cover. If so enter "2" and continue to OF8. If not, consider: The AA's vegetation is >10% woody* but uplands within 100 m of the wetland edge have <10% woody cover. If so, enter "1" [* NOTE: woody cover = trees & shrubs taller than 1 m.]	0	See above. Do not consider conifer plantations to be forest if it is obvious that trees were planted in rows. [AMv, PHv, POLv, SBMv]
41	OF8	Local Vegetated Cover Percentage	Draw a 5-km radius circle measured from the center of the AA. Ignoring all permanent water in the circle, the percent of the remaining area that is wooded or unmanaged herbaceous vegetation (NOT lawn, row crops, bare or heavily grazed land, clearcuts, or conifer plantations) is:		In Google Earth, draw the 5 km buffer and then estimate land cover percentages, or do GIS analysis of an appropriate land cover layer. [AM, PH, POL, SBM, Sens]
42			<5% of the land.	0	
43			5 to 20% of the land.	0	
44			20 to 60% of the land.	0	
45			60 to 90% of the land.	1	
46			>90% of the land. SKIP to OF10.	0	
47	OF9	Type of Land Cover Alteration	Within the **5-km** radius circle, and ignoring all permanent water, the land area that is bare or non-perennial cover is mostly:		[AM, SBM]
48			Impervious surface, e.g., paved road, parking lot, building, exposed rock.	0	
49			Bare pervious surface, e.g., lawn, recent (<5 yrs ago) clearcut, dirt or gravel road, cropland, landslide, conifer plantation.	1	
50	OF10	Distance by Road to Nearest Population Center	Measured **along** the maintained road nearest the AA, the distance to the nearest **population center** is:		"Population center" means a settled area with more than about 5 regularly- inhabited structures per square kilometer. In Google Earth Pro, click on the Ruler icon, then Path, and draw and measure the route. [FAv, FRv, NRv, PH, PU, SBM, WBFv]
51			<100 m.	0	
52			100 - 500 m.	0	
53			0.5- 1 km.	0	
54			1 - 5 km.	1	
55			>5 km.	0	

	A	B	C	D	E
56	OF11	Distance to Nearest Maintained Road	From the **center** of the AA, the distance to the nearest maintained public road (dirt or paved) is:		Determine this by viewing aerial imagery in Google Earth Pro and measuring with the Ruler>Line tool. [AM, FAv, FRv, NRv, PH, PU, SBM, STR, WBN]
57			<10 m.	0	
58			10 - 25 m.	0	
59			25 - 50 m.	0	
60			50 - 100 m.	0	
61			100 - 500 m.	0	
62			>500 m.	1	
63	OF12	Wildlife Access	Draw a circle of radius of 5 km from the center of the AA. If mammals and amphibians can move from the center of the AA to ALL other separate wetlands and ponds located within the circle without being forced to cross pavement (any width), lawns, bare ground, and/or marine waters, mark 1= yes can move to all, 0= no. Change to **blank** if there are no other wetlands within 5 km.	0	Draw the 5 km circle in Google Earth Pro using the Circle tool and search for roads and wetlands within it, being alert for roads hidden under forest canopy. [AM, SBM, STR]
64	OF13	Distance to Ponded Water	The distance from the AA center to the closest (but separate) ponded water body visible in GoogleEarth imagery is:		In Google Earth Pro, zoom in closely to examine the surrounding landscape for ponds, lakes, and wetlands that appear to be permanently flooded. [AM, PH, SBM, Sens, WBF, WBN]
65			<50 m, and not separated by any width of paved roads, stretches of open water, row crops, lawn, bare ground, or impervious surface.	0	
66			<50 m, but completely separated by those features.	0	
67			50-500 m, and not separated.	0	
68			50-500 m, but separated by those features.	0	
69			0.5 - 1 km, and not separated.	1	
70			0.5 - 1 km, but separated by those features.	0	
71			None of the above (the closest patches or corridors that large are >1 km away).	0	
72	OF14	Distance to Large Ponded Water	The distance from the AA center to the closest (but separate) non-tidal body of water that is ponded during most of the year and is **larger than 8 hectares** during most of a normal year is:		Determine this by viewing aerial imagery in Google Earth. [Sens, WBF, WBN]
73			<100 m.	0	
74			100 m - 1 km.	0	
75			1 -2 km.	0	
76			2-5 km.	1	
77			5-10 km.	0	
78			>10 km.	0	
79	OF15	Tidal Proximity	The distance from the AA edge to the closest **tidal water** body (regardless of its salinity) is:		In Google Earth, measure the distance to the ocean (including Bay of Fundy) or tidal river, whichever is closer. If you need to see how far upriver a river is tidal, see the KMZ file provided with this calculator for NS (NS Headtide). Points shown in those files are only an approximation, so local information if available may be preferable. [FA, WBF]
80			<100 m.	0	
81			100 m - 1 km.	0	
82			1 - 5 km.	0	
83			5-10 km.	0	
84			10-40 km.	1	
85			>40 km.	0	
86	OF16	Upland Edge Contact	Select one:		[NR, SBM, Sens]
87			The AA has no upland edge (or upland is <1% of perimeter). The AA is entirely surrounded by (& contiguous with) other wetlands or water.	0	
88			1-25% of the AA's perimeter abuts upland (including filled areas). The rest adjoins other wetlands or water that is mostly wider than the AA.	0	
89			25-50% of the AA's perimeter abuts upland. The rest adjoins other wetlands or water that is mostly wider than the AA.	0	
90			50-75% of the AA's perimeter abuts upland. The rest adjoins other wetlands or water that is mostly wider than the AA.	0	
91			More than 75% of the AA's perimeter abuts upland. Any remainder adjoins other wetlands or water that is mostly wider than the AA. **This will be true for most** assessments done with WESP-AC.	1	
92	OF17	Flood Damage from **Non-tidal** Waters	Within 5 km downstream or downslope of the AA (select first true choice):		Contact local authories to determine if such maps exist. Where available, LiDAR imagery can provide finer elevational resolution useful for flood modeling. [WSv]
93			Maps show Flood Zone or Flood Risk areas and there appears to be infrastructure vulnerable to river flooding not caused by tidal storm surges.	0	
94			Maps show Flood Zone or Flood Risk areas, but infrastructure is absent or is not vulnerable to floods from a non-tidal river. In some cases levees, upriver dams, or other measures may partly limit damage or risk from smaller events.	0	
95			Maps do **not** show Flood Zone or Flood Risk areas (**or no such mapping has been done locally**) and there appears to be infrastructure vulnerable to river flooding unrelated to tidal storm surges.	0	
96			Maps do not show Flood Zone or Flood Risk areas (or no such mapping has been done locally) and there is **no infrastructure** vulnerable to river flooding unrelated to tidal storm surges.	1	
97	OF18	Relative Elevation in Watershed	In Google Earth, enable the Terrain layer (lower left menu) and open the NS_Watersheds Secondary KMZ file that accompanies this calculator. Then determine the AA's approximate elevation (bottom right, NOT the "eye alt"). Then move cursor around to determine the watershed's maximum and minimum elevation. Divide the AA's elevation by the (max-min).	0.86	[FA, NR, Sens, SFSv, WCv, WSv]
98	OF19	Water Quality Sensitive Watershed or Area	The AA is in a Protected Water Supply area (Designated Water Supply Area, Natural Watershed Municipal Surface Water Supply Area, or Municipal Water Supply Area) according to the provided KMZ overlay ("NS Protected Water Supply Areas"). Enter 1= yes, 0= no.	0	If an ACCDC report is available for this AA, it also may contain such information. [NRv]
99	OF20	Degraded Water Upstream	Sampling indicates a problem with concentrations of **metals**, **hydrocarbons**, **nutrients**, or other substances (excluding bacteria, acidic water, high temperatures) being present at levels harmful to aquatic life or humans, and:		May use existing data, or sample those waters as part of this wetland assessment. "Harmful" should be evaluated with regard to current federal or provincial water quality standards. [AM, FA, FR, NRv, PRv, SRv, STR, WBF, WBN]
100			The condition is present within the AA.	0	
101			The condition is present in waters within 1 km that flow **into** the AA, but has not been documented in the AA itself.	0	
102			Sampling during both low water periods and times with high runoff (storms, snowmelt) indicates no problems in either the AA or inflowing waters.	0	
103			Data are insufficient (no or inadequate sampling within 1 km, or condition exists only at >1 km upstream). **This is the situation for nearly all wetlands in this region.**	1	
104	OF21	Degraded Water Downstream	The problem described above is **downslope from** the AA, and:		May use existing data, or monitor waters as part of this wetland assessment. [NRv, PRv, SRv]
105			The condition is present within 1 km downslope and connected to the AA by a channel.	0	
106			The condition is present within 5 km downslope and connected to the AA by a channel, or within 1 km but not connected to the AA by a channel.	0	
107			Sampling during both low water periods and times with high runoff (storms, snowmelt) indicates no problems in either the AA or inflowing waters.	0	
108			Data are insufficient (no or inadequate sampling within 1 km, or condition exists only at >1 km upstream). **This is the situation for nearly all wetlands in this region.**	1	
109	OF22	Wetland as a % of Its Contributing Area (Catchment)	From a topographic map and field observations, estimate the approximate boundaries of the catchment (CA) of the entire wetland of which the AA may be only a part. Then adjust those boundaries if necessary based on your field observations of the surrounding terrain, and/or by using procedures described in the Manual. Divide the area of the wetland (not just the AA) by the approximate area of its catchment excluding the area of the wetland itself. When doing the calculation, if ponded water is adjacent to the wetland, include that in the wetland's area. The result is:		Topographic maps may be viewed online at the National Atlas of Canada (Toporama): http://atlas.gc.ca/toporama/en/index.html [NR, PR, Sens, SR, WS]
110			<0.01, or catchment size unknown due to stormwater pipes that collect water from an indeterminate area.	1	
111			0.01 to 0.1.	0	
112			0.1 to 1.	0	
113			>1 (wetland is larger than its catchment (e.g., wetland with flat surrounding terrain and no inlet, or is entirely isolated by dikes, or is a raised bog).	0	
114	OF23	Unvegetated Surface in the Contributing Area	The proportion of the AA's contributing area (measured to no more than 1000 m upslope) that is comprised of buildings, roads, parking lots, other pavement, exposed bedrock, landslides, and other mostly-bare surface is about :		[FA, INV, NRv, PRv, SRv, STR, WCv, WSv]
115			<10%.	1	
116			10 to 25%.	0	
117			>25%.	0	

	A	B	C	D	E
118	OF24	Transport From Upslope	A relatively large proportion of the precipitation that falls farther upslope in the CA reaches this wetland quickly as runoff (surface water), as indicated by the following: (a) input channel is present, (b) input channels have been straightened, (c) upslope wetlands have been ditched extensively, (d) land cover is mostly non-forest, (e) CA slopes are steep, and/or (f) most CA soils are shallow (bedrock near surface) and/or have high runoff coefficients. This statement is:		[NRv, PRv, SRv, WSv]
119			Mostly true.	0	
120			Somewhat true.	0	
121			Mostly untrue.	0	
122	OF25	Aspect	The overland flow direction of most surface water (in streams, rivers, or runoff) that enters the AA is:		[AM, NR, SFS, WC, WS]
123			Northward (N, NE). north-facing contributing area.	0	
124			Southward (S, SW). south-facing contributing area.	1	
125			Other (E, SE, W, NW), or no detectable uphill slope or input channel (flat).	0	
126	OF26	Internal Flow Distance (Path Length)	The horizontal flow distance from the wetland's inlet to outlet is:		Identify inlets and outlets, if any, from topographic maps (use elevations to determine which are inlets and which are outlets) and augment by field inspection. With the Provincial Landscape Viewer, select Nova Scotia Topo as the Basemap. Also enable the layer Forestry>WAM Predicted Flow. Then measure the inlet-outlet distance. [NR, OE, PR, SR, WS]
127			<10 m.	0	
128			10 - 50 m.	0	
129			50 - 100 m.	0	
130			100 - 1000 m.	0	
131			1- 2 km.	0	
132			>2 km, or wetland lacks an inlet and outlet.	1	
133	OF27	Growing Degree Days	In Google Earth, open the KMZ file that accompanies this calculator, called NS_GrowingDegreeDays. Place your cursor over the AA and left-click. From the pop-up window, enter the GRIDCODE number in the next column.	2000	This layer was provided by Dr. Dan McKenney of the Canadian Forest Service [AM, CS, FR, INV, NR, OE, PH, PR, Sens, SR, WBF, WCv, WS]
134	OF28	Fish Access or Use	According to agency biologists and/or your own observations, the AA. [M*ark just the first choice that is true.]* :		Regarding the last choice, if uncertain if an AA is fishless, consider the possibility its waters have been stocked. [AM, FA, FR, INV, WBF, WBN]
135			Is known to support rearing and/or spawning by Atlantic salmon or other anadromous species or eels. Go to Provincial Landscape Viewer>Wildlife>Significant Habitat>Species at Risk. Contact local fishery biologists, review the ACCDC report, and visit these websites: http://www.salmonatlas.com/atlanticsalmon/canada-east/index.1.html http://atlanticsalmonfederation.org/rivers/introduction.html	0	
136			Has not been documented to support Atlantic salmon rearing and/or spawning, but is connected to nearby waters likely to contain Atlantic salmon or other anadromous species or eels and is probably accessed by those during some conditions.	0	
137			Is probably is not accessed by any anadromous fish species but is known or likely to have other fish at least seasonally.	0	
138			Is known or likely to be fishless (e.g., too small, dry, and/or not accessible even temporarily, and not stocked).	1	
139	OF29	Species of Conservation Concern	Within the past 10 years, in the AA (or in its adjoining waters or wetland), qualified observers have documented *[mark all applicable*]:		Request information from ACCDC and/or conduct your own survey at an appropriate season using an approved protocol. For birds, also check eBird.org. NOTE for NS: If your WESP-AC is being completed for a Wetland Alteration Application to NS-ECC, your ACCDC results and any taxon-specific survey results must be submitted along with your WESP-AC results, and application. [AMv, EC, PHv, POLv, SBMv, Sens, WBFv, WBNv]
140			Presence of one or more of the plant species listed in the Plants_Rare worksheet of the accompanying SuppInfo file, or the AA is within a mapped Atlantic Coastal Plain Flora Buffer (go to Provincial Landscape Viewer> Wildlife> Special Management Practice Zones).	0	
141			Presence of one or more of the amphibian or reptile species (AM) of conservation concern as listed in the Wildlife_Rare worksheet of the accompanying SuppInfo file.	0	
142			Presence of one or more of the waterbird species (WBF, WBN) of conservation concern as listed in the Wildlife_Rare worksheet of the accompanying SuppInfo file.	0	
143			Presence of one or more of the nesting songbird or raptor species (SBM) of conservation concern as listed in the Wildlife_Rare worksheet of the accompanying SuppInfo file, during their nesting season (May-July for most species).	0	
144			None of the above, or no data.	1	
145	OF30	Important Bird Area (IBA)	In Google Earth, open the KMZ file that accompanies this calculator, called IBAs_Canada. The AA is all or part of an officially designated IBA. Enter 1= yes, 0= no.	0	The source of this layer, which should be checked periodically for updates, is: http://www.ibacanada.com/mapviewer.jsp?lang=EN [SBMv, WBFv, WBNv]
146	OF31	Black Duck Nesting Area	In Google Earth, open the KMZ file that accompanies this calculator, called BlackDuck. Adjust its alignment and opacity. Determine the predicted density (pairs per 25 sq. km) of nesting American Black Duck in the AA's vicinity: <10 (enter 0), 10-20 (enter 1), 20-30 (enter 2), >30 (enter 3). If outside of region shown in map, change to blank.	0	This was provided by Dr. David Leske. [WBNv]
147	OF32	Wintering Deer or Moose Concentration Areas	If AA is on private land with no information, change to blank (not 0). Otherwise: With the Provincial Landscape Viewer, for Wintering Moose, go to Wildlife> Significant Habitat. For Mainland Moose Concentration Areas, go to Wildlife> Special Management Practice Zones. Enter: yes= 1, no= 0.	0	[SBM]
148	OF33	Other Conservation Designation	The AA is all or part of an area designated by government, First Nations, or the Nature Conservancy of Canada (NCC) for its exceptional ecological features or highly intact natural conditions. With Provincial Landscape Viewer, see Protected Areas. Enter: yes= 1, no= 0. If uncertain, consult NCC and agencies for more recent information.	0	See: https://novascotia.ca/parksandprotectedareas/plan/interactive-map/ [PU]
149	OF34	Conservation Investment	The AA is part of or contiguous to a wetland on which public or private organizational funds were spent to preserve, create, restore, or enhance the wetland (excluding mitigation wetlands). Ask the property owner. Enter: yes= 1, no= 0. If no information, change to blank (not 0).	0	[PU]
150	OF35	Mitigation Investment	The AA is all or part of a mitigation site used explicitly to offset impacts elsewhere. Ask the property owner. Enter: yes= 1, no= 0. If no information, change to blank.	0	[PU]
151	OF36	Sustained Scientific Use	Plants, animals, or water in the AA have been monitored for >2 years, unrelated to any regulatory requirements, and data are available to the public. Or the AA is part of an area that has been designated by an agency or institution as a benchmark, reference, or status-trends monitoring area. Ask the property owner. Enter: yes= 1, no= 0. If no information, change to blank.	0	[PU]
152	OF37	Calcareous Region	The AA is NOT in a subregion that has been heavily exposed to acid precipitation. Enter "1" if true (green or yellow in map in Appendix A of the Manual). Enter "0" if false. If no information, change to blank.		[AM, FA, FR, INV, PH]
153	OF38	Ownership	Select the ONE ownership that covers the most of the AA. In Google Earth, open KMZ file called NS_Crownlands.Use more recent information if available.		"Private lands" may include those owned or leased by non-governmental organizations, e.g., charitable conservation land trusts, DUC, TNC. [PU, STR]
154			New timber harvest, roads, mineral extraction, and intensive summer recreation (e.g., off-road vehicles) are permanently prohibited. Includes many publicly-owned Protected Lands, and private lands under long-term (30+ year) legal agreements to maintain nearly-unaltered conditions.	0	
155			Ownership is public (e.g., municipal, Crown Reservations/Notations) but some or all of the above activities are allowed.	0	
156			Ownership is private but public access is allowed, and/or a shorter-term conservation easement (whether renewable or not) is in place.	0	
157			Ownership is private and owner does not allow access, or access permission unknown, and not a conservation easement.	1	

	A	B	C	D	E
1	Date: 26 July, 2021		Site Identifier: WL-5	Investigator: Brady Leights and Tiffany MacAulay	
2	**Form F (Field). Non-tidal Wetland Data Form. WESP-AC version 2 for Nova Scotia.** DIRECTIONS: Walk for no less than 10 minutes from the wetland edge towards its core, in the part of the AA that is proposed for alteration. If no alteration is proposed, walk in a portion that appears to be most representative of the wetland overall. Walk only where it is safe and legal to do so. Conduct the assessment only after reading the accompanying Manual and the Explanations column of the data form. In the Data column, change the 0 (false) to a 1 (true) for the best choice, or for multiple choices where allowed and so indicated. Answer these questions primarily based on your onsite observations and interpretations. Do not write in shaded parts of this data form. Answering some questions accurately may require conferring with the landowner or other knowledgable persons, and/or reviewing aerial imagery. For most wetlands, completing this field data form will require 1-2 hours on a site. For a list of functions to which each question pertains, see the accompanying Interpretations form. For detailed descriptions of each WESP-AC model, see Appendix B of the accompanying Manual. Codes for functions and values are: WS= Water Storage & Delay, SFS= Stream Flow Support, WC= Water Cooling, SR= Sediment Retention & Stabilisation, PR= Phosphorus Retention, NR= Nitrate Removal, CS= Carbon Sequestration, OE= Organic Nutrient Export, INV= Invertebrate Habitat, FA= Anadromous Fish Habitat, FR= Resident Fish Habitat, AM= Amphibian & Reptile Habitat, WBF= Feeding Waterbird Habitat, WBN= Nesting Waterbird Habitat, SBM= Songbird, Raptor, & Mammal Habitat, POL= Pollinator Habitat, PH= Native Plant Habitat, PU= Public Use & Recognition, EC= Ecological Condition, Sen= Wetland Sensitivity, STR= Stressors.		
3	**#**	**Indicators**	**Condition Choices**	**Data**	**Definitions/Explanations**
4	F1	Wetland Type	Follow the key below and mark the ONE row that best describes MOST of the vegetated part of the AA:		Ericaceous shrubs are ones in the heather family (Ericaceae). Most have leathery evergreen leaves. They include rhododendron, azalea, swamp laurel, leatherleaf, Labrador tea, and others. Most require acidic soil. Although not in the family Ericaceae, sweetgale (*Myrica gale*) should be counted also. [AM, CS, FA, FR, INV, NR, OE, PH, Sens, SFS, WBF, WBN]
5			A. Moss and/or lichen cover more than 25% of the ground. Often dominated by ericaceous shrubs (e.g., Labrador tea) or other acid-tolerant plants (e.g., bog cranberry, pitcher plant, sundew, orchids). Substrate is mostly undecomposed peat. Choose between A1 and A2 and mark the choice with a 1 in their adjoining column. Otherwise go to B below.		
6			A1. Surface water is usually absent or, if present, pH is typically <4.5 and conductivity is usually <100 µS/cm (<64 ppm TDS). Trees are absent or nearly so. Sedge cover usually sparse or absent but cottongrass and/or lichen cover may be extensive, as well as cloudberry, lingonberry, sheep laurel, and a sedge (*Carex rariflor* a). Wetland surface and surrounding landscape are seldom sloping and wetland often is domed (convex). Inlet and outlet channels are usually absent. If known, pH of peat is <4.0.	0	
7			A2. Not A1. Surface water, if present, has pH typically >4.5 and conductivity is usually >100 µS/cm (>64 ppm TDS). Sedge cover is usually extensive, and/or tree and tall shrub cover is extensive. Sometimes at toe of slope or edge of water body. An exit channel is usually present. Wetter than A1 and peat depth may be shallower (<2 m).	0	
8			B. Moss and/or lichen cover less than 25% of the ground. Soil is mineral or decomposed organic (muck). Choose between B1 and B2 and mark the choice with a 1 in their adjoining column:		
9			B1. Trees and shrubs taller than 1 m comprise more than 25% of the vegetated cover. Surface water is mostly absent or inundates the vegetation only seasonally (e.g., vernal pools or floodplain).	0	
10			B2. Not B1. Tree & tall shrubs comprise less than than 25% of the vegetated cover. Vegetation is mostly herbaceous, e.g., cattail, bulrush, burreed, pond lily, horsetail. Surface water may be extensive and fluctuates seasonally, being either persistent or drying up partly or entirely.	1	
11			*Reminder : For all questions, the AA should include all persistent waters in ponds smaller than 8 hectares (~283 m on a side) that are adjacent to the AA. The AA should also include part of the water area of adjacent ponded water larger than 8 ha and adjacent rivers wider than 20 m. Specifically, the AA should include the open water part adjacent to wetland vegetation and equal in width to the average width of that vegetated zone. Throughout this data form, "* **adjacent** *" is used synonymously with abutting, adjoining, bordering, contiguous -- and means no upland (manmade or natural) completely separates the described features along their directly shared edge. Features joined only by a channel are not necessarily considered to be adjacent -- a large portion of their edges must match. The features do not have to be hydrologically connected in order to be considered adjacent.*		
12	F2	Wetland Types - Adjoining or Subordinate	If the AA is smaller than 1 ha, mark all other types that occupy more than 1% of the vegetated AA. If the AA is larger than 1 ha, mark all other types which are within or adjacent to the AA and occupy more than 1 ha, as visible from the AA or as interpreted from aerial imagery. Do not mark again the type marked in F1.		1 hectare is 10,000 sq. m or about 2.5 acres. It could have dimensions of 100 m by 100 m, 1000 m by 10 m, or similar. [AM, INV, SBM, WBF]
13			A1.	0	
14			A2.	0	
15			B1.	0	
16			B2.	0	
17	F3	Woody Height & Form Diversity	Following EACH row below, indicate with a number code the percentage of the living vegetation in the AA which is occupied by that feature (6 if >95%, 5 if 75-95%, 4 if 50-75%, 3 if 25-50%, 2 if 5-25%, 1 if <5%, 0 if none). If the vegetated part of the AA is largely herbaceous (non-woody) vegetation, these percentages should not sum to 100%.		Deciduous shrubs in this region usually include buttonbush, Labrador tea, bayberry (*Morella*), huckleberry, cranberry, cloudberry, sweetgale, alder, willow, birch, ash, dogwood, and a few others. If you assigned a code of 3 or higher to any of the first four choices and the ground cover beneath the trees/shrubs is <25% moss, then question F1 might be "B1". [CS, INV, NR, PH, POL, SBM, Sens]
18			coniferous trees (may include tamarack) taller than 3 m.	1	
19			deciduous trees taller than 3 m.	1	
20			coniferous or ericaceous shrubs or trees 1-3 m tall not directly below the canopy of trees.	2	
21			deciduous shrubs or trees 1-3 m tall not directly below the canopy of trees.	3	
22			coniferous or ericaceous shrubs <1 m tall not directly below the canopy of taller vegetation.	3	
23			deciduous shrubs or trees <1 m tall (e.g., deciduous seedlings) not directly below the canopy of taller vegetation.	3	
24			*Note : If none of top 4 rows in F3 was marked 2 or greater , SKIP to F9 (N fixers).*		
25	F4	Dominance of Most Abundant Shrub Species	Determine which two woody plant species comprise the greatest portion of the low (<3 m) woody cover . Then choose one:		[PH, POL, SBM, Sens]
26			those species together comprise > 50% of such cover.	1	
27			those species together do not comprise > 50% of such cover.	0	
28	F5	Woody Diameter Classes	Mark ALL the types that comprise >5% of the woody canopy cover in the AA or >5% of the wooded areas (if any) along its upland edge (perimeter). The edge should include only the trees whose canopies extend into the AA.		Estimate the diameters at chest height. If small-diameter trees are overtopped (shaded) by larger ones, visualise a "subcanopy" at the average height of the smaller-dbh trees, to serve as a basis for the minimum 5% canopy requirement in this question. The trees and shrubs need not be wetland species. [AM, CS, POL, SBM, Sens, WBN]
29			coniferous, 1-9 cm diameter and >1 m tall.	1	
30			broad-leaved deciduous 1-9 cm diameter and >1 m tall.	1	
31			coniferous, 10-19 cm diameter.	0	
32			broad-leaved deciduous 10-19 cm diameter.	0	
33			coniferous, 20-40 cm diameter.	0	
34			broad-leaved deciduous 20-40 cm diameter.	0	
35			coniferous, >40 cm diameter.	0	
36			broad-leaved deciduous >40 cm diameter.	0	
37	F6	Height Class Interspersion	Follow the key below and mark the ONE row that best describes MOST of the AA:		[AM, INV, NR, PH, SBM, Sens]
38			A. Neither the vegetation taller than 1 m nor the vegetation shorter than that comprise >70% of the vegetated part of the AA. They each comprise 30-70%. Choose between A1 and A2 and mark the choice with a 1 in the adjoining column. Otherwise go to B below.		
39			A1. The two height classes are mostly scattered and intermixed throughout the AA.	0	
40			A2. Not A1. The two height classes are mostly in separate zones or bands, or in proportionately large clumps.	0	
41			B. Either the vegetation shorter than 1 m comprises >70% of the vegetated part of the AA, or the vegetation taller than that does. One size class might even be totally absent. Choose between B1 and B2 and mark the choice with a 1 in the adjoining column:		
42			B1. The less prevalent height class is mostly scattered and intermixed within the prevalent one.	1	
43			B2. Not B1. The less prevalent height class is mostly located apart from the prevalent one, in separate zones or clumps, or is completely absent.	0	
44	F7	Large Snags (Dead Standing Trees)	The number of large snags (diameter >20 cm) in the AA plus adjacent upland area within 10 m of the wetland edge is:		Snags are dead standing trees that often (not always) lack bark and foliage. Include only ones that are at least 2 m tall. [POL, SBM, WBN]
45			None, or fewer than 8/ hectare which exceed this diameter.	1	
46			Several (>8/hectare) and a pond, lake, or slow-flowing water wider than 10 m is within 1 km.	0	

	A	B	C	D	E
47			Several (>8/hectare) but above not true.	0	
48	F8	Downed Wood	The number of downed wood pieces longer than 2 m and with diameter >10 cm, and not persistently submerged, is:		Exclude temporary "burn piles." [AM, INV, POL, SBM]
49			Few or none that meet these criteria.	0	
50			Several (>5 if AA is >5 hectares, less for smaller AAs) meet these criteria.	1	
51	F9	N Fixers	The percentage of the AA's vegetated cover that contains nitrogen-fixing plants (e.g., alder, sweetgale, clover, lupine, alfalfa, other legumes) is:		Do not include N-fixing algae or lichens. [FA, FR, INV, NRv, OE, PH, SBM, Sens]
52			<1% or none.	0	
53			1-25% of the vegetated cover, in the AA or along its water edge (whichever has more).	1	
54			25-50% of the vegetated cover, in the AA or along its water edge (whichever has more).	0	
55			50-75% of the vegetated cover, in the AA or along its water edge (whichever has more).	0	
56			>75% of the vegetated cover, in the AA or along its water edge (whichever has more).	0	
57	F10	Sphagnum Moss Extent	The cover of Sphagnum moss (or any moss that forms a dense cushion many centimeters thick), including the moss obscured by taller sedges and other plants rooted in it, is:		Exclude moss growing on trees and rocks. [CS, PH]
58			<5% of the vegetated part of the AA.	1	
59			5-25% of the vegetated part of the AA.	0	
60			25-50% of the vegetated part of the AA.	0	
61			50-95% of the vegetated part of the AA.	0	
62			>95% of the vegetated part of the AA.	0	
63	F11	% Bare Ground & Thatch	Consider the parts of the AA that lack surface water at the driest time of the growing season. Viewed from directly above the ground layer, the predominant condition in those areas at that time is:		Thatch is dead plant material (stems, leaves) resting on the ground surface. Bare ground that is present under a tree or shrub canopy should be counted. Boulders count as bare ground. Wetlands with mineral soils and that are heavily shaded or are dominated by annual plant species tend to have more extensive areas that are bare during the early growing season. [AM, EC, INV, NR, OE, POL, PR, SBM, Sens]
64			Little or no (<5%) *bare ground* is visible between erect stems or under canopy anywhere in the vegetated AA. Ground is extensively blanketed by dense thatch, moss, lichens, graminoids with great stem densities, or plants with ground-hugging foliage.	1	
65			Slightly bare ground (5-20% bare between plants) is visible in places, but those areas comprise less than 5% of the unflooded parts of the AA.	0	
66			Much bare ground (20-50% bare between plants) is visible in places, and those areas comprise more than 5% of the unflooded parts of the AA.	0	
67			Other conditions.	0	
68			Not applicable. Surface water (either open or obscured by emergent plants) covers all of the AA all the time.	0	
69	F12	Ground Irregularity	Imagine the AA without any living vegetation. Excluding the portion of the AA that is always under water, the number of hummocks, small pits, raised mounds, animal burrows, ruts, gullies, natural levees, microdepressions, and other areas of peat or mineral soil that are raised or depressed >10 cm compared to most of the area within a few meters surrounding them is:		The depressions may be of human or natural origin. [AM, EC, INV, NR, PH, POL, PR, SBM, SR, WS]
70			Few or none (minimal microtopography; <1% of the land has such features, or entire AA is always water-covered).	1	
71			Intermediate.	0	
72			Several (extensive micro-topography).	0	
73	F13	Upland Inclusions	Within the AA, inclusions of upland are:		[AM, NR, SBM]
74			Few or none.	1	
75			Intermediate (1 - 10% of vegetated part of the AA).	0	
76			Many (e.g., wetland-upland "mosaic", >10% of the vegetated AA).	0	
77	F14	Soil Texture	In parts of the AA that lack persistent water, the texture of soil in the uppermost layer is mostly: [*To determine this, use a trowel to check in at least 3 widely spaced locations, and use the soil texture key (in Appendix A of the Manual).]*		[CS, NR, OE, PH, PR, Sens, SFS, WS]
78			Loamy: soils that may contain a little fine grit and do not make a "ribbon" longer than 2 cm when moistened, rolled, squeezed, and extended between thumb and forefinger.	0	
79			Fines: includes silt, clay, silt, soils that make a ribbon longer than 2 cm when moistened, rolled, squeezed, and extended between thumb and forefinger.	1	
80			Deep Peat, to 40 cm depth or greater.	0	
81			Shallow Peat or organic <40 cm deep.	0	
82			Coarse: includes sand, loamy sand, gravel, cobble, soils that do not make a ribbon when moistened, rolled, squeezed, and extended between thumb and forefinger.	0	
83	F15	Shorebird Feeding Habitats	During any 2 consecutive weeks of the growing season, the extent of mudflats, bare unshaded saturated areas not covered by thatch, and unshaded waters shallower than 6 cm is: [Include also any area that is adjacent to the AA.]		This addresses needs of many but not all migratory sandpipers, plovers, and related species. [WBF]
84			None, or <100 sq. m.	1	
85			100-1000 sq. m.	0	
86			1000 – 10,000 sq. m.	0	
87			>10,000 sq. m.	0	
88	F16	Herbaceous % of Vegetated Wetland	In aerial ("ducks eye") view, the maximum annual cover of herbaceous vegetation (all non-woody plants except moss) is:		[AM, WBF, WBN]
89			<5% of the vegetated part of the AA or <0.01 hectare (whichever is less). Mark "1" here and SKIP to F20 (Invasive Plant Cover).	0	
90			5-25% of the vegetated part of the AA.	0	
91			25-50% of the vegetated part of the AA.	0	
92			50-95% of the vegetated part of the AA.	1	
93			>95% of the vegetated part of the AA.	0	
94	F17	Forb Cover	Within parts of the AA having herbaceous cover (excluding SAV), the areal cover of forbs reaches an annual maximum of:		Forbs are flowering plants. Do not include grasses, sedges, cattail, other graminoids, ferns, horsetails, or others that lack showy flowers. [POL]
95			<5% of the herbaceous part of the AA.	0	
96			5-25% of the herbaceous part of the AA.	1	
97			25-50% of the herbaceous part of the AA.	0	
98			50-95% of the herbaceous part of the AA.	0	
99			>95% of the herbaceous part of the AA.	0	
100	F18	Sedge Cover	Sedges (*Carex* spp.) and cottongrass (*Eriophorum* spp.) occupy:		[CS]
101			<5% of the vegetated area, or none.	0	
102			5-50% of the vegetated area.	1	
103			50-95% of the vegetated area.	0	
104			>95% of the vegetated area.	0	
105	F19	Dominance of Most Abundant Herbaceous Species	Determine which two herbaceous species comprise the greatest portion of the herbaceous cover (excluding mosses and floating-leaved aquatic plants). Then choose one of the following:		For this question, include ferns as well as graminoids and forbs. [EC, INV, PH, POL, Sens]
106			those species together comprise > 50% of the areal cover of herbaceous plants at any time during the year.	1	
107			those species together do not comprise > 50% of the areal cover of herbaceous plants at any time during the year.	0	
108	F20	Invasive Plant Cover	How extensive is the cover of invasive plant species in the AA? For species, see Plants_invasive worksheet in the accompanying SuppInfo file.		[EC, PH, POL, Sens]
109			invasive species appear to be absent in the AA, or are present only in trace amount (a few individuals).	1	
110			invasive species are present in more than trace amounts, but comprise <5% of herbaceous cover (or woody cover, if the invasives are woody).	0	
111			invasive species comprise 5-20% of the herb cover (or woody cover, if the invasives are woody).	0	
112			invasive species comprise 20-50% of the herb cover (or woody cover, if the invasives are woody).	0	
113			invasive species comprise >50% of the herb cover (or woody cover, if the invasives are woody).	0	

	A	B	C	D	E
114	F21	Invasive Cover Along Upland Edge	Along the wetland-upland boundary, the percent of the upland edge (within 3 m upslope from the wetland) that is occupied by invasive plant species is:		If a plant cannot be identified to species (e.g., winter conditions) but its genus contains an exotic species, assume the unidentified plant to also be exotic. If vegetation is so senesced that exotic species cannot be identified, answer "none". [PH, STR]
115			none of the upland edge (invasives apparently absent), or AA has no upland edge.	1	
116			some (but <5%) of the upland edge.	0	
117			5-50% of the upland edge.	0	
118			most (>50%) of the upland edge.	0	
119	F22	Fringe Wetland	During most of the year, open water within or adjacent to the vegetated part of the wetland is much wider than the maximum width of the vegetated zone within the wetland. Enter "1" if true, "0" if false.	0	[WBF, WBN, WCv]
120	F23	Lacustrine Wetland	The vegetated part of the AA is within or adjacent to a body of non-tidal standing open water whose size exceeds 8 hectares during most of a normal year.	0	[FR, PR, PU, WBF, WBN]
121	F24	% of AA Without Surface Water	The percentage of the AA that never contains surface water during an average year (that is, except perhaps for a few hours after snowmelt or rainstorms), but which is still a wetland, is:		1 hectare is 10,000 sq. m or about 2.5 acres. It could have dimensions of 100 m by 100 m, 1000 m by 10 m, or similar. [AM, FA, FR, INV, NR, PH, PR, SBM, Sens, SRv, WBF, WBN, WC]
122			<1% . In other words, all or nearly all of the AA is covered by water permanently or at least seasonally.	0	
123			1-25% of the AA, or <1% but >0.01 ha never contains surface water.	0	
124			25-50% of the AA never contains surface water.	0	
125			50-75% of the AA never contains surface water.	0	
126			75-99% of the AA never contains surface water, OR >99% and there is at least one persistently ponded water body larger than 1 ha in the AA.	0	
127			99-100%. AND there is no persistently ponded water body larger than 1 ha within the AA. Enter "1" and SKIP to F42 (Channel Connection).	1	
128	F25	% of AA with Persistent Surface Water	Identify the parts of the AA that still contain surface water (flowing or ponded, open or hidden beneath vegetation) even during the driest times of a normal year, i.e., when the AA's surface water is at its lowest annual level. At that time, the percentage of the AA that still contains surface water is:		If you are unable to determine the condition at the driest time of year, ask the land owner or neighbors about it if possible. Indicators of persistence may include fish, some dragonflies, beaver, and muskrat. [AM, CS, FA, FR, INV, NR, POL, PR, SBM, WBF, WBN]
129			None. The AA dries up completely (no water in channels either) or never has surface water during most years. SKIP to F27.	0	
130			1-20% of the AA.	0	
131			20-50% of the AA.	0	
132			50-95% of the AA.	0	
133			>95% of the AA. True for many fringe wetlands.	0	
134	F26	% of Summertime Water that Is Shaded	At mid-day during the warmest time of year, the area of surface water within the AA that is shaded by vegetation and other features that are within the AA at that time is:		[FA, WC]
135			<5% of the water is shaded, or no surface water is present then.	0	
136			5-25% of the water is shaded.	0	
137			25-50% of the water is shaded.	0	
138			50-75% of the water is shaded.	0	
139			>75% of the water is shaded.	0	
140	F27	% of AA that is Flooded Only Seasonally	The percentage of the AA's area that is between the annual high water and the annual low water (surface water) is:		Flood marks (algal mats, adventitious roots, debris lines, ice scour, etc.) are often evident when not fully inundated. Also, such areas often have a larger proportion of upland and annual (vs. perennial) plant species. In riverine systems, the extent of this zone can be estimated by multiplying by 2 the bankful height and visualising where that would intercept the land along the river. [CS, FA, INV, NR, OE, PH, SR, WBF, WBN, WS]
141			None, or <0.01 hectare and <1% of the AA. SKIP to F29.	0	
142			1-20% of the AA, or <1% but >0.01 ha.	0	
143			20-50% of the AA.	0	
144			50-95% of the AA.	0	
145			>95% of the AA.	0	
146	F28	Annual Water Fluctuation Range	The annual fluctuation in surface water level within most of the parts of the AA that contain surface water at least temporarily is:		Look for flood marks (see above). Because the annual range of water levels is difficult to estimate without multiple visits, consider asking the land owner or neighbors about it. [AM, CS, INV, NR, OE, PH, PR, SR, WBN, WS]
147			<10 cm change (stable or nearly so).	0	
148			10 cm - 50 cm change.	0	
149			0.5 - 1 m change.	0	
150			1-2 m change.	0	
151			>2 m change.	0	
152	Is the AA plus adjacent ponded water smaller than 0.01 hectare (about 10m x 10m, or 1m x 100 m)? If so, enter "1" in column D and SKIP TO F42 (Connection).			0	
153	F29	Predominant Depth Class	During most of the time when surface water is present during the growing season, its depth, averaged over the entire inundated part of the AA, is:		If a boat is unavailable, estimate this by considering wetland size and local topography. Or if timing and safety allow, depths may be measured by drilling through winter ice.This question is asking about the spatial median depth that occurs during most of that time, even if inundation is only seasonal or temporary. If inundation in most but not all of the wetland is brief, the answer will be based on the depth of the most persistently inundated part of the wetland. Include surface water in channels and ditches as well as ponded areas. [CS, FA, FR, INV, OE, PH, PR, Sens, SFS, SR, WBF, WBN, WC]
154			<10 cm deep (but >0).	0	
155			10 - 50 cm deep.	0	
156			0.5 - 1 m deep.	0	
157			1 - 2 m deep.	0	
158			>2 m deep. True for many fringe wetlands.	0	
159	F30	Depth Classes - Evenness of Proportions	When present, surface water in most of the AA usually consists of (select one):		Estimate these proportions by considering the gradient and microtopography of the site. [FR, INV, WBF, WBN]
160			One depth class that comprises >90% of the AA's inundated area (use the classes in the question above).	0	
161			One depth class that comprises 50-90% of the AA's inundated area.	0	
162			Neither of above. There are 3 or more depth classes and none occupy >50%.	0	
163	F31	% of Water That Is Ponded (not Flowing)	During most times when surface water is present, the percentage that is (1) ponded (stagnant, or flows so slowly that fine sediment is not held in suspension) AND (2) is likely to be deeper than 0.5 m in some places, is:		Nearly all wetlands with surface water have some ponded water. [AM, CS, INV, NR, OE, PR, Sens, SR, WBF, WBN, WC, WS]
164			<5% of the water, or it occupies <100 sq.m cumulatively. Nearly all the surface water is flowing. SKIP to F34.	0	
165			5-30% of the water.	0	
166			30-70% of the water.	0	
167			70-95% of the water.	0	
168			>95% of the water.	0	
169	F32	Ponded Open Water - Minimum Size	During most of the growing season, the largest patch of open water that is ponded and is in or bordering the AA is >0.01 hectare (about 10 m by 10 m) and mostly deeper than 0.5 m. If true enter "1" and continue, If false, enter "0" and SKIP to F41 (Floating Algae & Duckweed).	0	Open water is not obscured by vegetation in aerial ("duck's eye") view. It includes vegetation floating on the water surface or entirely submersed beneath it.
170	F33	% of Ponded Water that is Open	In ducks-eye aerial view, the percentage of the ponded water that is open (lacking emergent vegetation during most of the growing season, and unhidden by a forest or shrub canopy) is:		[AM, CS, FA, FR, INV, NR, OE, PR, SR, WBF, WBN, WC]
171			None, or <1% of the AA and largest pool occupies <0.01 hectares. Enter "1" and SKIP to F41 (Floating Algae & Duckweed).	0	
172			1-4% of the ponded water. Enter "1" and SKIP to F41 (Floating Algae & Duckweed).	0	
173			5-30% of the ponded water.	0	
174			30-70% of the ponded water.	0	
175			70-99% of the ponded water.	0	
176			100% of the ponded water.	0	
177	F34	Width of Vegetated Zone within Wetland	At the time during the growing season when the AA's water level is lowest, the average width of vegetated area in the AA that separates adjoining uplands from open water within the AA is:		"Vegetated area" does not include underwater or floating-leaved plants, i.e., aquatic bed. Width may include wooded riparian areas if they have wetland soil or plant indicators. [AM, CS, NR, OE, PH, PR, SBM, Sens, SR, WBN]
178			<1 m.	0	
179			1 - 9 m.	0	
180			10 - 29 m.	0	
181			30 - 49 m.	0	
182			50 - 100 m.	0	
183			> 100 m, or open water is absent at that time.	0	

	A	B	C	D	E
184	F35	Flat Shoreline Extent	During most of the part of the growing season when water is present, the percentage of the AA's **water edge** length that is **nearly flat** (a slope less than about 5% measured within 5 m landward of the water) is:		If several isolated pools are present in early summer, estimate the percent of their collective shorelines that has such a gentle slope. [SR, WBN]
185			<1% of the water edge.	0	
186			1-25% of the water edge.	0	
187			25-50% of the water edge.	0	
188			50-75% of the water edge.	0	
189			>75% of the water edge.	0	
190	F36	Robust Emergents	The percentage **of the emergent vegetation** cover in the AA that is cattail (*Typha* spp.), common reed (*Phragmites*), or tall (>1m) bulrush is:		**Emergent vegetation** is herbaceous plants whose stems are partly above and partly below the water surface during most of the time water is present. [WBN]
191			<1% of the emergent vegetation, or emergent vegetation is absent. SKIP to F38.	0	
192			1-25% of the emergent vegetation.	0	
193			25-75% of the emergent vegetation.	0	
194			>75%, of the emergent vegetation.	0	
195	F37	Interspersion of Emergents & Open Water	During most of the part of the growing season when water is present, the spatial pattern of **emergent** vegetation within the water is mostly:		[AM, FA, FR, INV, NR, OE, PH, PR, SBM, SR, WBF, WBN]
196			Scattered. More than 30% of such vegetation forms small islands or corridors surrounded by water.	0	
197			Intermediate.	0	
198			Clumped. More than 70% of such vegetation is in bands along the wetland perimeter or is clumped at one or a few sides of the surface water area.	0	
199	F38	Persistent Deepwater Area	If the deepest patch of surface water (flowing or ponded) in or directly adjacent to the AA is mostly deeper than 0.5 m for >2 weeks during the growing season, enter "1" and continue. If not, enter "0" and SKIP to F42.(Connection).	0	
200	F39	Non-vegetated Aquatic Cover	During most of the growing season and in waters deeper than 0.5 m, the cover for fish, aquatic invertebrates, and/or amphibians that is provided NOT by living vegetation, but by accumulations of **dead wood and undercut banks** is:		For this question, consider only the wood that is at or above the water surface. Estimates of underwater wood based only on observations from terrestrial viewpoints are unreliable so should not be attempted. [AM, FA, FR, INV]
201			Little or none.	0	
202			Intermediate.	0	
203			Extensive.	0	
204	F40	Isolated Island	The AA contains (or is part of) an island or beaver lodge within a lake, pond, or river, and is isolated from the shore **by water depths** >1 m on all sides during an average June. The island may be solid, or it may be a floating vegetation mat that is sufficiently large and dense to support a waterbird nest.	0	[WBN]
205	F41	Floating Algae & Duckweed	At some time of the year, mats of algae and/or duckweed are likely to cover >50% of the AA's otherwise-unshaded water surface, or blanket >50% of the underwater substrate. If true, enter "1" in next column. If untrue or uncertain, enter "0".	0	[EC, PR, WBF]
206	F42	Channel Connection & Outflow Duration	The most persistent surface water connection (outlet channel or pipe, ditch, or overbank water exchange) between the AA and a downslope stream network is: [Note: If the AA represents only part of a wetland, answer this according to whichever is the **least** permanent surface connection: the one between the AA and the rest of the wetland, or the surface connection between the wetland and the downslope stream network.]		Consider the connection regardless of whether the surface water is frozen. The "downslope stream network" could consist of ditches, rivers, ponds, or lakes which eventually connect to the ocean. If this cannot be determined while visiting the AA, consult topographic maps perhaps by viewing these online with Toporama (http://atlas.nrcan.gc.ca/toporama/en/index.html) [CS, FA, FR, NR, OE, PR, Sens, SFS, SR, WCv, WS]
207			Persistent (surface water flows out for >9 months/year).	0	
208			Seasonal (surface water flows out for 14 days to 9 months/year, not necessarily consecutive).	0	
209			Temporary (surface water flows out for <14 days, not necessarily consecutive).	0	
210			None -- but maps show a stream network downslope from the AA and within a distance that is less than the AA's length. SKIP to F47 (pH Measurement).	0	
211			No surface water flows out of the wetland except possibly during extreme events (<once per 10 years). Or, water flows only into a wetland, ditch, or lake that lacks an outlet. SKIP to F47 (pH Measurement).	1	
212	F43	Outflow Confinement	During major runoff events, in the places where **surface** water exits the AA or connected waters nearby, the water:		"Major runoff events" would include biennial high water caused by storms and/or rapid snowmelt. [CS, NR, OE, PR, Sens, SR, STR, WS]
213			Mostly passes through a pipe, culvert, narrowly breached dike, berm, beaver dam, or other partial obstruction (other than natural topography) that does not appear to drain the wetland artificially during most of the growing season.	0	
214			Leaves through natural exits (channels or diffuse outflow), not mainly through artificial or temporary features.	0	
215			Is exported more quickly than usual due to ditches or pipes within the AA or connected to its outlet, or within 10 m of the AA's edge, which drain the wetland artificially, or water is pumped out of the AA.	0	
216	F44	Tributary Channel	At least once annually, surface water from a tributary channel that is >100 m long moves into the AA. Or, surface water from a larger permanent water body adjacent to the AA spills into the AA. If it enters only via a pipe, that pipe must be fed by a mapped stream or lake further upslope. If no, SKIP to F47 (pH Measurement).	0	If inlet tributaries cannot be searched for due to inaccessibility of part of the AA, follow suggestions in F42 above. [NRv, PH, PRv, SRv]
217	F45	**Input** Water Temperature	Based on lack of shade, water source characteristics, or actual temperature measurements, the inflow is likely to be warmer than surface water in the AA during part of most years. Enter 1= yes, 0= no.	0	[WCv]
218	F46	Throughflow Resistance	During its travel through the AA at the time of peak annual flow, water arriving in channels: [select only the ONE encountered by **most** of the incoming water].		[FA, FR, INV, NR, OE, PR, SR, WS]
219			Does not bump into many plant stems as it travels through the AA. Nearly all the water continues to travel in unvegetated (often incised) channels that have minimal contact with wetland vegetation, or through a zone of open water such as an instream pond or lake.	0	
220			Bumps into **herbaceous** vegetation but mostly remains in fairly straight channels.	0	
221			Bumps into **herbaceous** vegetation and mostly spreads throughout, or is in widely meandering, multi-branched, or braided channels.	0	
222			Bumps into **tree trunks and/or shrub stems** but mostly remains in fairly straight channels.	0	
223			Bumps into tree trunks and/or shrub stems and follows a fairly **indirect** path from entrance to exit (meandering, multi-branched, or braided).	0	
224	F47	pH Measurement	The pH in most of the AA's surface water:		Preferably, measure this in larger areas of ponded surface water within the AA, or in streams that have passed through (not along) most of the AA. Unless surface water is completely absent, do not dig holes or make depressions in peat in order to provide water for this measurement. Avoid measuring near roads or in puddles formed only by recent rain. [AM, FA, FR, NR, WBF, PH, PR, Sens, WBF, WBN]
225			Was measured, and is: [*enter the reading in the column to the right.*]		
226			Was not measured but surface water is present and is darkly tea-coloured. Or if no surface water, then mosses and plants that indicate peatland (e.g., Labrador tea) are prevalent. Enter "1".	0	
227			Neither of above. Enter "1".	1	
228	F48	TDS and/or Conductivity	The TDS (total dissolved solids) or conductivity off the AA's surface water is: (select the first true row with information):		See above for measurement guidance. [FR, INV, NRv, PH, PRv, Sens]
229			TDS is: [*Enter the reading* ***in ppm or mg/L*** *in the column to the right, if measured, or answer next row.*]		
230			Conductivity is [*Enter the reading* ***in µS/cm*** *in the column to the right.*]		
231			Was not measured, but plants that indicate saline conditions cover much of the vegetated AA. Enter "1".	0	
232			Neither of above	1	
233	F49	Beaver Probability	Use of the AA by beaver during the past 5 years is (select most applicable ONE):		[FA, FR, PH, SBM, Sens, WBF, WBN]
234			**Evident** from direct observation or presence of gnawed limbs, dams, tracks, dens, lodges, or extensive stands of water-killed trees (snags).	0	
235			**Likely** based on known occurrence in the region and proximity to suitable habitat, which may include: (a) a persistent freshwater wetland, pond, or lake, or a perennial low or mid-gradient (<10%) channel, and (b) a corridor or multiple stands of hardwood trees and shrubs in vegetated areas near surface water.	0	
236			Unlikely because site characteristics above are deficient, and/or this is a settled area or other area where beaver are routinely removed.	1	
237	F50	Groundwater Strength of Evidence	Select first applicable choice:		Adhere to these criteria strictly -- do not use personal judgment based on fen conditions, pH, or other evidence. Consult topographic maps to detect breaks in slope described here. Rust deposits associated with groundwater seeps may be most noticeable as orange discoloration in ice formations along streams during early winter. [AM, CS, FA, FR, INV, NR, OE, PH, PRv, SFS, WC, WS]
238			Springs are known to be present within the AA, or if groundwater levels have been monitored, that has demonstrated that groundwater primarily discharges to the wetland for longer periods during the year than periods when the wetland recharges the groundwater.	0	

	A	B	C	D	E
239			Most of the AA has a slope of >5%, or is very close to the base of a natural slope longer than 100 and much steeper than the slope of the AA, AND the pH of surface water, if known, is >5.5.	0	
240			Neither of above is true, although some groundwater may discharge to or flow through the AA. Or groundwater influx is unknown.	1	
241	F51	Internal Gradient	The gradient along most of the flow path **within** the AA is:		This is not the same as the shoreline slope. It is the elevational difference between the AA's inlet and outlet, divided by the flow-distance between them and converted to percent. If available, use a clinometer to measure this. Free clinometer apps can be downloaded to smartphones. If the wetland is large (longer than ~1 km), this may be estimated using Google Earth to determine the minimum and maximum elevation within the AA, then dividing by length and multiplying by 100. [CS, NR, OE, PR, SR, WBF, WBN, WS]
242			<2% **or** the AA has no surface water outlet (not even seasonally).	1	
243			2-5%.	0	
244			6-10%.	0	
245			>10%.	0	
246	Note for the next three questions: If the AA lacks an upland edge, evaluate based on the AA's entire perimeter, and moving outward into whatever areas are adjacent. In many situations, these questions are best answered by measuring from aerial images.				
247	F52	Vegetated Buffer as % of Perimeter	Within a zone extending 30 m laterally from the AA's edge with upland and/or other wetlands, the percentage that contains **perennial vegetation cover** (except lawns, row crops, heavily grazed land, conifer plantations) is:		[AM, FA, FR, INV, NRv, PH, POL, PRv, SBM, Sens, SRv, STR, WBN]
248			<5%.	0	
249			5 to 30%.	0	
250			30 to 60%.	0	
251			60 to 90%.	0	
252			>90%, or all the area within 30 m of the AA edge is other wetlands. **SKIP to F55.**	1	
253	F53	Type of Cover in Buffer	Within 30 m upslope of where the wetland transitions to upland, the upland land cover that is NOT perennial vegetation is mostly (mark ONE):		[AM, FA, INV, NRv, PH, POL, SBM, STR, WBN]
254			Impervious surface, e.g., paved road, parking lot, building, exposed rock.	0	
255			Bare or nearly bare pervious surface or managed vegetation, e.g., lawn, row crops, unpaved road, dike, landslide.	0	
256	F54	Buffer Slope	The steepest and/or most disturbed part of the upland area that is within 30 m of the wetland and occupies >10% of that upland area has a percent slope of:		[NRv, PRv, Sens, SRv]
257			<1% (flat -- almost no noticeable slope) or all the area within 30 m of the AA edge is other wetlands.	0	
258			2-5%.	0	
259			5-30%.	0	
260			>30%.	0	
261	F55	Cliffs or Steep Banks	In the AA or within 100 m, there are elevated terrestrial features such as cliffs, talus slopes, stream banks, or excavated pits (but not riprap) that extend at least 2 m nearly vertically, are unvegetated, and potentially contain crevices or other substrate suitable for nesting or den areas. Enter 1 (yes) or 0 (no).	0	Do not include upturned trees as potential den sites. [POL, SBM]
262	F56	New or Expanded Wetland	**Human** actions within or adjacent to the AA have persistently expanded a naturally occurring wetland or created a wetland where there previously was none (e.g., by excavation, impoundment):		Determine this using historical aerial photography, old maps, soil maps, or permit files as available [CS, NR, OE, PH, Sens]
263			No.	0	
264			Yes, and created or expanded 20 - 100 years ago.	0	
265			Yes, and created or expanded 3-20 years ago.	0	
266			Yes, and created or expanded within last 3 years.	0	
267			Yes, but time of origin or expansion unknown.	0	
268			Unknown if new or expanded within 20 years or not.	1	
269	F57	Burn History	More than 1% of the AA's previously vegetated area:		Look for charred soil or stumps (in multiple widely-spaced locations) or ask landowner. [CS, PH, STR]
270			Burned within past 5 years.	0	
271			Burned 6-10 years ago.	0	
272			Burned 11-30 years ago.	0	
273			Burned >30 years ago, or no evidence of a burn and no data.	1	
274	F58	Visibility	The maximum percentage of the wetland that is visible from the best vantage point on public roads, public parking lots, public buildings, or public maintained trails that intersect, adjoin, or are within 100 m of the AA (select one) is:		[PU, STR, WBFv]
275			<25%.	1	
276			25-50%.	0	
277			>50%.	0	
278	F59	Non-consumptive Uses - Actual or Potential	Assuming access permission was granted, select **ALL** statements that are true of the AA as it currently exists:		[PU, STR]
279			For an average person, walking is physically possible in (not just near) >5% of the AA during most of the growing season, e.g., free of deep water and dense shrub thickets.	1	
280			Maintained roads, parking areas, or foot-trails are within 10 m of the AA, or the AA can be accessed part of the year by boats arriving via contiguous waters.	0	
281			Within or near the AA, there is an interpretive center, trails with interpretive signs or brochures, and/or regular guided interpretive tours.	0	
282	F60	Unvisited Core Area	The percentage of the AA almost never visited by humans during an average growing season probably comprises: *[Note: Only include the part actually walked or driven (not simply viewed from) with a vehicle or boat. Do not include visitors on trails outside of the AA unless more than half the wetland is visible from the trails and they are within 30 m of the wetland edge. In that case include only the area occupied by the trail.]*		[AM, FAv, FRv, PH, PU, SBM, STR, WBF, WBN]
283			<5% and no inhabited building is within 100 m of the AA.	0	
284			<5% and inhabited building is within 100 m of the AA.	0	
285			5-50% and no inhabited building is within 100 m of the AA.	0	
286			5-50% and inhabited building is within 100 m of the AA.	0	
287			50-95%, with or without inhabited building nearby.	0	
288			>95% of the AA with or without inhabited building nearby.	1	
289	F61	Frequently Visited Area	The part of the AA visited by humans almost daily for several weeks during an average growing season probably comprises: *[See note above.]*		[AM, PH, PU, SBM, STR, WBF, WBN]
290			<5%. If F60 was answered ">95%" (mostly never visited), **SKIP to F64.**	1	
291			5-50%.	0	
292			50-95%.	0	
293			>95% of the AA.	0	
294	F62	BMP - Soils	Boardwalks, paved trails, fences or other infrastructure and/or well-enforced regulations appear to effectively prevent visitors from walking on soil within nearly all of the AA when the soil is unfrozen. Enter "1" if true.	0	[PH, PU]
295	F63	BMP - Wildlife Protection	Fences, observation blinds, platforms, paved trails, exclusion periods, and/or well-enforced prohibitions on motorised boats, off-leash pets, and off road vehicles appear to effectively exclude or divert visitors and their pets from the AA at critical times in order to minimize disturbance of wildlife (except during hunting seasons). Enter "1" if true.	0	[AM, PU, WBF, WBN]
296	F64	Consumptive Uses (Provisioning Services)	Recent evidence was found within the AA of the following potentially-sustainable consumptive uses. Select ALL that apply.		[FAv, FRv, WBFv]
297			Low-impact commercial timber harvest (e.g., selective thinning).	1	
298			Commercial or traditional-use harvesting of native plants, their fruits, or mushrooms.	0	
299			Waterfowl hunting.	0	
300			Fishing.	0	
301			Trapping of furbearers.	0	
302			None of the above.	0	
303	F65	Domestic Wells	The closest wells or water bodies that currently provide drinking water are:		[NRv]
304			Within 0-100 m. of the AA.	0	

	A	B	C	D	E
305			100-500 m. away.	0	
306			>500 m. away, or no information.	1	
307	F66	Calcareous Fen	The AA is, or is part of, a calcareous fen. See the Plants_Calcar worksheet in the accompanying SuppInfo file for list of plant indicators (calciphiles). Enter 1 If more than two Strong or more than five Moderate calciphile species are present; otherwise enter 0, but if not able to identify those **and** no information, change to **blank**.	0	[PH, PR]
308					

Investigator: Brady Leights and Tiffany MacAulay	**Site Identifier: WL-5**	Date: 26 July, 2021

Stressor (S) Data Form for Non-Tidal Wetlands. WESP-AC for Nova Scotia version 2.

		Data
S1	**Aberrant Timing of Water Inputs**	
	In the last column, place a check mark next to any item that is likely to have caused the timing of water inputs (but not necessarily their volume) to shift by hours, days, or weeks, becoming either more muted (smaller or less frequent peaks spread over longer times, more temporal homogeneity of flow or water levels) or more flashy (larger or more frequent spikes but over shorter times). [FA, FR, INV, PH, STR]	
	Stormwater from impervious surfaces that drains directly to the wetland.	
	Water subsidies from wastewater effluent, septic system leakage, snow storage areas, or irrigation.	
	Regular removal of surface or groundwater for irrigation or other consumptive use.	
	Flow regulation in tributaries or water level regulation in adjoining water body, or other control structure at water entry points that regulates inflow to the wetland.	
	A dam, dike, levee, weir, berm, or fill -- within or downgradient from the wetland -- that interferes with surface or subsurface flow in/out of the AA (e.g., road fill, wellpads, pipelines).	
	Excavation within the wetland, e.g., dugout, artificial pond, dead-end ditch.	
	Artificial drains or ditches in or near the wetland.	
	Accelerated downcutting or channelization of an adjacent or internal channel (incised below the historical water table level).	
	Logging within the wetland.	1
	Subsidence or compaction of the wetland's substrate as a result of machinery, livestock, fire, drainage, or off road vehicles.	
	Straightening, ditching, dredging, and/or lining of tributary channels.	
	If any items were checked above, then for each row of the table below, assign points. However, if you believe the checked items had no measurable effect on the timing of water conditions in any part of the AA, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.	

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Spatial extent of timing shift within the wetland:	>95% of wetland.	5-95% of wetland.	<5% of wetland.	2
When most of the timing shift began:	<3 yrs ago.	3-9 yrs ago.	10-100 yrs ago.	2
Score the following 2 rows only if the altered inputs began within past 10 years, and only for the part of the wetland that experiences those.				
Input timing now vs. previously:	Shift of weeks.	Shift of days.	Shift of hours or minutes.	2
Flashiness or muting:	Became very flashy or controlled.	Intermediate.	Became mildly flashy or controlled.	2
			Sum=	8
			Stressor subscore=	0.67

		Data
S2	**Accelerated Inputs of Contaminants and/or Salts**	
	In the last column, place a check mark next to any item -- occurring in either the wetland or its CA -- that is likely to have accelerated the inputs of contaminants or salts to the AA. [AM, FA, PH, POL, STR]	
	Stormwater or wastewater effluent (including failing septic systems), landfills, industrial facilities.	
	Metals & chemical wastes from mining, shooting ranges, snow storage areas, oil/ gas extraction, other sources (download many locations from National Pollutant Release Inventory and view KMZ overlay in Google Earth. https://www.ec.gc.ca/inrp-npri/default.asp?lang=En&n=B85A1846-1	
	Road salt.	
	Spraying of pesticides, as applied to lawns, croplands, roadsides, or other areas in the CA.	
	If any items were checked above, then for each row of the table below, assign points. However, if you believe the checked items did not cumulatively expose the AA to significantly higher levels of contaminants and/or salts, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.	

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Usual toxicity of most toxic contaminants:	Industrial effluent, mining waste, unmanaged landfill.	Cropland, managed landfill, pipeline or transmission rights-of-way.	Low density residential.	0
Frequency & duration of input:	Frequent and year-round.	Frequent but mostly seasonal.	Infrequent & during high runoff events mainly.	0
AA proximity to main sources (actual or potential):	0 - 15 m.	15-100 m. or in groundwater.	In more distant part of contributing area.	0
			Sum=	0
			Stressor subscore=	0.00

		Data
S3	**Accelerated Inputs of Nutrients**	
	In the last column, place a check mark next to any item -- occurring in either the wetland or its CA -- that is likely to have accelerated the inputs of nutrients to the wetland. [NRv, PRv, STR]	
	Stormwater or wastewater effluent (including failing septic systems), landfills.	
	Fertilizers applied to lawns, ag lands, or other areas in the CA.	
	Livestock, dogs.	
	Artificial drainage of upslope lands.	
	If any items were checked above, then for each row of the table below, assign points. However, if you believe the checked items did not cumulatively expose the AA to significantly more nutrients, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.	

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Type of loading:	High density of unmaintained septic, some types of industrial sources.	Moderate density septic, cropland, secondary wastewater treatment plant.	Livestock, pets, low density residential.	0
Frequency & duration of input:	Frequent and year-round.	Frequent but mostly seasonal.	Infrequent & during high runoff events mainly.	0
AA proximity to main sources (actual or potential):	0 - 15 m.	15-100 m. or in groundwater.	In more distant part of contributing area.	0
			Sum=	0
			Stressor subscore=	0.00

		Data
S4	**Excessive Sediment Loading *from Contributing Area***	
	In the last column, place a check mark next to any item present in the CA that is likely to have elevated the load of waterborne or windborne sediment reaching the wetland from its CA. [FA, FR, INV, PH, SRv, STR]	
	Erosion from plowed fields, fill, timber harvest, dirt roads, vegetation clearing, fires.	1
	Erosion from construction, in-channel machinery in the CA.	
	Erosion from off-road vehicles in the CA.	
	Erosion from livestock or foot traffic in the CA.	
	Stormwater or wastewater effluent.	
	Sediment from road sanding, gravel mining, other mining, oil/ gas extraction.	
	Accelerated channel downcutting or headcutting of tributaries due to altered land use.	
	Other human-related disturbances within the CA.	
	If any items were checked above, then for each row of the table below, assign points (3, 2, or 1 as shown in header) in the last column. However, if you believe the checked items did not cumulatively add significantly more sediment or suspended solids to the AA, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.	

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Erosion in CA:	Extensive evidence, high intensity.*	Potentially (based on high-intensity* land use) or scattered evidence.	Potentially (based on low-intensity* land use) with little or no direct evidence.	3
Recentness of significant soil disturbance in the CA:	Current & ongoing.	1-12 months ago.	>1 yr ago.	1

	Duration of sediment inputs to the wetland:	Frequent and year-round.	Frequent but mostly seasonal.	Infrequent & during high runoff events mainly.	1
	AA proximity to actual or potential sources:	0 - 15 m.	15-100 m.	In more distant part of contributing area.	3
	* high-intensity= extensive off-road vehicle use, plowing, grading, excavation, erosion with or without veg removal; low-intensity= veg removal only with little or no apparent erosion or disturbance of soil or sediment.			Sum=	8
				Stressor subscore=	0.67
S5	**Soil or Sediment Alteration *Within the Assessment Area***				
	In the last column, place a check mark next to any item present in the wetland that is likely to have compacted, eroded, or otherwise altered the wetland's soil. Consider only items occurring within past 100 years or since wetland was created or restored (whichever is less). [CS, INV, NR, PH, SR, STR]				
	Compaction from machinery, off-road vehicles, livestock, or mountain bikes, especially during wetter periods.				
	Leveling or other grading not to the natural contour.				
	Tillage, plowing (but excluding disking for enhancement of native plants).				
	Fill or riprap, excluding small amounts of upland soils containing organic amendments (compost, etc.) or small amounts of topsoil imported from another wetland.				
	Excavation.				
	Ditch cleaning or dredging in or adjacent to the wetland.				
	Boat traffic in or adjacent to the wetland and sufficient to cause shore erosion or stir bottom sediments.				
	Artificial water level or flow manipulations sufficient to cause erosion or stir bottom sediments.				
	If any items were checked above, then for each row of the table below, assign points. However, if you believe the checked items did not measurably alter the soil structure and/or topography, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.				
		Severe (3 points)	Medium (2 points)	Mild (1 point)	
	Spatial extent of altered soil:	>95% of wetland or >95% of its upland edge (if any).	5-95% of wetland or 5-95% of its upland edge (if any).	<5% of wetland and <5% of its upland edge (if any).	0
	Recentness of significant soil alteration in wetland:	Current & ongoing.	1-12 months ago.	>1 yr ago.	0
	Duration:	Long-lasting, minimal veg recovery.	Long-lasting but mostly revegetated.	Short-term, revegetated, not intense.	0
	Timing of soil alteration:	Frequent and year-round.	Frequent but mostly seasonal.	Mainly during one-time or scattered events.	0
				Sum=	0
				Stressor subscore=	0.00

Assessment Area (AA) Results:

Wetland ID: Uniacke Quarry Wetland 5

Date: 26 July, 2021

Observer: Brady Leights and Tiffany MacAulay

Latitude & Longitude (decimal degrees): 44.9151, -63.8161

Scores will appear below after data are entered in worksheets OF, F, and S. See Manual for definitions and descriptions of how scores were computed.

Wetland Functions or Other Attributes:	Function Score (Normalised)	Function Rating	Benefits Score (Normalised)	Benefits Rating	Function Score (raw)	Benefits Score (raw)
Water Storage & Delay (WS)	7.62	Moderate	4.85	Moderate	7.63	2.15
Stream Flow Support (SFS)	0.00	Lower	0.00	Lower	0.00	0.00
Water Cooling (WC)	0.00	Lower	0.00	Lower	0.00	0.00
Sediment Retention & Stabilisation (SR)	4.30	Moderate	2.27	Moderate	5.56	1.11
Phosphorus Retention (PR)	0.61	Lower	1.29	Moderate	4.13	1.00
Nitrate Removal & Retention (NR)	10.00	Higher	3.33	Lower	10.00	3.33
Carbon Sequestration (CS)	4.16	Moderate			7.17	
Organic Nutrient Export (OE)	6.01	Moderate			3.93	
Anadromous Fish Habitat (FA)	0.00	Lower	0.00	Lower	0.00	0.00
Resident Fish Habitat (FR)	0.00	Lower	0.00	Lower	0.00	0.00
Aquatic Invertebrate Habitat (INV)	3.41	Lower	1.15	Moderate	4.88	1.86
Amphibian & Turtle Habitat (AM)	4.85	Moderate	2.11	Lower	5.66	3.50
Waterbird Feeding Habitat (WBF)	0.00	Lower	0.00	Lower	0.00	0.00
Waterbird Nesting Habitat (WBN)	0.00	Lower	0.00	Lower	0.00	0.00
Songbird, Raptor, & Mammal Habitat (SBM)	6.33	Moderate	5.00	Moderate	5.51	5.00
Pollinator Habitat (POL)	6.89	Moderate	3.33	Moderate	5.71	3.33
Native Plant Habitat (PH)	3.23	Lower	4.85	Lower	5.19	4.85
Public Use & Recognition (PU)			1.82	Moderate		1.54
Wetland Sensitivity (Sens)			5.00	Moderate		3.60
Wetland Ecological Condition (EC)			3.04	Lower		6.67
Wetland Stressors (STR) (higher score means more stress)			9.99	Higher		4.98
Summary Ratings for Grouped Functions:						
HYDROLOGIC Group (WS)	7.62	Moderate	4.85	Moderate	7.63	2.15
WATER QUALITY SUPPORT Group (max+avg/2 of SR, PR, NR, CS)	7.38	Higher	2.81	Lower	8.36	2.57
AQUATIC SUPPORT Group (max+avg/2 of SFS, INV, OE, WC)	4.18	Moderate	0.76	Lower	3.54	1.24
AQUATIC HABITAT Group (max+avg/2 of FA, FR, AM, WBF, WBN)	2.91	Lower	1.27	Lower	3.40	2.10
TRANSITION HABITAT Group (max+avg/2 of SBM, PH, POL)	6.19	Moderate	4.70	Lower	5.59	4.70
WETLAND CONDITION (EC)			3.04	Lower		6.67
WETLAND RISK (average of Sensitivity & Stressors)			7.50	Higher		4.29

NOTE: A score of 0 does not mean the function or benefit is absent from the wetland. It means only that this wetland has a capacity that is equal or less than the lowest-scoring one, for that function or benefit, from among all the NS calibration wetlands that were assessed previously.

NOVA SCOTIA - Functional WSS Interpretation Tool

1. General Description of Tool:

This interpretive tool automatically determines whether the subject wetland will be regulated as a Wetland of Special Significance (WSS). This determination is made based on the WESP-AC functional results, per the Nova Scotia *Wetland Conservation Policy* .

A 'Function-Benefit Product' (FBP) is calculated based upon the Grouped Functions, and has a theoretical maximum of 100. Threshold values for the FBP are applied, in order to categorize the FBP scores into 'Low', 'Moderate' or 'High' scores. Thresholds are determined based upon the statistical distribution of WESP-AC scores compiled from various sites across the Province (N=442). These categories are subsequently used to apply various 'Functional WSS Rules', as described below.

For the purpose of defining and applying the Functional WSS rules, two supergroups are defined based on grouped functions, as follows: **(1) Support Supergroup** - includes Hydrologic, Water Quality Support, and Aquatic Support grouped functions. **(2) Habitat Supergroup** - includes Aquatic Habitat and Transition Habitat grouped functions.

2. Functional WSS Rule Definitions:

Habitat Rule: In consideration of the Habitat Supergroup, the subject wetland is a WSS if either of the following sub-rules are satisfied:

(HAB 1) Two 'High Scores' OR

(HAB 2) One 'High' and one 'Moderate' score

Support Rule: In consideration of the Support Supergroup, the subject wetland is a WSS if either of the following sub-rules are satisfied:

(SUP 1) Three 'High' scores OR

(SUP 2) Two 'High' and one 'Moderate' score

Habitat/Support Hybrid Rule: In consideration of both the Habitat and Support Supergroups, the subject wetland is a WSS if the following is satisfied:

(HYB 1) One 'High' Habitat score **AND** Two or three 'High' Support scores

3. Functional WSS Interpretation Results

Function-Benefit Product (FBP)	FBP SCORE	FBP SCORE CATEGORY
SUPPORT SUPERGROUP - HYDROLOGIC	36.97304562	Moderate
SUPPORT SUPERGROUP - WATER QUALITY SUPPORT	20.78553065	Low
SUPPORT SUPERGROUP - AQUATIC SUPPORT	3.196643645	Low
HABITAT SUPERGROUP - AQUATIC HABITAT	3.684511533	Low
HABITAT SUPERGROUP - TRANSITION HABITAT	29.07130533	Low

3a. Functional WSS Determination: Automatic Method

Habitat Rule Satisfied?	NO
Support Rule Satisfied?	NO
Habitat/Support Hybrid Rule Satisfied?	NO
CONCLUSION:	**Site is not a WSS**

3b. Functional WSS Determination - Manual Method Using Dichotomous Key

1a. (HAB) - One or more 'High' scores for AH or TH.....**2**
2a. (HAB) - Two 'High' scores.....**WSS**
2b. (HAB) - One 'High' score.....**3**
3a. (HAB) - Any combination of 'High' and 'Moderate' scores..... **WSS**
3b. (HAB) - Any combination of 'High' and 'Low' scores.....**4**
4a. (SUP) One or more 'High' Scores for HYD, WQS, or AS.....**5**
5a. (SUP) Two or Three 'High' scores ..... **WSS**
5b. (SUP) One 'High' score **6**
6a. (SUP) Any combo of one 'High', two 'Mod' scores..... **WSS**
6b. (SUP) One 'High', plus any other combo of scores.....**not WSS**
4b. (SUP) Zero 'High' Scores for HYD, WQS, or AS.....**7**
7a. (SUP) Three 'Moderate' scores..... **WSS**
7b. (SUP) Any other combination of scores .....**not WSS**
1b. (HAB) - Zero 'High' Scores for AH or TH.....**8**
8a. (SUP) Three 'High' Scores.....**WSS**
8b. (SUP) Less than three 'High' scores.....**9**
9a. (SUP) Two 'High' and one 'Moderate' score.....**WSS**
9b. (SUP) - Any other combination of scores .....**not WSS**

Cover Page: Basic Description of Assessment	**WESP-AC version 2**
Site Name:	Uniacke Quarry Wetland 6
Investigator Name:	Brady Leights and Tiffany MacAulay
Date of Field Assessment:	26 July, 2021
Nearest Town:	Mount Uniacke
Latitude (decimal degrees):	44.9154
Longitude (decimal degrees):	-63.8159
Is a map based on a formal on-site wetland delineation available?	Yes
Approximate size of the Assessment Area (AA, in hectares):	0.09
AA as percent of entire wetland (approx.). Attach sketch map if AA is smaller than the entire contiguous wetland.	100
What percent (approx.) of the **wetland** were you able to visit?	100
What percent (approx.) of the **AA** were you able to visit?	100
Were you able to ask the site owner/manager about any of the questions?	
Indicate here if you intentionally surveyed for rare plants, calciphile plants, or rare animals:	
Have you attended a WESP-AC training session? If so, indicate approximate month & year.	September 2021
How many wetlands have you assessed previously using WESP-AC? (approx.)	
Comments about the site or this WESP-AC assessment (attach extra page if desired):	

	A	B	C	D	E
1	Date: 26 July, 2021		Site Identifier: WL-6	Investigator: Brady Leights and Tiffany MacAulay	
2	**Form OF (Office). Non-tidal Wetland Data Form. WESP-AC version 2 for Nova Scotia wetlands only.** DIRECTIONS: Conduct an assessment only after reading the accompanying Manual and the Explanations column of the data form. In the Data column, change the 0 (false) to a 1 (true) for the best choice, or for multiple choices where allowed and so indicated. Answering many of the questions below will require using these online map viewers: **Google Earth Pro**: https://www.google.com/earth/download/gep/agree.html **Provincial Landscape Viewer**: https://nsgi.novascotia.ca/plv/ For most wetlands, completing this office data form will require 1-2 hours. For a list of functions to which each question pertains, see bracketed abbreviations in the Definitions/Explanations column. For detailed descriptions of each WESP-AC model, see Appendix B of the accompanying Manual. Codes for functions and values are: WS= Water Storage, SFS= Stream Flow Support, WC= Water Cooling, SR= Sediment Retention & Stabilisation, PR= Phosphorus Retention, NR= Nitrate Removal, CS= Carbon Sequestration, OE= Organic Nutrient Export, INV= Invertebrate Habitat, FA= Anadromous Fish Habitat, FR= Resident Fish Habitat, AM= Amphibian & Reptile Habitat, WBF= Feeding Waterbird Habitat, WBN= Nesting Waterbird Habitat, SBM= Songbird, Raptor, & Mammal Habitat, POL= Pollinator Habitat, PH= Native Plant Habitat, PU= Public Use & Recognition, EC= Ecological Condition, Sen= Wetland Sensitivity, STR= Stressors.			
3	**#**	**Indicators**	**Condition Choices**	**Data**	**Definitions/Explanations**
4	OF1	Province	Mark the province in which the AA is located by changing the 0 in the column next to it to a "1". Mark only one.		This determines to which province's calibration wetlands the raw score of any wetland is normalised. In the function and benefits models, it also triggers the automatic exclusion of indicators for which no spatial data exists in a particular province.
5			New Brunswick	0	
6			Nova Scotia	1	
7			Prince Edward Island	0	
8			Newfoundland-Labrador	0	
9	OF2	Ponded Area Within 1 km.	The area of **surface water** ponded during most of the growing season that is both (1) in or adjacent to the AA and (2) within 1 km is:		**"Adjacent"** means not separated from the AA by a wide expanse (>50 m) of upland (including roads >50 m wide). Include ponded areas likely to be hidden by wetland vegetation. If surface water extends beyond 1 km, include only the part within 1 km. Do not include tidal areas. Measure the area from aerial imagery using Google Earth Pro (click on Ruler icon in toolbar, then Polygon in pop-up menu). [PH, SBM, WBN]
10			<0.01 hectare (about 10 m x 10 m).	0	
11			0.01 - 0.1 hectare.	0	
12			0.1 - 1 hectare.	0	
13			1 to 10 hectares.	1	
14			10 to 100 hectares.	0	
15			>100 hectares.	0	
16	OF3	Ponded Water & Wetland Within 1 km.	The area of **wetlands and surface water** ponded during most of the growing season that is both (1) in or adjacent to the AA and (2) within 1 km is:		See definition of adjacent in OF2. If the AA's wetland vegetation extends beyond 1 km, include only the part within 1 km. "Ponded" means not flowing in rivers or streams. [Sens, WBF]
17			<0.01 hectare (about 10 m x 10 m).	0	
18			0.01 - 0.1 hectare.	0	
19			0.1 - 1 hectare.	0	
20			1 to 10 hectares.	0	
21			10 to 100 hectares.	1	
22			>100 hectares.	0	
23	OF4	Size of Largest Nearby Vegetated Tract or Corridor	The largest vegetated patch or corridor that includes the AA's vegetation plus all **adjacent** upland vegetation that is not lawn, row crops, heavily grazed lands, conifer plantation is:		See definition of adjacent in OF2. Use Google Earth Pro's polygon ruler (as described above). Exclude conifer plantations only if it is obvious that trees were planted in rows. [AM, PH, SBM, Sens]
24			<0.01 hectare (about 10 m x 10 m).	0	
25			0.01 - 0.1 hectare.	0	
26			0.1 - 1 hectare.	0	
27			1 to 10 hectares.	0	
28			10 to 100 hectares.	0	
29			100 to 1000 hectares.	0	
30			>1000 hectares. [*This is nearly always the answer in relatively undeveloped landscapes.*]	1	
31	OF5	Distance to Large Vegetated Tract	The minimum distance from the **edge** of the AA to the edge of the closest ***vegetated land*** (but excluding row crops, lawn, conifer plantation) **larger than 375 hectares** (about 2 km on a side), is:		To measure distance, use Google Earth Pro (Ruler > Line tool). The 375-ha criterion is from the Fundy Model Forest Project. [AM, PH, POL, SBM, Sens]
32			<50 m, and not separated from the 375-ha vegetated area by any width of **paved** roads, stretches of open water, row crops, bare ground, lawn, or impervious surface. Or the AA itself contains >375 ha of vegetation. [This is often the answer in relatively undeveloped landscapes.]	1	
33			<50 m, but completely separated from the 375-ha vegetated area by those features, and AA does not contain >375 ha of vegetation.	0	
34			50-500 m, and **not** separated.	0	
35			50-500 m, but separated by those features.	0	
36			0.5 - 5 km, and **not** separated.	0	
37			0.5 - 5 km, but separated by those features.	0	
38			None of the above (the closest patches or corridors which are that large are >5 km away).	0	
39	OF6	Herbaceous Uniqueness	The AA's vegetation cover is >10% herbaceous* but uplands within 5 km have <10% herbaceous cover. If so, enter "3" and continue to OF7. If not, consider: The AA's vegetation cover is >10% herbaceous* but uplands within 1 km have <10% herbaceous cover. If so enter "2" and continue to OF7. If not, consider: The AA's vegetation cover is >10% herbaceous* but uplands within 100 m of the wetland edge have <10% herbaceous cover. If so, enter "1". [* NOTE: Exclude lawns, row crops, heavily grazed lands, forest, shrublands. Include moss as well as grasslike plants in this use of "herbaceous vegetation"]	1	For this question only, consider moss to be herbaceous vegetation. Determine the score by viewing aerial imagery in Google Earth after successively drawing or estimating the boundaries of the buffers of 5 km, 1 km, and 100 m radius focused on the center of the AA. Circles of specified radius can be drawn in Google Earth Pro by clicking on the Ruler icon, then Circle in the pop-up menu. [AMv, PHv, POLv, SBMv, WBFv, WBNv]
40	OF7	Woody Uniqueness	The AA's vegetation cover is >10% woody* but uplands within 5 km have <10% woody cover. If so, enter "3" and continue to OF8. If not, consider: The AA's vegetation is >10% woody* but uplands within 1 km have <10% woody cover. If so enter "2" and continue to OF8. If not, consider: The AA's vegetation is >10% woody* but uplands within 100 m of the wetland edge have <10% woody cover. If so, enter "1" [* NOTE: woody cover = trees & shrubs taller than 1 m.]	0	See above. Do not consider conifer plantations to be forest if it is obvious that trees were planted in rows. [AMv, PHv, POLv, SBMv]
41	OF8	Local Vegetated Cover Percentage	Draw a 5-km radius circle measured from the center of the AA. Ignoring all permanent water in the circle, the percent of the remaining area that is wooded or unmanaged herbaceous vegetation (NOT lawn, row crops, bare or heavily grazed land, clearcuts, or conifer plantations) is:		In Google Earth, draw the 5 km buffer and then estimate land cover percentages, or do GIS analysis of an appropriate land cover layer. [AM, PH, POL, SBM, Sens]
42			<5% of the land.	0	
43			5 to 20% of the land.	0	
44			20 to 60% of the land.	0	
45			60 to 90% of the land.	1	
46			>90% of the land. SKIP to OF10.	0	
47	OF9	Type of Land Cover Alteration	Within the **5-km** radius circle, and ignoring all permanent water, the land area that is bare or non-perennial cover is mostly:		[AM, SBM]
48			Impervious surface, e.g., paved road, parking lot, building, exposed rock.	0	
49			Bare pervious surface, e.g., lawn, recent (<5 yrs ago) clearcut, dirt or gravel road, cropland, landslide, conifer plantation.	1	
50	OF10	Distance by Road to Nearest Population Center	Measured **along** the maintained road nearest the AA, the distance to the nearest **population center** is:		"Population center" means a settled area with more than about 5 regularly- inhabited structures per square kilometer. In Google Earth Pro, click on the Ruler icon, then Path, and draw and measure the route. [FAv, FRv, NRv, PH, PU, SBM, WBFv]
51			<100 m.	0	
52			100 - 500 m.	0	
53			0.5- 1 km.	0	
54			1 - 5 km.	1	
55			>5 km.	0	

	A	B	C	D	E
56	OF11	Distance to Nearest Maintained Road	From the center of the AA, the distance to the nearest maintained public road (dirt or paved) is:		Determine this by viewing aerial imagery in Google Earth Pro and measuring with the Ruler>Line tool. [AM, FAv, FRv, NRv, PH, PU, SBM, STR, WBN]
57			<10 m.	0	
58			10 - 25 m.	0	
59			25 - 50 m.	0	
60			50 - 100 m.	0	
61			100 - 500 m.	0	
62			>500 m.	1	
63	OF12	Wildlife Access	Draw a circle of radius of 5 km from the center of the AA. If mammals and amphibians can move from the center of the AA to ALL other separate wetlands and ponds located within the circle without being forced to cross pavement (any width), lawns, bare ground, and/or marine waters, mark 1= yes can move to all, 0= no. Change to blank if there are no other wetlands within 5 km.	0	Draw the 5 km circle in Google Earth Pro using the Circle tool and search for roads and wetlands within it, being alert for roads hidden under forest canopy. [AM, SBM, STR]
64	OF13	Distance to Ponded Water	The distance from the AA center to the closest (but separate) ponded water body visible in GoogleEarth imagery is:		In Google Earth Pro, zoom in closely to examine the surrounding landscape for ponds, lakes, and wetlands that appear to be permanently flooded. [AM, PH, SBM, Sens, WBF, WBN]
65			<50 m, and not separated by any width of paved roads, stretches of open water, row crops, lawn, bare ground, or impervious surface.	0	
66			<50 m, but completely separated by those features.	0	
67			50-500 m, and not separated.	0	
68			50-500 m, but separated by those features.	0	
69			0.5 - 1 km, and not separated.	1	
70			0.5 - 1 km, but separated by those features.	0	
71			None of the above (the closest patches or corridors that large are >1 km away).	0	
72	OF14	Distance to Large Ponded Water	The distance from the AA center to the closest (but separate) non-tidal body of water that is ponded during most of the year and is larger than 8 hectares during most of a normal year is:		Determine this by viewing aerial imagery in Google Earth. [Sens, WBF, WBN]
73			<100 m.	0	
74			100 m - 1 km.	0	
75			1 -2 km.	0	
76			2-5 km.	1	
77			5-10 km.	0	
78			>10 km.	0	
79	OF15	Tidal Proximity	The distance from the AA edge to the closest tidal water body (regardless of its salinity) is:		In Google Earth, measure the distance to the ocean (including Bay of Fundy) or tidal river, whichever is closer. If you need to see how far upriver a river is tidal, see the KMZ file provided with this calculator for NS (NS Headtide). Points shown in those files are only an approximation, so local information if available may be preferable. [FA, WBF]
80			<100 m.	0	
81			100 m - 1 km.	0	
82			1 - 5 km.	0	
83			5-10 km.	0	
84			10-40 km.	1	
85			>40 km.	0	
86	OF16	Upland Edge Contact	Select one:		[NR, SBM, Sens]
87			The AA has no upland edge (or upland is <1% of perimeter). The AA is entirely surrounded by (& contiguous with) other wetlands or water.	0	
88			1-25% of the AA's perimeter abuts upland (including filled areas). The rest adjoins other wetlands or water that is mostly wider than the AA.	0	
89			25-50% of the AA's perimeter abuts upland. The rest adjoins other wetlands or water that is mostly wider than the AA.	0	
90			50-75% of the AA's perimeter abuts upland. The rest adjoins other wetlands or water that is mostly wider than the AA.	0	
91			More than 75% of the AA's perimeter abuts upland. Any remainder adjoins other wetlands or water that is mostly wider than the AA. This will be true for most assessments done with WESP-AC.	1	
92	OF17	Flood Damage from Non-tidal Waters	Within 5 km downstream or downslope of the AA (select first true choice):		Contact local authories to determine if such maps exist. Where available, LiDAR imagery can provide finer elevational resolution useful for flood modeling. [WSv]
93			Maps show Flood Zone or Flood Risk areas and there appears to be infrastructure vulnerable to river flooding not caused by tidal storm surges.	0	
94			Maps show Flood Zone or Flood Risk areas, but infrastructure is absent or is not vulnerable to floods from a non-tidal river. In some cases levees, upriver dams, or other measures may partly limit damage or risk from smaller events.	0	
95			Maps do not show Flood Zone or Flood Risk areas (or no such mapping has been done locally) and there appears to be infrastructure vulnerable to river flooding unrelated to tidal storm surges.	0	
96			Maps do not show Flood Zone or Flood Risk areas (or no such mapping has been done locally) and there is no infrastructure vulnerable to river flooding unrelated to tidal storm surges.	1	
97	OF18	Relative Elevation in Watershed	In Google Earth, enable the Terrain layer (lower left menu) and open the NS_Watersheds Secondary KMZ file that accompanies this calculator. Then determine the AA's approximate elevation (bottom right, NOT the "eye alt"). Then move cursor around to determine the watershed's maximum and minimum elevation. Divide the AA's elevation by the (max-min).	0.87	[FA, NR, Sens, SFSv, WCv, WSv]
98	OF19	Water Quality Sensitive Watershed or Area	The AA is in a Protected Water Supply area (Designated Water Supply Area, Natural Watershed Municipal Surface Water Supply Area, or Municipal Water Supply Area) according to the provided KMZ overlay ("NS Protected Water Supply Areas"). Enter 1= yes, 0= no.	0	If an ACCDC report is available for this AA, it also may contain such information. [NRv]
99	OF20	Degraded Water Upstream	Sampling indicates a problem with concentrations of metals, hydrocarbons, nutrients, or other substances (excluding bacteria, acidic water, high temperatures) being present at levels harmful to aquatic life or humans, and:		May use existing data, or sample those waters as part of this wetland assessment. "Harmful" should be evaluated with regard to current federal or provincial water quality standards. [AM, FA, FR, NRv, PRv, SRv, STR, WBF, WBN]
100			The condition is present within the AA.	0	
101			The condition is present in waters within 1 km that flow into the AA, but has not been documented in the AA itself.	0	
102			Sampling during both low water periods and times with high runoff (storms, snowmelt) indicates no problems in either the AA or inflowing waters.	0	
103			Data are insufficient (no or inadequate sampling within 1 km, or condition exists only at >1 km upstream). This is the situation for nearly all wetlands in this region.	1	
104	OF21	Degraded Water Downstream	The problem described above is downslope from the AA, and:		May use existing data, or monitor waters as part of this wetland assessment. [NRv, PRv, SRv]
105			The condition is present within 1 km downslope and connected to the AA by a channel.	0	
106			The condition is present within 5 km downslope and connected to the AA by a channel, or within 1 km but not connected to the AA by a channel.	0	
107			Sampling during both low water periods and times with high runoff (storms, snowmelt) indicates no problems in either the AA or inflowing waters.	0	
108			Data are insufficient (no or inadequate sampling within 1 km, or condition exists only at >1 km upstream). This is the situation for nearly all wetlands in this region.	1	
109	OF22	Wetland as a % of Its Contributing Area (Catchment)	From a topographic map and field observations, estimate the approximate boundaries of the catchment (CA) of the entire wetland of which the AA may be only a part. Then adjust those boundaries if necessary based on your field observations of the surrounding terrain, and/or by using procedures described in the Manual. Divide the area of the wetland (not just the AA) by the approximate area of its catchment excluding the area of the wetland itself. When doing the calculation, if ponded water is adjacent to the wetland, include that in the wetland's area. The result is:		Topographic maps may be viewed online at the National Atlas of Canada (Toporama): http://atlas.gc.ca/toporama/en/index.html [NR, PR, Sens, SR, WS]
110			<0.01, or catchment size unknown due to stormwater pipes that collect water from an indeterminate area.	1	
111			0.01 to 0.1.	0	
112			0.1 to 1.	0	
113			>1 (wetland is larger than its catchment (e.g., wetland with flat surrounding terrain and no inlet, or is entirely isolated by dikes, or is a raised bog).	0	
114	OF23	Unvegetated Surface in the Contributing Area	The proportion of the AA's contributing area (measured to no more than 1000 m upslope) that is comprised of buildings, roads, parking lots, other pavement, exposed bedrock, landslides, and other mostly-bare surface is about :		[FA, INV, NRv, PRv, SRv, STR, WCv, WSv]
115			<10%.	1	
116			10 to 25%.	0	
117			>25%.	0	

	A	B	C	D	E
118	OF24	Transport From Upslope	A relatively large proportion of the precipitation that falls farther upslope in the CA reaches this wetland quickly as runoff (surface water), as indicated by the following: (a) input channel is present, (b) input channels have been straightened, (c) upslope wetlands have been ditched extensively, (d) land cover is mostly non-forest, (e) CA slopes are steep, and/or (f) most CA soils are shallow (bedrock near surface) and/or have high runoff coefficients. This statement is:		[NRv, PRv, SRv, WSv]
119			Mostly true.	0	
120			Somewhat true.	0	
121			Mostly untrue.	1	
122	OF25	Aspect	The overland flow direction of most surface water (in streams, rivers, or runoff) that enters the AA is:		[AM, NR, SFS, WC, WS]
123			Northward (N, NE). north-facing contributing area.	0	
124			Southward (S, SW). south-facing contributing area.	1	
125			Other (E, SE, W, NW), or no detectable uphill slope or input channel (flat).	0	
126	OF26	Internal Flow Distance (Path Length)	The horizontal flow distance from the wetland's inlet to outlet is:		Identify inlets and outlets, if any, from topographic maps (use elevations to determine which are inlets and which are outlets) and augment by field inspection. With the Provincial Landscape Viewer, select Nova Scotia Topo as the Basemap. Also enable the layer Forestry>WAM Predicted Flow. Then measure the inlet-outlet distance. [NR, OE, PR, SR, WS]
127			<10 m.	0	
128			10 - 50 m.	0	
129			50 - 100 m.	0	
130			100 - 1000 m.	0	
131			1- 2 km.	0	
132			>2 km, or wetland lacks an inlet and outlet.	1	
133	OF27	Growing Degree Days	In Google Earth, open the KMZ file that accompanies this calculator, called NS_GrowingDegreeDays. Place your cursor over the AA and left-click. From the pop-up window, enter the GRIDCODE number in the next column.	2000	This layer was provided by Dr. Dan McKenney of the Canadian Forest Service [AM, CS, FR, INV, NR, OE, PH, PR, Sens, SR, WBF, WCv, WS]
134	OF28	Fish Access or Use	According to agency biologists and/or your own observations, the AA. [M*ark just the first choice that is true.]* :		Regarding the last choice, if uncertain if an AA is fishless, consider the possibility its waters have been stocked. [AM, FA, FR, INV, WBF, WBN]
135			Is known to support rearing and/or spawning by Atlantic salmon or other anadromous species or eels. Go to Provincial Landscape Viewer>Wildlife>Significant Habitat>Species at Risk. Contact local fishery biologists, review the ACCDC report, and visit these websites: http://www.salmonatlas.com/atlanticsalmon/canada-east/index.1.html http://atlanticsalmonfederation.org/rivers/introduction.html	0	
136			Has not been documented to support Atlantic salmon rearing and/or spawning, but is connected to nearby waters likely to contain Atlantic salmon or other anadromous species or eels and is probably accessed by those during some conditions.	0	
137			Is probably is not accessed by any anadromous fish species but is known or likely to have other fish at least seasonally.	0	
138			Is known or likely to be fishless (e.g., too small, dry, and/or not accessible even temporarily, and not stocked).	1	
139	OF29	Species of Conservation Concern	Within the past 10 years, in the AA (or in its adjoining waters or wetland), qualified observers have documented *[mark all applicable*]:		Request information from ACCDC and/or conduct your own survey at an appropriate season using an approved protocol. For birds, also check eBird.org. NOTE for NS: If your WESP-AC is being completed for a Wetland Alteration Application to NS-ECC, your ACCDC results and any taxon-specific survey results must be submitted along with your WESP-AC results, and application. [AMv, EC, PHv, POLv, SBMv, Sens, WBFv, WBNv]
140			Presence of one or more of the plant species listed in the Plants_Rare worksheet of the accompanying SuppInfo file, or the AA is within a mapped Atlantic Coastal Plain Flora Buffer (go to Provincial Landscape Viewer> Wildlife> Special Management Practice Zones).	0	
141			Presence of one or more of the amphibian or reptile species (AM) of conservation concern as listed in the Wildlife_Rare worksheet of the accompanying SuppInfo file.	0	
142			Presence of one or more of the waterbird species (WBF, WBN) of conservation concern as listed in the Wildlife_Rare worksheet of the accompanying SuppInfo file.	0	
143			Presence of one or more of the nesting songbird or raptor species (SBM) of conservation concern as listed in the Wildlife_Rare worksheet of the accompanying SuppInfo file, during their nesting season (May-July for most species).	0	
144			None of the above, or no data.	1	
145	OF30	Important Bird Area (IBA)	In Google Earth, open the KMZ file that accompanies this calculator, called IBAs_Canada. The AA is all or part of an officially designated IBA. Enter 1= yes, 0= no.	0	The source of this layer, which should be checked periodically for updates, is: http://www.ibacanada.com/mapviewer.jsp?lang=EN [SBMv, WBFv, WBNv]
146	OF31	Black Duck Nesting Area	In Google Earth, open the KMZ file that accompanies this calculator, called BlackDuck. Adjust its alignment and opacity. Determine the predicted density (pairs per 25 sq. km) of nesting American Black Duck in the AA's vicinity: <10 (enter 0), 10-20 (enter 1), 20-30 (enter 2), >30 (enter 3). If outside of region shown in map, change to blank.	0	This was provided by Dr. David Leske. [WBNv]
147	OF32	Wintering Deer or Moose Concentration Areas	If AA is on private land with no information, change to blank (not 0). Otherwise: With the Provincial Landscape Viewer, for Wintering Moose, go to Wildlife> Significant Habitat. For Mainland Moose Concentration Areas, go to Wildlife> Special Management Practice Zones. Enter: yes= 1, no= 0.	0	[SBM]
148	OF33	Other Conservation Designation	The AA is all or part of an area designated by government, First Nations, or the Nature Conservancy of Canada (NCC) for its exceptional ecological features or highly intact natural conditions. With Provincial Landscape Viewer, see Protected Areas. Enter: yes= 1, no= 0. If uncertain, consult NCC and agencies for more recent information.	0	See: https://novascotia.ca/parksandprotectedareas/plan/interactive-map/ [PU]
149	OF34	Conservation Investment	The AA is part of or contiguous to a wetland on which public or private organizational funds were spent to preserve, create, restore, or enhance the wetland (excluding mitigation wetlands). Ask the property owner. Enter: yes= 1, no= 0. If no information, change to blank (not 0).	0	[PU]
150	OF35	Mitigation Investment	The AA is all or part of a mitigation site used explicitly to offset impacts elsewhere. Ask the property owner. Enter: yes= 1, no= 0. If no information, change to blank.	0	[PU]
151	OF36	Sustained Scientific Use	Plants, animals, or water in the AA have been monitored for >2 years, unrelated to any regulatory requirements, and data are available to the public. Or the AA is part of an area that has been designated by an agency or institution as a benchmark, reference, or status-trends monitoring area. Ask the property owner. Enter: yes= 1, no= 0. If no information, change to blank.	0	[PU]
152	OF37	Calcareous Region	The AA is NOT in a subregion that has been heavily exposed to acid precipitation. Enter "1" if true (green or yellow in map in Appendix A of the Manual). Enter "0" if false. If no information, change to blank.		[AM, FA, FR, INV, PH]
153	OF38	Ownership	Select the ONE ownership that covers the most of the AA. In Google Earth, open KMZ file called NS_Crownlands.Use more recent information if available.		"Private lands" may include those owned or leased by non-governmental organizations, e.g., charitable conservation land trusts, DUC, TNC. [PU, STR]
154			New timber harvest, roads, mineral extraction, and intensive summer recreation (e.g., off-road vehicles) are permanently prohibited. Includes many publicly-owned Protected Lands, and private lands under long-term (30+ year) legal agreements to maintain nearly-unaltered conditions.	0	
155			Ownership is public (e.g., municipal, Crown Reservations/Notations) but some or all of the above activities are allowed.	0	
156			Ownership is private but public access is allowed, and/or a shorter-term conservation easement (whether renewable or not) is in place.	0	
157			Ownership is private and owner does not allow access, or access permission unknown, and not a conservation easement.	1	

	A	B	C	D	E
1	Date: 26 July, 2021		Site Identifier: WL-6	Investigator: Brady Leights and Tiffany MacAulay	
2	**Form F (Field). Non-tidal Wetland Data Form. WESP-AC version 2 for Nova Scotia.** DIRECTIONS: Walk for no less than 10 minutes from the wetland edge towards its core, in the part of the AA that is proposed for alteration. If no alteration is proposed, walk in a portion that appears to be most representative of the wetland overall. Walk only where it is safe and legal to do so. Conduct the assessment only after reading the accompanying Manual and the Explanations column of the data form. In the Data column, change the 0 (false) to a 1 (true) for the best choice, or for multiple choices where allowed and so indicated. Answer these questions primarily based on your onsite observations and interpretations. Do not write in shaded parts of this data form. Answering some questions accurately may require conferring with the landowner or other knowledgable persons, and/or reviewing aerial imagery. For most wetlands, completing this field data form will require 1-2 hours on a site. For a list of functions to which each question pertains, see the accompanying Interpretations form. For detailed descriptions of each WESP-AC model, see Appendix B of the accompanying Manual. Codes for functions and values are: WS= Water Storage & Delay, SFS= Stream Flow Support, WC= Water Cooling, SR= Sediment Retention & Stabilisation, PR= Phosphorus Retention, NR= Nitrate Removal, CS= Carbon Sequestration, OE= Organic Nutrient Export, INV= Invertebrate Habitat, FA= Anadromous Fish Habitat, FR= Resident Fish Habitat, AM= Amphibian & Reptile Habitat, WBF= Feeding Waterbird Habitat, WBN= Nesting Waterbird Habitat, SBM= Songbird, Raptor, & Mammal Habitat, POL= Pollinator Habitat, PH= Native Plant Habitat, PU= Public Use & Recognition, EC= Ecological Condition, Sen= Wetland Sensitivity, STR= Stressors.		
3	**#**	**Indicators**	**Condition Choices**	**Data**	**Definitions/Explanations**
4	F1	Wetland Type	Follow the key below and mark the ONE row that best describes MOST of the vegetated part of the AA:		Ericaceous shrubs are ones in the heather family (Ericaceae). Most have leathery evergreen leaves. They include rhododendron, azalea, swamp laurel, leatherleaf, Labrador tea, and others. Most require acidic soil. Although not in the family Ericaceae, sweetgale (*Myrica gale*) should be counted also. [AM, CS, FA, FR, INV, NR, OE, PH, Sens, SFS, WBF, WBN]
5			A. Moss and/or lichen cover more than 25% of the ground. Often dominated by ericaceous shrubs (e.g., Labrador tea) or other acid-tolerant plants (e.g., bog cranberry, pitcher plant, sundew, orchids). Substrate is mostly undecomposed peat. Choose between A1 and A2 and mark the choice with a 1 in their adjoining column. Otherwise go to B below.		
6			A1. Surface water is usually absent or, if present, pH is typically <4.5 and conductivity is usually <100 µS/cm (<64 ppm TDS). Trees are absent or nearly so. Sedge cover usually sparse or absent but cottongrass and/or lichen cover may be extensive, as well as cloudberry, lingonberry, sheep laurel, and a sedge (*Carex rariflor* a). Wetland surface and surrounding landscape are seldom sloping and wetland often is domed (convex). Inlet and outlet channels are usually absent. If known, pH of peat is <4.0.	0	
7			A2. Not A1. Surface water, if present, has pH typically >4.5 and conductivity is usually >100 µS/cm (>64 ppm TDS). Sedge cover is usually extensive, and/or tree and tall shrub cover is extensive. Sometimes at toe of slope or edge of water body. An exit channel is usually present. Wetter than A1 and peat depth may be shallower (<2 m).	0	
8			B. Moss and/or lichen cover less than 25% of the ground. Soil is mineral or decomposed organic (muck). Choose between B1 and B2 and mark the choice with a 1 in their adjoining column:		
9			B1. Trees and shrubs taller than 1 m comprise more than 25% of the vegetated cover. Surface water is mostly absent or inundates the vegetation only seasonally (e.g., vernal pools or floodplain).	0	
10			B2. Not B1. Tree & tall shrubs comprise less than than 25% of the vegetated cover. Vegetation is mostly herbaceous, e.g., cattail, bulrush, burreed, pond lily, horsetail. Surface water may be extensive and fluctuates seasonally, being either persistent or drying up partly or entirely.	1	
11			*Reminder : For all questions, the AA should include all persistent waters in ponds smaller than 8 hectares (~283 m on a side) that are adjacent to the AA. The AA should also include part of the water area of adjacent ponded water larger than 8 ha and adjacent rivers wider than 20 m. Specifically, the AA should include the open water part adjacent to wetland vegetation and equal in width to the average width of that vegetated zone. Throughout this data form, "* **adjacent** *" is used synonymously with abutting, adjoining, bordering, contiguous -- and means no upland (manmade or natural) completely separates the described features along their directly shared edge. Features joined only by a channel are not necessarily considered to be adjacent -- a large portion of their edges must match. The features do not have to be hydrologically connected in order to be considered adjacent.*		
12	F2	Wetland Types - Adjoining or Subordinate	If the AA is smaller than 1 ha, mark all other types that occupy more than 1% of the vegetated AA. If the AA is larger than 1 ha, mark all other types which are within or adjacent to the AA and occupy more than 1 ha, as visible from the AA or as interpreted from aerial imagery. Do not mark again the type marked in F1.		1 hectare is 10,000 sq. m or about 2.5 acres. It could have dimensions of 100 m by 100 m, 1000 m by 10 m, or similar. [AM, INV, SBM, WBF]
13			A1.	0	
14			A2.	0	
15			B1.	0	
16			B2.	0	
17	F3	Woody Height & Form Diversity	Following EACH row below, indicate with a number code the percentage of the living vegetation in the AA which is occupied by that feature (6 if >95%, 5 if 75-95%, 4 if 50-75%, 3 if 25-50%, 2 if 5-25%, 1 if <5%, 0 if none). If the vegetated part of the AA is largely herbaceous (non-woody) vegetation, these percentages should not sum to 100%.		Deciduous shrubs in this region usually include buttonbush, Labrador tea, bayberry (*Morella*), huckleberry, cranberry, cloudberry, sweetgale, alder, willow, birch, ash, dogwood, and a few others. If you assigned a code of 3 or higher to any of the first four choices and the ground cover beneath the trees/shrubs is <25% moss, then question F1 might be "B1". [CS, INV, NR, PH, POL, SBM, Sens]
18			coniferous trees (may include tamarack) taller than 3 m.	1	
19			deciduous trees taller than 3 m.	1	
20			coniferous or ericaceous shrubs or trees 1-3 m tall not directly below the canopy of trees.	2	
21			deciduous shrubs or trees 1-3 m tall not directly below the canopy of trees.	3	
22			coniferous or ericaceous shrubs <1 m tall not directly below the canopy of taller vegetation.	3	
23			deciduous shrubs or trees <1 m tall (e.g., deciduous seedlings) not directly below the canopy of taller vegetation.	3	
24			*Note : If none of top 4 rows in F3 was marked 2 or greater , SKIP to F9 (N fixers).*		
25	F4	Dominance of Most Abundant Shrub Species	Determine which two woody plant species comprise the greatest portion of the low (<3 m) woody cover . Then choose one:		[PH, POL, SBM, Sens]
26			those species together comprise > 50% of such cover.	1	
27			those species together do not comprise > 50% of such cover.	0	
28	F5	Woody Diameter Classes	Mark ALL the types that comprise >5% of the woody canopy cover in the AA or >5% of the wooded areas (if any) along its upland edge (perimeter). The edge should include only the trees whose canopies extend into the AA.		Estimate the diameters at chest height. If small-diameter trees are overtopped (shaded) by larger ones, visualise a "subcanopy" at the average height of the smaller-dbh trees, to serve as a basis for the minimum 5% canopy requirement in this question. The trees and shrubs need not be wetland species. [AM, CS, POL, SBM, Sens, WBN]
29			coniferous, 1-9 cm diameter and >1 m tall.	1	
30			broad-leaved deciduous 1-9 cm diameter and >1 m tall.	1	
31			coniferous, 10-19 cm diameter.	0	
32			broad-leaved deciduous 10-19 cm diameter.	0	
33			coniferous, 20-40 cm diameter.	0	
34			broad-leaved deciduous 20-40 cm diameter.	0	
35			coniferous, >40 cm diameter.	0	
36			broad-leaved deciduous >40 cm diameter.	0	
37	F6	Height Class Interspersion	Follow the key below and mark the ONE row that best describes MOST of the AA:		[AM, INV, NR, PH, SBM, Sens]
38			A. Neither the vegetation taller than 1 m nor the vegetation shorter than that comprise >70% of the vegetated part of the AA. They each comprise 30-70%. Choose between A1 and A2 and mark the choice with a 1 in the adjoining column. Otherwise go to B below.		
39			A1. The two height classes are mostly scattered and intermixed throughout the AA.	0	
40			A2. Not A1. The two height classes are mostly in separate zones or bands, or in proportionately large clumps.	0	
41			B. Either the vegetation shorter than 1 m comprises >70% of the vegetated part of the AA, or the vegetation taller than that does. One size class might even be totally absent. Choose between B1 and B2 and mark the choice with a 1 in the adjoining column:		
42			B1. The less prevalent height class is mostly scattered and intermixed within the prevalent one.	1	
43			B2. Not B1. The less prevalent height class is mostly located apart from the prevalent one, in separate zones or clumps, or is completely absent.	0	
44	F7	Large Snags (Dead Standing Trees)	The number of large snags (diameter >20 cm) in the AA plus adjacent upland area within 10 m of the wetland edge is:		Snags are dead standing trees that often (not always) lack bark and foliage. Include only ones that are at least 2 m tall. [POL, SBM, WBN]
45			None, or fewer than 8/ hectare which exceed this diameter.	1	
46			Several (>8/hectare) and a pond, lake, or slow-flowing water wider than 10 m is within 1 km.	0	

	A	B	C	D	E
47			Several (>8/hectare) but above not true.	0	
48	F8	Downed Wood	The number of downed wood pieces longer than 2 m and with diameter >10 cm, and not persistently submerged, is:		Exclude temporary "burn piles." [AM, INV, POL, SBM]
49			Few or none that meet these criteria.	0	
50			Several (>5 if AA is >5 hectares, less for smaller AAs) meet these criteria.	1	
51	F9	N Fixers	The percentage of the AA's vegetated cover that contains nitrogen-fixing plants (e.g., alder, sweetgale, clover, lupine, alfalfa, other legumes) is:		Do not include N-fixing algae or lichens. [FA, FR, INV, NRv, OE, PH, SBM, Sens]
52			<1% or none.	0	
53			1-25% of the vegetated cover, in the AA or along its water edge (whichever has more).	1	
54			25-50% of the vegetated cover, in the AA or along its water edge (whichever has more).	0	
55			50-75% of the vegetated cover, in the AA or along its water edge (whichever has more).	0	
56			>75% of the vegetated cover, in the AA or along its water edge (whichever has more).	0	
57	F10	Sphagnum Moss Extent	The cover of Sphagnum moss (or any moss that forms a dense cushion many centimeters thick), including the moss obscured by taller sedges and other plants rooted in it, is:		Exclude moss growing on trees and rocks. [CS, PH]
58			<5% of the vegetated part of the AA.	1	
59			5-25% of the vegetated part of the AA.	0	
60			25-50% of the vegetated part of the AA.	0	
61			50-95% of the vegetated part of the AA.	0	
62			>95% of the vegetated part of the AA.	0	
63	F11	% Bare Ground & Thatch	Consider the parts of the AA that lack surface water at the driest time of the growing season. Viewed from directly above the ground layer, the predominant condition in those areas at that time is:		Thatch is dead plant material (stems, leaves) resting on the ground surface. Bare ground that is present under a tree or shrub canopy should be counted. Boulders count as bare ground. Wetlands with mineral soils and that are heavily shaded or are dominated by annual plant species tend to have more extensive areas that are bare during the early growing season. [AM, EC, INV, NR, OE, POL, PR, SBM, Sens]
64			Little or no (<5%) *bare ground* is visible between erect stems or under canopy anywhere in the vegetated AA. Ground is extensively blanketed by dense thatch, moss, lichens, graminoids with great stem densities, or plants with ground-hugging foliage.	1	
65			Slightly bare ground (5-20% bare between plants) is visible in places, but those areas comprise less than 5% of the unflooded parts of the AA.	0	
66			Much bare ground (20-50% bare between plants) is visible in places, and those areas comprise more than 5% of the unflooded parts of the AA.	0	
67			Other conditions.	0	
68			Not applicable. Surface water (either open or obscured by emergent plants) covers all of the AA all the time.	0	
69	F12	Ground Irregularity	Imagine the AA without any living vegetation. Excluding the portion of the AA that is always under water, the number of hummocks, small pits, raised mounds, animal burrows, ruts, gullies, natural levees, microdepressions, and other areas of peat or mineral soil that are raised or depressed >10 cm compared to most of the area within a few meters surrounding them is:		The depressions may be of human or natural origin. [AM, EC, INV, NR, PH, POL, PR, SBM, SR, WS]
70			Few or none (minimal microtopography; <1% of the land has such features, or entire AA is always water-covered).	1	
71			Intermediate.	0	
72			Several (extensive micro-topography).	0	
73	F13	Upland Inclusions	Within the AA, inclusions of upland are:		[AM, NR, SBM]
74			Few or none.	1	
75			Intermediate (1 - 10% of vegetated part of the AA).	0	
76			Many (e.g., wetland-upland "mosaic", >10% of the vegetated AA).	0	
77	F14	Soil Texture	In parts of the AA that lack persistent water, the texture of soil in the uppermost layer is mostly: [*To determine this, use a trowel to check in at least 3 widely spaced locations, and use the soil texture key (in Appendix A of the Manual).]*		[CS, NR, OE, PH, PR, Sens, SFS, WS]
78			Loamy: soils that may contain a little fine grit and do not make a "ribbon" longer than 2 cm when moistened, rolled, squeezed, and extended between thumb and forefinger.	0	
79			Fines: includes silt, clay, silt, soils that make a ribbon longer than 2 cm when moistened, rolled, squeezed, and extended between thumb and forefinger.	1	
80			Deep Peat, to 40 cm depth or greater.	0	
81			Shallow Peat or organic <40 cm deep.	0	
82			Coarse: includes sand, loamy sand, gravel, cobble, soils that do not make a ribbon when moistened, rolled, squeezed, and extended between thumb and forefinger.	0	
83	F15	Shorebird Feeding Habitats	During any 2 consecutive weeks of the growing season, the extent of mudflats, bare unshaded saturated areas not covered by thatch, and unshaded waters shallower than 6 cm is: [Include also any area that is adjacent to the AA.]		This addresses needs of many but not all migratory sandpipers, plovers, and related species. [WBF]
84			None, or <100 sq. m.	1	
85			100-1000 sq. m.	0	
86			1000 – 10,000 sq. m.	0	
87			>10,000 sq. m.	0	
88	F16	Herbaceous % of Vegetated Wetland	In aerial ("ducks eye") view, the maximum annual cover of herbaceous vegetation (all non-woody plants except moss) is:		[AM, WBF, WBN]
89			<5% of the vegetated part of the AA or <0.01 hectare (whichever is less). Mark "1" here and SKIP to F20 (Invasive Plant Cover).	0	
90			5-25% of the vegetated part of the AA.	0	
91			25-50% of the vegetated part of the AA.	0	
92			50-95% of the vegetated part of the AA.	1	
93			>95% of the vegetated part of the AA.	0	
94	F17	Forb Cover	Within parts of the AA having herbaceous cover (excluding SAV), the areal cover of forbs reaches an annual maximum of:		Forbs are flowering plants. Do not include grasses, sedges, cattail, other graminoids, ferns, horsetails, or others that lack showy flowers. [POL]
95			<5% of the herbaceous part of the AA.	0	
96			5-25% of the herbaceous part of the AA.	1	
97			25-50% of the herbaceous part of the AA.	0	
98			50-95% of the herbaceous part of the AA.	0	
99			>95% of the herbaceous part of the AA.	0	
100	F18	Sedge Cover	Sedges (*Carex* spp.) and cottongrass (*Eriophorum* spp.) occupy:		[CS]
101			<5% of the vegetated area, or none.	0	
102			5-50% of the vegetated area.	1	
103			50-95% of the vegetated area.	0	
104			>95% of the vegetated area.	0	
105	F19	Dominance of Most Abundant Herbaceous Species	Determine which two herbaceous species comprise the greatest portion of the herbaceous cover (excluding mosses and floating-leaved aquatic plants). Then choose one of the following:		For this question, include ferns as well as graminoids and forbs. [EC, INV, PH, POL, Sens]
106			those species together comprise > 50% of the areal cover of herbaceous plants at any time during the year.	1	
107			those species together do not comprise > 50% of the areal cover of herbaceous plants at any time during the year.	0	
108	F20	Invasive Plant Cover	How extensive is the cover of invasive plant species in the AA? For species, see Plants_invasive worksheet in the accompanying SuppInfo file.		[EC, PH, POL, Sens]
109			invasive species appear to be absent in the AA, or are present only in trace amount (a few individuals).	1	
110			invasive species are present in more than trace amounts, but comprise <5% of herbaceous cover (or woody cover, if the invasives are woody).	0	
111			invasive species comprise 5-20% of the herb cover (or woody cover, if the invasives are woody).	0	
112			invasive species comprise 20-50% of the herb cover (or woody cover, if the invasives are woody).	0	
113			invasive species comprise >50% of the herb cover (or woody cover, if the invasives are woody).	0	

	A	B	C	D	E
114	F21	Invasive Cover Along Upland Edge	Along the wetland-upland boundary, the percent of the upland edge (within 3 m upslope from the wetland) that is occupied by invasive plant species is:		If a plant cannot be identified to species (e.g., winter conditions) but its genus contains an exotic species, assume the unidentified plant to also be exotic. If vegetation is so senesced that exotic species cannot be identified, answer "none". [PH, STR]
115			none of the upland edge (invasives apparently absent), or AA has no upland edge.	1	
116			some (but <5%) of the upland edge.	0	
117			5-50% of the upland edge.	0	
118			most (>50%) of the upland edge.	0	
119	F22	Fringe Wetland	During most of the year, open water within or adjacent to the vegetated part of the wetland is much wider than the maximum width of the vegetated zone within the wetland. Enter "1" if true, "0" if false.	0	[WBF, WBN, WCv]
120	F23	Lacustrine Wetland	The vegetated part of the AA is within or adjacent to a body of non-tidal standing open water whose size exceeds 8 hectares during most of a normal year.	0	[FR, PR, PU, WBF, WBN]
121	F24	% of AA Without Surface Water	The percentage of the AA that never contains surface water during an average year (that is, except perhaps for a few hours after snowmelt or rainstorms), but which is still a wetland, is:		1 hectare is 10,000 sq. m or about 2.5 acres. It could have dimensions of 100 m by 100 m, 1000 m by 10 m, or similar. [AM, FA, FR, INV, NR, PH, PR, SBM, Sens, SRv, WBF, WBN, WC]
122			<1% . In other words, all or nearly all of the AA is covered by water permanently or at least seasonally.	0	
123			1-25% of the AA, or <1% but >0.01 ha never contains surface water.	0	
124			25-50% of the AA never contains surface water.	0	
125			50-75% of the AA never contains surface water.	0	
126			75-99% of the AA never contains surface water, OR >99% and there is at least one persistently ponded water body larger than 1 ha in the AA.	0	
127			99-100%. AND there is no persistently ponded water body larger than 1 ha within the AA. Enter "1" and SKIP to F42 (Channel Connection).	1	
128	F25	% of AA with Persistent Surface Water	Identify the parts of the AA that still contain surface water (flowing or ponded, open or hidden beneath vegetation) even during the driest times of a normal year, i.e., when the AA's surface water is at its lowest annual level. At that time, the percentage of the AA that still contains surface water is:		If you are unable to determine the condition at the driest time of year, ask the land owner or neighbors about it if possible. Indicators of persistence may include fish, some dragonflies, beaver, and muskrat. [AM, CS, FA, FR, INV, NR, POL, PR, SBM, WBF, WBN]
129			None. The AA dries up completely (no water in channels either) or never has surface water during most years. SKIP to F27.	0	
130			1-20% of the AA.	0	
131			20-50% of the AA.	0	
132			50-95% of the AA.	0	
133			>95% of the AA. True for many fringe wetlands.	0	
134	F26	% of Summertime Water that Is Shaded	At mid-day during the warmest time of year, the area of surface water within the AA that is shaded by vegetation and other features that are within the AA at that time is:		[FA, WC]
135			<5% of the water is shaded, or no surface water is present then.	0	
136			5-25% of the water is shaded.	0	
137			25-50% of the water is shaded.	0	
138			50-75% of the water is shaded.	0	
139			>75% of the water is shaded.	0	
140	F27	% of AA that is Flooded Only Seasonally	The percentage of the AA's area that is between the annual high water and the annual low water (surface water) is:		Flood marks (algal mats, adventitious roots, debris lines, ice scour, etc.) are often evident when not fully inundated. Also, such areas often have a larger proportion of upland and annual (vs. perennial) plant species. In riverine systems, the extent of this zone can be estimated by multiplying by 2 the bankful height and visualising where that would intercept the land along the river. [CS, FA, INV, NR, OE, PH, SR, WBF, WBN, WS]
141			None, or <0.01 hectare and <1% of the AA. SKIP to F29.	0	
142			1-20% of the AA, or <1% but >0.01 ha.	0	
143			20-50% of the AA.	0	
144			50-95% of the AA.	0	
145			>95% of the AA.	0	
146	F28	Annual Water Fluctuation Range	The annual fluctuation in surface water level within most of the parts of the AA that contain surface water at least temporarily is:		Look for flood marks (see above). Because the annual range of water levels is difficult to estimate without multiple visits, consider asking the land owner or neighbors about it. [AM, CS, INV, NR, OE, PH, PR, SR, WBN, WS]
147			<10 cm change (stable or nearly so).	0	
148			10 cm - 50 cm change.	0	
149			0.5 - 1 m change.	0	
150			1-2 m change.	0	
151			>2 m change.	0	
152	Is the AA plus adjacent ponded water smaller than 0.01 hectare (about 10m x 10m, or 1m x 100 m)? If so, enter "1" in column D and SKIP TO F42 (Connection).			0	
153	F29	Predominant Depth Class	During most of the time when surface water is present during the growing season, its depth, averaged over the entire inundated part of the AA, is:		If a boat is unavailable, estimate this by considering wetland size and local topography. Or if timing and safety allow, depths may be measured by drilling through winter ice.This question is asking about the spatial median depth that occurs during most of that time, even if inundation is only seasonal or temporary. If inundation in most but not all of the wetland is brief, the answer will be based on the depth of the most persistently inundated part of the wetland. Include surface water in channels and ditches as well as ponded areas. [CS, FA, FR, INV, OE, PH, PR, Sens, SFS, SR, WBF, WBN, WC]
154			<10 cm deep (but >0).	0	
155			10 - 50 cm deep.	0	
156			0.5 - 1 m deep.	0	
157			1 - 2 m deep.	0	
158			>2 m deep. True for many fringe wetlands.	0	
159	F30	Depth Classes - Evenness of Proportions	When present, surface water in most of the AA usually consists of (select one):		Estimate these proportions by considering the gradient and microtopography of the site. [FR, INV, WBF, WBN]
160			One depth class that comprises >90% of the AA's inundated area (use the classes in the question above).	0	
161			One depth class that comprises 50-90% of the AA's inundated area.	0	
162			Neither of above. There are 3 or more depth classes and none occupy >50%.	0	
163	F31	% of Water That Is Ponded (not Flowing)	During most times when surface water is present, the percentage that is (1) ponded (stagnant, or flows so slowly that fine sediment is not held in suspension) AND (2) is likely to be deeper than 0.5 m in some places, is:		Nearly all wetlands with surface water have some ponded water. [AM, CS, INV, NR, OE, PR, Sens, SR, WBF, WBN, WC, WS]
164			<5% of the water, or it occupies <100 sq.m cumulatively. Nearly all the surface water is flowing. SKIP to F34.	0	
165			5-30% of the water.	0	
166			30-70% of the water.	0	
167			70-95% of the water.	0	
168			>95% of the water.	0	
169	F32	Ponded Open Water - Minimum Size	During most of the growing season, the largest patch of open water that is ponded and is in or bordering the AA is >0.01 hectare (about 10 m by 10 m) and mostly deeper than 0.5 m. If true enter "1" and continue, If false, enter "0" and SKIP to F41 (Floating Algae & Duckweed).	0	Open water is not obscured by vegetation in aerial ("duck's eye") view. It includes vegetation floating on the water surface or entirely submersed beneath it.
170	F33	% of Ponded Water that is Open	In ducks-eye aerial view, the percentage of the ponded water that is open (lacking emergent vegetation during most of the growing season, and unhidden by a forest or shrub canopy) is:		[AM, CS, FA, FR, INV, NR, OE, PR, SR, WBF, WBN, WC]
171			None, or <1% of the AA and largest pool occupies <0.01 hectares. Enter "1" and SKIP to F41 (Floating Algae & Duckweed).	0	
172			1-4% of the ponded water. Enter "1" and SKIP to F41 (Floating Algae & Duckweed).	0	
173			5-30% of the ponded water.	0	
174			30-70% of the ponded water.	0	
175			70-99% of the ponded water.	0	
176			100% of the ponded water.	0	
177	F34	Width of Vegetated Zone within Wetland	At the time during the growing season when the AA's water level is lowest, the average width of vegetated area in the AA that separates adjoining uplands from open water within the AA is:		"Vegetated area" does not include underwater or floating-leaved plants, i.e., aquatic bed. Width may include wooded riparian areas if they have wetland soil or plant indicators. [AM, CS, NR, OE, PH, PR, SBM, Sens, SR, WBN]
178			<1 m.	0	
179			1 - 9 m.	0	
180			10 - 29 m.	0	
181			30 - 49 m.	0	
182			50 - 100 m.	0	
183			> 100 m, or open water is absent at that time.	0	

	A	B	C	D	E
184	F35	Flat Shoreline Extent	During most of the part of the growing season when water is present, the percentage of the AA's **water edge** length that is **nearly flat** (a slope less than about 5% measured within 5 m landward of the water) is:		If several isolated pools are present in early summer, estimate the percent of their collective shorelines that has such a gentle slope. [SR, WBN]
185			<1% of the water edge.	0	
186			1-25% of the water edge.	0	
187			25-50% of the water edge.	0	
188			50-75% of the water edge.	0	
189			>75% of the water edge.	0	
190	F36	Robust Emergents	The percentage **of the emergent vegetation** cover in the AA that is cattail (*Typha* spp.), common reed (*Phragmites*), or tall (>1m) bulrush is:		**Emergent vegetation** is herbaceous plants whose stems are partly above and partly below the water surface during most of the time water is present. [WBN]
191			<1% of the emergent vegetation, or emergent vegetation is absent. SKIP to F38.	0	
192			1-25% of the emergent vegetation.	0	
193			25-75% of the emergent vegetation.	0	
194			>75%, of the emergent vegetation.	0	
195	F37	Interspersion of Emergents & Open Water	During most of the part of the growing season when water is present, the spatial pattern of **emergent** vegetation within the water is mostly:		[AM, FA, FR, INV, NR, OE, PH, PR, SBM, SR, WBF, WBN]
196			Scattered. More than 30% of such vegetation forms small islands or corridors surrounded by water.	0	
197			Intermediate.	0	
198			Clumped. More than 70% of such vegetation is in bands along the wetland perimeter or is clumped at one or a few sides of the surface water area.	0	
199	F38	Persistent Deepwater Area	If the deepest patch of surface water (flowing or ponded) in or directly adjacent to the AA is mostly deeper than 0.5 m for >2 weeks during the growing season, enter "1" and continue. If not, enter "0" and SKIP to F42.(Connection).	0	
200	F39	Non-vegetated Aquatic Cover	During most of the growing season and in waters deeper than 0.5 m, the cover for fish, aquatic invertebrates, and/or amphibians that is provided NOT by living vegetation, but by accumulations of **dead wood and undercut banks** is:		For this question, consider only the wood that is at or above the water surface. Estimates of underwater wood based only on observations from terrestrial viewpoints are unreliable so should not be attempted. [AM, FA, FR, INV]
201			Little or none.	0	
202			Intermediate.	0	
203			Extensive.	0	
204	F40	Isolated Island	The AA contains (or is part of) an island or beaver lodge within a lake, pond, or river, and is isolated from the shore **by water depths** >1 m on all sides during an average June. The island may be solid, or it may be a floating vegetation mat that is sufficiently large and dense to support a waterbird nest.	0	[WBN]
205	F41	Floating Algae & Duckweed	At some time of the year, mats of algae and/or duckweed are likely to cover >50% of the AA's otherwise-unshaded water surface, or blanket >50% of the underwater substrate. If true, enter "1" in next column. If untrue or uncertain, enter "0".	0	[EC, PR, WBF]
206	F42	Channel Connection & Outflow Duration	The most persistent surface water connection (outlet channel or pipe, ditch, or overbank water exchange) between the AA and a downslope stream network is: [Note: If the AA represents only part of a wetland, answer this according to whichever is the **least** permanent surface connection: the one between the AA and the rest of the wetland, or the surface connection between the wetland and the downslope stream network.]		Consider the connection regardless of whether the surface water is frozen. The "downslope stream network" could consist of ditches, rivers, ponds, or lakes which eventually connect to the ocean. If this cannot be determined while visiting the AA, consult topographic maps perhaps by viewing these online with Toporama (http://atlas.nrcan.gc.ca/toporama/en/index.html) [CS, FA, FR, NR, OE, PR, Sens, SFS, SR, WCv, WS]
207			Persistent (surface water flows out for >9 months/year).	0	
208			Seasonal (surface water flows out for 14 days to 9 months/year, not necessarily consecutive).	0	
209			Temporary (surface water flows out for <14 days, not necessarily consecutive).	0	
210			None -- but maps show a stream network downslope from the AA and within a distance that is less than the AA's length. SKIP to F47 (pH Measurement).	0	
211			No surface water flows out of the wetland except possibly during extreme events (<once per 10 years). Or, water flows only into a wetland, ditch, or lake that lacks an outlet. SKIP to F47 (pH Measurement).	1	
212	F43	Outflow Confinement	During major runoff events, in the places where **surface** water exits the AA or connected waters nearby, the water:		"Major runoff events" would include biennial high water caused by storms and/or rapid snowmelt. [CS, NR, OE, PR, Sens, SR, STR, WS]
213			Mostly passes through a pipe, culvert, narrowly breached dike, berm, beaver dam, or other partial obstruction (other than natural topography) that does not appear to drain the wetland artificially during most of the growing season.	0	
214			Leaves through natural exits (channels or diffuse outflow), not mainly through artificial or temporary features.	0	
215			Is exported more quickly than usual due to ditches or pipes within the AA or connected to its outlet, or within 10 m of the AA's edge, which drain the wetland artificially, or water is pumped out of the AA.	0	
216	F44	Tributary Channel	At least once annually, surface water from a tributary channel that is >100 m long moves into the AA. Or, surface water from a larger permanent water body adjacent to the AA spills into the AA. If it enters only via a pipe, that pipe must be fed by a mapped stream or lake further upslope. If no, SKIP to F47 (pH Measurement).	0	If inlet tributaries cannot be searched for due to inaccessibility of part of the AA, follow suggestions in F42 above. [NRv, PH, PRv, SRv]
217	F45	**Input** Water Temperature	Based on lack of shade, water source characteristics, or actual temperature measurements, the inflow is likely to be warmer than surface water in the AA during part of most years. Enter 1= yes, 0= no.	0	[WCv]
218	F46	Throughflow Resistance	During its travel through the AA at the time of peak annual flow, water arriving in channels: [select only the ONE encountered by **most** of the incoming water].		[FA, FR, INV, NR, OE, PR, SR, WS]
219			Does not bump into many plant stems as it travels through the AA. Nearly all the water continues to travel in unvegetated (often incised) channels that have minimal contact with wetland vegetation, or through a zone of open water such as an instream pond or lake.	0	
220			Bumps into **herbaceous** vegetation but mostly remains in fairly straight channels.	0	
221			Bumps into **herbaceous** vegetation and mostly spreads throughout, or is in widely meandering, multi-branched, or braided channels.	0	
222			Bumps into **tree trunks and/or shrub stems** but mostly remains in fairly straight channels.	0	
223			Bumps into tree trunks and/or shrub stems and follows a fairly **indirect** path from entrance to exit (meandering, multi-branched, or braided).	0	
224	F47	pH Measurement	The pH in most of the AA's surface water:		Preferably, measure this in larger areas of ponded surface water within the AA, or in streams that have passed through (not along) most of the AA. Unless surface water is completely absent, do not dig holes or make depressions in peat in order to provide water for this measurement. Avoid measuring near roads or in puddles formed only by recent rain. [AM, FA, FR, NR, WBF, PH, PR, Sens, WBF, WBN]
225			Was measured, and is: [*enter the reading in the column to the right.*]		
226			Was not measured but surface water is present and is darkly tea-coloured. Or if no surface water, then mosses and plants that indicate peatland (e.g., Labrador tea) are prevalent. Enter "1".	0	
227			Neither of above. Enter "1".	1	
228	F48	TDS and/or Conductivity	The TDS (total dissolved solids) or conductivity off the AA's surface water is: (select the first true row with information):		See above for measurement guidance. [FR, INV, NRv, PH, PRv, Sens]
229			TDS is: [*Enter the reading* ***in ppm or mg/L*** *in the column to the right, if measured, or answer next row.*]		
230			Conductivity is [*Enter the reading* ***in µS/cm*** *in the column to the right.*]		
231			Was not measured, but plants that indicate saline conditions cover much of the vegetated AA. Enter "1".	0	
232			Neither of above	1	
233	F49	Beaver Probability	Use of the AA by beaver during the past 5 years is (select most applicable ONE):		[FA, FR, PH, SBM, Sens, WBF, WBN]
234			**Evident** from direct observation or presence of gnawed limbs, dams, tracks, dens, lodges, or extensive stands of water-killed trees (snags).	0	
235			**Likely** based on known occurrence in the region and proximity to suitable habitat, which may include: (a) a persistent freshwater wetland, pond, or lake, or a perennial low or mid-gradient (<10%) channel, and (b) a corridor or multiple stands of hardwood trees and shrubs in vegetated areas near surface water.	0	
236			Unlikely because site characteristics above are deficient, and/or this is a settled area or other area where beaver are routinely removed.	1	
237	F50	Groundwater Strength of Evidence	Select first applicable choice:		Adhere to these criteria strictly -- do not use personal judgment based on fen conditions, pH, or other evidence. Consult topographic maps to detect breaks in slope described here. Rust deposits associated with groundwater seeps may be most noticeable as orange discoloration in ice formations along streams during early winter. [AM, CS, FA, FR, INV, NR, OE, PH, PRv, SFS, WC, WS]
238			Springs are known to be present within the AA, or if groundwater levels have been monitored, that has demonstrated that groundwater primarily discharges to the wetland for longer periods during the year than periods when the wetland recharges the groundwater.	0	

	A	B	C	D	E
239			Most of the AA has a slope of >5%, or is very close to the base of a natural slope longer than 100 and much steeper than the slope of the AA, AND the pH of surface water, if known, is >5.5.	0	
240			Neither of above is true, although some groundwater may discharge to or flow through the AA. Or groundwater influx is unknown.	1	
241	F51	Internal Gradient	The gradient along most of the flow path **within** the AA is:		This is not the same as the shoreline slope. It is the elevational difference between the AA's inlet and outlet, divided by the flow-distance between them and converted to percent. If available, use a clinometer to measure this. Free clinometer apps can be downloaded to smartphones. If the wetland is large (longer than ~1 km), this may be estimated using Google Earth to determine the minimum and maximum elevation within the AA, then dividing by length and multiplying by 100. [CS, NR, OE, PR, SR, WBF, WBN, WS]
242			<2% **or** the AA has no surface water outlet (not even seasonally).	1	
243			2-5%.	0	
244			6-10%.	0	
245			>10%.	0	
246	Note for the next three questions: If the AA lacks an upland edge, evaluate based on the AA's entire perimeter, and moving outward into whatever areas are adjacent. In many situations, these questions are best answered by measuring from aerial images.				
247	F52	Vegetated Buffer as % of Perimeter	Within a zone extending 30 m laterally from the AA's edge with upland and/or other wetlands, the percentage that contains **perennial vegetation cover** (except lawns, row crops, heavily grazed land, conifer plantations) is:		[AM, FA, FR, INV, NRv, PH, POL, PRv, SBM, Sens, SRv, STR, WBN]
248			<5%.	0	
249			5 to 30%.	0	
250			30 to 60%.	0	
251			60 to 90%.	0	
252			>90%, or all the area within 30 m of the AA edge is other wetlands. **SKIP to F55.**	1	
253	F53	Type of Cover in Buffer	Within 30 m upslope of where the wetland transitions to upland, the upland land cover that is NOT perennial vegetation is mostly (mark ONE):		[AM, FA, INV, NRv, PH, POL, SBM, STR, WBN]
254			Impervious surface, e.g., paved road, parking lot, building, exposed rock.	0	
255			Bare or nearly bare pervious surface or managed vegetation, e.g., lawn, row crops, unpaved road, dike, landslide.	0	
256	F54	Buffer Slope	The steepest and/or most disturbed part of the upland area that is within 30 m of the wetland and occupies >10% of that upland area has a percent slope of:		[NRv, PRv, Sens, SRv]
257			<1% (flat -- almost no noticeable slope) or all the area within 30 m of the AA edge is other wetlands.	0	
258			2-5%.	0	
259			5-30%.	0	
260			>30%.	0	
261	F55	Cliffs or Steep Banks	In the AA or within 100 m, there are elevated terrestrial features such as cliffs, talus slopes, stream banks, or excavated pits (but not riprap) that extend at least 2 m nearly vertically, are unvegetated, and potentially contain crevices or other substrate suitable for nesting or den areas. Enter 1 (yes) or 0 (no).	0	Do not include upturned trees as potential den sites. [POL, SBM]
262	F56	New or Expanded Wetland	**Human** actions within or adjacent to the AA have persistently expanded a naturally occurring wetland or created a wetland where there previously was none (e.g., by excavation, impoundment):		Determine this using historical aerial photography, old maps, soil maps, or permit files as available [CS, NR, OE, PH, Sens]
263			No.	0	
264			Yes, and created or expanded 20 - 100 years ago.	0	
265			Yes, and created or expanded 3-20 years ago.	0	
266			Yes, and created or expanded within last 3 years.	0	
267			Yes, but time of origin or expansion unknown.	0	
268			Unknown if new or expanded within 20 years or not.	1	
269	F57	Burn History	More than 1% of the AA's previously vegetated area:		Look for charred soil or stumps (in multiple widely-spaced locations) or ask landowner. [CS, PH, STR]
270			Burned within past 5 years.	0	
271			Burned 6-10 years ago.	0	
272			Burned 11-30 years ago.	0	
273			Burned >30 years ago, or no evidence of a burn and no data.	1	
274	F58	Visibility	The maximum percentage of the wetland that is visible from the best vantage point on public roads, public parking lots, public buildings, or public maintained trails that intersect, adjoin, or are within 100 m of the AA (select one) is:		[PU, STR, WBFv]
275			<25%.	1	
276			25-50%.	0	
277			>50%.	0	
278	F59	Non-consumptive Uses - Actual or Potential	Assuming access permission was granted, select **ALL** statements that are true of the AA as it currently exists:		[PU, STR]
279			For an average person, walking is physically possible in (not just near) >5% of the AA during most of the growing season, e.g., free of deep water and dense shrub thickets.	1	
280			Maintained roads, parking areas, or foot-trails are within 10 m of the AA, or the AA can be accessed part of the year by boats arriving via contiguous waters.	0	
281			Within or near the AA, there is an interpretive center, trails with interpretive signs or brochures, and/or regular guided interpretive tours.	0	
282	F60	Unvisited Core Area	The percentage of the AA almost never visited by humans during an average growing season probably comprises: *[Note: Only include the part actually walked or driven (not simply viewed from) with a vehicle or boat. Do not include visitors on trails outside of the AA unless more than half the wetland is visible from the trails and they are within 30 m of the wetland edge. In that case include only the area occupied by the trail.]*		[AM, FAv, FRv, PH, PU, SBM, STR, WBF, WBN]
283			<5% and no inhabited building is within 100 m of the AA.	0	
284			<5% and inhabited building is within 100 m of the AA.	0	
285			5-50% and no inhabited building is within 100 m of the AA.	0	
286			5-50% and inhabited building is within 100 m of the AA.	0	
287			50-95%, with or without inhabited building nearby.	0	
288			>95% of the AA with or without inhabited building nearby.	1	
289	F61	Frequently Visited Area	The part of the AA visited by humans almost daily for several weeks during an average growing season probably comprises: *[See note above.]*		[AM, PH, PU, SBM, STR, WBF, WBN]
290			<5%. If F60 was answered ">95%" (mostly never visited), **SKIP to F64.**	1	
291			5-50%.	0	
292			50-95%.	0	
293			>95% of the AA.	0	
294	F62	BMP - Soils	Boardwalks, paved trails, fences or other infrastructure and/or well-enforced regulations appear to effectively prevent visitors from walking on soil within nearly all of the AA when the soil is unfrozen. Enter "1" if true.	0	[PH, PU]
295	F63	BMP - Wildlife Protection	Fences, observation blinds, platforms, paved trails, exclusion periods, and/or well-enforced prohibitions on motorised boats, off-leash pets, and off road vehicles appear to effectively exclude or divert visitors and their pets from the AA at critical times in order to minimize disturbance of wildlife (except during hunting seasons). Enter "1" if true.	0	[AM, PU, WBF, WBN]
296	F64	Consumptive Uses (Provisioning Services)	Recent evidence was found within the AA of the following potentially-sustainable consumptive uses. Select ALL that apply.		[FAv, FRv, WBFv]
297			Low-impact commercial timber harvest (e.g., selective thinning).	1	
298			Commercial or traditional-use harvesting of native plants, their fruits, or mushrooms.	0	
299			Waterfowl hunting.	0	
300			Fishing.	0	
301			Trapping of furbearers.	0	
302			None of the above.	0	
303	F65	Domestic Wells	The closest wells or water bodies that currently provide drinking water are:		[NRv]
304			Within 0-100 m. of the AA.	0	

	A	B	C	D	E
305			100-500 m. away.	0	
306			>500 m. away, or no information.	1	
307	F66	Calcareous Fen	The AA is, or is part of, a calcareous fen. See the Plants_Calcar worksheet in the accompanying SuppInfo file for list of plant indicators (calciphiles). Enter 1 If more than two Strong or more than five Moderate calciphile species are present; otherwise enter 0, but if not able to identify those **and** no information, change to **blank**.	0	[PH, PR]
308					

Investigator: Brady Leights and Tiffany MacAulay	**Site Identifier: WL-6**	**Date: 26 July, 2021**

Stressor (S) Data Form for Non-Tidal Wetlands. WESP-AC for Nova Scotia version 2.

		Data
S1	**Aberrant Timing of Water Inputs**	
	In the last column, place a check mark next to any item that is likely to have caused the timing of water inputs (but not necessarily their volume) to shift by hours, days, or weeks, becoming either more muted (smaller or less frequent peaks spread over longer times, more temporal homogeneity of flow or water levels) or more flashy (larger or more frequent spikes but over shorter times). [FA, FR, INV, PH, STR]	
	Stormwater from impervious surfaces that drains directly to the wetland.	
	Water subsidies from wastewater effluent, septic system leakage, snow storage areas, or irrigation.	
	Regular removal of surface or groundwater for irrigation or other consumptive use.	
	Flow regulation in tributaries or water level regulation in adjoining water body, or other control structure at water entry points that regulates inflow to the wetland.	
	A dam, dike, levee, weir, berm, or fill -- within or downgradient from the wetland -- that interferes with surface or subsurface flow in/out of the AA (e.g., road fill, wellpads, pipelines).	
	Excavation within the wetland, e.g., dugout, artificial pond, dead-end ditch.	
	Artificial drains or ditches in or near the wetland.	
	Accelerated downcutting or channelization of an adjacent or internal channel (incised below the historical water table level).	
	Logging within the wetland.	1
	Subsidence or compaction of the wetland's substrate as a result of machinery, livestock, fire, drainage, or off road vehicles.	
	Straightening, ditching, dredging, and/or lining of tributary channels.	
	If any items were checked above, then for each row of the table below, assign points. However, if you believe the checked items had no measurable effect on the timing of water conditions in any part of the AA, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.	

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Spatial extent of timing shift within the wetland:	>95% of wetland.	5-95% of wetland.	<5% of wetland.	2
When most of the timing shift began:	<3 yrs ago.	3-9 yrs ago.	10-100 yrs ago.	2
Score the following 2 rows only if the altered inputs began within past 10 years, and only for the part of the wetland that experiences those.				
Input timing now vs. previously:	Shift of weeks.	Shift of days.	Shift of hours or minutes.	2
Flashiness or muting:	Became very flashy or controlled.	Intermediate.	Became mildly flashy or controlled.	2
			Sum=	8
			Stressor subscore=	0.67

		Data
S2	**Accelerated Inputs of Contaminants and/or Salts**	
	In the last column, place a check mark next to any item -- occurring in either the wetland or its CA -- that is likely to have accelerated the inputs of contaminants or salts to the AA. [AM, FA, PH, POL, STR]	
	Stormwater or wastewater effluent (including failing septic systems), landfills, industrial facilities.	
	Metals & chemical wastes from mining, shooting ranges, snow storage areas, oil/ gas extraction, other sources (download many locations from National Pollutant Release Inventory and view KMZ overlay in Google Earth. https://www.ec.gc.ca/inrp-npri/default.asp?lang=En&n=B85A1846-1	
	Road salt.	
	Spraying of pesticides, as applied to lawns, croplands, roadsides, or other areas in the CA.	
	If any items were checked above, then for each row of the table below, assign points. However, if you believe the checked items did not cumulatively expose the AA to significantly higher levels of contaminants and/or salts, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.	

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Usual toxicity of most toxic contaminants:	Industrial effluent, mining waste, unmanaged landfill.	Cropland, managed landfill, pipeline or transmission rights-of-way.	Low density residential.	0
Frequency & duration of input:	Frequent and year-round.	Frequent but mostly seasonal.	Infrequent & during high runoff events mainly.	0
AA proximity to main sources (actual or potential):	0 - 15 m.	15-100 m. or in groundwater.	In more distant part of contributing area.	0
			Sum=	0
			Stressor subscore=	0.00

		Data
S3	**Accelerated Inputs of Nutrients**	
	In the last column, place a check mark next to any item -- occurring in either the wetland or its CA -- that is likely to have accelerated the inputs of nutrients to the wetland. [NRv, PRv, STR]	
	Stormwater or wastewater effluent (including failing septic systems), landfills.	
	Fertilizers applied to lawns, ag lands, or other areas in the CA.	
	Livestock, dogs.	
	Artificial drainage of upslope lands.	
	If any items were checked above, then for each row of the table below, assign points. However, if you believe the checked items did not cumulatively expose the AA to significantly more nutrients, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.	

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Type of loading:	High density of unmaintained septic, some types of industrial sources.	Moderate density septic, cropland, secondary wastewater treatment plant.	Livestock, pets, low density residential.	0
Frequency & duration of input:	Frequent and year-round.	Frequent but mostly seasonal.	Infrequent & during high runoff events mainly.	0
AA proximity to main sources (actual or potential):	0 - 15 m.	15-100 m. or in groundwater.	In more distant part of contributing area.	0
			Sum=	0
			Stressor subscore=	0.00

		Data
S4	**Excessive Sediment Loading *from Contributing Area***	
	In the last column, place a check mark next to any item present in the CA that is likely to have elevated the load of waterborne or windborne sediment reaching the wetland from its CA. [FA, FR, INV, PH, SRv, STR]	
	Erosion from plowed fields, fill, timber harvest, dirt roads, vegetation clearing, fires.	1
	Erosion from construction, in-channel machinery in the CA.	
	Erosion from off-road vehicles in the CA.	
	Erosion from livestock or foot traffic in the CA.	
	Stormwater or wastewater effluent.	
	Sediment from road sanding, gravel mining, other mining, oil/ gas extraction.	
	Accelerated channel downcutting or headcutting of tributaries due to altered land use.	
	Other human-related disturbances within the CA.	
	If any items were checked above, then for each row of the table below, assign points (3, 2, or 1 as shown in header) in the last column. However, if you believe the checked items did not cumulatively add significantly more sediment or suspended solids to the AA, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.	

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Erosion in CA:	Extensive evidence, high intensity.*	Potentially (based on high-intensity* land use) or scattered evidence.	Potentially (based on low-intensity* land use) with little or no direct evidence.	2
Recentness of significant soil disturbance in the CA:	Current & ongoing.	1-12 months ago.	>1 yr ago.	1

	Duration of sediment inputs to the wetland:	Frequent and year-round.	Frequent but mostly seasonal.	Infrequent & during high runoff events mainly.	1
	AA proximity to actual or potential sources:	0 - 15 m.	15-100 m.	In more distant part of contributing area.	3
	* high-intensity= extensive off-road vehicle use, plowing, grading, excavation, erosion with or without veg removal; low-intensity= veg removal only with little or no apparent erosion or disturbance of soil or sediment.			Sum=	7
				Stressor subscore=	0.58
S5	**Soil or Sediment Alteration *Within the Assessment Area***				
	In the last column, place a check mark next to any item present in the wetland that is likely to have compacted, eroded, or otherwise altered the wetland's soil. Consider only items occurring within past 100 years or since wetland was created or restored (whichever is less). [CS, INV, NR, PH, SR, STR]				
	Compaction from machinery, off-road vehicles, livestock, or mountain bikes, especially during wetter periods.				
	Leveling or other grading not to the natural contour.				
	Tillage, plowing (but excluding disking for enhancement of native plants).				
	Fill or riprap, excluding small amounts of upland soils containing organic amendments (compost, etc.) or small amounts of topsoil imported from another wetland.				
	Excavation.				
	Ditch cleaning or dredging in or adjacent to the wetland.				
	Boat traffic in or adjacent to the wetland and sufficient to cause shore erosion or stir bottom sediments.				
	Artificial water level or flow manipulations sufficient to cause erosion or stir bottom sediments.				
	If any items were checked above, then for each row of the table below, assign points. However, if you believe the checked items did not measurably alter the soil structure and/or topography, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.				
		Severe (3 points)	Medium (2 points)	Mild (1 point)	
	Spatial extent of altered soil:	>95% of wetland or >95% of its upland edge (if any).	5-95% of wetland or 5-95% of its upland edge (if any).	<5% of wetland and <5% of its upland edge (if any).	0
	Recentness of significant soil alteration in wetland:	Current & ongoing.	1-12 months ago.	>1 yr ago.	0
	Duration:	Long-lasting, minimal veg recovery.	Long-lasting but mostly revegetated.	Short-term, revegetated, not intense.	0
	Timing of soil alteration:	Frequent and year-round.	Frequent but mostly seasonal.	Mainly during one-time or scattered events.	0
				Sum=	0
				Stressor subscore=	0.00

Assessment Area (AA) Results:

Wetland ID: Uniacke Quarry Wetland 6

Date: 26 July, 2021

Observer: Brady Leights and Tiffany MacAulay

Latitude & Longitude (decimal degrees): 44.9154, -63.8159

Scores will appear below after data are entered in worksheets OF, F, and S. See Manual for definitions and descriptions of how scores were computed.

Wetland Functions or Other Attributes:	Function Score (Normalised)	Function Rating	Benefits Score (Normalised)	Benefits Rating	Function Score (raw)	Benefits Score (raw)
Water Storage & Delay (WS)	7.62	Moderate	4.91	Moderate	7.63	2.18
Stream Flow Support (SFS)	0.00	Lower	0.00	Lower	0.00	0.00
Water Cooling (WC)	0.00	Lower	0.00	Lower	0.00	0.00
Sediment Retention & Stabilisation (SR)	4.30	Moderate	2.16	Moderate	5.56	1.06
Phosphorus Retention (PR)	0.61	Lower	1.29	Moderate	4.13	1.00
Nitrate Removal & Retention (NR)	10.00	Higher	3.33	Lower	10.00	3.33
Carbon Sequestration (CS)	4.16	Moderate			7.17	
Organic Nutrient Export (OE)	6.01	Moderate			3.93	
Anadromous Fish Habitat (FA)	0.00	Lower	0.00	Lower	0.00	0.00
Resident Fish Habitat (FR)	0.00	Lower	0.00	Lower	0.00	0.00
Aquatic Invertebrate Habitat (INV)	3.52	Moderate	1.15	Moderate	4.93	1.86
Amphibian & Turtle Habitat (AM)	4.85	Moderate	2.11	Lower	5.66	3.50
Waterbird Feeding Habitat (WBF)	0.00	Lower	0.00	Lower	0.00	0.00
Waterbird Nesting Habitat (WBN)	0.00	Lower	0.00	Lower	0.00	0.00
Songbird, Raptor, & Mammal Habitat (SBM)	6.33	Moderate	5.00	Moderate	5.51	5.00
Pollinator Habitat (POL)	6.89	Moderate	3.33	Moderate	5.71	3.33
Native Plant Habitat (PH)	3.29	Lower	4.85	Lower	5.21	4.85
Public Use & Recognition (PU)			1.82	Moderate		1.54
Wetland Sensitivity (Sens)			5.01	Moderate		3.60
Wetland Ecological Condition (EC)			3.04	Lower		6.67
Wetland Stressors (STR) (higher score means more stress)			9.95	Higher		4.96
Summary Ratings for Grouped Functions:						
HYDROLOGIC Group (WS)	7.62	Moderate	4.91	Moderate	7.63	2.18
WATER QUALITY SUPPORT Group (max+avg/2 of SR, PR, NR, CS)	7.38	Higher	2.80	Lower	8.36	2.56
AQUATIC SUPPORT Group (max+avg/2 of SFS, INV, OE, WC)	4.20	Moderate	0.76	Lower	3.57	1.24
AQUATIC HABITAT Group (max+avg/2 of FA, FR, AM, WBF, WBN)	2.91	Lower	1.27	Lower	3.40	2.10
TRANSITION HABITAT Group (max+avg/2 of SBM, PH, POL)	6.20	Moderate	4.70	Lower	5.60	4.70
WETLAND CONDITION (EC)			3.04	Lower		6.67
WETLAND RISK (average of Sensitivity & Stressors)			7.48	Higher		4.28

NOTE: A score of 0 does not mean the function or benefit is absent from the wetland. It means only that this wetland has a capacity that is equal or less than the lowest-scoring one, for that function or benefit, from among all the NS calibration wetlands that were assessed previously.

NOVA SCOTIA - Functional WSS Interpretation Tool

1. General Description of Tool:

This interpretive tool automatically determines whether the subject wetland will be regulated as a Wetland of Special Significance (WSS). This determination is made based on the WESP-AC functional results, per the Nova Scotia *Wetland Conservation Policy* .

A 'Function-Benefit Product' (FBP) is calculated based upon the Grouped Functions, and has a theoretical maximum of 100. Threshold values for the FBP are applied, in order to categorize the FBP scores into 'Low', 'Moderate' or 'High' scores. Thresholds are determined based upon the statistical distribution of WESP-AC scores compiled from various sites across the Province (N=442). These categories are subsequently used to apply various 'Functional WSS Rules', as described below.

For the purpose of defining and applying the Functional WSS rules, two supergroups are defined based on grouped functions, as follows: **(1) Support Supergroup** - includes Hydrologic, Water Quality Support, and Aquatic Support grouped functions. **(2) Habitat Supergroup** - includes Aquatic Habitat and Transition Habitat grouped functions.

2. Functional WSS Rule Definitions:

Habitat Rule: In consideration of the Habitat Supergroup, the subject wetland is a WSS if either of the following sub-rules are satisfied:

(HAB 1) Two 'High Scores' OR

(HAB 2) One 'High' and one 'Moderate' score

Support Rule: In consideration of the Support Supergroup, the subject wetland is a WSS if either of the following sub-rules are satisfied:

(SUP 1) Three 'High' scores OR

(SUP 2) Two 'High' and one 'Moderate' score

Habitat/Support Hybrid Rule: In consideration of both the Habitat and Support Supergroups, the subject wetland is a WSS if the following is satisfied:

(HYB 1) One 'High' Habitat score **AND** Two or three 'High' Support scores

3. Functional WSS Interpretation Results

Function-Benefit Product (FBP)	FBP SCORE	FBP SCORE CATEGORY
SUPPORT SUPERGROUP - HYDROLOGIC	37.40296475	Moderate
SUPPORT SUPERGROUP - WATER QUALITY SUPPORT	20.64592857	Low
SUPPORT SUPERGROUP - AQUATIC SUPPORT	3.207477149	Low
HABITAT SUPERGROUP - AQUATIC HABITAT	3.684511533	Low
HABITAT SUPERGROUP - TRANSITION HABITAT	29.11325998	Low

3a. Functional WSS Determination: Automatic Method

Habitat Rule Satisfied?	NO
Support Rule Satisfied?	NO
Habitat/Support Hybrid Rule Satisfied?	NO
CONCLUSION:	**Site is not a WSS**

3b. Functional WSS Determination - Manual Method Using Dichotomous Key

1a. (HAB) - One or more 'High' scores for AH or TH.....**2**
2a. (HAB) - Two 'High' scores.....**WSS**
2b. (HAB) - One 'High' score.....**3**
3a. (HAB) - Any combination of 'High' and 'Moderate' scores..... **WSS**
3b. (HAB) - Any combination of 'High' and 'Low' scores.....**4**
4a. (SUP) One or more 'High' Scores for HYD, WQS, or AS.....**5**
5a. (SUP) Two or Three 'High' scores ..... **WSS**
5b. (SUP) One 'High' score **6**
6a. (SUP) Any combo of one 'High', two 'Mod' scores..... **WSS**
6b. (SUP) One 'High', plus any other combo of scores.....**not WSS**
4b. (SUP) Zero 'High' Scores for HYD, WQS, or AS.....**7**
7a. (SUP) Three 'Moderate' scores..... **WSS**
7b. (SUP) Any other combination of scores .....**not WSS**
1b. (HAB) - Zero 'High' Scores for AH or TH.....**8**
8a. (SUP) Three 'High' Scores.....**WSS**
8b. (SUP) Less than three 'High' scores.....**9**
9a. (SUP) Two 'High' and one 'Moderate' score.....**WSS**
9b. (SUP) - Any other combination of scores .....**not WSS**

Cover Page: Basic Description of Assessment	**WESP-AC version 2**
Site Name:	Uniacke Quarry Wetland 7
Investigator Name:	Brady Leights
Date of Field Assessment:	27 July 2021
Nearest Town:	Mount Uniacke, NS
Latitude (decimal degrees):	44.914574
Longitude (decimal degrees):	-63.810150
Is a map based on a formal on-site wetland delineation available?	Yes
Approximate size of the Assessment Area (AA, in hectares):	0.4
AA as percent of entire wetland (approx.). Attach sketch map if AA is smaller than the entire contiguous wetland.	
What percent (approx.) of the **wetland** were you able to visit?	
What percent (approx.) of the **AA** were you able to visit?	
Were you able to ask the site owner/manager about any of the questions?	
Indicate here if you intentionally surveyed for rare plants, calciphile plants, or rare animals:	
Have you attended a WESP-AC training session? If so, indicate approximate month & year.	September 2021
How many wetlands have you assessed previously using WESP-AC? (approx.)	
Comments about the site or this WESP-AC assessment (attach extra page if desired):	

	A	B	C	D	E
1	Date: July 27, 2021		Site Identifier: WL-7	Investigator: Brady Leights	
2	**Form OF (Office). Non-tidal Wetland Data Form. WESP-AC version 2 for Nova Scotia wetlands only.** DIRECTIONS: Conduct an assessment only after reading the accompanying Manual and the Explanations column of the data form. In the Data column, change the 0 (false) to a 1 (true) for the best choice, or for multiple choices where allowed and so indicated. Answering many of the questions below will require using these online map viewers: **Google Earth Pro**: https://www.google.com/earth/download/gep/agree.html **Provincial Landscape Viewer**: https://nsgi.novascotia.ca/plv/ For most wetlands, completing this office data form will require 1-2 hours. For a list of functions to which each question pertains, see bracketed abbreviations in the Definitions/Explanations column. For detailed descriptions of each WESP-AC model, see Appendix B of the accompanying Manual. Codes for functions and values are: WS= Water Storage, SFS= Stream Flow Support, WC= Water Cooling, SR= Sediment Retention & Stabilisation, PR= Phosphorus Retention, NR= Nitrate Removal, CS= Carbon Sequestration, OE= Organic Nutrient Export, INV= Invertebrate Habitat, FA= Anadromous Fish Habitat, FR= Resident Fish Habitat, AM= Amphibian & Reptile Habitat, WBF= Feeding Waterbird Habitat, WBN= Nesting Waterbird Habitat, SBM= Songbird, Raptor, & Mammal Habitat, POL= Pollinator Habitat, PH= Native Plant Habitat, PU= Public Use & Recognition, EC= Ecological Condition, Sen= Wetland Sensitivity, STR= Stressors.			
3	**#**	**Indicators**	**Condition Choices**	**Data**	**Definitions/Explanations**
4	OF1	Province	Mark the province in which the AA is located by changing the 0 in the column next to it to a "1". Mark only one.		This determines to which province's calibration wetlands the raw score of any wetland is normalised. In the function and benefits models, it also triggers the automatic exclusion of indicators for which no spatial data exists in a particular province.
5			New Brunswick	0	
6			Nova Scotia	1	
7			Prince Edward Island	0	
8			Newfoundland-Labrador	0	
9	OF2	Ponded Area Within 1 km.	The area of **surface water** ponded during most of the growing season that is both (1) in or adjacent to the AA and (2) within 1 km is:		**"Adjacent"** means not separated from the AA by a wide expanse (>50 m) of upland (including roads >50 m wide). Include ponded areas likely to be hidden by wetland vegetation. If surface water extends beyond 1 km, include only the part within 1 km. Do not include tidal areas. Measure the area from aerial imagery using Google Earth Pro (click on Ruler icon in toolbar, then Polygon in pop-up menu). [PH, SBM, WBN]
10			<0.01 hectare (about 10 m x 10 m).	0	
11			0.01 - 0.1 hectare.	0	
12			0.1 - 1 hectare.	0	
13			1 to 10 hectares.	1	
14			10 to 100 hectares.	0	
15			>100 hectares.	0	
16	OF3	Ponded Water & Wetland Within 1 km.	The area of **wetlands and surface water** ponded during most of the growing season that is both (1) in or adjacent to the AA and (2) within 1 km is:		See definition of adjacent in OF2. If the AA's wetland vegetation extends beyond 1 km, include only the part within 1 km. "Ponded" means not flowing in rivers or streams. [Sens, WBF]
17			<0.01 hectare (about 10 m x 10 m).	0	
18			0.01 - 0.1 hectare.	0	
19			0.1 - 1 hectare.	0	
20			1 to 10 hectares.	0	
21			10 to 100 hectares.	1	
22			>100 hectares.	0	
23	OF4	Size of Largest Nearby Vegetated Tract or Corridor	The largest vegetated patch or corridor that includes the AA's vegetation plus all **adjacent** upland vegetation that is not lawn, row crops, heavily grazed lands, conifer plantation is:		See definition of adjacent in OF2. Use Google Earth Pro's polygon ruler (as described above). Exclude conifer plantations only if it is obvious that trees were planted in rows. [AM, PH, SBM, Sens]
24			<0.01 hectare (about 10 m x 10 m).	0	
25			0.01 - 0.1 hectare.	0	
26			0.1 - 1 hectare.	0	
27			1 to 10 hectares.	0	
28			10 to 100 hectares.	0	
29			100 to 1000 hectares.	0	
30			>1000 hectares. [*This is nearly always the answer in relatively undeveloped landscapes.*]	1	
31	OF5	Distance to Large Vegetated Tract	The minimum distance from the **edge** of the AA to the edge of the closest ***vegetated land*** (but excluding row crops, lawn, conifer plantation) **larger than 375 hectares** (about 2 km on a side), is:		To measure distance, use Google Earth Pro (Ruler > Line tool). The 375-ha criterion is from the Fundy Model Forest Project. [AM, PH, POL, SBM, Sens]
32			<50 m, and not separated from the 375-ha vegetated area by any width of **paved** roads, stretches of open water, row crops, bare ground, lawn, or impervious surface. Or the AA itself contains >375 ha of vegetation. [This is often the answer in relatively undeveloped landscapes.]	1	
33			<50 m, but completely separated from the 375-ha vegetated area by those features, and AA does not contain >375 ha of vegetation.	0	
34			50-500 m, and **not** separated.	0	
35			50-500 m, but separated by those features.	0	
36			0.5 - 5 km, and **not** separated.	0	
37			0.5 - 5 km, but separated by those features.	0	
38			None of the above (the closest patches or corridors which are that large are >5 km away).	0	
39	OF6	Herbaceous Uniqueness	The AA's vegetation cover is >10% herbaceous* but uplands within 5 km have <10% herbaceous cover. If so, enter "3" and continue to OF7. If not, consider: The AA's vegetation cover is >10% herbaceous* but uplands within 1 km have <10% herbaceous cover. If so enter "2" and continue to OF7. If not, consider: The AA's vegetation cover is >10% herbaceous* but uplands within 100 m of the wetland edge have <10% herbaceous cover. If so, enter "1". [* NOTE: Exclude lawns, row crops, heavily grazed lands, forest, shrublands. Include moss as well as grasslike plants in this use of "herbaceous vegetation"]	1	For this question only, consider moss to be herbaceous vegetation. Determine the score by viewing aerial imagery in Google Earth after successively drawing or estimating the boundaries of the buffers of 5 km, 1 km, and 100 m radius focused on the center of the AA. Circles of specified radius can be drawn in Google Earth Pro by clicking on the Ruler icon, then Circle in the pop-up menu. [AMv, PHv, POLv, SBMv, WBFv, WBNv]
40	OF7	Woody Uniqueness	The AA's vegetation cover is >10% woody* but uplands within 5 km have <10% woody cover. If so, enter "3" and continue to OF8. If not, consider: The AA's vegetation is >10% woody* but uplands within 1 km have <10% woody cover. If so enter "2" and continue to OF8. If not, consider: The AA's vegetation is >10% woody* but uplands within 100 m of the wetland edge have <10% woody cover. If so, enter "1" [* NOTE: woody cover = trees & shrubs taller than 1 m.]	0	See above. Do not consider conifer plantations to be forest if it is obvious that trees were planted in rows. [AMv, PHv, POLv, SBMv]
41	OF8	Local Vegetated Cover Percentage	Draw a 5-km radius circle measured from the center of the AA. Ignoring all permanent water in the circle, the percent of the remaining area that is wooded or unmanaged herbaceous vegetation (NOT lawn, row crops, bare or heavily grazed land, clearcuts, or conifer plantations) is:		In Google Earth, draw the 5 km buffer and then estimate land cover percentages, or do GIS analysis of an appropriate land cover layer. [AM, PH, POL, SBM, Sens]
42			<5% of the land.	0	
43			5 to 20% of the land.	0	
44			20 to 60% of the land.	0	
45			60 to 90% of the land.	1	
46			>90% of the land. SKIP to OF10.	0	
47	OF9	Type of Land Cover Alteration	Within the **5-km** radius circle, and ignoring all permanent water, the land area that is bare or non-perennial cover is mostly:		[AM, SBM]
48			Impervious surface, e.g., paved road, parking lot, building, exposed rock.	0	
49			Bare pervious surface, e.g., lawn, recent (<5 yrs ago) clearcut, dirt or gravel road, cropland, landslide, conifer plantation.	1	
50	OF10	Distance by Road to Nearest Population Center	Measured **along** the maintained road nearest the AA, the distance to the nearest **population center** is:		"Population center" means a settled area with more than about 5 regularly- inhabited structures per square kilometer. In Google Earth Pro, click on the Ruler icon, then Path, and draw and measure the route. [FAv, FRv, NRv, PH, PU, SBM, WBFv]
51			<100 m.	0	
52			100 - 500 m.	0	
53			0.5- 1 km.	0	
54			1 - 5 km.	1	
55			>5 km.	0	

	A	B	C	D	E
56	OF11	Distance to Nearest Maintained Road	From the center of the AA, the distance to the nearest maintained public road (dirt or paved) is:		Determine this by viewing aerial imagery in Google Earth Pro and measuring with the Ruler>Line tool. [AM, FAv, FRv, NRv, PH, PU, SBM, STR, WBN]
57			<10 m.	0	
58			10 - 25 m.	0	
59			25 - 50 m.	0	
60			50 - 100 m.	0	
61			100 - 500 m.	0	
62			>500 m.	1	
63	OF12	Wildlife Access	Draw a circle of radius of 5 km from the center of the AA. If mammals and amphibians can move from the center of the AA to ALL other separate wetlands and ponds located within the circle without being forced to cross pavement (any width), lawns, bare ground, and/or marine waters, mark 1= yes can move to all, 0= no. Change to blank if there are no other wetlands within 5 km.	0	Draw the 5 km circle in Google Earth Pro using the Circle tool and search for roads and wetlands within it, being alert for roads hidden under forest canopy. [AM, SBM, STR]
64	OF13	Distance to Ponded Water	The distance from the AA center to the closest (but separate) ponded water body visible in GoogleEarth imagery is:		In Google Earth Pro, zoom in closely to examine the surrounding landscape for ponds, lakes, and wetlands that appear to be permanently flooded. [AM, PH, SBM, Sens, WBF, WBN]
65			<50 m, and not separated by any width of paved roads, stretches of open water, row crops, lawn, bare ground, or impervious surface.	0	
66			<50 m, but completely separated by those features.	0	
67			50-500 m, and not separated.	0	
68			50-500 m, but separated by those features.	0	
69			0.5 - 1 km, and not separated.	1	
70			0.5 - 1 km, but separated by those features.	0	
71			None of the above (the closest patches or corridors that large are >1 km away).	0	
72	OF14	Distance to Large Ponded Water	The distance from the AA center to the closest (but separate) non-tidal body of water that is ponded during most of the year and is larger than 8 hectares during most of a normal year is:		Determine this by viewing aerial imagery in Google Earth. [Sens, WBF, WBN]
73			<100 m.	0	
74			100 m - 1 km.	0	
75			1 -2 km.	0	
76			2-5 km.	1	
77			5-10 km.	0	
78			>10 km.	0	
79	OF15	Tidal Proximity	The distance from the AA edge to the closest tidal water body (regardless of its salinity) is:		In Google Earth, measure the distance to the ocean (including Bay of Fundy) or tidal river, whichever is closer. If you need to see how far upriver a river is tidal, see the KMZ file provided with this calculator for NS (NS Headtide). Points shown in those files are only an approximation, so local information if available may be preferable. [FA, WBF]
80			<100 m.	0	
81			100 m - 1 km.	0	
82			1 - 5 km.	0	
83			5-10 km.	0	
84			10-40 km.	1	
85			>40 km.	0	
86	OF16	Upland Edge Contact	Select one:		[NR, SBM, Sens]
87			The AA has no upland edge (or upland is <1% of perimeter). The AA is entirely surrounded by (& contiguous with) other wetlands or water.	0	
88			1-25% of the AA's perimeter abuts upland (including filled areas). The rest adjoins other wetlands or water that is mostly wider than the AA.	0	
89			25-50% of the AA's perimeter abuts upland. The rest adjoins other wetlands or water that is mostly wider than the AA.	0	
90			50-75% of the AA's perimeter abuts upland. The rest adjoins other wetlands or water that is mostly wider than the AA.	0	
91			More than 75% of the AA's perimeter abuts upland. Any remainder adjoins other wetlands or water that is mostly wider than the AA. This will be true for most assessments done with WESP-AC.	1	
92	OF17	Flood Damage from Non-tidal Waters	Within 5 km downstream or downslope of the AA (select first true choice):		Contact local authories to determine if such maps exist. Where available, LiDAR imagery can provide finer elevational resolution useful for flood modeling. [WSv]
93			Maps show Flood Zone or Flood Risk areas and there appears to be infrastructure vulnerable to river flooding not caused by tidal storm surges.	0	
94			Maps show Flood Zone or Flood Risk areas, but infrastructure is absent or is not vulnerable to floods from a non-tidal river. In some cases levees, upriver dams, or other measures may partly limit damage or risk from smaller events.	0	
95			Maps do not show Flood Zone or Flood Risk areas (or no such mapping has been done locally) and there appears to be infrastructure vulnerable to river flooding unrelated to tidal storm surges.	0	
96			Maps do not show Flood Zone or Flood Risk areas (or no such mapping has been done locally) and there is no infrastructure vulnerable to river flooding unrelated to tidal storm surges.	1	
97	OF18	Relative Elevation in Watershed	In Google Earth, enable the Terrain layer (lower left menu) and open the NS_Watersheds Secondary KMZ file that accompanies this calculator. Then determine the AA's approximate elevation (bottom right, NOT the "eye alt"). Then move cursor around to determine the watershed's maximum and minimum elevation. Divide the AA's elevation by the (max-min).	0.85	[FA, NR, Sens, SFSv, WCv, WSv]
98	OF19	Water Quality Sensitive Watershed or Area	The AA is in a Protected Water Supply area (Designated Water Supply Area, Natural Watershed Municipal Surface Water Supply Area, or Municipal Water Supply Area) according to the provided KMZ overlay ("NS Protected Water Supply Areas"). Enter 1= yes, 0= no.	0	If an ACCDC report is available for this AA, it also may contain such information. [NRv]
99	OF20	Degraded Water Upstream	Sampling indicates a problem with concentrations of metals, hydrocarbons, nutrients, or other substances (excluding bacteria, acidic water, high temperatures) being present at levels harmful to aquatic life or humans, and:		May use existing data, or sample those waters as part of this wetland assessment. "Harmful" should be evaluated with regard to current federal or provincial water quality standards. [AM, FA, FR, NRv, PRv, SRv, STR, WBF, WBN]
100			The condition is present within the AA.	0	
101			The condition is present in waters within 1 km that flow into the AA, but has not been documented in the AA itself.	0	
102			Sampling during both low water periods and times with high runoff (storms, snowmelt) indicates no problems in either the AA or inflowing waters.	0	
103			Data are insufficient (no or inadequate sampling within 1 km, or condition exists only at >1 km upstream). This is the situation for nearly all wetlands in this region.	1	
104	OF21	Degraded Water Downstream	The problem described above is downslope from the AA, and:		May use existing data, or monitor waters as part of this wetland assessment. [NRv, PRv, SRv]
105			The condition is present within 1 km downslope and connected to the AA by a channel.	0	
106			The condition is present within 5 km downslope and connected to the AA by a channel, or within 1 km but not connected to the AA by a channel.	0	
107			Sampling during both low water periods and times with high runoff (storms, snowmelt) indicates no problems in either the AA or inflowing waters.	0	
108			Data are insufficient (no or inadequate sampling within 1 km, or condition exists only at >1 km upstream). This is the situation for nearly all wetlands in this region.	1	
109	OF22	Wetland as a % of Its Contributing Area (Catchment)	From a topographic map and field observations, estimate the approximate boundaries of the catchment (CA) of the entire wetland of which the AA may be only a part. Then adjust those boundaries if necessary based on your field observations of the surrounding terrain, and/or by using procedures described in the Manual. Divide the area of the wetland (not just the AA) by the approximate area of its catchment excluding the area of the wetland itself. When doing the calculation, if ponded water is adjacent to the wetland, include that in the wetland's area. The result is:		Topographic maps may be viewed online at the National Atlas of Canada (Toporama): http://atlas.gc.ca/toporama/en/index.html [NR, PR, Sens, SR, WS]
110			<0.01, or catchment size unknown due to stormwater pipes that collect water from an indeterminate area.	1	
111			0.01 to 0.1.	0	
112			0.1 to 1.	0	
113			>1 (wetland is larger than its catchment (e.g., wetland with flat surrounding terrain and no inlet, or is entirely isolated by dikes, or is a raised bog).	0	
114	OF23	Unvegetated Surface in the Contributing Area	The proportion of the AA's contributing area (measured to no more than 1000 m upslope) that is comprised of buildings, roads, parking lots, other pavement, exposed bedrock, landslides, and other mostly-bare surface is about :		[FA, INV, NRv, PRv, SRv, STR, WCv, WSv]
115			<10%.	1	
116			10 to 25%.	0	
117			>25%.	0	

	A	B	C	D	E
118	OF24	Transport From Upslope	A relatively large proportion of the precipitation that falls farther upslope in the CA reaches this wetland quickly as runoff (surface water), as indicated by the following: (a) input channel is present, (b) input channels have been straightened, (c) upslope wetlands have been ditched extensively, (d) land cover is mostly non-forest, (e) CA slopes are steep, and/or (f) most CA soils are shallow (bedrock near surface) and/or have high runoff coefficients. This statement is:		[NRv, PRv, SRv, WSv]
119			Mostly true.	0	
120			Somewhat true.	0	
121			Mostly untrue.	1	
122	OF25	Aspect	The overland flow direction of most surface water (in streams, rivers, or runoff) that enters the AA is:		[AM, NR, SFS, WC, WS]
123			Northward (N, NE). north-facing contributing area.	0	
124			Southward (S, SW). south-facing contributing area.	1	
125			Other (E, SE, W, NW), or no detectable uphill slope or input channel (flat).	0	
126	OF26	Internal Flow Distance (Path Length)	The horizontal flow distance from the wetland's inlet to outlet is:		Identify inlets and outlets, if any, from topographic maps (use elevations to determine which are inlets and which are outlets) and augment by field inspection. With the Provincial Landscape Viewer, select Nova Scotia Topo as the Basemap. Also enable the layer Forestry>WAM Predicted Flow. Then measure the inlet-outlet distance. [NR, OE, PR, SR, WS]
127			<10 m.	0	
128			10 - 50 m.	0	
129			50 - 100 m.	0	
130			100 - 1000 m.	0	
131			1- 2 km.	0	
132			>2 km, or wetland lacks an inlet and outlet.	1	
133	OF27	Growing Degree Days	In Google Earth, open the KMZ file that accompanies this calculator, called NS_GrowingDegreeDays. Place your cursor over the AA and left-click. From the pop-up window, enter the GRIDCODE number in the next column.	2000	This layer was provided by Dr. Dan McKenney of the Canadian Forest Service [AM, CS, FR, INV, NR, OE, PH, PR, Sens, SR, WBF, WCv, WS]
134	OF28	Fish Access or Use	According to agency biologists and/or your own observations, the AA. [M*ark just the first choice that is true.]* :		Regarding the last choice, if uncertain if an AA is fishless, consider the possibility its waters have been stocked. [AM, FA, FR, INV, WBF, WBN]
135			Is known to support rearing and/or spawning by Atlantic salmon or other anadromous species or eels. Go to Provincial Landscape Viewer>Wildlife>Significant Habitat>Species at Risk. Contact local fishery biologists, review the ACCDC report, and visit these websites: http://www.salmonatlas.com/atlanticsalmon/canada-east/index.1.html http://atlanticsalmonfederation.org/rivers/introduction.html	0	
136			Has not been documented to support Atlantic salmon rearing and/or spawning, but is connected to nearby waters likely to contain Atlantic salmon or other anadromous species or eels and is probably accessed by those during some conditions.	0	
137			Is probably is not accessed by any anadromous fish species but is known or likely to have other fish at least seasonally.	0	
138			Is known or likely to be fishless (e.g., too small, dry, and/or not accessible even temporarily, and not stocked).	1	
139	OF29	Species of Conservation Concern	Within the past 10 years, in the AA (or in its adjoining waters or wetland), qualified observers have documented *[mark all applicable*]:		Request information from ACCDC and/or conduct your own survey at an appropriate season using an approved protocol. For birds, also check eBird.org. NOTE for NS: If your WESP-AC is being completed for a Wetland Alteration Application to NS-ECC, your ACCDC results and any taxon-specific survey results must be submitted along with your WESP-AC results, and application. [AMv, EC, PHv, POLv, SBMv, Sens, WBFv, WBNv]
140			Presence of one or more of the plant species listed in the Plants_Rare worksheet of the accompanying SuppInfo file, or the AA is within a mapped Atlantic Coastal Plain Flora Buffer (go to Provincial Landscape Viewer> Wildlife> Special Management Practice Zones).	0	
141			Presence of one or more of the amphibian or reptile species (AM) of conservation concern as listed in the Wildlife_Rare worksheet of the accompanying SuppInfo file.	0	
142			Presence of one or more of the waterbird species (WBF, WBN) of conservation concern as listed in the Wildlife_Rare worksheet of the accompanying SuppInfo file.	0	
143			Presence of one or more of the nesting songbird or raptor species (SBM) of conservation concern as listed in the Wildlife_Rare worksheet of the accompanying SuppInfo file, during their nesting season (May-July for most species).	0	
144			None of the above, or no data.	1	
145	OF30	Important Bird Area (IBA)	In Google Earth, open the KMZ file that accompanies this calculator, called IBAs_Canada. The AA is all or part of an officially designated IBA. Enter 1= yes, 0= no.	0	The source of this layer, which should be checked periodically for updates, is: http://www.ibacanada.com/mapviewer.jsp?lang=EN [SBMv, WBFv, WBNv]
146	OF31	Black Duck Nesting Area	In Google Earth, open the KMZ file that accompanies this calculator, called BlackDuck. Adjust its alignment and opacity. Determine the predicted density (pairs per 25 sq. km) of nesting American Black Duck in the AA's vicinity: <10 (enter 0), 10-20 (enter 1), 20-30 (enter 2), >30 (enter 3). If outside of region shown in map, change to blank.	0	This was provided by Dr. David Leske. [WBNv]
147	OF32	Wintering Deer or Moose Concentration Areas	If AA is on private land with no information, change to blank (not 0). Otherwise: With the Provincial Landscape Viewer, for Wintering Moose, go to Wildlife> Significant Habitat. For Mainland Moose Concentration Areas, go to Wildlife> Special Management Practice Zones. Enter: yes= 1, no= 0.	0	[SBM]
148	OF33	Other Conservation Designation	The AA is all or part of an area designated by government, First Nations, or the Nature Conservancy of Canada (NCC) for its exceptional ecological features or highly intact natural conditions. With Provincial Landscape Viewer, see Protected Areas. Enter: yes= 1, no= 0. If uncertain, consult NCC and agencies for more recent information.	0	See: https://novascotia.ca/parksandprotectedareas/plan/interactive-map/ [PU]
149	OF34	Conservation Investment	The AA is part of or contiguous to a wetland on which public or private organizational funds were spent to preserve, create, restore, or enhance the wetland (excluding mitigation wetlands). Ask the property owner. Enter: yes= 1, no= 0. If no information, change to blank (not 0).	0	[PU]
150	OF35	Mitigation Investment	The AA is all or part of a mitigation site used explicitly to offset impacts elsewhere. Ask the property owner. Enter: yes= 1, no= 0. If no information, change to blank.	0	[PU]
151	OF36	Sustained Scientific Use	Plants, animals, or water in the AA have been monitored for >2 years, unrelated to any regulatory requirements, and data are available to the public. Or the AA is part of an area that has been designated by an agency or institution as a benchmark, reference, or status-trends monitoring area. Ask the property owner. Enter: yes= 1, no= 0. If no information, change to blank.	0	[PU]
152	OF37	Calcareous Region	The AA is NOT in a subregion that has been heavily exposed to acid precipitation. Enter "1" if true (green or yellow in map in Appendix A of the Manual). Enter "0" if false. If no information, change to blank.		[AM, FA, FR, INV, PH]
153	OF38	Ownership	Select the ONE ownership that covers the most of the AA. In Google Earth, open KMZ file called NS_Crownlands.Use more recent information if available.		"Private lands" may include those owned or leased by non-governmental organizations, e.g., charitable conservation land trusts, DUC, TNC. [PU, STR]
154			New timber harvest, roads, mineral extraction, and intensive summer recreation (e.g., off-road vehicles) are permanently prohibited. Includes many publicly-owned Protected Lands, and private lands under long-term (30+ year) legal agreements to maintain nearly-unaltered conditions.	0	
155			Ownership is public (e.g., municipal, Crown Reservations/Notations) but some or all of the above activities are allowed.	0	
156			Ownership is private but public access is allowed, and/or a shorter-term conservation easement (whether renewable or not) is in place.	0	
157			Ownership is private and owner does not allow access, or access permission unknown, and not a conservation easement.	1	

	A	B	C	D	E
1	Date: July 27, 2021		Site Identifier: WL-7	Investigator: Brady Leights	
2	**Form F (Field). Non-tidal Wetland Data Form. WESP-AC version 2 for Nova Scotia.** DIRECTIONS: Walk for no less than 10 minutes from the wetland edge towards its core, in the part of the AA that is proposed for alteration. If no alteration is proposed, walk in a portion that appears to be most representative of the wetland overall. Walk only where it is safe and legal to do so. Conduct the assessment only after reading the accompanying Manual and the Explanations column of the data form. In the Data column, change the 0 (false) to a 1 (true) for the best choice, or for multiple choices where allowed and so indicated. Answer these questions primarily based on your onsite observations and interpretations. Do not write in shaded parts of this data form. Answering some questions accurately may require conferring with the landowner or other knowledgable persons, and/or reviewing aerial imagery. For most wetlands, completing this field data form will require 1-2 hours on a site. For a list of functions to which each question pertains, see the accompanying Interpretations form. For detailed descriptions of each WESP-AC model, see Appendix B of the accompanying Manual. Codes for functions and values are: WS= Water Storage & Delay, SFS= Stream Flow Support, WC= Water Cooling, SR= Sediment Retention & Stabilisation, PR= Phosphorus Retention, NR= Nitrate Removal, CS= Carbon Sequestration, OE= Organic Nutrient Export, INV= Invertebrate Habitat, FA= Anadromous Fish Habitat, FR= Resident Fish Habitat, AM= Amphibian & Reptile Habitat, WBF= Feeding Waterbird Habitat, WBN= Nesting Waterbird Habitat, SBM= Songbird, Raptor, & Mammal Habitat, POL= Pollinator Habitat, PH= Native Plant Habitat, PU= Public Use & Recognition, EC= Ecological Condition, Sen= Wetland Sensitivity, STR= Stressors.		
3	**#**	**Indicators**	**Condition Choices**	**Data**	**Definitions/Explanations**
4	F1	Wetland Type	Follow the key below and mark the ONE row that best describes MOST of the vegetated part of the AA:		Ericaceous shrubs are ones in the heather family (Ericaceae). Most have leathery evergreen leaves. They include rhododendron, azalea, swamp laurel, leatherleaf, Labrador tea, and others. Most require acidic soil. Although not in the family Ericaceae, sweetgale (*Myrica gale*) should be counted also. [AM, CS, FA, FR, INV, NR, OE, PH, Sens, SFS, WBF, WBN]
5			A. Moss and/or lichen cover more than 25% of the ground. Often dominated by ericaceous shrubs (e.g., Labrador tea) or other acid-tolerant plants (e.g., bog cranberry, pitcher plant, sundew, orchids). Substrate is mostly undecomposed peat. Choose between A1 and A2 and mark the choice with a 1 in their adjoining column. Otherwise go to B below.		
6			A1. Surface water is usually absent or, if present, pH is typically <4.5 and conductivity is usually <100 µS/cm (<64 ppm TDS). Trees are absent or nearly so. Sedge cover usually sparse or absent but cottongrass and/or lichen cover may be extensive, as well as cloudberry, lingonberry, sheep laurel, and a sedge (*Carex rariflor* a). Wetland surface and surrounding landscape are seldom sloping and wetland often is domed (convex). Inlet and outlet channels are usually absent. If known, pH of peat is <4.0.	0	
7			A2. Not A1. Surface water, if present, has pH typically >4.5 and conductivity is usually >100 µS/cm (>64 ppm TDS). Sedge cover is usually extensive, and/or tree and tall shrub cover is extensive. Sometimes at toe of slope or edge of water body. An exit channel is usually present. Wetter than A1 and peat depth may be shallower (<2 m).	0	
8			B. Moss and/or lichen cover less than 25% of the ground. Soil is mineral or decomposed organic (muck). Choose between B1 and B2 and mark the choice with a 1 in their adjoining column:		
9			B1. Trees and shrubs taller than 1 m comprise more than 25% of the vegetated cover. Surface water is mostly absent or inundates the vegetation only seasonally (e.g., vernal pools or floodplain).	0	
10			B2. Not B1. Tree & tall shrubs comprise less than than 25% of the vegetated cover. Vegetation is mostly herbaceous, e.g., cattail, bulrush, burreed, pond lily, horsetail. Surface water may be extensive and fluctuates seasonally, being either persistent or drying up partly or entirely.	1	
11			*Reminder : For all questions, the AA should include all persistent waters in ponds smaller than 8 hectares (~283 m on a side) that are adjacent to the AA. The AA should also include part of the water area of adjacent ponded water larger than 8 ha and adjacent rivers wider than 20 m. Specifically, the AA should include the open water part adjacent to wetland vegetation and equal in width to the average width of that vegetated zone. Throughout this data form, "* **adjacent** *" is used synonymously with abutting, adjoining, bordering, contiguous -- and means no upland (manmade or natural) completely separates the described features along their directly shared edge. Features joined only by a channel are not necessarily considered to be adjacent -- a large portion of their edges must match. The features do not have to be hydrologically connected in order to be considered adjacent.*		
12	F2	Wetland Types - Adjoining or Subordinate	If the AA is smaller than 1 ha, mark all other types that occupy more than 1% of the vegetated AA. If the AA is larger than 1 ha, mark all other types which are within or adjacent to the AA and occupy more than 1 ha, as visible from the AA or as interpreted from aerial imagery. Do not mark again the type marked in F1.		1 hectare is 10,000 sq. m or about 2.5 acres. It could have dimensions of 100 m by 100 m, 1000 m by 10 m, or similar. [AM, INV, SBM, WBF]
13			A1.	0	
14			A2.	0	
15			B1.	0	
16			B2.	0	
17	F3	Woody Height & Form Diversity	Following EACH row below, indicate with a number code the percentage of the living vegetation in the AA which is occupied by that feature (6 if >95%, 5 if 75-95%, 4 if 50-75%, 3 if 25-50%, 2 if 5-25%, 1 if <5%, 0 if none). If the vegetated part of the AA is largely herbaceous (non-woody) vegetation, these percentages should not sum to 100%.		Deciduous shrubs in this region usually include buttonbush, Labrador tea, bayberry (*Morella*), huckleberry, cranberry, cloudberry, sweetgale, alder, willow, birch, ash, dogwood, and a few others. If you assigned a code of 3 or higher to any of the first four choices and the ground cover beneath the trees/shrubs is <25% moss, then question F1 might be "B1". [CS, INV, NR, PH, POL, SBM, Sens]
18			coniferous trees (may include tamarack) taller than 3 m.	2	
19			deciduous trees taller than 3 m.	2	
20			coniferous or ericaceous shrubs or trees 1-3 m tall not directly below the canopy of trees.	3	
21			deciduous shrubs or trees 1-3 m tall not directly below the canopy of trees.	3	
22			coniferous or ericaceous shrubs <1 m tall not directly below the canopy of taller vegetation.	2	
23			deciduous shrubs or trees <1 m tall (e.g., deciduous seedlings) not directly below the canopy of taller vegetation.	2	
24			*Note : If none of top 4 rows in F3 was marked 2 or greater , SKIP to F9 (N fixers).*		
25	F4	Dominance of Most Abundant Shrub Species	Determine which two woody plant species comprise the greatest portion of the low (<3 m) woody cover . Then choose one:		[PH, POL, SBM, Sens]
26			those species together comprise > 50% of such cover.	1	
27			those species together do not comprise > 50% of such cover.	0	
28	F5	Woody Diameter Classes	Mark ALL the types that comprise >5% of the woody canopy cover in the AA or >5% of the wooded areas (if any) along its upland edge (perimeter). The edge should include only the trees whose canopies extend into the AA.		Estimate the diameters at chest height. If small-diameter trees are overtopped (shaded) by larger ones, visualise a "subcanopy" at the average height of the smaller-dbh trees, to serve as a basis for the minimum 5% canopy requirement in this question. The trees and shrubs need not be wetland species. [AM, CS, POL, SBM, Sens, WBN]
29			coniferous, 1-9 cm diameter and >1 m tall.	1	
30			broad-leaved deciduous 1-9 cm diameter and >1 m tall.	1	
31			coniferous, 10-19 cm diameter.	0	
32			broad-leaved deciduous 10-19 cm diameter.	0	
33			coniferous, 20-40 cm diameter.	0	
34			broad-leaved deciduous 20-40 cm diameter.	0	
35			coniferous, >40 cm diameter.	0	
36			broad-leaved deciduous >40 cm diameter.	0	
37	F6	Height Class Interspersion	Follow the key below and mark the ONE row that best describes MOST of the AA:		[AM, INV, NR, PH, SBM, Sens]
38			A. Neither the vegetation taller than 1 m nor the vegetation shorter than that comprise >70% of the vegetated part of the AA. They each comprise 30-70%. Choose between A1 and A2 and mark the choice with a 1 in the adjoining column. Otherwise go to B below.		
39			A1. The two height classes are mostly scattered and intermixed throughout the AA.	0	
40			A2. Not A1. The two height classes are mostly in separate zones or bands, or in proportionately large clumps.	0	
41			B. Either the vegetation shorter than 1 m comprises >70% of the vegetated part of the AA, or the vegetation taller than that does. One size class might even be totally absent. Choose between B1 and B2 and mark the choice with a 1 in the adjoining column:		
42			B1. The less prevalent height class is mostly scattered and intermixed within the prevalent one.	1	
43			B2. Not B1. The less prevalent height class is mostly located apart from the prevalent one, in separate zones or clumps, or is completely absent.	0	
44	F7	Large Snags (Dead Standing Trees)	The number of large snags (diameter >20 cm) in the AA plus adjacent upland area within 10 m of the wetland edge is:		Snags are dead standing trees that often (not always) lack bark and foliage. Include only ones that are at least 2 m tall. [POL, SBM, WBN]
45			None, or fewer than 8/ hectare which exceed this diameter.	1	
46			Several (>8/hectare) and a pond, lake, or slow-flowing water wider than 10 m is within 1 km.	0	

	A	B	C	D	E
47			Several (>8/hectare) but above not true.	0	
48	F8	Downed Wood	The number of downed wood pieces longer than 2 m and with diameter >10 cm, and not persistently submerged, is:		Exclude temporary "burn piles." [AM, INV, POL, SBM]
49			Few or none that meet these criteria.	0	
50			Several (>5 if AA is >5 hectares, less for smaller AAs) meet these criteria.	1	
51	F9	N Fixers	The percentage of the AA's vegetated cover that contains nitrogen-fixing plants (e.g., alder, sweetgale, clover, lupine, alfalfa, other legumes) is:		Do not include N-fixing algae or lichens. [FA, FR, INV, NRv, OE, PH, SBM, Sens]
52			<1% or none.	0	
53			1-25% of the vegetated cover, in the AA or along its water edge (whichever has more).	1	
54			25-50% of the vegetated cover, in the AA or along its water edge (whichever has more).	0	
55			50-75% of the vegetated cover, in the AA or along its water edge (whichever has more).	0	
56			>75% of the vegetated cover, in the AA or along its water edge (whichever has more).	0	
57	F10	Sphagnum Moss Extent	The cover of Sphagnum moss (or any moss that forms a dense cushion many centimeters thick), including the moss obscured by taller sedges and other plants rooted in it, is:		Exclude moss growing on trees and rocks. [CS, PH]
58			<5% of the vegetated part of the AA.	0	
59			5-25% of the vegetated part of the AA.	1	
60			25-50% of the vegetated part of the AA.	0	
61			50-95% of the vegetated part of the AA.	0	
62			>95% of the vegetated part of the AA.	0	
63	F11	% Bare Ground & Thatch	Consider the parts of the AA that lack surface water at the driest time of the growing season. Viewed from directly above the ground layer, the predominant condition in those areas at that time is:		Thatch is dead plant material (stems, leaves) resting on the ground surface. Bare ground that is present under a tree or shrub canopy should be counted. Boulders count as bare ground. Wetlands with mineral soils and that are heavily shaded or are dominated by annual plant species tend to have more extensive areas that are bare during the early growing season. [AM, EC, INV, NR, OE, POL, PR, SBM, Sens]
64			Little or no (<5%) *bare ground* is visible between erect stems or under canopy anywhere in the vegetated AA. Ground is extensively blanketed by dense thatch, moss, lichens, graminoids with great stem densities, or plants with ground-hugging foliage.	1	
65			Slightly bare ground (5-20% bare between plants) is visible in places, but those areas comprise less than 5% of the unflooded parts of the AA.	0	
66			Much bare ground (20-50% bare between plants) is visible in places, and those areas comprise more than 5% of the unflooded parts of the AA.	0	
67			Other conditions.	0	
68			Not applicable. Surface water (either open or obscured by emergent plants) covers all of the AA all the time.	0	
69	F12	Ground Irregularity	Imagine the AA without any living vegetation. Excluding the portion of the AA that is always under water, the number of hummocks, small pits, raised mounds, animal burrows, ruts, gullies, natural levees, microdepressions, and other areas of peat or mineral soil that are raised or depressed >10 cm compared to most of the area within a few meters surrounding them is:		The depressions may be of human or natural origin. [AM, EC, INV, NR, PH, POL, PR, SBM, SR, WS]
70			Few or none (minimal microtopography; <1% of the land has such features, or entire AA is always water-covered).	0	
71			Intermediate.	1	
72			Several (extensive micro-topography).	0	
73	F13	Upland Inclusions	Within the AA, inclusions of upland are:		[AM, NR, SBM]
74			Few or none.	1	
75			Intermediate (1 - 10% of vegetated part of the AA).	0	
76			Many (e.g., wetland-upland "mosaic", >10% of the vegetated AA).	0	
77	F14	Soil Texture	In parts of the AA that lack persistent water, the texture of soil in the uppermost layer is mostly: [*To determine this, use a trowel to check in at least 3 widely spaced locations, and use the soil texture key (in Appendix A of the Manual).]*		[CS, NR, OE, PH, PR, Sens, SFS, WS]
78			Loamy: soils that may contain a little fine grit and do not make a "ribbon" longer than 2 cm when moistened, rolled, squeezed, and extended between thumb and forefinger.	0	
79			Fines: includes silt, clay, silt, soils that make a ribbon longer than 2 cm when moistened, rolled, squeezed, and extended between thumb and forefinger.	1	
80			Deep Peat, to 40 cm depth or greater.	0	
81			Shallow Peat or organic <40 cm deep.	0	
82			Coarse: includes sand, loamy sand, gravel, cobble, soils that do not make a ribbon when moistened, rolled, squeezed, and extended between thumb and forefinger.	0	
83	F15	Shorebird Feeding Habitats	During any 2 consecutive weeks of the growing season, the extent of mudflats, bare unshaded saturated areas not covered by thatch, and unshaded waters shallower than 6 cm is: [Include also any area that is adjacent to the AA.]		This addresses needs of many but not all migratory sandpipers, plovers, and related species. [WBF]
84			None, or <100 sq. m.	1	
85			100-1000 sq. m.	0	
86			1000 – 10,000 sq. m.	0	
87			>10,000 sq. m.	0	
88	F16	Herbaceous % of Vegetated Wetland	In aerial ("ducks eye") view, the maximum annual cover of herbaceous vegetation (all non-woody plants except moss) is:		[AM, WBF, WBN]
89			<5% of the vegetated part of the AA or <0.01 hectare (whichever is less). Mark "1" here and SKIP to F20 (Invasive Plant Cover).	0	
90			5-25% of the vegetated part of the AA.	0	
91			25-50% of the vegetated part of the AA.	0	
92			50-95% of the vegetated part of the AA.	1	
93			>95% of the vegetated part of the AA.	0	
94	F17	Forb Cover	Within parts of the AA having herbaceous cover (excluding SAV), the areal cover of forbs reaches an annual maximum of:		Forbs are flowering plants. Do not include grasses, sedges, cattail, other graminoids, ferns, horsetails, or others that lack showy flowers. [POL]
95			<5% of the herbaceous part of the AA.	0	
96			5-25% of the herbaceous part of the AA.	1	
97			25-50% of the herbaceous part of the AA.	0	
98			50-95% of the herbaceous part of the AA.	0	
99			>95% of the herbaceous part of the AA.	0	
100	F18	Sedge Cover	Sedges (*Carex* spp.) and cottongrass (*Eriophorum* spp.) occupy:		[CS]
101			<5% of the vegetated area, or none.	0	
102			5-50% of the vegetated area.	0	
103			50-95% of the vegetated area.	1	
104			>95% of the vegetated area.	0	
105	F19	Dominance of Most Abundant Herbaceous Species	Determine which two herbaceous species comprise the greatest portion of the herbaceous cover (excluding mosses and floating-leaved aquatic plants). Then choose one of the following:		For this question, include ferns as well as graminoids and forbs. [EC, INV, PH, POL, Sens]
106			those species together comprise > 50% of the areal cover of herbaceous plants at any time during the year.	1	
107			those species together do not comprise > 50% of the areal cover of herbaceous plants at any time during the year.	0	
108	F20	Invasive Plant Cover	How extensive is the cover of invasive plant species in the AA? For species, see Plants_invasive worksheet in the accompanying SuppInfo file.		[EC, PH, POL, Sens]
109			invasive species appear to be absent in the AA, or are present only in trace amount (a few individuals).	1	
110			invasive species are present in more than trace amounts, but comprise <5% of herbaceous cover (or woody cover, if the invasives are woody).	0	
111			invasive species comprise 5-20% of the herb cover (or woody cover, if the invasives are woody).	0	
112			invasive species comprise 20-50% of the herb cover (or woody cover, if the invasives are woody).	0	
113			invasive species comprise >50% of the herb cover (or woody cover, if the invasives are woody).	0	

	A	B	C	D	E
114	F21	Invasive Cover Along Upland Edge	Along the wetland-upland boundary, the percent of the upland edge (within 3 m upslope from the wetland) that is occupied by invasive plant species is:		If a plant cannot be identified to species (e.g., winter conditions) but its genus contains an exotic species, assume the unidentified plant to also be exotic. If vegetation is so senesced that exotic species cannot be identified, answer "none". [PH, STR]
115			none of the upland edge (invasives apparently absent), or AA has no upland edge.	1	
116			some (but <5%) of the upland edge.	0	
117			5-50% of the upland edge.	0	
118			most (>50%) of the upland edge.	0	
119	F22	Fringe Wetland	During most of the year, open water within or adjacent to the vegetated part of the wetland is much wider than the maximum width of the vegetated zone within the wetland. Enter "1" if true, "0" if false.	0	[WBF, WBN, WCv]
120	F23	Lacustrine Wetland	The vegetated part of the AA is within or adjacent to a body of non-tidal standing open water whose size exceeds 8 hectares during most of a normal year.	0	[FR, PR, PU, WBF, WBN]
121	F24	% of AA Without Surface Water	The percentage of the AA that never contains surface water during an average year (that is, except perhaps for a few hours after snowmelt or rainstorms), but which is still a wetland, is:		1 hectare is 10,000 sq. m or about 2.5 acres. It could have dimensions of 100 m by 100 m, 1000 m by 10 m, or similar. [AM, FA, FR, INV, NR, PH, PR, SBM, Sens, SRv, WBF, WBN, WC]
122			<1% . In other words, all or nearly all of the AA is covered by water permanently or at least seasonally.	0	
123			1-25% of the AA, or <1% but >0.01 ha never contains surface water.	0	
124			25-50% of the AA never contains surface water.	0	
125			50-75% of the AA never contains surface water.	0	
126			75-99% of the AA never contains surface water, OR >99% and there is at least one persistently ponded water body larger than 1 ha in the AA.	0	
127			99-100%. AND there is no persistently ponded water body larger than 1 ha within the AA. Enter "1" and SKIP to F42 (Channel Connection).	1	
128	F25	% of AA with Persistent Surface Water	Identify the parts of the AA that still contain surface water (flowing or ponded, open or hidden beneath vegetation) even during the driest times of a normal year, i.e., when the AA's surface water is at its lowest annual level. At that time, the percentage of the AA that still contains surface water is:		If you are unable to determine the condition at the driest time of year, ask the land owner or neighbors about it if possible. Indicators of persistence may include fish, some dragonflies, beaver, and muskrat. [AM, CS, FA, FR, INV, NR, POL, PR, SBM, WBF, WBN]
129			None. The AA dries up completely (no water in channels either) or never has surface water during most years. SKIP to F27.	0	
130			1-20% of the AA.	0	
131			20-50% of the AA.	0	
132			50-95% of the AA.	0	
133			>95% of the AA. True for many fringe wetlands.	0	
134	F26	% of Summertime Water that Is Shaded	At mid-day during the warmest time of year, the area of surface water within the AA that is shaded by vegetation and other features that are within the AA at that time is:		[FA, WC]
135			<5% of the water is shaded, or no surface water is present then.	0	
136			5-25% of the water is shaded.	0	
137			25-50% of the water is shaded.	0	
138			50-75% of the water is shaded.	0	
139			>75% of the water is shaded.	0	
140	F27	% of AA that is Flooded Only Seasonally	The percentage of the AA's area that is between the annual high water and the annual low water (surface water) is:		Flood marks (algal mats, adventitious roots, debris lines, ice scour, etc.) are often evident when not fully inundated. Also, such areas often have a larger proportion of upland and annual (vs. perennial) plant species. In riverine systems, the extent of this zone can be estimated by multiplying by 2 the bankful height and visualising where that would intercept the land along the river. [CS, FA, INV, NR, OE, PH, SR, WBF, WBN, WS]
141			None, or <0.01 hectare and <1% of the AA. SKIP to F29.	0	
142			1-20% of the AA, or <1% but >0.01 ha.	0	
143			20-50% of the AA.	0	
144			50-95% of the AA.	0	
145			>95% of the AA.	0	
146	F28	Annual Water Fluctuation Range	The annual fluctuation in surface water level within most of the parts of the AA that contain surface water at least temporarily is:		Look for flood marks (see above). Because the annual range of water levels is difficult to estimate without multiple visits, consider asking the land owner or neighbors about it. [AM, CS, INV, NR, OE, PH, PR, SR, WBN, WS]
147			<10 cm change (stable or nearly so).	0	
148			10 cm - 50 cm change.	0	
149			0.5 - 1 m change.	0	
150			1-2 m change.	0	
151			>2 m change.	0	
152	Is the AA plus adjacent ponded water smaller than 0.01 hectare (about 10m x 10m, or 1m x 100 m)? If so, enter "1" in column D and SKIP TO F42 (Connection).			0	
153	F29	Predominant Depth Class	During most of the time when surface water is present during the growing season, its depth, averaged over the entire inundated part of the AA, is:		If a boat is unavailable, estimate this by considering wetland size and local topography. Or if timing and safety allow, depths may be measured by drilling through winter ice.This question is asking about the spatial median depth that occurs during most of that time, even if inundation is only seasonal or temporary. If inundation in most but not all of the wetland is brief, the answer will be based on the depth of the most persistently inundated part of the wetland. Include surface water in channels and ditches as well as ponded areas. [CS, FA, FR, INV, OE, PH, PR, Sens, SFS, SR, WBF, WBN, WC]
154			<10 cm deep (but >0).	0	
155			10 - 50 cm deep.	0	
156			0.5 - 1 m deep.	0	
157			1 - 2 m deep.	0	
158			>2 m deep. True for many fringe wetlands.	0	
159	F30	Depth Classes - Evenness of Proportions	When present, surface water in most of the AA usually consists of (select one):		Estimate these proportions by considering the gradient and microtopography of the site. [FR, INV, WBF, WBN]
160			One depth class that comprises >90% of the AA's inundated area (use the classes in the question above).	0	
161			One depth class that comprises 50-90% of the AA's inundated area.	0	
162			Neither of above. There are 3 or more depth classes and none occupy >50%.	0	
163	F31	% of Water That Is Ponded (not Flowing)	During most times when surface water is present, the percentage that is (1) ponded (stagnant, or flows so slowly that fine sediment is not held in suspension) AND (2) is likely to be deeper than 0.5 m in some places, is:		Nearly all wetlands with surface water have some ponded water. [AM, CS, INV, NR, OE, PR, Sens, SR, WBF, WBN, WC, WS]
164			<5% of the water, or it occupies <100 sq.m cumulatively. Nearly all the surface water is flowing. SKIP to F34.	0	
165			5-30% of the water.	0	
166			30-70% of the water.	0	
167			70-95% of the water.	0	
168			>95% of the water.	0	
169	F32	Ponded Open Water - Minimum Size	During most of the growing season, the largest patch of open water that is ponded and is in or bordering the AA is >0.01 hectare (about 10 m by 10 m) and mostly deeper than 0.5 m. If true enter "1" and continue, If false, enter "0" and SKIP to F41 (Floating Algae & Duckweed).	0	Open water is not obscured by vegetation in aerial ("duck's eye") view. It includes vegetation floating on the water surface or entirely submersed beneath it.
170	F33	% of Ponded Water that is Open	In ducks-eye aerial view, the percentage of the ponded water that is open (lacking emergent vegetation during most of the growing season, and unhidden by a forest or shrub canopy) is:		[AM, CS, FA, FR, INV, NR, OE, PR, SR, WBF, WBN, WC]
171			None, or <1% of the AA and largest pool occupies <0.01 hectares. Enter "1" and SKIP to F41 (Floating Algae & Duckweed).	0	
172			1-4% of the ponded water. Enter "1" and SKIP to F41 (Floating Algae & Duckweed).	0	
173			5-30% of the ponded water.	0	
174			30-70% of the ponded water.	0	
175			70-99% of the ponded water.	0	
176			100% of the ponded water.	0	
177	F34	Width of Vegetated Zone within Wetland	At the time during the growing season when the AA's water level is lowest, the average width of vegetated area in the AA that separates adjoining uplands from open water within the AA is:		"Vegetated area" does not include underwater or floating-leaved plants, i.e., aquatic bed. Width may include wooded riparian areas if they have wetland soil or plant indicators. [AM, CS, NR, OE, PH, PR, SBM, Sens, SR, WBN]
178			<1 m.	0	
179			1 - 9 m.	0	
180			10 - 29 m.	0	
181			30 - 49 m.	0	
182			50 - 100 m.	0	
183			> 100 m, or open water is absent at that time.	0	

	A	B	C	D	E
184	F35	Flat Shoreline Extent	During most of the part of the growing season when water is present, the percentage of the AA's **water edge** length that is **nearly flat** (a slope less than about 5% measured within 5 m landward of the water) is:		If several isolated pools are present in early summer, estimate the percent of their collective shorelines that has such a gentle slope. [SR, WBN]
185			<1% of the water edge.	0	
186			1-25% of the water edge.	0	
187			25-50% of the water edge.	0	
188			50-75% of the water edge.	0	
189			>75% of the water edge.	0	
190	F36	Robust Emergents	The percentage **of the emergent vegetation** cover in the AA that is cattail (*Typha* spp.), common reed (*Phragmites*), or tall (>1m) bulrush is:		**Emergent vegetation** is herbaceous plants whose stems are partly above and partly below the water surface during most of the time water is present. [WBN]
191			<1% of the emergent vegetation, or emergent vegetation is absent. SKIP to F38.	0	
192			1-25% of the emergent vegetation.	0	
193			25-75% of the emergent vegetation.	0	
194			>75%, of the emergent vegetation.	0	
195	F37	Interspersion of Emergents & Open Water	During most of the part of the growing season when water is present, the spatial pattern of **emergent** vegetation within the water is mostly:		[AM, FA, FR, INV, NR, OE, PH, PR, SBM, SR, WBF, WBN]
196			Scattered. More than 30% of such vegetation forms small islands or corridors surrounded by water.	0	
197			Intermediate.	0	
198			Clumped. More than 70% of such vegetation is in bands along the wetland perimeter or is clumped at one or a few sides of the surface water area.	0	
199	F38	Persistent Deepwater Area	If the deepest patch of surface water (flowing or ponded) in or directly adjacent to the AA is mostly deeper than 0.5 m for >2 weeks during the growing season, enter "1" and continue. If not, enter "0" and SKIP to F42.(Connection).	0	
200	F39	Non-vegetated Aquatic Cover	During most of the growing season and in waters deeper than 0.5 m, the cover for fish, aquatic invertebrates, and/or amphibians that is provided NOT by living vegetation, but by accumulations of **dead wood and undercut banks** is:		For this question, consider only the wood that is at or above the water surface. Estimates of underwater wood based only on observations from terrestrial viewpoints are unreliable so should not be attempted. [AM, FA, FR, INV]
201			Little or none.	0	
202			Intermediate.	0	
203			Extensive.	0	
204	F40	Isolated Island	The AA contains (or is part of) an island or beaver lodge within a lake, pond, or river, and is isolated from the shore **by water depths** >1 m on all sides during an average June. The island may be solid, or it may be a floating vegetation mat that is sufficiently large and dense to support a waterbird nest.	0	[WBN]
205	F41	Floating Algae & Duckweed	At some time of the year, mats of algae and/or duckweed are likely to cover >50% of the AA's otherwise-unshaded water surface, or blanket >50% of the underwater substrate. If true, enter "1" in next column. If untrue or uncertain, enter "0".	0	[EC, PR, WBF]
206	F42	Channel Connection & Outflow Duration	The most persistent surface water connection (outlet channel or pipe, ditch, or overbank water exchange) between the AA and a downslope stream network is: [Note: If the AA represents only part of a wetland, answer this according to whichever is the **least** permanent surface connection: the one between the AA and the rest of the wetland, or the surface connection between the wetland and the downslope stream network.]		Consider the connection regardless of whether the surface water is frozen. The "downslope stream network" could consist of ditches, rivers, ponds, or lakes which eventually connect to the ocean. If this cannot be determined while visiting the AA, consult topographic maps perhaps by viewing these online with Toporama (http://atlas.nrcan.gc.ca/toporama/en/index.html) [CS, FA, FR, NR, OE, PR, Sens, SFS, SR, WCv, WS]
207			Persistent (surface water flows out for >9 months/year).	0	
208			Seasonal (surface water flows out for 14 days to 9 months/year, not necessarily consecutive).	0	
209			Temporary (surface water flows out for <14 days, not necessarily consecutive).	0	
210			None -- but maps show a stream network downslope from the AA and within a distance that is less than the AA's length. SKIP to F47 (pH Measurement).	0	
211			No surface water flows out of the wetland except possibly during extreme events (<once per 10 years). Or, water flows only into a wetland, ditch, or lake that lacks an outlet. SKIP to F47 (pH Measurement).	1	
212	F43	Outflow Confinement	During major runoff events, in the places where **surface** water exits the AA or connected waters nearby, the water:		"Major runoff events" would include biennial high water caused by storms and/or rapid snowmelt. [CS, NR, OE, PR, Sens, SR, STR, WS]
213			Mostly passes through a pipe, culvert, narrowly breached dike, berm, beaver dam, or other partial obstruction (other than natural topography) that does not appear to drain the wetland artificially during most of the growing season.	0	
214			Leaves through natural exits (channels or diffuse outflow), not mainly through artificial or temporary features.	0	
215			Is exported more quickly than usual due to ditches or pipes within the AA or connected to its outlet, or within 10 m of the AA's edge, which drain the wetland artificially, or water is pumped out of the AA.	0	
216	F44	Tributary Channel	At least once annually, surface water from a tributary channel that is >100 m long moves into the AA. Or, surface water from a larger permanent water body adjacent to the AA spills into the AA. If it enters only via a pipe, that pipe must be fed by a mapped stream or lake further upslope. If no, SKIP to F47 (pH Measurement).	0	If inlet tributaries cannot be searched for due to inaccessibility of part of the AA, follow suggestions in F42 above. [NRv, PH, PRv, SRv]
217	F45	**Input** Water Temperature	Based on lack of shade, water source characteristics, or actual temperature measurements, the inflow is likely to be warmer than surface water in the AA during part of most years. Enter 1= yes, 0= no.	0	[WCv]
218	F46	Throughflow Resistance	During its travel through the AA at the time of peak annual flow, water arriving in channels: [select only the ONE encountered by **most** of the incoming water].		[FA, FR, INV, NR, OE, PR, SR, WS]
219			Does not bump into many plant stems as it travels through the AA. Nearly all the water continues to travel in unvegetated (often incised) channels that have minimal contact with wetland vegetation, or through a zone of open water such as an instream pond or lake.	0	
220			Bumps into **herbaceous** vegetation but mostly remains in fairly straight channels.	0	
221			Bumps into **herbaceous** vegetation and mostly spreads throughout, or is in widely meandering, multi-branched, or braided channels.	0	
222			Bumps into **tree trunks and/or shrub stems** but mostly remains in fairly straight channels.	0	
223			Bumps into tree trunks and/or shrub stems and follows a fairly **indirect** path from entrance to exit (meandering, multi-branched, or braided).	0	
224	F47	pH Measurement	The pH in most of the AA's surface water:		Preferably, measure this in larger areas of ponded surface water within the AA, or in streams that have passed through (not along) most of the AA. Unless surface water is completely absent, do not dig holes or make depressions in peat in order to provide water for this measurement. Avoid measuring near roads or in puddles formed only by recent rain. [AM, FA, FR, NR, WBF, PH, PR, Sens, WBF, WBN]
225			Was measured, and is: [*enter the reading in the column to the right.*]		
226			Was not measured but surface water is present and is darkly tea-coloured. Or if no surface water, then mosses and plants that indicate peatland (e.g., Labrador tea) are prevalent. Enter "1".	0	
227			Neither of above. Enter "1".	1	
228	F48	TDS and/or Conductivity	The TDS (total dissolved solids) or conductivity off the AA's surface water is: (select the first true row with information):		See above for measurement guidance. [FR, INV, NRv, PH, PRv, Sens]
229			TDS is: [*Enter the reading* ***in ppm or mg/L*** *in the column to the right, if measured, or answer next row.*]		
230			Conductivity is [*Enter the reading* ***in µS/cm*** *in the column to the right.*]		
231			Was not measured, but plants that indicate saline conditions cover much of the vegetated AA. Enter "1".	0	
232			Neither of above	1	
233	F49	Beaver Probability	Use of the AA by beaver during the past 5 years is (select most applicable ONE):		[FA, FR, PH, SBM, Sens, WBF, WBN]
234			**Evident** from direct observation or presence of gnawed limbs, dams, tracks, dens, lodges, or extensive stands of water-killed trees (snags).	0	
235			**Likely** based on known occurrence in the region and proximity to suitable habitat, which may include: (a) a persistent freshwater wetland, pond, or lake, or a perennial low or mid-gradient (<10%) channel, and (b) a corridor or multiple stands of hardwood trees and shrubs in vegetated areas near surface water.	0	
236			Unlikely because site characteristics above are deficient, and/or this is a settled area or other area where beaver are routinely removed.	1	
237	F50	Groundwater Strength of Evidence	Select first applicable choice:		Adhere to these criteria strictly -- do not use personal judgment based on fen conditions, pH, or other evidence. Consult topographic maps to detect breaks in slope described here. Rust deposits associated with groundwater seeps may be most noticeable as orange discoloration in ice formations along streams during early winter. [AM, CS, FA, FR, INV, NR, OE, PH, PRv, SFS, WC, WS]
238			Springs are known to be present within the AA, or if groundwater levels have been monitored, that has demonstrated that groundwater primarily discharges to the wetland for longer periods during the year than periods when the wetland recharges the groundwater.	0	

	A	B	C	D	E
239			Most of the AA has a slope of >5%, or is very close to the base of a natural slope longer than 100 and much steeper than the slope of the AA, AND the pH of surface water, if known, is >5.5.	0	
240			Neither of above is true, although some groundwater may discharge to or flow through the AA. Or groundwater influx is unknown.	1	
241	F51	Internal Gradient	The gradient along most of the flow path **within** the AA is:		This is not the same as the shoreline slope. It is the elevational difference between the AA's inlet and outlet, divided by the flow-distance between them and converted to percent. If available, use a clinometer to measure this. Free clinometer apps can be downloaded to smartphones. If the wetland is large (longer than ~1 km), this may be estimated using Google Earth to determine the minimum and maximum elevation within the AA, then dividing by length and multiplying by 100. [CS, NR, OE, PR, SR, WBF, WBN, WS]
242			<2% **or** the AA has no surface water outlet (not even seasonally).	1	
243			2-5%.	0	
244			6-10%.	0	
245			>10%.	0	
246	Note for the next three questions: If the AA lacks an upland edge, evaluate based on the AA's entire perimeter, and moving outward into whatever areas are adjacent. In many situations, these questions are best answered by measuring from aerial images.				
247	F52	Vegetated Buffer as % of Perimeter	Within a zone extending 30 m laterally from the AA's edge with upland and/or other wetlands, the percentage that contains **perennial vegetation cover** (except lawns, row crops, heavily grazed land, conifer plantations) is:		[AM, FA, FR, INV, NRv, PH, POL, PRv, SBM, Sens, SRv, STR, WBN]
248			<5%.	0	
249			5 to 30%.	0	
250			30 to 60%.	0	
251			60 to 90%.	0	
252			>90%, or all the area within 30 m of the AA edge is other wetlands. **SKIP to F55.**	1	
253	F53	Type of Cover in Buffer	Within 30 m upslope of where the wetland transitions to upland, the upland land cover that is NOT perennial vegetation is mostly (mark ONE):		[AM, FA, INV, NRv, PH, POL, SBM, STR, WBN]
254			Impervious surface, e.g., paved road, parking lot, building, exposed rock.	0	
255			Bare or nearly bare pervious surface or managed vegetation, e.g., lawn, row crops, unpaved road, dike, landslide.	0	
256	F54	Buffer Slope	The steepest and/or most disturbed part of the upland area that is within 30 m of the wetland and occupies >10% of that upland area has a percent slope of:		[NRv, PRv, Sens, SRv]
257			<1% (flat -- almost no noticeable slope) or all the area within 30 m of the AA edge is other wetlands.	0	
258			2-5%.	0	
259			5-30%.	0	
260			>30%.	0	
261	F55	Cliffs or Steep Banks	In the AA or within 100 m, there are elevated terrestrial features such as cliffs, talus slopes, stream banks, or excavated pits (but not riprap) that extend at least 2 m nearly vertically, are unvegetated, and potentially contain crevices or other substrate suitable for nesting or den areas. Enter 1 (yes) or 0 (no).	0	Do not include upturned trees as potential den sites. [POL, SBM]
262	F56	New or Expanded Wetland	**Human** actions within or adjacent to the AA have persistently expanded a naturally occurring wetland or created a wetland where there previously was none (e.g., by excavation, impoundment):		Determine this using historical aerial photography, old maps, soil maps, or permit files as available [CS, NR, OE, PH, Sens]
263			No.	0	
264			Yes, and created or expanded 20 - 100 years ago.	0	
265			Yes, and created or expanded 3-20 years ago.	0	
266			Yes, and created or expanded within last 3 years.	0	
267			Yes, but time of origin or expansion unknown.	0	
268			Unknown if new or expanded within 20 years or not.	1	
269	F57	Burn History	More than 1% of the AA's previously vegetated area:		Look for charred soil or stumps (in multiple widely-spaced locations) or ask landowner. [CS, PH, STR]
270			Burned within past 5 years.	0	
271			Burned 6-10 years ago.	0	
272			Burned 11-30 years ago.	0	
273			Burned >30 years ago, or no evidence of a burn and no data.	1	
274	F58	Visibility	The maximum percentage of the wetland that is visible from the best vantage point on public roads, public parking lots, public buildings, or public maintained trails that intersect, adjoin, or are within 100 m of the AA (select one) is:		[PU, STR, WBFv]
275			<25%.	1	
276			25-50%.	0	
277			>50%.	0	
278	F59	Non-consumptive Uses - Actual or Potential	Assuming access permission was granted, select **ALL** statements that are true of the AA as it currently exists:		[PU, STR]
279			For an average person, walking is physically possible in (not just near) >5% of the AA during most of the growing season, e.g., free of deep water and dense shrub thickets.	1	
280			Maintained roads, parking areas, or foot-trails are within 10 m of the AA, or the AA can be accessed part of the year by boats arriving via contiguous waters.	0	
281			Within or near the AA, there is an interpretive center, trails with interpretive signs or brochures, and/or regular guided interpretive tours.	0	
282	F60	Unvisited Core Area	The percentage of the AA almost never visited by humans during an average growing season probably comprises: *[Note: Only include the part actually walked or driven (not simply viewed from) with a vehicle or boat. Do not include visitors on trails outside of the AA unless more than half the wetland is visible from the trails and they are within 30 m of the wetland edge. In that case include only the area occupied by the trail.]*		[AM, FAv, FRv, PH, PU, SBM, STR, WBF, WBN]
283			<5% and no inhabited building is within 100 m of the AA.	0	
284			<5% and inhabited building is within 100 m of the AA.	0	
285			5-50% and no inhabited building is within 100 m of the AA.	0	
286			5-50% and inhabited building is within 100 m of the AA.	0	
287			50-95%, with or without inhabited building nearby.	0	
288			>95% of the AA with or without inhabited building nearby.	1	
289	F61	Frequently Visited Area	The part of the AA visited by humans almost daily for several weeks during an average growing season probably comprises: *[See note above.]*		[AM, PH, PU, SBM, STR, WBF, WBN]
290			<5%. If F60 was answered ">95%" (mostly never visited), **SKIP to F64.**	1	
291			5-50%.	0	
292			50-95%.	0	
293			>95% of the AA.	0	
294	F62	BMP - Soils	Boardwalks, paved trails, fences or other infrastructure and/or well-enforced regulations appear to effectively prevent visitors from walking on soil within nearly all of the AA when the soil is unfrozen. Enter "1" if true.	0	[PH, PU]
295	F63	BMP - Wildlife Protection	Fences, observation blinds, platforms, paved trails, exclusion periods, and/or well-enforced prohibitions on motorised boats, off-leash pets, and off road vehicles appear to effectively exclude or divert visitors and their pets from the AA at critical times in order to minimize disturbance of wildlife (except during hunting seasons). Enter "1" if true.	0	[AM, PU, WBF, WBN]
296	F64	Consumptive Uses (Provisioning Services)	Recent evidence was found within the AA of the following potentially-sustainable consumptive uses. Select ALL that apply.		[FAv, FRv, WBFv]
297			Low-impact commercial timber harvest (e.g., selective thinning).	1	
298			Commercial or traditional-use harvesting of native plants, their fruits, or mushrooms.	0	
299			Waterfowl hunting.	0	
300			Fishing.	0	
301			Trapping of furbearers.	0	
302			None of the above.	0	
303	F65	Domestic Wells	The closest wells or water bodies that currently provide drinking water are:		[NRv]
304			Within 0-100 m. of the AA.	0	

	A	B	C	D	E
305			100-500 m. away.	0	
306			>500 m. away, or no information.	1	
307	F66	Calcareous Fen	The AA is, or is part of, a calcareous fen. See the Plants_Calcar worksheet in the accompanying SuppInfo file for list of plant indicators (calciphiles). Enter 1 If more than two Strong or more than five Moderate calciphile species are present; otherwise enter 0, but if not able to identify those **and** no information, change to **blank**.	0	[PH, PR]
308					

Investigator: Brady Leights	**Site Identifier: WL-7**	**Date: July 27, 2021**

Stressor (S) Data Form for Non-Tidal Wetlands. WESP-AC for Nova Scotia version 2.

		Data
S1	**Aberrant Timing of Water Inputs**	
	In the last column, place a check mark next to any item that is likely to have caused the timing of water inputs (but not necessarily their volume) to shift by hours, days, or weeks, becoming either more muted (smaller or less frequent peaks spread over longer times, more temporal homogeneity of flow or water levels) or more flashy (larger or more frequent spikes but over shorter times). [FA, FR, INV, PH, STR]	
	Stormwater from impervious surfaces that drains directly to the wetland.	
	Water subsidies from wastewater effluent, septic system leakage, snow storage areas, or irrigation.	
	Regular removal of surface or groundwater for irrigation or other consumptive use.	
	Flow regulation in tributaries or water level regulation in adjoining water body, or other control structure at water entry points that regulates inflow to the wetland.	
	A dam, dike, levee, weir, berm, or fill -- within or downgradient from the wetland -- that interferes with surface or subsurface flow in/out of the AA (e.g., road fill, wellpads, pipelines).	
	Excavation within the wetland, e.g., dugout, artificial pond, dead-end ditch.	
	Artificial drains or ditches in or near the wetland.	
	Accelerated downcutting or channelization of an adjacent or internal channel (incised below the historical water table level).	
	Logging within the wetland.	1
	Subsidence or compaction of the wetland's substrate as a result of machinery, livestock, fire, drainage, or off road vehicles.	
	Straightening, ditching, dredging, and/or lining of tributary channels.	
	If any items were checked above, then for each row of the table below, assign points. However, if you believe the checked items had no measurable effect on the timing of water conditions in any part of the AA, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.	

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Spatial extent of timing shift within the wetland:	>95% of wetland.	5-95% of wetland.	<5% of wetland.	3
When most of the timing shift began:	<3 yrs ago.	3-9 yrs ago.	10-100 yrs ago.	1
Score the following 2 rows only if the altered inputs began within past 10 years, and only for the part of the wetland that experiences those.				
Input timing now vs. previously:	Shift of weeks.	Shift of days.	Shift of hours or minutes.	2
Flashiness or muting:	Became very flashy or controlled.	Intermediate.	Became mildly flashy or controlled.	2
			Sum=	8
			Stressor subscore=	0.67

		Data
S2	**Accelerated Inputs of Contaminants and/or Salts**	
	In the last column, place a check mark next to any item -- occurring in either the wetland or its CA -- that is likely to have accelerated the inputs of contaminants or salts to the AA. [AM, FA, PH, POL, STR]	
	Stormwater or wastewater effluent (including failing septic systems), landfills, industrial facilities.	
	Metals & chemical wastes from mining, shooting ranges, snow storage areas, oil/ gas extraction, other sources (download many locations from National Pollutant Release Inventory and view KMZ overlay in Google Earth. https://www.ec.gc.ca/inrp-npri/default.asp?lang=En&n=B85A1846-1	
	Road salt.	
	Spraying of pesticides, as applied to lawns, croplands, roadsides, or other areas in the CA.	
	If any items were checked above, then for each row of the table below, assign points. However, if you believe the checked items did not cumulatively expose the AA to significantly higher levels of contaminants and/or salts, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.	

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Usual toxicity of most toxic contaminants:	Industrial effluent, mining waste, unmanaged landfill.	Cropland, managed landfill, pipeline or transmission rights-of-way.	Low density residential.	0
Frequency & duration of input:	Frequent and year-round.	Frequent but mostly seasonal.	Infrequent & during high runoff events mainly.	0
AA proximity to main sources (actual or potential):	0 - 15 m.	15-100 m. or in groundwater.	In more distant part of contributing area.	0
			Sum=	0
			Stressor subscore=	0.00

		Data
S3	**Accelerated Inputs of Nutrients**	
	In the last column, place a check mark next to any item -- occurring in either the wetland or its CA -- that is likely to have accelerated the inputs of nutrients to the wetland. [NRv, PRv, STR]	
	Stormwater or wastewater effluent (including failing septic systems), landfills.	
	Fertilizers applied to lawns, ag lands, or other areas in the CA.	
	Livestock, dogs.	
	Artificial drainage of upslope lands.	
	If any items were checked above, then for each row of the table below, assign points. However, if you believe the checked items did not cumulatively expose the AA to significantly more nutrients, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.	

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Type of loading:	High density of unmaintained septic, some types of industrial sources.	Moderate density septic, cropland, secondary wastewater treatment plant.	Livestock, pets, low density residential.	0
Frequency & duration of input:	Frequent and year-round.	Frequent but mostly seasonal.	Infrequent & during high runoff events mainly.	0
AA proximity to main sources (actual or potential):	0 - 15 m.	15-100 m. or in groundwater.	In more distant part of contributing area.	0
			Sum=	0
			Stressor subscore=	0.00

		Data
S4	**Excessive Sediment Loading *from Contributing Area***	
	In the last column, place a check mark next to any item present in the CA that is likely to have elevated the load of waterborne or windborne sediment reaching the wetland from its CA. [FA, FR, INV, PH, SRv, STR]	
	Erosion from plowed fields, fill, timber harvest, dirt roads, vegetation clearing, fires.	1
	Erosion from construction, in-channel machinery in the CA.	
	Erosion from off-road vehicles in the CA.	
	Erosion from livestock or foot traffic in the CA.	
	Stormwater or wastewater effluent.	
	Sediment from road sanding, gravel mining, other mining, oil/ gas extraction.	
	Accelerated channel downcutting or headcutting of tributaries due to altered land use.	
	Other human-related disturbances within the CA.	
	If any items were checked above, then for each row of the table below, assign points (3, 2, or 1 as shown in header) in the last column. However, if you believe the checked items did not cumulatively add significantly more sediment or suspended solids to the AA, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.	

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Erosion in CA:	Extensive evidence, high intensity.*	Potentially (based on high-intensity* land use) or scattered evidence.	Potentially (based on low-intensity* land use) with little or no direct evidence.	2
Recentness of significant soil disturbance in the CA:	Current & ongoing.	1-12 months ago.	>1 yr ago.	1

	Duration of sediment inputs to the wetland:	Frequent and year-round.	Frequent but mostly seasonal.	Infrequent & during high runoff events mainly.	1
	AA proximity to actual or potential sources:	0 - 15 m.	15-100 m.	In more distant part of contributing area.	3
	* high-intensity= extensive off-road vehicle use, plowing, grading, excavation, erosion with or without veg removal; low-intensity= veg removal only with little or no apparent erosion or disturbance of soil or sediment.			Sum=	7
				Stressor subscore=	0.58
S5	**Soil or Sediment Alteration *Within the Assessment Area***				
	In the last column, place a check mark next to any item present in the wetland that is likely to have compacted, eroded, or otherwise altered the wetland's soil. Consider only items occurring within past 100 years or since wetland was created or restored (whichever is less). [CS, INV, NR, PH, SR, STR]				
	Compaction from machinery, off-road vehicles, livestock, or mountain bikes, especially during wetter periods.				
	Leveling or other grading not to the natural contour.				
	Tillage, plowing (but excluding disking for enhancement of native plants).				
	Fill or riprap, excluding small amounts of upland soils containing organic amendments (compost, etc.) or small amounts of topsoil imported from another wetland.				
	Excavation.				
	Ditch cleaning or dredging in or adjacent to the wetland.				
	Boat traffic in or adjacent to the wetland and sufficient to cause shore erosion or stir bottom sediments.				
	Artificial water level or flow manipulations sufficient to cause erosion or stir bottom sediments.				
	If any items were checked above, then for each row of the table below, assign points. However, if you believe the checked items did not measurably alter the soil structure and/or topography, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.				
		Severe (3 points)	Medium (2 points)	Mild (1 point)	
	Spatial extent of altered soil:	>95% of wetland or >95% of its upland edge (if any).	5-95% of wetland or 5-95% of its upland edge (if any).	<5% of wetland and <5% of its upland edge (if any).	0
	Recentness of significant soil alteration in wetland:	Current & ongoing.	1-12 months ago.	>1 yr ago.	0
	Duration:	Long-lasting, minimal veg recovery.	Long-lasting but mostly revegetated.	Short-term, revegetated, not intense.	0
	Timing of soil alteration:	Frequent and year-round.	Frequent but mostly seasonal.	Mainly during one-time or scattered events.	0
				Sum=	0
				Stressor subscore=	0.00

Assessment Area (AA) Results:

Wetland ID: Uniacke Quarry Wetland 7

Date: July 27, 2021

Observer: Brady Leights

Latitude & Longitude (decimal degrees): 44.914574, -63.810150

Scores will appear below after data are entered in worksheets OF, F, and S. See Manual for definitions and descriptions of how scores were computed.

Wetland Functions or Other Attributes:	Function Score (Normalised)	Function Rating	Benefits Score (Normalised)	Benefits Rating	Function Score (raw)	Benefits Score (raw)
Water Storage & Delay (WS)	7.90	Higher	4.79	Moderate	7.84	2.13
Stream Flow Support (SFS)	0.00	Lower	0.00	Lower	0.00	0.00
Water Cooling (WC)	0.00	Lower	0.00	Lower	0.00	0.00
Sediment Retention & Stabilisation (SR)	5.02	Moderate	2.16	Moderate	6.11	1.06
Phosphorus Retention (PR)	0.91	Lower	1.29	Moderate	4.31	1.00
Nitrate Removal & Retention (NR)	10.00	Higher	3.33	Lower	10.00	3.33
Carbon Sequestration (CS)	4.12	Moderate			7.14	
Organic Nutrient Export (OE)	6.01	Moderate			3.93	
Anadromous Fish Habitat (FA)	0.00	Lower	0.00	Lower	0.00	0.00
Resident Fish Habitat (FR)	0.00	Lower	0.00	Lower	0.00	0.00
Aquatic Invertebrate Habitat (INV)	4.54	Moderate	1.29	Moderate	5.34	1.94
Amphibian & Turtle Habitat (AM)	4.97	Moderate	2.27	Lower	5.73	3.63
Waterbird Feeding Habitat (WBF)	0.00	Lower	0.00	Lower	0.00	0.00
Waterbird Nesting Habitat (WBN)	0.00	Lower	0.00	Lower	0.00	0.00
Songbird, Raptor, & Mammal Habitat (SBM)	6.78	Moderate	5.00	Moderate	5.90	5.00
Pollinator Habitat (POL)	6.89	Moderate	3.33	Moderate	5.71	3.33
Native Plant Habitat (PH)	3.77	Moderate	4.98	Lower	5.41	4.98
Public Use & Recognition (PU)			1.82	Moderate		1.54
Wetland Sensitivity (Sens)			5.58	Moderate		3.76
Wetland Ecological Condition (EC)			4.78	Moderate		7.50
Wetland Stressors (STR) (higher score means more stress)			9.95	Higher		4.96
Summary Ratings for Grouped Functions:						
HYDROLOGIC Group (WS)	7.90	Higher	4.79	Moderate	7.84	2.13
WATER QUALITY SUPPORT Group (max+avg/2 of SR, PR, NR, CS)	7.51	Higher	2.80	Lower	8.45	2.56
AQUATIC SUPPORT Group (max+avg/2 of SFS, INV, OE, WC)	4.32	Moderate	0.86	Lower	3.83	1.29
AQUATIC HABITAT Group (max+avg/2 of FA, FR, AM, WBF, WBN)	2.98	Moderate	1.36	Lower	3.44	2.18
TRANSITION HABITAT Group (max+avg/2 of SBM, PH, POL)	6.35	Moderate	4.72	Lower	5.79	4.72
WETLAND CONDITION (EC)			4.78	Moderate		7.50
WETLAND RISK (average of Sensitivity & Stressors)			7.76	Higher		4.36

NOTE: A score of 0 does not mean the function or benefit is absent from the wetland. It means only that this wetland has a capacity that is equal or less than the lowest-scoring one, for that function or benefit, from among all the NS calibration wetlands that were assessed previously.

NOVA SCOTIA - Functional WSS Interpretation Tool

1. General Description of Tool:

This interpretive tool automatically determines whether the subject wetland will be regulated as a Wetland of Special Significance (WSS). This determination is made based on the WESP-AC functional results, per the Nova Scotia *Wetland Conservation Policy* .

A 'Function-Benefit Product' (FBP) is calculated based upon the Grouped Functions, and has a theoretical maximum of 100. Threshold values for the FBP are applied, in order to categorize the FBP scores into 'Low', 'Moderate' or 'High' scores. Thresholds are determined based upon the statistical distribution of WESP-AC scores compiled from various sites across the Province (N=442). These categories are subsequently used to apply various 'Functional WSS Rules', as described below.

For the purpose of defining and applying the Functional WSS rules, two supergroups are defined based on grouped functions, as follows: **(1) Support Supergroup** - includes Hydrologic, Water Quality Support, and Aquatic Support grouped functions. **(2) Habitat Supergroup** - includes Aquatic Habitat and Transition Habitat grouped functions.

2. Functional WSS Rule Definitions:

Habitat Rule: In consideration of the Habitat Supergroup, the subject wetland is a WSS if either of the following sub-rules are satisfied:

(HAB 1) Two 'High Scores' OR

(HAB 2) One 'High' and one 'Moderate' score

Support Rule: In consideration of the Support Supergroup, the subject wetland is a WSS if either of the following sub-rules are satisfied:

(SUP 1) Three 'High' scores OR

(SUP 2) Two 'High' and one 'Moderate' score

Habitat/Support Hybrid Rule: In consideration of both the Habitat and Support Supergroups, the subject wetland is a WSS if the following is satisfied:

(HYB 1) One 'High' Habitat score **AND** Two or three 'High' Support scores

3. Functional WSS Interpretation Results

Function-Benefit Product (FBP)	FBP SCORE	FBP SCORE CATEGORY
SUPPORT SUPERGROUP - HYDROLOGIC	37.88171918	Moderate
SUPPORT SUPERGROUP - WATER QUALITY SUPPORT	20.98184305	Low
SUPPORT SUPERGROUP - AQUATIC SUPPORT	3.715525221	Low
HABITAT SUPERGROUP - AQUATIC HABITAT	4.066386496	Low
HABITAT SUPERGROUP - TRANSITION HABITAT	29.98370503	Low

3a. Functional WSS Determination: Automatic Method

Habitat Rule Satisfied?	NO
Support Rule Satisfied?	NO
Habitat/Support Hybrid Rule Satisfied?	NO
CONCLUSION:	**Site is not a WSS**

3b. Functional WSS Determination - Manual Method Using Dichotomous Key

1a. (HAB) - One or more 'High' scores for AH or TH.....**2**
2a. (HAB) - Two 'High' scores.....**WSS**
2b. (HAB) - One 'High' score.....**3**
3a. (HAB) - Any combination of 'High' and 'Moderate' scores..... **WSS**
3b. (HAB) - Any combination of 'High' and 'Low' scores.....**4**
4a. (SUP) One or more 'High' Scores for HYD, WQS, or AS.....**5**
5a. (SUP) Two or Three 'High' scores ..... **WSS**
5b. (SUP) One 'High' score **6**
6a. (SUP) Any combo of one 'High', two 'Mod' scores..... **WSS**
6b. (SUP) One 'High', plus any other combo of scores.....**not WSS**
4b. (SUP) Zero 'High' Scores for HYD, WQS, or AS.....**7**
7a. (SUP) Three 'Moderate' scores..... **WSS**
7b. (SUP) Any other combination of scores .....**not WSS**
1b. (HAB) - Zero 'High' Scores for AH or TH.....**8**
8a. (SUP) Three 'High' Scores.....**WSS**
8b. (SUP) Less than three 'High' scores.....**9**
9a. (SUP) Two 'High' and one 'Moderate' score.....**WSS**
9b. (SUP) - Any other combination of scores .....**not WSS**

Cover Page: Basic Description of Assessment	**WESP-AC version 2**
Site Name:	Uniacke Quarry Wetland 8
Investigator Name:	Brady Leights and Kyle d'Entremont
Date of Field Assessment:	27 July 2021
Nearest Town:	Mount Uniacke
Latitude (decimal degrees):	44.915128
Longitude (decimal degrees):	-63.810765
Is a map based on a formal on-site wetland delineation available?	Yes
Approximate size of the Assessment Area (AA, in hectares):	0.1
AA as percent of entire wetland (approx.). Attach sketch map if AA is smaller than the entire contiguous wetland.	100
What percent (approx.) of the **wetland** were you able to visit?	100
What percent (approx.) of the **AA** were you able to visit?	100
Were you able to ask the site owner/manager about any of the questions?	No
Indicate here if you intentionally surveyed for rare plants, calciphile plants, or rare animals:	Yes
Have you attended a WESP-AC training session? If so, indicate approximate month & year.	September 2021
How many wetlands have you assessed previously using WESP-AC? (approx.)	>100
Comments about the site or this WESP-AC assessment (attach extra page if desired):	

	A	B	C	D	E
1	Date: 27 July 2021		Site Identifier: WL-8	Investigator: Brady Leights and Kyle d'Entremont	
2	**Form OF (Office). Non-tidal Wetland Data Form. WESP-AC version 2 for Nova Scotia wetlands only.** DIRECTIONS: Conduct an assessment only after reading the accompanying Manual and the Explanations column of the data form. In the Data column, change the 0 (false) to a 1 (true) for the best choice, or for multiple choices where allowed and so indicated. Answering many of the questions below will require using these online map viewers: **Google Earth Pro**: https://www.google.com/earth/download/gep/agree.html **Provincial Landscape Viewer**: https://nsgi.novascotia.ca/plv/ For most wetlands, completing this office data form will require 1-2 hours. For a list of functions to which each question pertains, see bracketed abbreviations in the Definitions/Explanations column. For detailed descriptions of each WESP-AC model, see Appendix B of the accompanying Manual. Codes for functions and values are: WS= Water Storage, SFS= Stream Flow Support, WC= Water Cooling, SR= Sediment Retention & Stabilisation, PR= Phosphorus Retention, NR= Nitrate Removal, CS= Carbon Sequestration, OE= Organic Nutrient Export, INV= Invertebrate Habitat, FA= Anadromous Fish Habitat, FR= Resident Fish Habitat, AM= Amphibian & Reptile Habitat, WBF= Feeding Waterbird Habitat, WBN= Nesting Waterbird Habitat, SBM= Songbird, Raptor, & Mammal Habitat, POL= Pollinator Habitat, PH= Native Plant Habitat, PU= Public Use & Recognition, EC= Ecological Condition, Sen= Wetland Sensitivity, STR= Stressors.			
3	**#**	**Indicators**	**Condition Choices**	**Data**	**Definitions/Explanations**
4	OF1	Province	Mark the province in which the AA is located by changing the 0 in the column next to it to a "1". Mark only one.		This determines to which province's calibration wetlands the raw score of any wetland is normalised. In the function and benefits models, it also triggers the automatic exclusion of indicators for which no spatial data exists in a particular province.
5			New Brunswick	0	
6			Nova Scotia	1	
7			Prince Edward Island	0	
8			Newfoundland-Labrador	0	
9	OF2	Ponded Area Within 1 km.	The area of **surface water** ponded during most of the growing season that is both (1) in or adjacent to the AA and (2) within 1 km is:		**"Adjacent"** means not separated from the AA by a wide expanse (>50 m) of upland (including roads >50 m wide). Include ponded areas likely to be hidden by wetland vegetation. If surface water extends beyond 1 km, include only the part within 1 km. Do not include tidal areas. Measure the area from aerial imagery using Google Earth Pro (click on Ruler icon in toolbar, then Polygon in pop-up menu). [PH, SBM, WBN]
10			<0.01 hectare (about 10 m x 10 m).	0	
11			0.01 - 0.1 hectare.	0	
12			0.1 - 1 hectare.	0	
13			1 to 10 hectares.	0	
14			10 to 100 hectares.	1	
15			>100 hectares.	0	
16	OF3	Ponded Water & Wetland Within 1 km.	The area of **wetlands and surface water** ponded during most of the growing season that is both (1) in or adjacent to the AA and (2) within 1 km is:		See definition of adjacent in OF2. If the AA's wetland vegetation extends beyond 1 km, include only the part within 1 km. "Ponded" means not flowing in rivers or streams. [Sens, WBF]
17			<0.01 hectare (about 10 m x 10 m).	0	
18			0.01 - 0.1 hectare.	0	
19			0.1 - 1 hectare.	0	
20			1 to 10 hectares.	0	
21			10 to 100 hectares.	0	
22			>100 hectares.	1	
23	OF4	Size of Largest Nearby Vegetated Tract or Corridor	The largest vegetated patch or corridor that includes the AA's vegetation plus all **adjacent** upland vegetation that is not lawn, row crops, heavily grazed lands, conifer plantation is:		See definition of adjacent in OF2. Use Google Earth Pro's polygon ruler (as described above). Exclude conifer plantations only if it is obvious that trees were planted in rows. [AM, PH, SBM, Sens]
24			<0.01 hectare (about 10 m x 10 m).	0	
25			0.01 - 0.1 hectare.	0	
26			0.1 - 1 hectare.	0	
27			1 to 10 hectares.	0	
28			10 to 100 hectares.	0	
29			100 to 1000 hectares.	0	
30			>1000 hectares. [*This is nearly always the answer in relatively undeveloped landscapes.*]	1	
31	OF5	Distance to Large Vegetated Tract	The minimum distance from the **edge** of the AA to the edge of the closest ***vegetated land*** (but excluding row crops, lawn, conifer plantation) **larger than 375 hectares** (about 2 km on a side), is:		To measure distance, use Google Earth Pro (Ruler > Line tool). The 375-ha criterion is from the Fundy Model Forest Project. [AM, PH, POL, SBM, Sens]
32			<50 m, and not separated from the 375-ha vegetated area by any width of **paved** roads, stretches of open water, row crops, bare ground, lawn, or impervious surface. Or the AA itself contains >375 ha of vegetation. [This is often the answer in relatively undeveloped landscapes.]	1	
33			<50 m, but completely separated from the 375-ha vegetated area by those features, and AA does not contain >375 ha of vegetation.	0	
34			50-500 m, and **not** separated.	0	
35			50-500 m, but separated by those features.	0	
36			0.5 - 5 km, and **not** separated.	0	
37			0.5 - 5 km, but separated by those features.	0	
38			None of the above (the closest patches or corridors which are that large are >5 km away).	0	
39	OF6	Herbaceous Uniqueness	The AA's vegetation cover is >10% herbaceous* but uplands within 5 km have <10% herbaceous cover. If so, enter "3" and continue to OF7. If not, consider: The AA's vegetation cover is >10% herbaceous* but uplands within 1 km have <10% herbaceous cover. If so enter "2" and continue to OF7. If not, consider: The AA's vegetation cover is >10% herbaceous* but uplands within 100 m of the wetland edge have <10% herbaceous cover. If so, enter "1". [* NOTE: Exclude lawns, row crops, heavily grazed lands, forest, shrublands. Include moss as well as grasslike plants in this use of "herbaceous vegetation"]	1	For this question only, consider moss to be herbaceous vegetation. Determine the score by viewing aerial imagery in Google Earth after successively drawing or estimating the boundaries of the buffers of 5 km, 1 km, and 100 m radius focused on the center of the AA. Circles of specified radius can be drawn in Google Earth Pro by clicking on the Ruler icon, then Circle in the pop-up menu. [AMv, PHv, POLv, SBMv, WBFv, WBNv]
40	OF7	Woody Uniqueness	The AA's vegetation cover is >10% woody* but uplands within 5 km have <10% woody cover. If so, enter "3" and continue to OF8. If not, consider: The AA's vegetation is >10% woody* but uplands within 1 km have <10% woody cover. If so enter "2" and continue to OF8. If not, consider: The AA's vegetation is >10% woody* but uplands within 100 m of the wetland edge have <10% woody cover. If so, enter "1" [* NOTE: woody cover = trees & shrubs taller than 1 m.]	0	See above. Do not consider conifer plantations to be forest if it is obvious that trees were planted in rows. [AMv, PHv, POLv, SBMv]
41	OF8	Local Vegetated Cover Percentage	Draw a 5-km radius circle measured from the center of the AA. Ignoring all permanent water in the circle, the percent of the remaining area that is wooded or unmanaged herbaceous vegetation (NOT lawn, row crops, bare or heavily grazed land, clearcuts, or conifer plantations) is:		In Google Earth, draw the 5 km buffer and then estimate land cover percentages, or do GIS analysis of an appropriate land cover layer. [AM, PH, POL, SBM, Sens]
42			<5% of the land.	0	
43			5 to 20% of the land.	0	
44			20 to 60% of the land.	0	
45			60 to 90% of the land.	1	
46			>90% of the land. SKIP to OF10.	0	
47	OF9	Type of Land Cover Alteration	Within the **5-km** radius circle, and ignoring all permanent water, the land area that is bare or non-perennial cover is mostly:		[AM, SBM]
48			Impervious surface, e.g., paved road, parking lot, building, exposed rock.	0	
49			Bare pervious surface, e.g., lawn, recent (<5 yrs ago) clearcut, dirt or gravel road, cropland, landslide, conifer plantation.	1	
50	OF10	Distance by Road to Nearest Population Center	Measured **along** the maintained road nearest the AA, the distance to the nearest **population center** is:		"Population center" means a settled area with more than about 5 regularly- inhabited structures per square kilometer. In Google Earth Pro, click on the Ruler icon, then Path, and draw and measure the route. [FAv, FRv, NRv, PH, PU, SBM, WBFv]
51			<100 m.	0	
52			100 - 500 m.	0	
53			0.5- 1 km.	0	
54			1 - 5 km.	1	
55			>5 km.	0	

	A	B	C	D	E
56	OF11	Distance to Nearest Maintained Road	From the center of the AA, the distance to the nearest maintained public road (dirt or paved) is:		Determine this by viewing aerial imagery in Google Earth Pro and measuring with the Ruler>Line tool. [AM, FAv, FRv, NRv, PH, PU, SBM, STR, WBN]
57			<10 m.	0	
58			10 - 25 m.	0	
59			25 - 50 m.	0	
60			50 - 100 m.	0	
61			100 - 500 m.	0	
62			>500 m.	1	
63	OF12	Wildlife Access	Draw a circle of radius of 5 km from the center of the AA. If mammals and amphibians can move from the center of the AA to ALL other separate wetlands and ponds located within the circle without being forced to cross pavement (any width), lawns, bare ground, and/or marine waters, mark 1= yes can move to all, 0= no. Change to blank if there are no other wetlands within 5 km.	0	Draw the 5 km circle in Google Earth Pro using the Circle tool and search for roads and wetlands within it, being alert for roads hidden under forest canopy. [AM, SBM, STR]
64	OF13	Distance to Ponded Water	The distance from the AA center to the closest (but separate) ponded water body visible in GoogleEarth imagery is:		In Google Earth Pro, zoom in closely to examine the surrounding landscape for ponds, lakes, and wetlands that appear to be permanently flooded. [AM, PH, SBM, Sens, WBF, WBN]
65			<50 m, and not separated by any width of paved roads, stretches of open water, row crops, lawn, bare ground, or impervious surface.	0	
66			<50 m, but completely separated by those features.	0	
67			50-500 m, and not separated.	0	
68			50-500 m, but separated by those features.	0	
69			0.5 - 1 km, and not separated.	1	
70			0.5 - 1 km, but separated by those features.	0	
71			None of the above (the closest patches or corridors that large are >1 km away).	0	
72	OF14	Distance to Large Ponded Water	The distance from the AA center to the closest (but separate) non-tidal body of water that is ponded during most of the year and is larger than 8 hectares during most of a normal year is:		Determine this by viewing aerial imagery in Google Earth. [Sens, WBF, WBN]
73			<100 m.	0	
74			100 m - 1 km.	0	
75			1 -2 km.	0	
76			2-5 km.	1	
77			5-10 km.	0	
78			>10 km.	0	
79	OF15	Tidal Proximity	The distance from the AA edge to the closest tidal water body (regardless of its salinity) is:		In Google Earth, measure the distance to the ocean (including Bay of Fundy) or tidal river, whichever is closer. If you need to see how far upriver a river is tidal, see the KMZ file provided with this calculator for NS (NS Headtide). Points shown in those files are only an approximation, so local information if available may be preferable. [FA, WBF]
80			<100 m.	0	
81			100 m - 1 km.	0	
82			1 - 5 km.	0	
83			5-10 km.	0	
84			10-40 km.	1	
85			>40 km.	0	
86	OF16	Upland Edge Contact	Select one:		[NR, SBM, Sens]
87			The AA has no upland edge (or upland is <1% of perimeter). The AA is entirely surrounded by (& contiguous with) other wetlands or water.	0	
88			1-25% of the AA's perimeter abuts upland (including filled areas). The rest adjoins other wetlands or water that is mostly wider than the AA.	0	
89			25-50% of the AA's perimeter abuts upland. The rest adjoins other wetlands or water that is mostly wider than the AA.	0	
90			50-75% of the AA's perimeter abuts upland. The rest adjoins other wetlands or water that is mostly wider than the AA.	0	
91			More than 75% of the AA's perimeter abuts upland. Any remainder adjoins other wetlands or water that is mostly wider than the AA. This will be true for most assessments done with WESP-AC.	1	
92	OF17	Flood Damage from Non-tidal Waters	Within 5 km downstream or downslope of the AA (select first true choice):		Contact local authories to determine if such maps exist. Where available, LiDAR imagery can provide finer elevational resolution useful for flood modeling. [WSv]
93			Maps show Flood Zone or Flood Risk areas and there appears to be infrastructure vulnerable to river flooding not caused by tidal storm surges.	0	
94			Maps show Flood Zone or Flood Risk areas, but infrastructure is absent or is not vulnerable to floods from a non-tidal river. In some cases levees, upriver dams, or other measures may partly limit damage or risk from smaller events.	0	
95			Maps do not show Flood Zone or Flood Risk areas (or no such mapping has been done locally) and there appears to be infrastructure vulnerable to river flooding unrelated to tidal storm surges.	0	
96			Maps do not show Flood Zone or Flood Risk areas (or no such mapping has been done locally) and there is no infrastructure vulnerable to river flooding unrelated to tidal storm surges.	1	
97	OF18	Relative Elevation in Watershed	In Google Earth, enable the Terrain layer (lower left menu) and open the NS_Watersheds Secondary KMZ file that accompanies this calculator. Then determine the AA's approximate elevation (bottom right, NOT the "eye alt"). Then move cursor around to determine the watershed's maximum and minimum elevation. Divide the AA's elevation by the (max-min).	0.87	[FA, NR, Sens, SFSv, WCv, WSv]
98	OF19	Water Quality Sensitive Watershed or Area	The AA is in a Protected Water Supply area (Designated Water Supply Area, Natural Watershed Municipal Surface Water Supply Area, or Municipal Water Supply Area) according to the provided KMZ overlay ("NS Protected Water Supply Areas"). Enter 1= yes, 0= no.	0	If an ACCDC report is available for this AA, it also may contain such information. [NRv]
99	OF20	Degraded Water Upstream	Sampling indicates a problem with concentrations of metals, hydrocarbons, nutrients, or other substances (excluding bacteria, acidic water, high temperatures) being present at levels harmful to aquatic life or humans, and:		May use existing data, or sample those waters as part of this wetland assessment. "Harmful" should be evaluated with regard to current federal or provincial water quality standards. [AM, FA, FR, NRv, PRv, SRv, STR, WBF, WBN]
100			The condition is present within the AA.	0	
101			The condition is present in waters within 1 km that flow into the AA, but has not been documented in the AA itself.	0	
102			Sampling during both low water periods and times with high runoff (storms, snowmelt) indicates no problems in either the AA or inflowing waters.	0	
103			Data are insufficient (no or inadequate sampling within 1 km, or condition exists only at >1 km upstream). This is the situation for nearly all wetlands in this region.	1	
104	OF21	Degraded Water Downstream	The problem described above is downslope from the AA, and:		May use existing data, or monitor waters as part of this wetland assessment. [NRv, PRv, SRv]
105			The condition is present within 1 km downslope and connected to the AA by a channel.	0	
106			The condition is present within 5 km downslope and connected to the AA by a channel, or within 1 km but not connected to the AA by a channel.	0	
107			Sampling during both low water periods and times with high runoff (storms, snowmelt) indicates no problems in either the AA or inflowing waters.	0	
108			Data are insufficient (no or inadequate sampling within 1 km, or condition exists only at >1 km upstream). This is the situation for nearly all wetlands in this region.	1	
109	OF22	Wetland as a % of Its Contributing Area (Catchment)	From a topographic map and field observations, estimate the approximate boundaries of the catchment (CA) of the entire wetland of which the AA may be only a part. Then adjust those boundaries if necessary based on your field observations of the surrounding terrain, and/or by using procedures described in the Manual. Divide the area of the wetland (not just the AA) by the approximate area of its catchment excluding the area of the wetland itself. When doing the calculation, if ponded water is adjacent to the wetland, include that in the wetland's area. The result is:		Topographic maps may be viewed online at the National Atlas of Canada (Toporama): http://atlas.gc.ca/toporama/en/index.html [NR, PR, Sens, SR, WS]
110			<0.01, or catchment size unknown due to stormwater pipes that collect water from an indeterminate area.	1	
111			0.01 to 0.1.	0	
112			0.1 to 1.	0	
113			>1 (wetland is larger than its catchment (e.g., wetland with flat surrounding terrain and no inlet, or is entirely isolated by dikes, or is a raised bog).	0	
114	OF23	Unvegetated Surface in the Contributing Area	The proportion of the AA's contributing area (measured to no more than 1000 m upslope) that is comprised of buildings, roads, parking lots, other pavement, exposed bedrock, landslides, and other mostly-bare surface is about :		[FA, INV, NRv, PRv, SRv, STR, WCv, WSv]
115			<10%.	1	
116			10 to 25%.	0	
117			>25%.	0	

	A	B	C	D	E
118	OF24	Transport From Upslope	A relatively large proportion of the precipitation that falls farther upslope in the CA reaches this wetland quickly as runoff (surface water), as indicated by the following: (a) input channel is present, (b) input channels have been straightened, (c) upslope wetlands have been ditched extensively, (d) land cover is mostly non-forest, (e) CA slopes are steep, and/or (f) most CA soils are shallow (bedrock near surface) and/or have high runoff coefficients. This statement is:		[NRv, PRv, SRv, WSv]
119			Mostly true.	0	
120			Somewhat true.	0	
121			Mostly untrue.	1	
122	OF25	Aspect	The overland flow direction of most surface water (in streams, rivers, or runoff) that enters the AA is:		[AM, NR, SFS, WC, WS]
123			Northward (N, NE). north-facing contributing area.	0	
124			Southward (S, SW). south-facing contributing area.	1	
125			Other (E, SE, W, NW), or no detectable uphill slope or input channel (flat).	0	
126	OF26	Internal Flow Distance (Path Length)	The horizontal flow distance from the wetland's inlet to outlet is:		Identify inlets and outlets, if any, from topographic maps (use elevations to determine which are inlets and which are outlets) and augment by field inspection. With the Provincial Landscape Viewer, select Nova Scotia Topo as the Basemap. Also enable the layer Forestry>WAM Predicted Flow. Then measure the inlet-outlet distance. [NR, OE, PR, SR, WS]
127			<10 m.	0	
128			10 - 50 m.	0	
129			50 - 100 m.	0	
130			100 - 1000 m.	0	
131			1- 2 km.	0	
132			>2 km, or wetland lacks an inlet and outlet.	1	
133	OF27	Growing Degree Days	In Google Earth, open the KMZ file that accompanies this calculator, called NS_GrowingDegreeDays. Place your cursor over the AA and left-click. From the pop-up window, enter the GRIDCODE number in the next column.	2000	This layer was provided by Dr. Dan McKenney of the Canadian Forest Service [AM, CS, FR, INV, NR, OE, PH, PR, Sens, SR, WBF, WCv, WS]
134	OF28	Fish Access or Use	According to agency biologists and/or your own observations, the AA. [M*ark just the first choice that is true.]* :		Regarding the last choice, if uncertain if an AA is fishless, consider the possibility its waters have been stocked. [AM, FA, FR, INV, WBF, WBN]
135			Is known to support rearing and/or spawning by Atlantic salmon or other anadromous species or eels. Go to Provincial Landscape Viewer>Wildlife>Significant Habitat>Species at Risk. Contact local fishery biologists, review the ACCDC report, and visit these websites: http://www.salmonatlas.com/atlanticsalmon/canada-east/index.1.html http://atlanticsalmonfederation.org/rivers/introduction.html	0	
136			Has not been documented to support Atlantic salmon rearing and/or spawning, but is connected to nearby waters likely to contain Atlantic salmon or other anadromous species or eels and is probably accessed by those during some conditions.	0	
137			Is probably is not accessed by any anadromous fish species but is known or likely to have other fish at least seasonally.	0	
138			Is known or likely to be fishless (e.g., too small, dry, and/or not accessible even temporarily, and not stocked).	1	
139	OF29	Species of Conservation Concern	Within the past 10 years, in the AA (or in its adjoining waters or wetland), qualified observers have documented *[mark all applicable*]:		Request information from ACCDC and/or conduct your own survey at an appropriate season using an approved protocol. For birds, also check eBird.org. NOTE for NS: If your WESP-AC is being completed for a Wetland Alteration Application to NS-ECC, your ACCDC results and any taxon-specific survey results must be submitted along with your WESP-AC results, and application. [AMv, EC, PHv, POLv, SBMv, Sens, WBFv, WBNv]
140			Presence of one or more of the plant species listed in the Plants_Rare worksheet of the accompanying SuppInfo file, or the AA is within a mapped Atlantic Coastal Plain Flora Buffer (go to Provincial Landscape Viewer> Wildlife> Special Management Practice Zones).	0	
141			Presence of one or more of the amphibian or reptile species (AM) of conservation concern as listed in the Wildlife_Rare worksheet of the accompanying SuppInfo file.	0	
142			Presence of one or more of the waterbird species (WBF, WBN) of conservation concern as listed in the Wildlife_Rare worksheet of the accompanying SuppInfo file.	0	
143			Presence of one or more of the nesting songbird or raptor species (SBM) of conservation concern as listed in the Wildlife_Rare worksheet of the accompanying SuppInfo file, during their nesting season (May-July for most species).	0	
144			None of the above, or no data.	1	
145	OF30	Important Bird Area (IBA)	In Google Earth, open the KMZ file that accompanies this calculator, called IBAs_Canada. The AA is all or part of an officially designated IBA. Enter 1= yes, 0= no.	0	The source of this layer, which should be checked periodically for updates, is: http://www.ibacanada.com/mapviewer.jsp?lang=EN [SBMv, WBFv, WBNv]
146	OF31	Black Duck Nesting Area	In Google Earth, open the KMZ file that accompanies this calculator, called BlackDuck. Adjust its alignment and opacity. Determine the predicted density (pairs per 25 sq. km) of nesting American Black Duck in the AA's vicinity: <10 (enter 0), 10-20 (enter 1), 20-30 (enter 2), >30 (enter 3). If outside of region shown in map, change to blank.	0	This was provided by Dr. David Leske. [WBNv]
147	OF32	Wintering Deer or Moose Concentration Areas	If AA is on private land with no information, change to blank (not 0). Otherwise: With the Provincial Landscape Viewer, for Wintering Moose, go to Wildlife> Significant Habitat. For Mainland Moose Concentration Areas, go to Wildlife> Special Management Practice Zones. Enter: yes= 1, no= 0.	0	[SBM]
148	OF33	Other Conservation Designation	The AA is all or part of an area designated by government, First Nations, or the Nature Conservancy of Canada (NCC) for its exceptional ecological features or highly intact natural conditions. With Provincial Landscape Viewer, see Protected Areas. Enter: yes= 1, no= 0. If uncertain, consult NCC and agencies for more recent information.	0	See: https://novascotia.ca/parksandprotectedareas/plan/interactive-map/ [PU]
149	OF34	Conservation Investment	The AA is part of or contiguous to a wetland on which public or private organizational funds were spent to preserve, create, restore, or enhance the wetland (excluding mitigation wetlands). Ask the property owner. Enter: yes= 1, no= 0. If no information, change to blank (not 0).	0	[PU]
150	OF35	Mitigation Investment	The AA is all or part of a mitigation site used explicitly to offset impacts elsewhere. Ask the property owner. Enter: yes= 1, no= 0. If no information, change to blank.	0	[PU]
151	OF36	Sustained Scientific Use	Plants, animals, or water in the AA have been monitored for >2 years, unrelated to any regulatory requirements, and data are available to the public. Or the AA is part of an area that has been designated by an agency or institution as a benchmark, reference, or status-trends monitoring area. Ask the property owner. Enter: yes= 1, no= 0. If no information, change to blank.	0	[PU]
152	OF37	Calcareous Region	The AA is NOT in a subregion that has been heavily exposed to acid precipitation. Enter "1" if true (green or yellow in map in Appendix A of the Manual). Enter "0" if false. If no information, change to blank.		[AM, FA, FR, INV, PH]
153	OF38	Ownership	Select the ONE ownership that covers the most of the AA. In Google Earth, open KMZ file called NS_Crownlands.Use more recent information if available.		"Private lands" may include those owned or leased by non-governmental organizations, e.g., charitable conservation land trusts, DUC, TNC. [PU, STR]
154			New timber harvest, roads, mineral extraction, and intensive summer recreation (e.g., off-road vehicles) are permanently prohibited. Includes many publicly-owned Protected Lands, and private lands under long-term (30+ year) legal agreements to maintain nearly-unaltered conditions.	0	
155			Ownership is public (e.g., municipal, Crown Reservations/Notations) but some or all of the above activities are allowed.	0	
156			Ownership is private but public access is allowed, and/or a shorter-term conservation easement (whether renewable or not) is in place.	0	
157			Ownership is private and owner does not allow access, or access permission unknown, and not a conservation easement.	1	

	A	B	C	D	E
1	Date: 27 July 2021		Site Identifier: WL-8	Investigator: Brady Leights and Kyle d'Entremont	
2	**Form F (Field). Non-tidal Wetland Data Form. WESP-AC version 2 for Nova Scotia.** DIRECTIONS: Walk for no less than 10 minutes from the wetland edge towards its core, in the part of the AA that is proposed for alteration. If no alteration is proposed, walk in a portion that appears to be most representative of the wetland overall. Walk only where it is safe and legal to do so. Conduct the assessment only after reading the accompanying Manual and the Explanations column of the data form. In the Data column, change the 0 (false) to a 1 (true) for the best choice, or for multiple choices where allowed and so indicated. Answer these questions primarily based on your onsite observations and interpretations. Do not write in shaded parts of this data form. Answering some questions accurately may require conferring with the landowner or other knowledgable persons, and/or reviewing aerial imagery. For most wetlands, completing this field data form will require 1-2 hours on a site. For a list of functions to which each question pertains, see the accompanying Interpretations form. For detailed descriptions of each WESP-AC model, see Appendix B of the accompanying Manual. Codes for functions and values are: WS= Water Storage & Delay, SFS= Stream Flow Support, WC= Water Cooling, SR= Sediment Retention & Stabilisation, PR= Phosphorus Retention, NR= Nitrate Removal, CS= Carbon Sequestration, OE= Organic Nutrient Export, INV= Invertebrate Habitat, FA= Anadromous Fish Habitat, FR= Resident Fish Habitat, AM= Amphibian & Reptile Habitat, WBF= Feeding Waterbird Habitat, WBN= Nesting Waterbird Habitat, SBM= Songbird, Raptor, & Mammal Habitat, POL= Pollinator Habitat, PH= Native Plant Habitat, PU= Public Use & Recognition, EC= Ecological Condition, Sen= Wetland Sensitivity, STR= Stressors.		
3	**#**	**Indicators**	**Condition Choices**	**Data**	**Definitions/Explanations**
4	F1	Wetland Type	Follow the key below and mark the ONE row that best describes MOST of the vegetated part of the AA:		Ericaceous shrubs are ones in the heather family (Ericaceae). Most have leathery evergreen leaves. They include rhododendron, azalea, swamp laurel, leatherleaf, Labrador tea, and others. Most require acidic soil. Although not in the family Ericaceae, sweetgale (*Myrica gale*) should be counted also. [AM, CS, FA, FR, INV, NR, OE, PH, Sens, SFS, WBF, WBN]
5			A. Moss and/or lichen cover more than 25% of the ground. Often dominated by ericaceous shrubs (e.g., Labrador tea) or other acid-tolerant plants (e.g., bog cranberry, pitcher plant, sundew, orchids). Substrate is mostly undecomposed peat. Choose between A1 and A2 and mark the choice with a 1 in their adjoining column. Otherwise go to B below.		
6			A1. Surface water is usually absent or, if present, pH is typically <4.5 and conductivity is usually <100 µS/cm (<64 ppm TDS). Trees are absent or nearly so. Sedge cover usually sparse or absent but cottongrass and/or lichen cover may be extensive, as well as cloudberry, lingonberry, sheep laurel, and a sedge (*Carex rariflor* a). Wetland surface and surrounding landscape are seldom sloping and wetland often is domed (convex). Inlet and outlet channels are usually absent. If known, pH of peat is <4.0.	0	
7			A2. Not A1. Surface water, if present, has pH typically >4.5 and conductivity is usually >100 µS/cm (>64 ppm TDS). Sedge cover is usually extensive, and/or tree and tall shrub cover is extensive. Sometimes at toe of slope or edge of water body. An exit channel is usually present. Wetter than A1 and peat depth may be shallower (<2 m).	1	
8			B. Moss and/or lichen cover less than 25% of the ground. Soil is mineral or decomposed organic (muck). Choose between B1 and B2 and mark the choice with a 1 in their adjoining column:		
9			B1. Trees and shrubs taller than 1 m comprise more than 25% of the vegetated cover. Surface water is mostly absent or inundates the vegetation only seasonally (e.g., vernal pools or floodplain).	0	
10			B2. Not B1. Tree & tall shrubs comprise less than than 25% of the vegetated cover. Vegetation is mostly herbaceous, e.g., cattail, bulrush, burreed, pond lily, horsetail. Surface water may be extensive and fluctuates seasonally, being either persistent or drying up partly or entirely.	0	
11			*Reminder : For all questions, the AA should include all persistent waters in ponds smaller than 8 hectares (~283 m on a side) that are adjacent to the AA. The AA should also include part of the water area of adjacent ponded water larger than 8 ha and adjacent rivers wider than 20 m. Specifically, the AA should include the open water part adjacent to wetland vegetation and equal in width to the average width of that vegetated zone. Throughout this data form, " adjacent " is used synonymously with abutting, adjoining, bordering, contiguous -- and means no upland (manmade or natural) completely separates the described features along their directly shared edge. Features joined only by a channel are not necessarily considered to be adjacent -- a large portion of their edges must match. The features do not have to be hydrologically connected in order to be considered adjacent.*		
12	F2	Wetland Types - Adjoining or Subordinate	If the AA is smaller than 1 ha, mark all other types that occupy more than 1% of the vegetated AA. If the AA is larger than 1 ha, mark all other types which are within or adjacent to the AA and occupy more than 1 ha, as visible from the AA or as interpreted from aerial imagery. Do not mark again the type marked in F1.		1 hectare is 10,000 sq. m or about 2.5 acres. It could have dimensions of 100 m by 100 m, 1000 m by 10 m, or similar. [AM, INV, SBM, WBF]
13			A1.	0	
14			A2.	0	
15			B1.	0	
16			B2.	0	
17	F3	Woody Height & Form Diversity	Following EACH row below, indicate with a number code the percentage of the living vegetation in the AA which is occupied by that feature (6 if >95%, 5 if 75-95%, 4 if 50-75%, 3 if 25-50%, 2 if 5-25%, 1 if <5%, 0 if none). If the vegetated part of the AA is largely herbaceous (non-woody) vegetation, these percentages should not sum to 100%.		Deciduous shrubs in this region usually include buttonbush, Labrador tea, bayberry (*Morella*), huckleberry, cranberry, cloudberry, sweetgale, alder, willow, birch, ash, dogwood, and a few others. If you assigned a code of 3 or higher to any of the first four choices and the ground cover beneath the trees/shrubs is <25% moss, then question F1 might be "B1". [CS, INV, NR, PH, POL, SBM, Sens]
18			coniferous trees (may include tamarack) taller than 3 m.	3	
19			deciduous trees taller than 3 m.	1	
20			coniferous or ericaceous shrubs or trees 1-3 m tall not directly below the canopy of trees.	3	
21			deciduous shrubs or trees 1-3 m tall not directly below the canopy of trees.	3	
22			coniferous or ericaceous shrubs <1 m tall not directly below the canopy of taller vegetation.	2	
23			deciduous shrubs or trees <1 m tall (e.g., deciduous seedlings) not directly below the canopy of taller vegetation.	2	
24			*Note : If none of top 4 rows in F3 was marked 2 or greater , SKIP to F9 (N fixers).*		
25	F4	Dominance of Most Abundant Shrub Species	Determine which two woody plant species comprise the greatest portion of the low (<3 m) woody cover . Then choose one:		[PH, POL, SBM, Sens]
26			those species together comprise > 50% of such cover.	1	
27			those species together do not comprise > 50% of such cover.	0	
28	F5	Woody Diameter Classes	Mark ALL the types that comprise >5% of the woody canopy cover in the AA or >5% of the wooded areas (if any) along its upland edge (perimeter). The edge should include only the trees whose canopies extend into the AA.		Estimate the diameters at chest height. If small-diameter trees are overtopped (shaded) by larger ones, visualise a "subcanopy" at the average height of the smaller-dbh trees, to serve as a basis for the minimum 5% canopy requirement in this question. The trees and shrubs need not be wetland species. [AM, CS, POL, SBM, Sens, WBN]
29			coniferous, 1-9 cm diameter and >1 m tall.	1	
30			broad-leaved deciduous 1-9 cm diameter and >1 m tall.	1	
31			coniferous, 10-19 cm diameter.	1	
32			broad-leaved deciduous 10-19 cm diameter.	0	
33			coniferous, 20-40 cm diameter.	1	
34			broad-leaved deciduous 20-40 cm diameter.	0	
35			coniferous, >40 cm diameter.	0	
36			broad-leaved deciduous >40 cm diameter.	0	
37	F6	Height Class Interspersion	Follow the key below and mark the ONE row that best describes MOST of the AA:		[AM, INV, NR, PH, SBM, Sens]
38			A. Neither the vegetation taller than 1 m nor the vegetation shorter than that comprise >70% of the vegetated part of the AA. They each comprise 30-70%. Choose between A1 and A2 and mark the choice with a 1 in the adjoining column. Otherwise go to B below.		
39			A1. The two height classes are mostly scattered and intermixed throughout the AA.	0	
40			A2. Not A1. The two height classes are mostly in separate zones or bands, or in proportionately large clumps.	0	
41			B. Either the vegetation shorter than 1 m comprises >70% of the vegetated part of the AA, or the vegetation taller than that does. One size class might even be totally absent. Choose between B1 and B2 and mark the choice with a 1 in the adjoining column:		
42			B1. The less prevalent height class is mostly scattered and intermixed within the prevalent one.	0	
43			B2. Not B1. The less prevalent height class is mostly located apart from the prevalent one, in separate zones or clumps, or is completely absent.	1	
44	F7	Large Snags (Dead Standing Trees)	The number of large snags (diameter >20 cm) in the AA plus adjacent upland area within 10 m of the wetland edge is:		Snags are dead standing trees that often (not always) lack bark and foliage. Include only ones that are at least 2 m tall. [POL, SBM, WBN]
45			None, or fewer than 8/ hectare which exceed this diameter.	0	
46			Several (>8/hectare) and a pond, lake, or slow-flowing water wider than 10 m is within 1 km.	1	

	A	B	C	D	E
47			Several (>8/hectare) but above not true.	0	
48	F8	Downed Wood	The number of downed wood pieces longer than 2 m and with diameter >10 cm, and not persistently submerged, is:		Exclude temporary "burn piles." [AM, INV, POL, SBM]
49			Few or none that meet these criteria.	1	
50			Several (>5 if AA is >5 hectares, less for smaller AAs) meet these criteria.	0	
51	F9	N Fixers	The percentage of the AA's vegetated cover that contains nitrogen-fixing plants (e.g., alder, sweetgale, clover, lupine, alfalfa, other legumes) is:		Do not include N-fixing algae or lichens. [FA, FR, INV, NRv, OE, PH, SBM, Sens]
52			<1% or none.	0	
53			1-25% of the vegetated cover, in the AA or along its water edge (whichever has more).	1	
54			25-50% of the vegetated cover, in the AA or along its water edge (whichever has more).	0	
55			50-75% of the vegetated cover, in the AA or along its water edge (whichever has more).	0	
56			>75% of the vegetated cover, in the AA or along its water edge (whichever has more).	0	
57	F10	Sphagnum Moss Extent	The cover of Sphagnum moss (or any moss that forms a dense cushion many centimeters thick), including the moss obscured by taller sedges and other plants rooted in it, is:		Exclude moss growing on trees and rocks. [CS, PH]
58			<5% of the vegetated part of the AA.	0	
59			5-25% of the vegetated part of the AA.	0	
60			25-50% of the vegetated part of the AA.	0	
61			50-95% of the vegetated part of the AA.	0	
62			>95% of the vegetated part of the AA.	1	
63	F11	% Bare Ground & Thatch	Consider the parts of the AA that lack surface water at the driest time of the growing season. Viewed from directly above the ground layer, the predominant condition in those areas at that time is:		Thatch is dead plant material (stems, leaves) resting on the ground surface. Bare ground that is present under a tree or shrub canopy should be counted. Boulders count as bare ground. Wetlands with mineral soils and that are heavily shaded or are dominated by annual plant species tend to have more extensive areas that are bare during the early growing season. [AM, EC, INV, NR, OE, POL, PR, SBM, Sens]
64			Little or no (<5%) *bare ground* is visible between erect stems or under canopy anywhere in the vegetated AA. Ground is extensively blanketed by dense thatch, moss, lichens, graminoids with great stem densities, or plants with ground-hugging foliage.	1	
65			Slightly bare ground (5-20% bare between plants) is visible in places, but those areas comprise less than 5% of the unflooded parts of the AA.	0	
66			Much bare ground (20-50% bare between plants) is visible in places, and those areas comprise more than 5% of the unflooded parts of the AA.	0	
67			Other conditions.	0	
68			Not applicable. Surface water (either open or obscured by emergent plants) covers all of the AA all the time.	0	
69	F12	Ground Irregularity	Imagine the AA without any living vegetation. Excluding the portion of the AA that is always under water, the number of hummocks, small pits, raised mounds, animal burrows, ruts, gullies, natural levees, microdepressions, and other areas of peat or mineral soil that are raised or depressed >10 cm compared to most of the area within a few meters surrounding them is:		The depressions may be of human or natural origin. [AM, EC, INV, NR, PH, POL, PR, SBM, SR, WS]
70			Few or none (minimal microtopography; <1% of the land has such features, or entire AA is always water-covered).	1	
71			Intermediate.	0	
72			Several (extensive micro-topography).	0	
73	F13	Upland Inclusions	Within the AA, inclusions of upland are:		[AM, NR, SBM]
74			Few or none.	1	
75			Intermediate (1 - 10% of vegetated part of the AA).	0	
76			Many (e.g., wetland-upland "mosaic", >10% of the vegetated AA).	0	
77	F14	Soil Texture	In parts of the AA that lack persistent water, the texture of soil in the uppermost layer is mostly: [*To determine this, use a trowel to check in at least 3 widely spaced locations, and use the soil texture key (in Appendix A of the Manual).]*		[CS, NR, OE, PH, PR, Sens, SFS, WS]
78			Loamy: soils that may contain a little fine grit and do not make a "ribbon" longer than 2 cm when moistened, rolled, squeezed, and extended between thumb and forefinger.	0	
79			Fines: includes silt, clay, silt, soils that make a ribbon longer than 2 cm when moistened, rolled, squeezed, and extended between thumb and forefinger.	0	
80			Deep Peat, to 40 cm depth or greater.	1	
81			Shallow Peat or organic <40 cm deep.	0	
82			Coarse: includes sand, loamy sand, gravel, cobble, soils that do not make a ribbon when moistened, rolled, squeezed, and extended between thumb and forefinger.	0	
83	F15	Shorebird Feeding Habitats	During any 2 consecutive weeks of the growing season, the extent of mudflats, bare unshaded saturated areas not covered by thatch, and unshaded waters shallower than 6 cm is: [Include also any area that is adjacent to the AA.]		This addresses needs of many but not all migratory sandpipers, plovers, and related species. [WBF]
84			None, or <100 sq. m.	1	
85			100-1000 sq. m.	0	
86			1000 – 10,000 sq. m.	0	
87			>10,000 sq. m.	0	
88	F16	Herbaceous % of Vegetated Wetland	In aerial ("ducks eye") view, the maximum annual cover of herbaceous vegetation (all non-woody plants except moss) is:		[AM, WBF, WBN]
89			<5% of the vegetated part of the AA or <0.01 hectare (whichever is less). Mark "1" here and SKIP to F20 (Invasive Plant Cover).	0	
90			5-25% of the vegetated part of the AA.	0	
91			25-50% of the vegetated part of the AA.	0	
92			50-95% of the vegetated part of the AA.	1	
93			>95% of the vegetated part of the AA.	0	
94	F17	Forb Cover	Within parts of the AA having herbaceous cover (excluding SAV), the areal cover of forbs reaches an annual maximum of:		Forbs are flowering plants. Do not include grasses, sedges, cattail, other graminoids, ferns, horsetails, or others that lack showy flowers. [POL]
95			<5% of the herbaceous part of the AA.	1	
96			5-25% of the herbaceous part of the AA.	0	
97			25-50% of the herbaceous part of the AA.	0	
98			50-95% of the herbaceous part of the AA.	0	
99			>95% of the herbaceous part of the AA.	0	
100	F18	Sedge Cover	Sedges (*Carex* spp.) and cottongrass (*Eriophorum* spp.) occupy:		[CS]
101			<5% of the vegetated area, or none.	0	
102			5-50% of the vegetated area.	1	
103			50-95% of the vegetated area.	0	
104			>95% of the vegetated area.	0	
105	F19	Dominance of Most Abundant Herbaceous Species	Determine which two herbaceous species comprise the greatest portion of the herbaceous cover (excluding mosses and floating-leaved aquatic plants). Then choose one of the following:		For this question, include ferns as well as graminoids and forbs. [EC, INV, PH, POL, Sens]
106			those species together comprise > 50% of the areal cover of herbaceous plants at any time during the year.	1	
107			those species together do not comprise > 50% of the areal cover of herbaceous plants at any time during the year.	0	
108	F20	Invasive Plant Cover	How extensive is the cover of invasive plant species in the AA? For species, see Plants_invasive worksheet in the accompanying SuppInfo file.		[EC, PH, POL, Sens]
109			invasive species appear to be absent in the AA, or are present only in trace amount (a few individuals).	1	
110			invasive species are present in more than trace amounts, but comprise <5% of herbaceous cover (or woody cover, if the invasives are woody).	0	
111			invasive species comprise 5-20% of the herb cover (or woody cover, if the invasives are woody).	0	
112			invasive species comprise 20-50% of the herb cover (or woody cover, if the invasives are woody).	0	
113			invasive species comprise >50% of the herb cover (or woody cover, if the invasives are woody).	0	

	A	B	C	D	E
114	F21	Invasive Cover Along Upland Edge	Along the wetland-upland boundary, the percent of the upland edge (within 3 m upslope from the wetland) that is occupied by invasive plant species is:		If a plant cannot be identified to species (e.g., winter conditions) but its genus contains an exotic species, assume the unidentified plant to also be exotic. If vegetation is so senesced that exotic species cannot be identified, answer "none". [PH, STR]
115			none of the upland edge (invasives apparently absent), or AA has no upland edge.	1	
116			some (but <5%) of the upland edge.	0	
117			5-50% of the upland edge.	0	
118			most (>50%) of the upland edge.	0	
119	F22	Fringe Wetland	During most of the year, open water within or adjacent to the vegetated part of the wetland is much wider than the maximum width of the vegetated zone within the wetland. Enter "1" if true, "0" if false.	0	[WBF, WBN, WCv]
120	F23	Lacustrine Wetland	The vegetated part of the AA is within or adjacent to a body of non-tidal standing open water whose size exceeds 8 hectares during most of a normal year.	0	[FR, PR, PU, WBF, WBN]
121	F24	% of AA Without Surface Water	The percentage of the AA that never contains surface water during an average year (that is, except perhaps for a few hours after snowmelt or rainstorms), but which is still a wetland, is:		1 hectare is 10,000 sq. m or about 2.5 acres. It could have dimensions of 100 m by 100 m, 1000 m by 10 m, or similar. [AM, FA, FR, INV, NR, PH, PR, SBM, Sens, SRv, WBF, WBN, WC]
122			<1% . In other words, all or nearly all of the AA is covered by water permanently or at least seasonally.	0	
123			1-25% of the AA, or <1% but >0.01 ha never contains surface water.	0	
124			25-50% of the AA never contains surface water.	0	
125			50-75% of the AA never contains surface water.	1	
126			75-99% of the AA never contains surface water, OR >99% and there is at least one persistently ponded water body larger than 1 ha in the AA.	0	
127			99-100%. AND there is no persistently ponded water body larger than 1 ha within the AA. Enter "1" and SKIP to F42 (Channel Connection).	0	
128	F25	% of AA with Persistent Surface Water	Identify the parts of the AA that still contain surface water (flowing or ponded, open or hidden beneath vegetation) even during the driest times of a normal year, i.e., when the AA's surface water is at its lowest annual level. At that time, the percentage of the AA that still contains surface water is:		If you are unable to determine the condition at the driest time of year, ask the land owner or neighbors about it if possible. Indicators of persistence may include fish, some dragonflies, beaver, and muskrat. [AM, CS, FA, FR, INV, NR, POL, PR, SBM, WBF, WBN]
129			None. The AA dries up completely (no water in channels either) or never has surface water during most years. SKIP to F27.	0	
130			1-20% of the AA.	1	
131			20-50% of the AA.	0	
132			50-95% of the AA.	0	
133			>95% of the AA. True for many fringe wetlands.	0	
134	F26	% of Summertime Water that Is Shaded	At mid-day during the warmest time of year, the area of surface water within the AA that is shaded by vegetation and other features that are within the AA at that time is:		[FA, WC]
135			<5% of the water is shaded, or no surface water is present then.	0	
136			5-25% of the water is shaded.	1	
137			25-50% of the water is shaded.	0	
138			50-75% of the water is shaded.	0	
139			>75% of the water is shaded.	0	
140	F27	% of AA that is Flooded Only Seasonally	The percentage of the AA's area that is between the annual high water and the annual low water (surface water) is:		Flood marks (algal mats, adventitious roots, debris lines, ice scour, etc.) are often evident when not fully inundated. Also, such areas often have a larger proportion of upland and annual (vs. perennial) plant species. In riverine systems, the extent of this zone can be estimated by multiplying by 2 the bankful height and visualising where that would intercept the land along the river. [CS, FA, INV, NR, OE, PH, SR, WBF, WBN, WS]
141			None, or <0.01 hectare and <1% of the AA. SKIP to F29.	0	
142			1-20% of the AA, or <1% but >0.01 ha.	0	
143			20-50% of the AA.	0	
144			50-95% of the AA.	1	
145			>95% of the AA.	0	
146	F28	Annual Water Fluctuation Range	The annual fluctuation in surface water level within most of the parts of the AA that contain surface water at least temporarily is:		Look for flood marks (see above). Because the annual range of water levels is difficult to estimate without multiple visits, consider asking the land owner or neighbors about it. [AM, CS, INV, NR, OE, PH, PR, SR, WBN, WS]
147			<10 cm change (stable or nearly so).	1	
148			10 cm - 50 cm change.	0	
149			0.5 - 1 m change.	0	
150			1-2 m change.	0	
151			>2 m change.	0	
152	Is the AA plus adjacent ponded water smaller than 0.01 hectare (about 10m x 10m, or 1m x 100 m)? If so, enter "1" in column D and SKIP TO F42 (Connection).			0	
153	F29	Predominant Depth Class	During most of the time when surface water is present during the growing season, its depth, averaged over the entire inundated part of the AA, is:		If a boat is unavailable, estimate this by considering wetland size and local topography. Or if timing and safety allow, depths may be measured by drilling through winter ice.This question is asking about the spatial median depth that occurs during most of that time, even if inundation is only seasonal or temporary. If inundation in most but not all of the wetland is brief, the answer will be based on the depth of the most persistently inundated part of the wetland. Include surface water in channels and ditches as well as ponded areas. [CS, FA, FR, INV, OE, PH, PR, Sens, SFS, SR, WBF, WBN, WC]
154			<10 cm deep (but >0).	1	
155			10 - 50 cm deep.	0	
156			0.5 - 1 m deep.	0	
157			1 - 2 m deep.	0	
158			>2 m deep. True for many fringe wetlands.	0	
159	F30	Depth Classes - Evenness of Proportions	When present, surface water in most of the AA usually consists of (select one):		Estimate these proportions by considering the gradient and microtopography of the site. [FR, INV, WBF, WBN]
160			One depth class that comprises >90% of the AA's inundated area (use the classes in the question above).	1	
161			One depth class that comprises 50-90% of the AA's inundated area.	0	
162			Neither of above. There are 3 or more depth classes and none occupy >50%.	0	
163	F31	% of Water That Is Ponded (not Flowing)	During most times when surface water is present, the percentage that is (1) ponded (stagnant, or flows so slowly that fine sediment is not held in suspension) AND (2) is likely to be deeper than 0.5 m in some places, is:		Nearly all wetlands with surface water have some ponded water. [AM, CS, INV, NR, OE, PR, Sens, SR, WBF, WBN, WC, WS]
164			<5% of the water, or it occupies <100 sq.m cumulatively. Nearly all the surface water is flowing. SKIP to F34.	0	
165			5-30% of the water.	0	
166			30-70% of the water.	0	
167			70-95% of the water.	0	
168			>95% of the water.	1	
169	F32	Ponded Open Water - Minimum Size	During most of the growing season, the largest patch of open water that is ponded and is in or bordering the AA is >0.01 hectare (about 10 m by 10 m) and mostly deeper than 0.5 m. If true enter "1" and continue, If false, enter "0" and SKIP to F41 (Floating Algae & Duckweed).	0	Open water is not obscured by vegetation in aerial ("duck's eye") view. It includes vegetation floating on the water surface or entirely submersed beneath it.
170	F33	% of Ponded Water that is Open	In ducks-eye aerial view, the percentage of the ponded water that is open (lacking emergent vegetation during most of the growing season, and unhidden by a forest or shrub canopy) is:		[AM, CS, FA, FR, INV, NR, OE, PR, SR, WBF, WBN, WC]
171			None, or <1% of the AA and largest pool occupies <0.01 hectares. Enter "1" and SKIP to F41 (Floating Algae & Duckweed).	0	
172			1-4% of the ponded water. Enter "1" and SKIP to F41 (Floating Algae & Duckweed).	0	
173			5-30% of the ponded water.	0	
174			30-70% of the ponded water.	0	
175			70-99% of the ponded water.	0	
176			100% of the ponded water.	0	
177	F34	Width of Vegetated Zone within Wetland	At the time during the growing season when the AA's water level is lowest, the average width of vegetated area in the AA that separates adjoining uplands from open water within the AA is:		"Vegetated area" does not include underwater or floating-leaved plants, i.e., aquatic bed. Width may include wooded riparian areas if they have wetland soil or plant indicators. [AM, CS, NR, OE, PH, PR, SBM, Sens, SR, WBN]
178			<1 m.	0	
179			1 - 9 m.	0	
180			10 - 29 m.	0	
181			30 - 49 m.	0	
182			50 - 100 m.	0	
183			> 100 m, or open water is absent at that time.	0	

	A	B	C	D	E
184	F35	Flat Shoreline Extent	During most of the part of the growing season when water is present, the percentage of the AA's **water edge** length that is **nearly flat** (a slope less than about 5% measured within 5 m landward of the water) is:		If several isolated pools are present in early summer, estimate the percent of their collective shorelines that has such a gentle slope. [SR, WBN]
185			<1% of the water edge.	0	
186			1-25% of the water edge.	0	
187			25-50% of the water edge.	0	
188			50-75% of the water edge.	0	
189			>75% of the water edge.	0	
190	F36	Robust Emergents	The percentage **of the emergent vegetation** cover in the AA that is cattail (*Typha* spp.), common reed (*Phragmites*), or tall (>1m) bulrush is:		**Emergent vegetation** is herbaceous plants whose stems are partly above and partly below the water surface during most of the time water is present. [WBN]
191			<1% of the emergent vegetation, or emergent vegetation is absent. SKIP to F38.	0	
192			1-25% of the emergent vegetation.	0	
193			25-75% of the emergent vegetation.	0	
194			>75%, of the emergent vegetation.	0	
195	F37	Interspersion of Emergents & Open Water	During most of the part of the growing season when water is present, the spatial pattern of **emergent** vegetation within the water is mostly:		[AM, FA, FR, INV, NR, OE, PH, PR, SBM, SR, WBF, WBN]
196			Scattered. More than 30% of such vegetation forms small islands or corridors surrounded by water.	0	
197			Intermediate.	0	
198			Clumped. More than 70% of such vegetation is in bands along the wetland perimeter or is clumped at one or a few sides of the surface water area.	0	
199	F38	Persistent Deepwater Area	If the deepest patch of surface water (flowing or ponded) in or directly adjacent to the AA is mostly deeper than 0.5 m for >2 weeks during the growing season, enter "1" and continue. If not, enter "0" and SKIP to F42.(Connection).	0	
200	F39	Non-vegetated Aquatic Cover	During most of the growing season and in waters deeper than 0.5 m, the cover for fish, aquatic invertebrates, and/or amphibians that is provided NOT by living vegetation, but by accumulations of **dead wood and undercut banks** is:		For this question, consider only the wood that is at or above the water surface. Estimates of underwater wood based only on observations from terrestrial viewpoints are unreliable so should not be attempted. [AM, FA, FR, INV]
201			Little or none.	0	
202			Intermediate.	0	
203			Extensive.	0	
204	F40	Isolated Island	The AA contains (or is part of) an island or beaver lodge within a lake, pond, or river, and is isolated from the shore **by water depths** >1 m on all sides during an average June. The island may be solid, or it may be a floating vegetation mat that is sufficiently large and dense to support a waterbird nest.	0	[WBN]
205	F41	Floating Algae & Duckweed	At some time of the year, mats of algae and/or duckweed are likely to cover >50% of the AA's otherwise-unshaded water surface, or blanket >50% of the underwater substrate. If true, enter "1" in next column. If untrue or uncertain, enter "0".	0	[EC, PR, WBF]
206	F42	Channel Connection & Outflow Duration	The most persistent surface water connection (outlet channel or pipe, ditch, or overbank water exchange) between the AA and a downslope stream network is: [Note: If the AA represents only part of a wetland, answer this according to whichever is the **least** permanent surface connection: the one between the AA and the rest of the wetland, or the surface connection between the wetland and the downslope stream network.]		Consider the connection regardless of whether the surface water is frozen. The "downslope stream network" could consist of ditches, rivers, ponds, or lakes which eventually connect to the ocean. If this cannot be determined while visiting the AA, consult topographic maps perhaps by viewing these online with Toporama (http://atlas.nrcan.gc.ca/toporama/en/index.html) [CS, FA, FR, NR, OE, PR, Sens, SFS, SR, WCv, WS]
207			Persistent (surface water flows out for >9 months/year).	0	
208			Seasonal (surface water flows out for 14 days to 9 months/year, not necessarily consecutive).	0	
209			Temporary (surface water flows out for <14 days, not necessarily consecutive).	0	
210			None -- but maps show a stream network downslope from the AA and within a distance that is less than the AA's length. SKIP to F47 (pH Measurement).	0	
211			No surface water flows out of the wetland except possibly during extreme events (<once per 10 years). Or, water flows only into a wetland, ditch, or lake that lacks an outlet. SKIP to F47 (pH Measurement).	1	
212	F43	Outflow Confinement	During major runoff events, in the places where **surface** water exits the AA or connected waters nearby, the water:		"Major runoff events" would include biennial high water caused by storms and/or rapid snowmelt. [CS, NR, OE, PR, Sens, SR, STR, WS]
213			Mostly passes through a pipe, culvert, narrowly breached dike, berm, beaver dam, or other partial obstruction (other than natural topography) that does not appear to drain the wetland artificially during most of the growing season.	0	
214			Leaves through natural exits (channels or diffuse outflow), not mainly through artificial or temporary features.	0	
215			Is exported more quickly than usual due to ditches or pipes within the AA or connected to its outlet, or within 10 m of the AA's edge, which drain the wetland artificially, or water is pumped out of the AA.	0	
216	F44	Tributary Channel	At least once annually, surface water from a tributary channel that is >100 m long moves into the AA. Or, surface water from a larger permanent water body adjacent to the AA spills into the AA. If it enters only via a pipe, that pipe must be fed by a mapped stream or lake further upslope. If no, SKIP to F47 (pH Measurement).	0	If inlet tributaries cannot be searched for due to inaccessibility of part of the AA, follow suggestions in F42 above. [NRv, PH, PRv, SRv]
217	F45	**Input** Water Temperature	Based on lack of shade, water source characteristics, or actual temperature measurements, the inflow is likely to be warmer than surface water in the AA during part of most years. Enter 1= yes, 0= no.	0	[WCv]
218	F46	Throughflow Resistance	During its travel through the AA at the time of peak annual flow, water arriving in channels: [select only the ONE encountered by **most** of the incoming water].		[FA, FR, INV, NR, OE, PR, SR, WS]
219			Does not bump into many plant stems as it travels through the AA. Nearly all the water continues to travel in unvegetated (often incised) channels that have minimal contact with wetland vegetation, or through a zone of open water such as an instream pond or lake.	0	
220			Bumps into **herbaceous** vegetation but mostly remains in fairly straight channels.	0	
221			Bumps into **herbaceous** vegetation and mostly spreads throughout, or is in widely meandering, multi-branched, or braided channels.	0	
222			Bumps into **tree trunks and/or shrub stems** but mostly remains in fairly straight channels.	0	
223			Bumps into tree trunks and/or shrub stems and follows a fairly **indirect** path from entrance to exit (meandering, multi-branched, or braided).	0	
224	F47	pH Measurement	The pH in most of the AA's surface water:		Preferably, measure this in larger areas of ponded surface water within the AA, or in streams that have passed through (not along) most of the AA. Unless surface water is completely absent, do not dig holes or make depressions in peat in order to provide water for this measurement. Avoid measuring near roads or in puddles formed only by recent rain. [AM, FA, FR, NR, WBF, PH, PR, Sens, WBF, WBN]
225			Was measured, and is: [*enter the reading in the column to the right.*]		
226			Was not measured but surface water is present and is darkly tea-coloured. Or if no surface water, then mosses and plants that indicate peatland (e.g., Labrador tea) are prevalent. Enter "1".	0	
227			Neither of above. Enter "1".	1	
228	F48	TDS and/or Conductivity	The TDS (total dissolved solids) or conductivity off the AA's surface water is: (select the first true row with information):		See above for measurement guidance. [FR, INV, NRv, PH, PRv, Sens]
229			TDS is: [*Enter the reading* ***in ppm or mg/L*** *in the column to the right, if measured, or answer next row.*]		
230			Conductivity is [*Enter the reading* ***in µS/cm*** *in the column to the right.*]		
231			Was not measured, but plants that indicate saline conditions cover much of the vegetated AA. Enter "1".	0	
232			Neither of above	1	
233	F49	Beaver Probability	Use of the AA by beaver during the past 5 years is (select most applicable ONE):		[FA, FR, PH, SBM, Sens, WBF, WBN]
234			**Evident** from direct observation or presence of gnawed limbs, dams, tracks, dens, lodges, or extensive stands of water-killed trees (snags).	0	
235			**Likely** based on known occurrence in the region and proximity to suitable habitat, which may include: (a) a persistent freshwater wetland, pond, or lake, or a perennial low or mid-gradient (<10%) channel, and (b) a corridor or multiple stands of hardwood trees and shrubs in vegetated areas near surface water.	0	
236			Unlikely because site characteristics above are deficient, and/or this is a settled area or other area where beaver are routinely removed.	1	
237	F50	Groundwater Strength of Evidence	Select first applicable choice:		Adhere to these criteria strictly -- do not use personal judgment based on fen conditions, pH, or other evidence. Consult topographic maps to detect breaks in slope described here. Rust deposits associated with groundwater seeps may be most noticeable as orange discoloration in ice formations along streams during early winter. [AM, CS, FA, FR, INV, NR, OE, PH, PRv, SFS, WC, WS]
238			Springs are known to be present within the AA, or if groundwater levels have been monitored, that has demonstrated that groundwater primarily discharges to the wetland for longer periods during the year than periods when the wetland recharges the groundwater.	0	

	A	B	C	D	E
239			Most of the AA has a slope of >5%, or is very close to the base of a natural slope longer than 100 and much steeper than the slope of the AA, AND the pH of surface water, if known, is >5.5.	0	
240			Neither of above is true, although some groundwater may discharge to or flow through the AA. Or groundwater influx is unknown.	1	
241	F51	Internal Gradient	The gradient along most of the flow path **within** the AA is:		This is not the same as the shoreline slope. It is the elevational difference between the AA's inlet and outlet, divided by the flow-distance between them and converted to percent. If available, use a clinometer to measure this. Free clinometer apps can be downloaded to smartphones. If the wetland is large (longer than ~1 km), this may be estimated using Google Earth to determine the minimum and maximum elevation within the AA, then dividing by length and multiplying by 100. [CS, NR, OE, PR, SR, WBF, WBN, WS]
242			<2% **or** the AA has no surface water outlet (not even seasonally).	1	
243			2-5%.	0	
244			6-10%.	0	
245			>10%.	0	
246	Note for the next three questions: If the AA lacks an upland edge, evaluate based on the AA's entire perimeter, and moving outward into whatever areas are adjacent. In many situations, these questions are best answered by measuring from aerial images.				
247	F52	Vegetated Buffer as % of Perimeter	Within a zone extending 30 m laterally from the AA's edge with upland and/or other wetlands, the percentage that contains **perennial vegetation cover** (except lawns, row crops, heavily grazed land, conifer plantations) is:		[AM, FA, FR, INV, NRv, PH, POL, PRv, SBM, Sens, SRv, STR, WBN]
248			<5%.	0	
249			5 to 30%.	0	
250			30 to 60%.	0	
251			60 to 90%.	0	
252			>90%, or all the area within 30 m of the AA edge is other wetlands. **SKIP to F55.**	1	
253	F53	Type of Cover in Buffer	Within 30 m upslope of where the wetland transitions to upland, the upland land cover that is NOT perennial vegetation is mostly (mark ONE):		[AM, FA, INV, NRv, PH, POL, SBM, STR, WBN]
254			Impervious surface, e.g., paved road, parking lot, building, exposed rock.	0	
255			Bare or nearly bare pervious surface or managed vegetation, e.g., lawn, row crops, unpaved road, dike, landslide.	0	
256	F54	Buffer Slope	The steepest and/or most disturbed part of the upland area that is within 30 m of the wetland and occupies >10% of that upland area has a percent slope of:		[NRv, PRv, Sens, SRv]
257			<1% (flat -- almost no noticeable slope) or all the area within 30 m of the AA edge is other wetlands.	0	
258			2-5%.	0	
259			5-30%.	0	
260			>30%.	0	
261	F55	Cliffs or Steep Banks	In the AA or within 100 m, there are elevated terrestrial features such as cliffs, talus slopes, stream banks, or excavated pits (but not riprap) that extend at least 2 m nearly vertically, are unvegetated, and potentially contain crevices or other substrate suitable for nesting or den areas. Enter 1 (yes) or 0 (no).	0	Do not include upturned trees as potential den sites. [POL, SBM]
262	F56	New or Expanded Wetland	**Human** actions within or adjacent to the AA have persistently expanded a naturally occurring wetland or created a wetland where there previously was none (e.g., by excavation, impoundment):		Determine this using historical aerial photography, old maps, soil maps, or permit files as available [CS, NR, OE, PH, Sens]
263			No.	0	
264			Yes, and created or expanded 20 - 100 years ago.	0	
265			Yes, and created or expanded 3-20 years ago.	0	
266			Yes, and created or expanded within last 3 years.	0	
267			Yes, but time of origin or expansion unknown.	0	
268			Unknown if new or expanded within 20 years or not.	1	
269	F57	Burn History	More than 1% of the AA's previously vegetated area:		Look for charred soil or stumps (in multiple widely-spaced locations) or ask landowner. [CS, PH, STR]
270			Burned within past 5 years.	0	
271			Burned 6-10 years ago.	0	
272			Burned 11-30 years ago.	0	
273			Burned >30 years ago, or no evidence of a burn and no data.	1	
274	F58	Visibility	The maximum percentage of the wetland that is visible from the best vantage point on public roads, public parking lots, public buildings, or public maintained trails that intersect, adjoin, or are within 100 m of the AA (select one) is:		[PU, STR, WBFv]
275			<25%.	1	
276			25-50%.	0	
277			>50%.	0	
278	F59	Non-consumptive Uses - Actual or Potential	Assuming access permission was granted, select **ALL** statements that are true of the AA as it currently exists:		[PU, STR]
279			For an average person, walking is physically possible in (not just near) >5% of the AA during most of the growing season, e.g., free of deep water and dense shrub thickets.	1	
280			Maintained roads, parking areas, or foot-trails are within 10 m of the AA, or the AA can be accessed part of the year by boats arriving via contiguous waters.	0	
281			Within or near the AA, there is an interpretive center, trails with interpretive signs or brochures, and/or regular guided interpretive tours.	0	
282	F60	Unvisited Core Area	The percentage of the AA almost never visited by humans during an average growing season probably comprises: *[Note: Only include the part actually walked or driven (not simply viewed from) with a vehicle or boat. Do not include visitors on trails outside of the AA unless more than half the wetland is visible from the trails and they are within 30 m of the wetland edge. In that case include only the area occupied by the trail.]*		[AM, FAv, FRv, PH, PU, SBM, STR, WBF, WBN]
283			<5% and no inhabited building is within 100 m of the AA.	0	
284			<5% and inhabited building is within 100 m of the AA.	0	
285			5-50% and no inhabited building is within 100 m of the AA.	0	
286			5-50% and inhabited building is within 100 m of the AA.	0	
287			50-95%, with or without inhabited building nearby.	0	
288			>95% of the AA with or without inhabited building nearby.	1	
289	F61	Frequently Visited Area	The part of the AA visited by humans almost daily for several weeks during an average growing season probably comprises: *[See note above.]*		[AM, PH, PU, SBM, STR, WBF, WBN]
290			<5%. If F60 was answered ">95%" (mostly never visited), **SKIP to F64.**	1	
291			5-50%.	0	
292			50-95%.	0	
293			>95% of the AA.	0	
294	F62	BMP - Soils	Boardwalks, paved trails, fences or other infrastructure and/or well-enforced regulations appear to effectively prevent visitors from walking on soil within nearly all of the AA when the soil is unfrozen. Enter "1" if true.	0	[PH, PU]
295	F63	BMP - Wildlife Protection	Fences, observation blinds, platforms, paved trails, exclusion periods, and/or well-enforced prohibitions on motorised boats, off-leash pets, and off road vehicles appear to effectively exclude or divert visitors and their pets from the AA at critical times in order to minimize disturbance of wildlife (except during hunting seasons). Enter "1" if true.	0	[AM, PU, WBF, WBN]
296	F64	Consumptive Uses (Provisioning Services)	Recent evidence was found within the AA of the following potentially-sustainable consumptive uses. Select ALL that apply.		[FAv, FRv, WBFv]
297			Low-impact commercial timber harvest (e.g., selective thinning).	0	
298			Commercial or traditional-use harvesting of native plants, their fruits, or mushrooms.	0	
299			Waterfowl hunting.	0	
300			Fishing.	0	
301			Trapping of furbearers.	0	
302			None of the above.	1	
303	F65	Domestic Wells	The closest wells or water bodies that currently provide drinking water are:		[NRv]
304			Within 0-100 m. of the AA.	0	

	A	B	C	D	E
305			100-500 m. away.	0	
306			>500 m. away, or no information.	1	
307	F66	Calcareous Fen	The AA is, or is part of, a calcareous fen. See the Plants_Calcar worksheet in the accompanying SuppInfo file for list of plant indicators (calciphiles). Enter 1 If more than two Strong or more than five Moderate calciphile species are present; otherwise enter 0, but if not able to identify those **and** no information, change to **blank**.	0	[PH, PR]
308					

Investigator: Brady Leights and Kyle d'Entremont	**Site Identifier: WL-8**	**Date: 27 July 2021**

Stressor (S) Data Form for Non-Tidal Wetlands. WESP-AC for Nova Scotia version 2.

		Data
S1	**Aberrant Timing of Water Inputs**	
	In the last column, place a check mark next to any item that is likely to have caused the timing of water inputs (but not necessarily their volume) to shift by hours, days, or weeks, becoming either more muted (smaller or less frequent peaks spread over longer times, more temporal homogeneity of flow or water levels) or more flashy (larger or more frequent spikes but over shorter times). [FA, FR, INV, PH, STR]	
	Stormwater from impervious surfaces that drains directly to the wetland.	
	Water subsidies from wastewater effluent, septic system leakage, snow storage areas, or irrigation.	
	Regular removal of surface or groundwater for irrigation or other consumptive use.	
	Flow regulation in tributaries or water level regulation in adjoining water body, or other control structure at water entry points that regulates inflow to the wetland.	
	A dam, dike, levee, weir, berm, or fill -- within or downgradient from the wetland -- that interferes with surface or subsurface flow in/out of the AA (e.g., road fill, wellpads, pipelines).	
	Excavation within the wetland, e.g., dugout, artificial pond, dead-end ditch.	
	Artificial drains or ditches in or near the wetland.	1
	Accelerated downcutting or channelization of an adjacent or internal channel (incised below the historical water table level).	
	Logging within the wetland.	
	Subsidence or compaction of the wetland's substrate as a result of machinery, livestock, fire, drainage, or off road vehicles.	
	Straightening, ditching, dredging, and/or lining of tributary channels.	
	If any items were checked above, then for each row of the table below, assign points. However, if you believe the checked items had no measurable effect on the timing of water conditions in any part of the AA, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.	

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Spatial extent of timing shift within the wetland:	>95% of wetland.	5-95% of wetland.	<5% of wetland.	1
When most of the timing shift began:	<3 yrs ago.	3-9 yrs ago.	10-100 yrs ago.	2
Score the following 2 rows only if the altered inputs began within past 10 years, and only for the part of the wetland that experiences those.				
Input timing now vs. previously:	Shift of weeks.	Shift of days.	Shift of hours or minutes.	1
Flashiness or muting:	Became very flashy or controlled.	Intermediate.	Became mildly flashy or controlled.	1
			Sum=	5
			Stressor subscore=	0.42

		Data
S2	**Accelerated Inputs of Contaminants and/or Salts**	
	In the last column, place a check mark next to any item -- occurring in either the wetland or its CA -- that is likely to have accelerated the inputs of contaminants or salts to the AA. [AM, FA, PH, POL, STR]	
	Stormwater or wastewater effluent (including failing septic systems), landfills, industrial facilities.	
	Metals & chemical wastes from mining, shooting ranges, snow storage areas, oil/ gas extraction, other sources (download many locations from National Pollutant Release Inventory and view KMZ overlay in Google Earth. https://www.ec.gc.ca/inrp-npri/default.asp?lang=En&n=B85A1846-1	
	Road salt.	
	Spraying of pesticides, as applied to lawns, croplands, roadsides, or other areas in the CA.	
	If any items were checked above, then for each row of the table below, assign points. However, if you believe the checked items did not cumulatively expose the AA to significantly higher levels of contaminants and/or salts, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.	

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Usual toxicity of most toxic contaminants:	Industrial effluent, mining waste, unmanaged landfill.	Cropland, managed landfill, pipeline or transmission rights-of-way.	Low density residential.	0
Frequency & duration of input:	Frequent and year-round.	Frequent but mostly seasonal.	Infrequent & during high runoff events mainly.	0
AA proximity to main sources (actual or potential):	0 - 15 m.	15-100 m. or in groundwater.	In more distant part of contributing area.	0
			Sum=	0
			Stressor subscore=	0.00

		Data
S3	**Accelerated Inputs of Nutrients**	
	In the last column, place a check mark next to any item -- occurring in either the wetland or its CA -- that is likely to have accelerated the inputs of nutrients to the wetland. [NRv, PRv, STR]	
	Stormwater or wastewater effluent (including failing septic systems), landfills.	
	Fertilizers applied to lawns, ag lands, or other areas in the CA.	
	Livestock, dogs.	
	Artificial drainage of upslope lands.	
	If any items were checked above, then for each row of the table below, assign points. However, if you believe the checked items did not cumulatively expose the AA to significantly more nutrients, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.	

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Type of loading:	High density of unmaintained septic, some types of industrial sources.	Moderate density septic, cropland, secondary wastewater treatment plant.	Livestock, pets, low density residential.	0
Frequency & duration of input:	Frequent and year-round.	Frequent but mostly seasonal.	Infrequent & during high runoff events mainly.	0
AA proximity to main sources (actual or potential):	0 - 15 m.	15-100 m. or in groundwater.	In more distant part of contributing area.	0
			Sum=	0
			Stressor subscore=	0.00

		Data
S4	**Excessive Sediment Loading *from Contributing Area***	
	In the last column, place a check mark next to any item present in the CA that is likely to have elevated the load of waterborne or windborne sediment reaching the wetland from its CA. [FA, FR, INV, PH, SRv, STR]	
	Erosion from plowed fields, fill, timber harvest, dirt roads, vegetation clearing, fires.	
	Erosion from construction, in-channel machinery in the CA.	
	Erosion from off-road vehicles in the CA.	
	Erosion from livestock or foot traffic in the CA.	
	Stormwater or wastewater effluent.	
	Sediment from road sanding, gravel mining, other mining, oil/ gas extraction.	
	Accelerated channel downcutting or headcutting of tributaries due to altered land use.	
	Other human-related disturbances within the CA.	
	If any items were checked above, then for each row of the table below, assign points (3, 2, or 1 as shown in header) in the last column. However, if you believe the checked items did not cumulatively add significantly more sediment or suspended solids to the AA, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.	

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Erosion in CA:	Extensive evidence, high intensity.*	Potentially (based on high-intensity* land use) or scattered evidence.	Potentially (based on low-intensity* land use) with little or no direct evidence.	0
Recentness of significant soil disturbance in the CA:	Current & ongoing.	1-12 months ago.	>1 yr ago.	0

	Duration of sediment inputs to the wetland:	Frequent and year-round.	Frequent but mostly seasonal.	Infrequent & during high runoff events mainly.	0
	AA proximity to actual or potential sources:	0 - 15 m.	15-100 m.	In more distant part of contributing area.	0
	* high-intensity= extensive off-road vehicle use, plowing, grading, excavation, erosion with or without veg removal; low-intensity= veg removal only with little or no apparent erosion or disturbance of soil or sediment.			Sum=	0
				Stressor subscore=	0.00
S5	**Soil or Sediment Alteration *Within the Assessment Area***				
	In the last column, place a check mark next to any item present in the wetland that is likely to have compacted, eroded, or otherwise altered the wetland's soil. Consider only items occurring within past 100 years or since wetland was created or restored (whichever is less). [CS, INV, NR, PH, SR, STR]				
	Compaction from machinery, off-road vehicles, livestock, or mountain bikes, especially during wetter periods.				
	Leveling or other grading not to the natural contour.				
	Tillage, plowing (but excluding disking for enhancement of native plants).				
	Fill or riprap, excluding small amounts of upland soils containing organic amendments (compost, etc.) or small amounts of topsoil imported from another wetland.				
	Excavation.				
	Ditch cleaning or dredging in or adjacent to the wetland.				
	Boat traffic in or adjacent to the wetland and sufficient to cause shore erosion or stir bottom sediments.				
	Artificial water level or flow manipulations sufficient to cause erosion or stir bottom sediments.				
	If any items were checked above, then for each row of the table below, assign points. However, if you believe the checked items did not measurably alter the soil structure and/or topography, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.				
		Severe (3 points)	Medium (2 points)	Mild (1 point)	
	Spatial extent of altered soil:	>95% of wetland or >95% of its upland edge (if any).	5-95% of wetland or 5-95% of its upland edge (if any).	<5% of wetland and <5% of its upland edge (if any).	0
	Recentness of significant soil alteration in wetland:	Current & ongoing.	1-12 months ago.	>1 yr ago.	0
	Duration:	Long-lasting, minimal veg recovery.	Long-lasting but mostly revegetated.	Short-term, revegetated, not intense.	0
	Timing of soil alteration:	Frequent and year-round.	Frequent but mostly seasonal.	Mainly during one-time or scattered events.	0
				Sum=	0
				Stressor subscore=	0.00

Assessment Area (AA) Results:

Wetland ID: Uniacke Quarry Wetland 8

Date: 27 July 2021

Observer: Brady Leights and Kyle d'Entremont

Latitude & Longitude (decimal degrees): 44.915128, -63.810765

Scores will appear below after data are entered in worksheets OF, F, and S. See Manual for definitions and descriptions of how scores were computed.

Wetland Functions or Other Attributes:	Function Score (Normalised)	Function Rating	Benefits Score (Normalised)	Benefits Rating	Function Score (raw)	Benefits Score (raw)
Water Storage & Delay (WS)	7.46	Moderate	4.91	Moderate	7.51	2.18
Stream Flow Support (SFS)	0.00	Lower	0.00	Lower	0.00	0.00
Water Cooling (WC)	2.13	Moderate	0.00	Lower	1.42	0.00
Sediment Retention & Stabilisation (SR)	10.00	Higher	1.13	Moderate	10.00	0.56
Phosphorus Retention (PR)	10.00	Higher	1.29	Moderate	10.00	1.00
Nitrate Removal & Retention (NR)	10.00	Higher	3.33	Lower	10.00	3.33
Carbon Sequestration (CS)	5.52	Moderate			7.81	
Organic Nutrient Export (OE)	6.08	Moderate			3.98	
Anadromous Fish Habitat (FA)	0.00	Lower	0.00	Lower	0.00	0.00
Resident Fish Habitat (FR)	0.00	Lower	0.00	Lower	0.00	0.00
Aquatic Invertebrate Habitat (INV)	1.99	Lower	4.85	Moderate	4.30	3.86
Amphibian & Turtle Habitat (AM)	6.28	Moderate	4.76	Moderate	6.42	5.68
Waterbird Feeding Habitat (WBF)	5.79	Moderate	5.00	Moderate	4.41	5.00
Waterbird Nesting Habitat (WBN)	6.45	Moderate	5.00	Higher	4.68	5.00
Songbird, Raptor, & Mammal Habitat (SBM)	8.78	Higher	5.00	Moderate	7.64	5.00
Pollinator Habitat (POL)	7.87	Moderate	3.33	Moderate	6.52	3.33
Native Plant Habitat (PH)	4.76	Moderate	5.83	Moderate	5.80	5.83
Public Use & Recognition (PU)			1.82	Moderate		1.54
Wetland Sensitivity (Sens)			7.96	Higher		4.44
Wetland Ecological Condition (EC)			3.04	Lower		6.67
Wetland Stressors (STR) (higher score means more stress)			6.38	Higher		3.25
Summary Ratings for Grouped Functions:						
HYDROLOGIC Group (WS)	7.46	Moderate	4.91	Moderate	7.51	2.18
WATER QUALITY SUPPORT Group (max+avg/2 of SR, PR, NR, CS)	9.44	Higher	2.63	Lower	9.73	2.48
AQUATIC SUPPORT Group (max+avg/2 of SFS, INV, OE, WC)	4.32	Moderate	3.24	Lower	3.36	2.57
AQUATIC HABITAT Group (max+avg/2 of FA, FR, AM, WBF, WBN)	5.08	Moderate	3.98	Moderate	4.76	4.41
TRANSITION HABITAT Group (max+avg/2 of SBM, PH, POL)	7.96	Higher	5.28	Lower	7.15	5.28
WETLAND CONDITION (EC)			3.04	Lower		6.67
WETLAND RISK (average of Sensitivity & Stressors)			7.17	Higher		3.84

NOTE: A score of 0 does not mean the function or benefit is absent from the wetland. It means only that this wetland has a capacity that is equal or less than the lowest-scoring one, for that function or benefit, from among all the NS calibration wetlands that were assessed previously.

NOVA SCOTIA - Functional WSS Interpretation Tool

1. General Description of Tool:

This interpretive tool automatically determines whether the subject wetland will be regulated as a Wetland of Special Significance (WSS). This determination is made based on the WESP-AC functional results, per the Nova Scotia *Wetland Conservation Policy* .

A 'Function-Benefit Product' (FBP) is calculated based upon the Grouped Functions, and has a theoretical maximum of 100. Threshold values for the FBP are applied, in order to categorize the FBP scores into 'Low', 'Moderate' or 'High' scores. Thresholds are determined based upon the statistical distribution of WESP-AC scores compiled from various sites across the Province (N=442). These categories are subsequently used to apply various 'Functional WSS Rules', as described below.

For the purpose of defining and applying the Functional WSS rules, two supergroups are defined based on grouped functions, as follows: **(1) Support Supergroup** - includes Hydrologic, Water Quality Support, and Aquatic Support grouped functions. **(2) Habitat Supergroup** - includes Aquatic Habitat and Transition Habitat grouped functions.

2. Functional WSS Rule Definitions:

Habitat Rule: In consideration of the Habitat Supergroup, the subject wetland is a WSS if either of the following sub-rules are satisfied:

(HAB 1) Two 'High Scores' OR

(HAB 2) One 'High' and one 'Moderate' score

Support Rule: In consideration of the Support Supergroup, the subject wetland is a WSS if either of the following sub-rules are satisfied:

(SUP 1) Three 'High' scores OR

(SUP 2) Two 'High' and one 'Moderate' score

Habitat/Support Hybrid Rule: In consideration of both the Habitat and Support Supergroups, the subject wetland is a WSS if the following is satisfied:

(HYB 1) One 'High' Habitat score **AND** Two or three 'High' Support scores

3. Functional WSS Interpretation Results

Function-Benefit Product (FBP)	FBP SCORE	FBP SCORE CATEGORY
SUPPORT SUPERGROUP - HYDROLOGIC	36.6186582	Moderate
SUPPORT SUPERGROUP - WATER QUALITY SUPPORT	24.78666998	Low
SUPPORT SUPERGROUP - AQUATIC SUPPORT	13.96327111	Low
HABITAT SUPERGROUP - AQUATIC HABITAT	20.19992025	Low
HABITAT SUPERGROUP - TRANSITION HABITAT	41.98302681	Low

3a. Functional WSS Determination: Automatic Method

Habitat Rule Satisfied?	NO
Support Rule Satisfied?	NO
Habitat/Support Hybrid Rule Satisfied?	NO
CONCLUSION:	**Site is not a WSS**

3b. Functional WSS Determination - Manual Method Using Dichotomous Key

1a. (HAB) - One or more 'High' scores for AH or TH.....**2**
2a. (HAB) - Two 'High' scores.....**WSS**
2b. (HAB) - One 'High' score.....**3**
3a. (HAB) - Any combination of 'High' and 'Moderate' scores..... **WSS**
3b. (HAB) - Any combination of 'High' and 'Low' scores.....**4**
4a. (SUP) One or more 'High' Scores for HYD, WQS, or AS.....**5**
5a. (SUP) Two or Three 'High' scores ..... **WSS**
5b. (SUP) One 'High' score **6**
6a. (SUP) Any combo of one 'High', two 'Mod' scores..... **WSS**
6b. (SUP) One 'High', plus any other combo of scores.....**not WSS**
4b. (SUP) Zero 'High' Scores for HYD, WQS, or AS.....**7**
7a. (SUP) Three 'Moderate' scores..... **WSS**
7b. (SUP) Any other combination of scores .....**not WSS**
1b. (HAB) - Zero 'High' Scores for AH or TH.....**8**
8a. (SUP) Three 'High' Scores.....**WSS**
8b. (SUP) Less than three 'High' scores.....**9**
9a. (SUP) Two 'High' and one 'Moderate' score.....**WSS**
9b. (SUP) - Any other combination of scores .....**not WSS**

Cover Page: Basic Description of Assessment	**WESP-AC version 2**
Site Name:	Uniacke Quarry Wetland 9
Investigator Name:	Brady Leights and Tiffany MacAulay
Date of Field Assessment:	27 July, 2021
Nearest Town:	Mount Uniacke, NS
Latitude (decimal degrees):	44.916062
Longitude (decimal degrees):	-63.813515
Is a map based on a formal on-site wetland delineation available?	Yes
Approximate size of the Assessment Area (AA, in hectares):	0.5
AA as percent of entire wetland (approx.). Attach sketch map if AA is smaller than the entire contiguous wetland.	100
What percent (approx.) of the **wetland** were you able to visit?	100
What percent (approx.) of the **AA** were you able to visit?	100
Were you able to ask the site owner/manager about any of the questions?	No
Indicate here if you intentionally surveyed for rare plants, calciphile plants, or rare animals:	Yes
Have you attended a WESP-AC training session? If so, indicate approximate month & year.	September 2021
How many wetlands have you assessed previously using WESP-AC? (approx.)	>100
Comments about the site or this WESP-AC assessment (attach extra page if desired):	

	A	B	C	D	E
1	Date: 27 July, 2021		Site Identifier: WL-9	Investigator: Brady Leights and Tiffany MacAulay	
2	**Form OF (Office). Non-tidal Wetland Data Form. WESP-AC version 2 for Nova Scotia wetlands only.** DIRECTIONS: Conduct an assessment only after reading the accompanying Manual and the Explanations column of the data form. In the Data column, change the 0 (false) to a 1 (true) for the best choice, or for multiple choices where allowed and so indicated. Answering many of the questions below will require using these online map viewers: **Google Earth Pro**: https://www.google.com/earth/download/gep/agree.html **Provincial Landscape Viewer**: https://nsgi.novascotia.ca/plv/ For most wetlands, completing this office data form will require 1-2 hours. For a list of functions to which each question pertains, see bracketed abbreviations in the Definitions/Explanations column. For detailed descriptions of each WESP-AC model, see Appendix B of the accompanying Manual. Codes for functions and values are: WS= Water Storage, SFS= Stream Flow Support, WC= Water Cooling, SR= Sediment Retention & Stabilisation, PR= Phosphorus Retention, NR= Nitrate Removal, CS= Carbon Sequestration, OE= Organic Nutrient Export, INV= Invertebrate Habitat, FA= Anadromous Fish Habitat, FR= Resident Fish Habitat, AM= Amphibian & Reptile Habitat, WBF= Feeding Waterbird Habitat, WBN= Nesting Waterbird Habitat, SBM= Songbird, Raptor, & Mammal Habitat, POL= Pollinator Habitat, PH= Native Plant Habitat, PU= Public Use & Recognition, EC= Ecological Condition, Sen= Wetland Sensitivity, STR= Stressors.			
3	#	Indicators	Condition Choices	Data	Definitions/Explanations
4	OF1	Province	Mark the province in which the AA is located by changing the 0 in the column next to it to a "1". Mark only one.		This determines to which province's calibration wetlands the raw score of any wetland is normalised. In the function and benefits models, it also triggers the automatic exclusion of indicators for which no spatial data exists in a particular province.
5			New Brunswick	0	
6			Nova Scotia	1	
7			Prince Edward Island	0	
8			Newfoundland-Labrador	0	
9	OF2	Ponded Area Within 1 km.	The area of **surface water** ponded during most of the growing season that is both (1) in or adjacent to the AA and (2) within 1 km is:		**"Adjacent"** means not separated from the AA by a wide expanse (>50 m) of upland (including roads >50 m wide). Include ponded areas likely to be hidden by wetland vegetation. If surface water extends beyond 1 km, include only the part within 1 km. Do not include tidal areas. Measure the area from aerial imagery using Google Earth Pro (click on Ruler icon in toolbar, then Polygon in pop-up menu). [PH, SBM, WBN]
10			<0.01 hectare (about 10 m x 10 m).	0	
11			0.01 - 0.1 hectare.	0	
12			0.1 - 1 hectare.	0	
13			1 to 10 hectares.	1	
14			10 to 100 hectares.	0	
15			>100 hectares.	0	
16	OF3	Ponded Water & Wetland Within 1 km.	The area of **wetlands and surface water** ponded during most of the growing season that is both (1) in or adjacent to the AA and (2) within 1 km is:		See definition of adjacent in OF2. If the AA's wetland vegetation extends beyond 1 km, include only the part within 1 km. "Ponded" means not flowing in rivers or streams. [Sens, WBF]
17			<0.01 hectare (about 10 m x 10 m).	0	
18			0.01 - 0.1 hectare.	0	
19			0.1 - 1 hectare.	0	
20			1 to 10 hectares.	0	
21			10 to 100 hectares.	1	
22			>100 hectares.	0	
23	OF4	Size of Largest Nearby Vegetated Tract or Corridor	The largest vegetated patch or corridor that includes the AA's vegetation plus all **adjacent** upland vegetation that is not lawn, row crops, heavily grazed lands, conifer plantation is:		See definition of adjacent in OF2. Use Google Earth Pro's polygon ruler (as described above). Exclude conifer plantations only if it is obvious that trees were planted in rows. [AM, PH, SBM, Sens]
24			<0.01 hectare (about 10 m x 10 m).	0	
25			0.01 - 0.1 hectare.	0	
26			0.1 - 1 hectare.	0	
27			1 to 10 hectares.	0	
28			10 to 100 hectares.	0	
29			100 to 1000 hectares.	0	
30			>1000 hectares. [*This is nearly always the answer in relatively undeveloped landscapes.*]	1	
31	OF5	Distance to Large Vegetated Tract	The minimum distance from the **edge** of the AA to the edge of the closest ***vegetated land*** (but excluding row crops, lawn, conifer plantation) **larger than 375 hectares** (about 2 km on a side), is:		To measure distance, use Google Earth Pro (Ruler > Line tool). The 375-ha criterion is from the Fundy Model Forest Project. [AM, PH, POL, SBM, Sens]
32			<50 m, and not separated from the 375-ha vegetated area by any width of **paved** roads, stretches of open water, row crops, bare ground, lawn, or impervious surface. Or the AA itself contains >375 ha of vegetation. [This is often the answer in relatively undeveloped landscapes.]	1	
33			<50 m, but completely separated from the 375-ha vegetated area by those features, and AA does not contain >375 ha of vegetation.	0	
34			50-500 m, and **not** separated.	0	
35			50-500 m, but separated by those features.	0	
36			0.5 - 5 km, and **not** separated.	0	
37			0.5 - 5 km, but separated by those features.	0	
38			None of the above (the closest patches or corridors which are that large are >5 km away).	0	
39	OF6	Herbaceous Uniqueness	The AA's vegetation cover is >10% herbaceous* but uplands within 5 km have <10% herbaceous cover. If so, enter "3" and continue to OF7. If not, consider: The AA's vegetation cover is >10% herbaceous* but uplands within 1 km have <10% herbaceous cover. If so enter "2" and continue to OF7. If not, consider: The AA's vegetation cover is >10% herbaceous* but uplands within 100 m of the wetland edge have <10% herbaceous cover. If so, enter "1". [* NOTE: Exclude lawns, row crops, heavily grazed lands, forest, shrublands. Include moss as well as grasslike plants in this use of "herbaceous vegetation"]	1	For this question only, consider moss to be herbaceous vegetation. Determine the score by viewing aerial imagery in Google Earth after successively drawing or estimating the boundaries of the buffers of 5 km, 1 km, and 100 m radius focused on the center of the AA. Circles of specified radius can be drawn in Google Earth Pro by clicking on the Ruler icon, then Circle in the pop-up menu. [AMv, PHv, POLv, SBMv, WBFv, WBNv]
40	OF7	Woody Uniqueness	The AA's vegetation cover is >10% woody* but uplands within 5 km have <10% woody cover. If so, enter "3" and continue to OF8. If not, consider: The AA's vegetation is >10% woody* but uplands within 1 km have <10% woody cover. If so enter "2" and continue to OF8. If not, consider: The AA's vegetation is >10% woody* but uplands within 100 m of the wetland edge have <10% woody cover. If so, enter "1" [* NOTE: woody cover = trees & shrubs taller than 1 m.]	0	See above. Do not consider conifer plantations to be forest if it is obvious that trees were planted in rows. [AMv, PHv, POLv, SBMv]
41	OF8	Local Vegetated Cover Percentage	Draw a 5-km radius circle measured from the center of the AA. Ignoring all permanent water in the circle, the percent of the remaining area that is wooded or unmanaged herbaceous vegetation (NOT lawn, row crops, bare or heavily grazed land, clearcuts, or conifer plantations) is:		In Google Earth, draw the 5 km buffer and then estimate land cover percentages, or do GIS analysis of an appropriate land cover layer. [AM, PH, POL, SBM, Sens]
42			<5% of the land.	0	
43			5 to 20% of the land.	0	
44			20 to 60% of the land.	0	
45			60 to 90% of the land.	1	
46			>90% of the land. SKIP to OF10.	0	
47	OF9	Type of Land Cover Alteration	Within the **5-km** radius circle, and ignoring all permanent water, the land area that is bare or non-perennial cover is mostly:		[AM, SBM]
48			Impervious surface, e.g., paved road, parking lot, building, exposed rock.	0	
49			Bare pervious surface, e.g., lawn, recent (<5 yrs ago) clearcut, dirt or gravel road, cropland, landslide, conifer plantation.	1	
50	OF10	Distance by Road to Nearest Population Center	Measured **along** the maintained road nearest the AA, the distance to the nearest **population center** is:		"Population center" means a settled area with more than about 5 regularly- inhabited structures per square kilometer. In Google Earth Pro, click on the Ruler icon, then Path, and draw and measure the route. [FAv, FRv, NRv, PH, PU, SBM, WBFv]
51			<100 m.	0	
52			100 - 500 m.	0	
53			0.5- 1 km.	0	
54			1 - 5 km.	1	
55			>5 km.	0	

	A	B	C	D	E
56	OF11	Distance to Nearest Maintained Road	From the center of the AA, the distance to the nearest maintained public road (dirt or paved) is:		Determine this by viewing aerial imagery in Google Earth Pro and measuring with the Ruler>Line tool. [AM, FAv, FRv, NRv, PH, PU, SBM, STR, WBN]
57			<10 m.	0	
58			10 - 25 m.	0	
59			25 - 50 m.	0	
60			50 - 100 m.	0	
61			100 - 500 m.	0	
62			>500 m.	1	
63	OF12	Wildlife Access	Draw a circle of radius of 5 km from the center of the AA. If mammals and amphibians can move from the center of the AA to ALL other separate wetlands and ponds located within the circle without being forced to cross pavement (any width), lawns, bare ground, and/or marine waters, mark 1= yes can move to all, 0= no. Change to blank if there are no other wetlands within 5 km.	0	Draw the 5 km circle in Google Earth Pro using the Circle tool and search for roads and wetlands within it, being alert for roads hidden under forest canopy. [AM, SBM, STR]
64	OF13	Distance to Ponded Water	The distance from the AA center to the closest (but separate) ponded water body visible in GoogleEarth imagery is:		In Google Earth Pro, zoom in closely to examine the surrounding landscape for ponds, lakes, and wetlands that appear to be permanently flooded. [AM, PH, SBM, Sens, WBF, WBN]
65			<50 m, and not separated by any width of paved roads, stretches of open water, row crops, lawn, bare ground, or impervious surface.	0	
66			<50 m, but completely separated by those features.	0	
67			50-500 m, and not separated.	0	
68			50-500 m, but separated by those features.	0	
69			0.5 - 1 km, and not separated.	1	
70			0.5 - 1 km, but separated by those features.	0	
71			None of the above (the closest patches or corridors that large are >1 km away).	0	
72	OF14	Distance to Large Ponded Water	The distance from the AA center to the closest (but separate) non-tidal body of water that is ponded during most of the year and is larger than 8 hectares during most of a normal year is:		Determine this by viewing aerial imagery in Google Earth. [Sens, WBF, WBN]
73			<100 m.	0	
74			100 m - 1 km.	0	
75			1 -2 km.	0	
76			2-5 km.	1	
77			5-10 km.	0	
78			>10 km.	0	
79	OF15	Tidal Proximity	The distance from the AA edge to the closest tidal water body (regardless of its salinity) is:		In Google Earth, measure the distance to the ocean (including Bay of Fundy) or tidal river, whichever is closer. If you need to see how far upriver a river is tidal, see the KMZ file provided with this calculator for NS (NS Headtide). Points shown in those files are only an approximation, so local information if available may be preferable. [FA, WBF]
80			<100 m.	0	
81			100 m - 1 km.	0	
82			1 - 5 km.	0	
83			5-10 km.	0	
84			10-40 km.	1	
85			>40 km.	0	
86	OF16	Upland Edge Contact	Select one:		[NR, SBM, Sens]
87			The AA has no upland edge (or upland is <1% of perimeter). The AA is entirely surrounded by (& contiguous with) other wetlands or water.	0	
88			1-25% of the AA's perimeter abuts upland (including filled areas). The rest adjoins other wetlands or water that is mostly wider than the AA.	0	
89			25-50% of the AA's perimeter abuts upland. The rest adjoins other wetlands or water that is mostly wider than the AA.	0	
90			50-75% of the AA's perimeter abuts upland. The rest adjoins other wetlands or water that is mostly wider than the AA.	0	
91			More than 75% of the AA's perimeter abuts upland. Any remainder adjoins other wetlands or water that is mostly wider than the AA. This will be true for most assessments done with WESP-AC.	1	
92	OF17	Flood Damage from Non-tidal Waters	Within 5 km downstream or downslope of the AA (select first true choice):		Contact local authories to determine if such maps exist. Where available, LiDAR imagery can provide finer elevational resolution useful for flood modeling. [WSv]
93			Maps show Flood Zone or Flood Risk areas and there appears to be infrastructure vulnerable to river flooding not caused by tidal storm surges.	0	
94			Maps show Flood Zone or Flood Risk areas, but infrastructure is absent or is not vulnerable to floods from a non-tidal river. In some cases levees, upriver dams, or other measures may partly limit damage or risk from smaller events.	0	
95			Maps do not show Flood Zone or Flood Risk areas (or no such mapping has been done locally) and there appears to be infrastructure vulnerable to river flooding unrelated to tidal storm surges.	0	
96			Maps do not show Flood Zone or Flood Risk areas (or no such mapping has been done locally) and there is no infrastructure vulnerable to river flooding unrelated to tidal storm surges.	1	
97	OF18	Relative Elevation in Watershed	In Google Earth, enable the Terrain layer (lower left menu) and open the NS_Watersheds Secondary KMZ file that accompanies this calculator. Then determine the AA's approximate elevation (bottom right, NOT the "eye alt"). Then move cursor around to determine the watershed's maximum and minimum elevation. Divide the AA's elevation by the (max-min).	0.90	[FA, NR, Sens, SFSv, WCv, WSv]
98	OF19	Water Quality Sensitive Watershed or Area	The AA is in a Protected Water Supply area (Designated Water Supply Area, Natural Watershed Municipal Surface Water Supply Area, or Municipal Water Supply Area) according to the provided KMZ overlay ("NS Protected Water Supply Areas"). Enter 1= yes, 0= no.	0	If an ACCDC report is available for this AA, it also may contain such information. [NRv]
99	OF20	Degraded Water Upstream	Sampling indicates a problem with concentrations of metals, hydrocarbons, nutrients, or other substances (excluding bacteria, acidic water, high temperatures) being present at levels harmful to aquatic life or humans, and:		May use existing data, or sample those waters as part of this wetland assessment. "Harmful" should be evaluated with regard to current federal or provincial water quality standards. [AM, FA, FR, NRv, PRv, SRv, STR, WBF, WBN]
100			The condition is present within the AA.	0	
101			The condition is present in waters within 1 km that flow into the AA, but has not been documented in the AA itself.	0	
102			Sampling during both low water periods and times with high runoff (storms, snowmelt) indicates no problems in either the AA or inflowing waters.	0	
103			Data are insufficient (no or inadequate sampling within 1 km, or condition exists only at >1 km upstream). This is the situation for nearly all wetlands in this region.	1	
104	OF21	Degraded Water Downstream	The problem described above is downslope from the AA, and:		May use existing data, or monitor waters as part of this wetland assessment. [NRv, PRv, SRv]
105			The condition is present within 1 km downslope and connected to the AA by a channel.	0	
106			The condition is present within 5 km downslope and connected to the AA by a channel, or within 1 km but not connected to the AA by a channel.	0	
107			Sampling during both low water periods and times with high runoff (storms, snowmelt) indicates no problems in either the AA or inflowing waters.	0	
108			Data are insufficient (no or inadequate sampling within 1 km, or condition exists only at >1 km upstream). This is the situation for nearly all wetlands in this region.	1	
109	OF22	Wetland as a % of Its Contributing Area (Catchment)	From a topographic map and field observations, estimate the approximate boundaries of the catchment (CA) of the entire wetland of which the AA may be only a part. Then adjust those boundaries if necessary based on your field observations of the surrounding terrain, and/or by using procedures described in the Manual. Divide the area of the wetland (not just the AA) by the approximate area of its catchment excluding the area of the wetland itself. When doing the calculation, if ponded water is adjacent to the wetland, include that in the wetland's area. The result is:		Topographic maps may be viewed online at the National Atlas of Canada (Toporama): http://atlas.gc.ca/toporama/en/index.html [NR, PR, Sens, SR, WS]
110			<0.01, or catchment size unknown due to stormwater pipes that collect water from an indeterminate area.	1	
111			0.01 to 0.1.	0	
112			0.1 to 1.	0	
113			>1 (wetland is larger than its catchment (e.g., wetland with flat surrounding terrain and no inlet, or is entirely isolated by dikes, or is a raised bog).	0	
114	OF23	Unvegetated Surface in the Contributing Area	The proportion of the AA's contributing area (measured to no more than 1000 m upslope) that is comprised of buildings, roads, parking lots, other pavement, exposed bedrock, landslides, and other mostly-bare surface is about :		[FA, INV, NRv, PRv, SRv, STR, WCv, WSv]
115			<10%.	1	
116			10 to 25%.	0	
117			>25%.	0	

	A	B	C	D	E
118	OF24	Transport From Upslope	A relatively large proportion of the precipitation that falls farther upslope in the CA reaches this wetland quickly as runoff (surface water), as indicated by the following: (a) input channel is present, (b) input channels have been straightened, (c) upslope wetlands have been ditched extensively, (d) land cover is mostly non-forest, (e) CA slopes are steep, and/or (f) most CA soils are shallow (bedrock near surface) and/or have high runoff coefficients. This statement is:		[NRv, PRv, SRv, WSv]
119			Mostly true.	0	
120			Somewhat true.	0	
121			Mostly untrue.	1	
122	OF25	Aspect	The overland flow direction of most surface water (in streams, rivers, or runoff) that enters the AA is:		[AM, NR, SFS, WC, WS]
123			Northward (N, NE). north-facing contributing area.	0	
124			Southward (S, SW). south-facing contributing area.	1	
125			Other (E, SE, W, NW), or no detectable uphill slope or input channel (flat).	0	
126	OF26	Internal Flow Distance (Path Length)	The horizontal flow distance from the wetland's inlet to outlet is:		Identify inlets and outlets, if any, from topographic maps (use elevations to determine which are inlets and which are outlets) and augment by field inspection. With the Provincial Landscape Viewer, select Nova Scotia Topo as the Basemap. Also enable the layer Forestry>WAM Predicted Flow. Then measure the inlet-outlet distance. [NR, OE, PR, SR, WS]
127			<10 m.	0	
128			10 - 50 m.	0	
129			50 - 100 m.	0	
130			100 - 1000 m.	0	
131			1- 2 km.	0	
132			>2 km, or wetland lacks an inlet and outlet.	1	
133	OF27	Growing Degree Days	In Google Earth, open the KMZ file that accompanies this calculator, called NS_GrowingDegreeDays. Place your cursor over the AA and left-click. From the pop-up window, enter the GRIDCODE number in the next column.	2000	This layer was provided by Dr. Dan McKenney of the Canadian Forest Service [AM, CS, FR, INV, NR, OE, PH, PR, Sens, SR, WBF, WCv, WS]
134	OF28	Fish Access or Use	According to agency biologists and/or your own observations, the AA. [M*ark just the first choice that is true.]* :		Regarding the last choice, if uncertain if an AA is fishless, consider the possibility its waters have been stocked. [AM, FA, FR, INV, WBF, WBN]
135			Is known to support rearing and/or spawning by Atlantic salmon or other anadromous species or eels. Go to Provincial Landscape Viewer>Wildlife>Significant Habitat>Species at Risk. Contact local fishery biologists, review the ACCDC report, and visit these websites: http://www.salmonatlas.com/atlanticsalmon/canada-east/index.1.html http://atlanticsalmonfederation.org/rivers/introduction.html	0	
136			Has not been documented to support Atlantic salmon rearing and/or spawning, but is connected to nearby waters likely to contain Atlantic salmon or other anadromous species or eels and is probably accessed by those during some conditions.	0	
137			Is probably is not accessed by any anadromous fish species but is known or likely to have other fish at least seasonally.	0	
138			Is known or likely to be fishless (e.g., too small, dry, and/or not accessible even temporarily, and not stocked).	1	
139	OF29	Species of Conservation Concern	Within the past 10 years, in the AA (or in its adjoining waters or wetland), qualified observers have documented *[mark all applicable*]:		Request information from ACCDC and/or conduct your own survey at an appropriate season using an approved protocol. For birds, also check eBird.org. NOTE for NS: If your WESP-AC is being completed for a Wetland Alteration Application to NS-ECC, your ACCDC results and any taxon-specific survey results must be submitted along with your WESP-AC results, and application. [AMv, EC, PHv, POLv, SBMv, Sens, WBFv, WBNv]
140			Presence of one or more of the plant species listed in the Plants_Rare worksheet of the accompanying SuppInfo file, or the AA is within a mapped Atlantic Coastal Plain Flora Buffer (go to Provincial Landscape Viewer> Wildlife> Special Management Practice Zones).	0	
141			Presence of one or more of the amphibian or reptile species (AM) of conservation concern as listed in the Wildlife_Rare worksheet of the accompanying SuppInfo file.	0	
142			Presence of one or more of the waterbird species (WBF, WBN) of conservation concern as listed in the Wildlife_Rare worksheet of the accompanying SuppInfo file.	0	
143			Presence of one or more of the nesting songbird or raptor species (SBM) of conservation concern as listed in the Wildlife_Rare worksheet of the accompanying SuppInfo file, during their nesting season (May-July for most species).	0	
144			None of the above, or no data.	1	
145	OF30	Important Bird Area (IBA)	In Google Earth, open the KMZ file that accompanies this calculator, called IBAs_Canada. The AA is all or part of an officially designated IBA. Enter 1= yes, 0= no.	0	The source of this layer, which should be checked periodically for updates, is: http://www.ibacanada.com/mapviewer.jsp?lang=EN [SBMv, WBFv, WBNv]
146	OF31	Black Duck Nesting Area	In Google Earth, open the KMZ file that accompanies this calculator, called BlackDuck. Adjust its alignment and opacity. Determine the predicted density (pairs per 25 sq. km) of nesting American Black Duck in the AA's vicinity: <10 (enter 0), 10-20 (enter 1), 20-30 (enter 2), >30 (enter 3). If outside of region shown in map, change to blank.	0	This was provided by Dr. David Leske. [WBNv]
147	OF32	Wintering Deer or Moose Concentration Areas	If AA is on private land with no information, change to blank (not 0). Otherwise: With the Provincial Landscape Viewer, for Wintering Moose, go to Wildlife> Significant Habitat. For Mainland Moose Concentration Areas, go to Wildlife> Special Management Practice Zones. Enter: yes= 1, no= 0.	0	[SBM]
148	OF33	Other Conservation Designation	The AA is all or part of an area designated by government, First Nations, or the Nature Conservancy of Canada (NCC) for its exceptional ecological features or highly intact natural conditions. With Provincial Landscape Viewer, see Protected Areas. Enter: yes= 1, no= 0. If uncertain, consult NCC and agencies for more recent information.	0	See: https://novascotia.ca/parksandprotectedareas/plan/interactive-map/ [PU]
149	OF34	Conservation Investment	The AA is part of or contiguous to a wetland on which public or private organizational funds were spent to preserve, create, restore, or enhance the wetland (excluding mitigation wetlands). Ask the property owner. Enter: yes= 1, no= 0. If no information, change to blank (not 0).	0	[PU]
150	OF35	Mitigation Investment	The AA is all or part of a mitigation site used explicitly to offset impacts elsewhere. Ask the property owner. Enter: yes= 1, no= 0. If no information, change to blank.	0	[PU]
151	OF36	Sustained Scientific Use	Plants, animals, or water in the AA have been monitored for >2 years, unrelated to any regulatory requirements, and data are available to the public. Or the AA is part of an area that has been designated by an agency or institution as a benchmark, reference, or status-trends monitoring area. Ask the property owner. Enter: yes= 1, no= 0. If no information, change to blank.	0	[PU]
152	OF37	Calcareous Region	The AA is NOT in a subregion that has been heavily exposed to acid precipitation. Enter "1" if true (green or yellow in map in Appendix A of the Manual). Enter "0" if false. If no information, change to blank.		[AM, FA, FR, INV, PH]
153	OF38	Ownership	Select the ONE ownership that covers the most of the AA. In Google Earth, open KMZ file called NS_Crownlands.Use more recent information if available.		"Private lands" may include those owned or leased by non-governmental organizations, e.g., charitable conservation land trusts, DUC, TNC. [PU, STR]
154			New timber harvest, roads, mineral extraction, and intensive summer recreation (e.g., off-road vehicles) are permanently prohibited. Includes many publicly-owned Protected Lands, and private lands under long-term (30+ year) legal agreements to maintain nearly-unaltered conditions.	0	
155			Ownership is public (e.g., municipal, Crown Reservations/Notations) but some or all of the above activities are allowed.	0	
156			Ownership is private but public access is allowed, and/or a shorter-term conservation easement (whether renewable or not) is in place.	0	
157			Ownership is private and owner does not allow access, or access permission unknown, and not a conservation easement.	1	

	A	B	C	D	E
1	Date: 27 July, 2021		Site Identifier: WL-9	Investigator: Brady Leights and Tiffany MacAulay	
2	**Form F (Field). Non-tidal Wetland Data Form. WESP-AC version 2 for Nova Scotia.** DIRECTIONS: Walk for no less than 10 minutes from the wetland edge towards its core, in the part of the AA that is proposed for alteration. If no alteration is proposed, walk in a portion that appears to be most representative of the wetland overall. Walk only where it is safe and legal to do so. Conduct the assessment only after reading the accompanying Manual and the Explanations column of the data form. In the Data column, change the 0 (false) to a 1 (true) for the best choice, or for multiple choices where allowed and so indicated. Answer these questions primarily based on your onsite observations and interpretations. Do not write in shaded parts of this data form. Answering some questions accurately may require conferring with the landowner or other knowledgable persons, and/or reviewing aerial imagery. For most wetlands, completing this field data form will require 1-2 hours on a site. For a list of functions to which each question pertains, see the accompanying Interpretations form. For detailed descriptions of each WESP-AC model, see Appendix B of the accompanying Manual. Codes for functions and values are: WS= Water Storage & Delay, SFS= Stream Flow Support, WC= Water Cooling, SR= Sediment Retention & Stabilisation, PR= Phosphorus Retention, NR= Nitrate Removal, CS= Carbon Sequestration, OE= Organic Nutrient Export, INV= Invertebrate Habitat, FA= Anadromous Fish Habitat, FR= Resident Fish Habitat, AM= Amphibian & Reptile Habitat, WBF= Feeding Waterbird Habitat, WBN= Nesting Waterbird Habitat, SBM= Songbird, Raptor, & Mammal Habitat, POL= Pollinator Habitat, PH= Native Plant Habitat, PU= Public Use & Recognition, EC= Ecological Condition, Sen= Wetland Sensitivity, STR= Stressors.		
3	**#**	**Indicators**	**Condition Choices**	**Data**	**Definitions/Explanations**
4	F1	Wetland Type	Follow the key below and mark the ONE row that best describes MOST of the vegetated part of the AA:		Ericaceous shrubs are ones in the heather family (Ericaceae). Most have leathery evergreen leaves. They include rhododendron, azalea, swamp laurel, leatherleaf, Labrador tea, and others. Most require acidic soil. Although not in the family Ericaceae, sweetgale (*Myrica gale*) should be counted also. [AM, CS, FA, FR, INV, NR, OE, PH, Sens, SFS, WBF, WBN]
5			A. Moss and/or lichen cover more than 25% of the ground. Often dominated by ericaceous shrubs (e.g., Labrador tea) or other acid-tolerant plants (e.g., bog cranberry, pitcher plant, sundew, orchids). Substrate is mostly undecomposed peat. Choose between A1 and A2 and mark the choice with a 1 in their adjoining column. Otherwise go to B below.		
6			A1. Surface water is usually absent or, if present, pH is typically <4.5 and conductivity is usually <100 µS/cm (<64 ppm TDS). Trees are absent or nearly so. Sedge cover usually sparse or absent but cottongrass and/or lichen cover may be extensive, as well as cloudberry, lingonberry, sheep laurel, and a sedge (*Carex rariflor* a). Wetland surface and surrounding landscape are seldom sloping and wetland often is domed (convex). Inlet and outlet channels are usually absent. If known, pH of peat is <4.0.	0	
7			A2. Not A1. Surface water, if present, has pH typically >4.5 and conductivity is usually >100 µS/cm (>64 ppm TDS). Sedge cover is usually extensive, and/or tree and tall shrub cover is extensive. Sometimes at toe of slope or edge of water body. An exit channel is usually present. Wetter than A1 and peat depth may be shallower (<2 m).	1	
8			B. Moss and/or lichen cover less than 25% of the ground. Soil is mineral or decomposed organic (muck). Choose between B1 and B2 and mark the choice with a 1 in their adjoining column:		
9			B1. Trees and shrubs taller than 1 m comprise more than 25% of the vegetated cover. Surface water is mostly absent or inundates the vegetation only seasonally (e.g., vernal pools or floodplain).	0	
10			B2. Not B1. Tree & tall shrubs comprise less than than 25% of the vegetated cover. Vegetation is mostly herbaceous, e.g., cattail, bulrush, burreed, pond lily, horsetail. Surface water may be extensive and fluctuates seasonally, being either persistent or drying up partly or entirely.	0	
11			*Reminder : For all questions, the AA should include all persistent waters in ponds smaller than 8 hectares (~283 m on a side) that are adjacent to the AA. The AA should also include part of the water area of adjacent ponded water larger than 8 ha and adjacent rivers wider than 20 m. Specifically, the AA should include the open water part adjacent to wetland vegetation and equal in width to the average width of that vegetated zone. Throughout this data form, " adjacent " is used synonymously with abutting, adjoining, bordering, contiguous -- and means no upland (manmade or natural) completely separates the described features along their directly shared edge. Features joined only by a channel are not necessarily considered to be adjacent -- a large portion of their edges must match. The features do not have to be hydrologically connected in order to be considered adjacent.*		
12	F2	Wetland Types - Adjoining or Subordinate	If the AA is smaller than 1 ha, mark all other types that occupy more than 1% of the vegetated AA. If the AA is larger than 1 ha, mark all other types which are within or adjacent to the AA and occupy more than 1 ha, as visible from the AA or as interpreted from aerial imagery. Do not mark again the type marked in F1.		1 hectare is 10,000 sq. m or about 2.5 acres. It could have dimensions of 100 m by 100 m, 1000 m by 10 m, or similar. [AM, INV, SBM, WBF]
13			A1.	0	
14			A2.	0	
15			B1.	0	
16			B2.	0	
17	F3	Woody Height & Form Diversity	Following EACH row below, indicate with a number code the percentage of the living vegetation in the AA which is occupied by that feature (6 if >95%, 5 if 75-95%, 4 if 50-75%, 3 if 25-50%, 2 if 5-25%, 1 if <5%, 0 if none). If the vegetated part of the AA is largely herbaceous (non-woody) vegetation, these percentages should not sum to 100%.		Deciduous shrubs in this region usually include buttonbush, Labrador tea, bayberry (*Morella*), huckleberry, cranberry, cloudberry, sweetgale, alder, willow, birch, ash, dogwood, and a few others. If you assigned a code of 3 or higher to any of the first four choices and the ground cover beneath the trees/shrubs is <25% moss, then question F1 might be "B1". [CS, INV, NR, PH, POL, SBM, Sens]
18			coniferous trees (may include tamarack) taller than 3 m.	3	
19			deciduous trees taller than 3 m.	3	
20			coniferous or ericaceous shrubs or trees 1-3 m tall not directly below the canopy of trees.	2	
21			deciduous shrubs or trees 1-3 m tall not directly below the canopy of trees.	2	
22			coniferous or ericaceous shrubs <1 m tall not directly below the canopy of taller vegetation.	2	
23			deciduous shrubs or trees <1 m tall (e.g., deciduous seedlings) not directly below the canopy of taller vegetation.	2	
24			*Note : If none of top 4 rows in F3 was marked 2 or greater , SKIP to F9 (N fixers).*		
25	F4	Dominance of Most Abundant Shrub Species	Determine which two woody plant species comprise the greatest portion of the low (<3 m) woody cover . Then choose one:		[PH, POL, SBM, Sens]
26			those species together comprise > 50% of such cover.	1	
27			those species together do not comprise > 50% of such cover.	0	
28	F5	Woody Diameter Classes	Mark ALL the types that comprise >5% of the woody canopy cover in the AA or >5% of the wooded areas (if any) along its upland edge (perimeter). The edge should include only the trees whose canopies extend into the AA.		Estimate the diameters at chest height. If small-diameter trees are overtopped (shaded) by larger ones, visualise a "subcanopy" at the average height of the smaller-dbh trees, to serve as a basis for the minimum 5% canopy requirement in this question. The trees and shrubs need not be wetland species. [AM, CS, POL, SBM, Sens, WBN]
29			coniferous, 1-9 cm diameter and >1 m tall.	1	
30			broad-leaved deciduous 1-9 cm diameter and >1 m tall.	1	
31			coniferous, 10-19 cm diameter.	1	
32			broad-leaved deciduous 10-19 cm diameter.	1	
33			coniferous, 20-40 cm diameter.	0	
34			broad-leaved deciduous 20-40 cm diameter.	0	
35			coniferous, >40 cm diameter.	0	
36			broad-leaved deciduous >40 cm diameter.	0	
37	F6	Height Class Interspersion	Follow the key below and mark the ONE row that best describes MOST of the AA:		[AM, INV, NR, PH, SBM, Sens]
38			A. Neither the vegetation taller than 1 m nor the vegetation shorter than that comprise >70% of the vegetated part of the AA. They each comprise 30-70%. Choose between A1 and A2 and mark the choice with a 1 in the adjoining column. Otherwise go to B below.		
39			A1. The two height classes are mostly scattered and intermixed throughout the AA.	0	
40			A2. Not A1. The two height classes are mostly in separate zones or bands, or in proportionately large clumps.	0	
41			B. Either the vegetation shorter than 1 m comprises >70% of the vegetated part of the AA, or the vegetation taller than that does. One size class might even be totally absent. Choose between B1 and B2 and mark the choice with a 1 in the adjoining column:		
42			B1. The less prevalent height class is mostly scattered and intermixed within the prevalent one.	1	
43			B2. Not B1. The less prevalent height class is mostly located apart from the prevalent one, in separate zones or clumps, or is completely absent.	0	
44	F7	Large Snags (Dead Standing Trees)	The number of large snags (diameter >20 cm) in the AA plus adjacent upland area within 10 m of the wetland edge is:		Snags are dead standing trees that often (not always) lack bark and foliage. Include only ones that are at least 2 m tall. [POL, SBM, WBN]
45			None, or fewer than 8/ hectare which exceed this diameter.	1	
46			Several (>8/hectare) and a pond, lake, or slow-flowing water wider than 10 m is within 1 km.	0	

	A	B	C	D	E
47			Several (>8/hectare) but above not true.	0	
48	F8	Downed Wood	The number of downed wood pieces longer than 2 m and with diameter >10 cm, and not persistently submerged, is:		Exclude temporary "burn piles." [AM, INV, POL, SBM]
49			Few or none that meet these criteria.	1	
50			Several (>5 if AA is >5 hectares, less for smaller AAs) meet these criteria.	0	
51	F9	N Fixers	The percentage of the AA's vegetated cover that contains nitrogen-fixing plants (e.g., alder, sweetgale, clover, lupine, alfalfa, other legumes) is:		Do not include N-fixing algae or lichens. [FA, FR, INV, NRv, OE, PH, SBM, Sens]
52			<1% or none.	0	
53			1-25% of the vegetated cover, in the AA or along its water edge (whichever has more).	0	
54			25-50% of the vegetated cover, in the AA or along its water edge (whichever has more).	1	
55			50-75% of the vegetated cover, in the AA or along its water edge (whichever has more).	0	
56			>75% of the vegetated cover, in the AA or along its water edge (whichever has more).	0	
57	F10	Sphagnum Moss Extent	The cover of Sphagnum moss (or any moss that forms a dense cushion many centimeters thick), including the moss obscured by taller sedges and other plants rooted in it, is:		Exclude moss growing on trees and rocks. [CS, PH]
58			<5% of the vegetated part of the AA.	0	
59			5-25% of the vegetated part of the AA.	0	
60			25-50% of the vegetated part of the AA.	0	
61			50-95% of the vegetated part of the AA.	1	
62			>95% of the vegetated part of the AA.	0	
63	F11	% Bare Ground & Thatch	Consider the parts of the AA that lack surface water at the driest time of the growing season. Viewed from directly above the ground layer, the predominant condition in those areas at that time is:		Thatch is dead plant material (stems, leaves) resting on the ground surface. Bare ground that is present under a tree or shrub canopy should be counted. Boulders count as bare ground. Wetlands with mineral soils and that are heavily shaded or are dominated by annual plant species tend to have more extensive areas that are bare during the early growing season. [AM, EC, INV, NR, OE, POL, PR, SBM, Sens]
64			Little or no (<5%) *bare ground* is visible between erect stems or under canopy anywhere in the vegetated AA. Ground is extensively blanketed by dense thatch, moss, lichens, graminoids with great stem densities, or plants with ground-hugging foliage.	1	
65			Slightly bare ground (5-20% bare between plants) is visible in places, but those areas comprise less than 5% of the unflooded parts of the AA.	0	
66			Much bare ground (20-50% bare between plants) is visible in places, and those areas comprise more than 5% of the unflooded parts of the AA.	0	
67			Other conditions.	0	
68			Not applicable. Surface water (either open or obscured by emergent plants) covers all of the AA all the time.	0	
69	F12	Ground Irregularity	Imagine the AA without any living vegetation. Excluding the portion of the AA that is always under water, the number of hummocks, small pits, raised mounds, animal burrows, ruts, gullies, natural levees, microdepressions, and other areas of peat or mineral soil that are raised or depressed >10 cm compared to most of the area within a few meters surrounding them is:		The depressions may be of human or natural origin. [AM, EC, INV, NR, PH, POL, PR, SBM, SR, WS]
70			Few or none (minimal microtopography; <1% of the land has such features, or entire AA is always water-covered).	1	
71			Intermediate.	0	
72			Several (extensive micro-topography).	0	
73	F13	Upland Inclusions	Within the AA, inclusions of upland are:		[AM, NR, SBM]
74			Few or none.	1	
75			Intermediate (1 - 10% of vegetated part of the AA).	0	
76			Many (e.g., wetland-upland "mosaic", >10% of the vegetated AA).	0	
77	F14	Soil Texture	In parts of the AA that lack persistent water, the texture of soil in the uppermost layer is mostly: [*To determine this, use a trowel to check in at least 3 widely spaced locations, and use the soil texture key (in Appendix A of the Manual).]*		[CS, NR, OE, PH, PR, Sens, SFS, WS]
78			Loamy: soils that may contain a little fine grit and do not make a "ribbon" longer than 2 cm when moistened, rolled, squeezed, and extended between thumb and forefinger.	0	
79			Fines: includes silt, clay, silt, soils that make a ribbon longer than 2 cm when moistened, rolled, squeezed, and extended between thumb and forefinger.	1	
80			Deep Peat, to 40 cm depth or greater.	0	
81			Shallow Peat or organic <40 cm deep.	0	
82			Coarse: includes sand, loamy sand, gravel, cobble, soils that do not make a ribbon when moistened, rolled, squeezed, and extended between thumb and forefinger.	0	
83	F15	Shorebird Feeding Habitats	During any 2 consecutive weeks of the growing season, the extent of mudflats, bare unshaded saturated areas not covered by thatch, and unshaded waters shallower than 6 cm is: [Include also any area that is adjacent to the AA.]		This addresses needs of many but not all migratory sandpipers, plovers, and related species. [WBF]
84			None, or <100 sq. m.	1	
85			100-1000 sq. m.	0	
86			1000 – 10,000 sq. m.	0	
87			>10,000 sq. m.	0	
88	F16	Herbaceous % of Vegetated Wetland	In aerial ("ducks eye") view, the maximum annual cover of herbaceous vegetation (all non-woody plants except moss) is:		[AM, WBF, WBN]
89			<5% of the vegetated part of the AA or <0.01 hectare (whichever is less). Mark "1" here and SKIP to F20 (Invasive Plant Cover).	0	
90			5-25% of the vegetated part of the AA.	0	
91			25-50% of the vegetated part of the AA.	1	
92			50-95% of the vegetated part of the AA.	0	
93			>95% of the vegetated part of the AA.	0	
94	F17	Forb Cover	Within parts of the AA having herbaceous cover (excluding SAV), the areal cover of forbs reaches an annual maximum of:		Forbs are flowering plants. Do not include grasses, sedges, cattail, other graminoids, ferns, horsetails, or others that lack showy flowers. [POL]
95			<5% of the herbaceous part of the AA.	1	
96			5-25% of the herbaceous part of the AA.	0	
97			25-50% of the herbaceous part of the AA.	0	
98			50-95% of the herbaceous part of the AA.	0	
99			>95% of the herbaceous part of the AA.	0	
100	F18	Sedge Cover	Sedges (*Carex* spp.) and cottongrass (*Eriophorum* spp.) occupy:		[CS]
101			<5% of the vegetated area, or none.	0	
102			5-50% of the vegetated area.	1	
103			50-95% of the vegetated area.	0	
104			>95% of the vegetated area.	0	
105	F19	Dominance of Most Abundant Herbaceous Species	Determine which two herbaceous species comprise the greatest portion of the herbaceous cover (excluding mosses and floating-leaved aquatic plants). Then choose one of the following:		For this question, include ferns as well as graminoids and forbs. [EC, INV, PH, POL, Sens]
106			those species together comprise > 50% of the areal cover of herbaceous plants at any time during the year.	1	
107			those species together do not comprise > 50% of the areal cover of herbaceous plants at any time during the year.	0	
108	F20	Invasive Plant Cover	How extensive is the cover of invasive plant species in the AA? For species, see Plants_invasive worksheet in the accompanying SuppInfo file.		[EC, PH, POL, Sens]
109			invasive species appear to be absent in the AA, or are present only in trace amount (a few individuals).	1	
110			invasive species are present in more than trace amounts, but comprise <5% of herbaceous cover (or woody cover, if the invasives are woody).	0	
111			invasive species comprise 5-20% of the herb cover (or woody cover, if the invasives are woody).	0	
112			invasive species comprise 20-50% of the herb cover (or woody cover, if the invasives are woody).	0	
113			invasive species comprise >50% of the herb cover (or woody cover, if the invasives are woody).	0	

	A	B	C	D	E
114	F21	Invasive Cover Along Upland Edge	Along the wetland-upland boundary, the percent of the upland edge (within 3 m upslope from the wetland) that is occupied by invasive plant species is:		If a plant cannot be identified to species (e.g., winter conditions) but its genus contains an exotic species, assume the unidentified plant to also be exotic. If vegetation is so senesced that exotic species cannot be identified, answer "none". [PH, STR]
115			none of the upland edge (invasives apparently absent), or AA has no upland edge.	1	
116			some (but <5%) of the upland edge.	0	
117			5-50% of the upland edge.	0	
118			most (>50%) of the upland edge.	0	
119	F22	Fringe Wetland	During most of the year, open water within or adjacent to the vegetated part of the wetland is much wider than the maximum width of the vegetated zone within the wetland. Enter "1" if true, "0" if false.	0	[WBF, WBN, WCv]
120	F23	Lacustrine Wetland	The vegetated part of the AA is within or adjacent to a body of non-tidal standing open water whose size exceeds 8 hectares during most of a normal year.	0	[FR, PR, PU, WBF, WBN]
121	F24	% of AA Without Surface Water	The percentage of the AA that never contains surface water during an average year (that is, except perhaps for a few hours after snowmelt or rainstorms), but which is still a wetland, is:		1 hectare is 10,000 sq. m or about 2.5 acres. It could have dimensions of 100 m by 100 m, 1000 m by 10 m, or similar. [AM, FA, FR, INV, NR, PH, PR, SBM, Sens, SRv, WBF, WBN, WC]
122			<1% . In other words, all or nearly all of the AA is covered by water permanently or at least seasonally.	0	
123			1-25% of the AA, or <1% but >0.01 ha never contains surface water.	0	
124			25-50% of the AA never contains surface water.	0	
125			50-75% of the AA never contains surface water.	0	
126			75-99% of the AA never contains surface water, OR >99% and there is at least one persistently ponded water body larger than 1 ha in the AA.	0	
127			99-100%. AND there is no persistently ponded water body larger than 1 ha within the AA. Enter "1" and SKIP to F42 (Channel Connection).	1	
128	F25	% of AA with Persistent Surface Water	Identify the parts of the AA that still contain surface water (flowing or ponded, open or hidden beneath vegetation) even during the driest times of a normal year, i.e., when the AA's surface water is at its lowest annual level. At that time, the percentage of the AA that still contains surface water is:		If you are unable to determine the condition at the driest time of year, ask the land owner or neighbors about it if possible. Indicators of persistence may include fish, some dragonflies, beaver, and muskrat. [AM, CS, FA, FR, INV, NR, POL, PR, SBM, WBF, WBN]
129			None. The AA dries up completely (no water in channels either) or never has surface water during most years. SKIP to F27.	0	
130			1-20% of the AA.	0	
131			20-50% of the AA.	0	
132			50-95% of the AA.	0	
133			>95% of the AA. True for many fringe wetlands.	0	
134	F26	% of Summertime Water that Is Shaded	At mid-day during the warmest time of year, the area of surface water within the AA that is shaded by vegetation and other features that are within the AA at that time is:		[FA, WC]
135			<5% of the water is shaded, or no surface water is present then.	0	
136			5-25% of the water is shaded.	0	
137			25-50% of the water is shaded.	0	
138			50-75% of the water is shaded.	0	
139			>75% of the water is shaded.	0	
140	F27	% of AA that is Flooded Only Seasonally	The percentage of the AA's area that is between the annual high water and the annual low water (surface water) is:		Flood marks (algal mats, adventitious roots, debris lines, ice scour, etc.) are often evident when not fully inundated. Also, such areas often have a larger proportion of upland and annual (vs. perennial) plant species. In riverine systems, the extent of this zone can be estimated by multiplying by 2 the bankful height and visualising where that would intercept the land along the river. [CS, FA, INV, NR, OE, PH, SR, WBF, WBN, WS]
141			None, or <0.01 hectare and <1% of the AA. SKIP to F29.	0	
142			1-20% of the AA, or <1% but >0.01 ha.	0	
143			20-50% of the AA.	0	
144			50-95% of the AA.	0	
145			>95% of the AA.	0	
146	F28	Annual Water Fluctuation Range	The annual fluctuation in surface water level within most of the parts of the AA that contain surface water at least temporarily is:		Look for flood marks (see above). Because the annual range of water levels is difficult to estimate without multiple visits, consider asking the land owner or neighbors about it. [AM, CS, INV, NR, OE, PH, PR, SR, WBN, WS]
147			<10 cm change (stable or nearly so).	0	
148			10 cm - 50 cm change.	0	
149			0.5 - 1 m change.	0	
150			1-2 m change.	0	
151			>2 m change.	0	
152	Is the AA plus adjacent ponded water smaller than 0.01 hectare (about 10m x 10m, or 1m x 100 m)? If so, enter "1" in column D and SKIP TO F42 (Connection).			0	
153	F29	Predominant Depth Class	During most of the time when surface water is present during the growing season, its depth, averaged over the entire inundated part of the AA, is:		If a boat is unavailable, estimate this by considering wetland size and local topography. Or if timing and safety allow, depths may be measured by drilling through winter ice.This question is asking about the spatial median depth that occurs during most of that time, even if inundation is only seasonal or temporary. If inundation in most but not all of the wetland is brief, the answer will be based on the depth of the most persistently inundated part of the wetland. Include surface water in channels and ditches as well as ponded areas. [CS, FA, FR, INV, OE, PH, PR, Sens, SFS, SR, WBF, WBN, WC]
154			<10 cm deep (but >0).	0	
155			10 - 50 cm deep.	0	
156			0.5 - 1 m deep.	0	
157			1 - 2 m deep.	0	
158			>2 m deep. True for many fringe wetlands.	0	
159	F30	Depth Classes - Evenness of Proportions	When present, surface water in most of the AA usually consists of (select one):		Estimate these proportions by considering the gradient and microtopography of the site. [FR, INV, WBF, WBN]
160			One depth class that comprises >90% of the AA's inundated area (use the classes in the question above).	0	
161			One depth class that comprises 50-90% of the AA's inundated area.	0	
162			Neither of above. There are 3 or more depth classes and none occupy >50%.	0	
163	F31	% of Water That Is Ponded (not Flowing)	During most times when surface water is present, the percentage that is (1) ponded (stagnant, or flows so slowly that fine sediment is not held in suspension) AND (2) is likely to be deeper than 0.5 m in some places, is:		Nearly all wetlands with surface water have some ponded water. [AM, CS, INV, NR, OE, PR, Sens, SR, WBF, WBN, WC, WS]
164			<5% of the water, or it occupies <100 sq.m cumulatively. Nearly all the surface water is flowing. SKIP to F34.	0	
165			5-30% of the water.	0	
166			30-70% of the water.	0	
167			70-95% of the water.	0	
168			>95% of the water.	0	
169	F32	Ponded Open Water - Minimum Size	During most of the growing season, the largest patch of open water that is ponded and is in or bordering the AA is >0.01 hectare (about 10 m by 10 m) and mostly deeper than 0.5 m. If true enter "1" and continue, If false, enter "0" and SKIP to F41 (Floating Algae & Duckweed).	0	Open water is not obscured by vegetation in aerial ("duck's eye") view. It includes vegetation floating on the water surface or entirely submersed beneath it.
170	F33	% of Ponded Water that is Open	In ducks-eye aerial view, the percentage of the ponded water that is open (lacking emergent vegetation during most of the growing season, and unhidden by a forest or shrub canopy) is:		[AM, CS, FA, FR, INV, NR, OE, PR, SR, WBF, WBN, WC]
171			None, or <1% of the AA and largest pool occupies <0.01 hectares. Enter "1" and SKIP to F41 (Floating Algae & Duckweed).	0	
172			1-4% of the ponded water. Enter "1" and SKIP to F41 (Floating Algae & Duckweed).	0	
173			5-30% of the ponded water.	0	
174			30-70% of the ponded water.	0	
175			70-99% of the ponded water.	0	
176			100% of the ponded water.	0	
177	F34	Width of Vegetated Zone within Wetland	At the time during the growing season when the AA's water level is lowest, the average width of vegetated area in the AA that separates adjoining uplands from open water within the AA is:		"Vegetated area" does not include underwater or floating-leaved plants, i.e., aquatic bed. Width may include wooded riparian areas if they have wetland soil or plant indicators. [AM, CS, NR, OE, PH, PR, SBM, Sens, SR, WBN]
178			<1 m.	0	
179			1 - 9 m.	0	
180			10 - 29 m.	0	
181			30 - 49 m.	0	
182			50 - 100 m.	0	
183			> 100 m, or open water is absent at that time.	0	

	A	B	C	D	E
184	F35	Flat Shoreline Extent	During most of the part of the growing season when water is present, the percentage of the AA's **water edge** length that is **nearly flat** (a slope less than about 5% measured within 5 m landward of the water) is:		If several isolated pools are present in early summer, estimate the percent of their collective shorelines that has such a gentle slope. [SR, WBN]
185			<1% of the water edge.	0	
186			1-25% of the water edge.	0	
187			25-50% of the water edge.	0	
188			50-75% of the water edge.	0	
189			>75% of the water edge.	0	
190	F36	Robust Emergents	The percentage **of the emergent vegetation** cover in the AA that is cattail (*Typha* spp.), common reed (*Phragmites*), or tall (>1m) bulrush is:		**Emergent vegetation** is herbaceous plants whose stems are partly above and partly below the water surface during most of the time water is present. [WBN]
191			<1% of the emergent vegetation, or emergent vegetation is absent. SKIP to F38.	0	
192			1-25% of the emergent vegetation.	0	
193			25-75% of the emergent vegetation.	0	
194			>75%, of the emergent vegetation.	0	
195	F37	Interspersion of Emergents & Open Water	During most of the part of the growing season when water is present, the spatial pattern of **emergent** vegetation within the water is mostly:		[AM, FA, FR, INV, NR, OE, PH, PR, SBM, SR, WBF, WBN]
196			Scattered. More than 30% of such vegetation forms small islands or corridors surrounded by water.	0	
197			Intermediate.	0	
198			Clumped. More than 70% of such vegetation is in bands along the wetland perimeter or is clumped at one or a few sides of the surface water area.	0	
199	F38	Persistent Deepwater Area	If the deepest patch of surface water (flowing or ponded) in or directly adjacent to the AA is mostly deeper than 0.5 m for >2 weeks during the growing season, enter "1" and continue. If not, enter "0" and SKIP to F42.(Connection).	0	
200	F39	Non-vegetated Aquatic Cover	During most of the growing season and in waters deeper than 0.5 m, the cover for fish, aquatic invertebrates, and/or amphibians that is provided NOT by living vegetation, but by accumulations of **dead wood and undercut banks** is:		For this question, consider only the wood that is at or above the water surface. Estimates of underwater wood based only on observations from terrestrial viewpoints are unreliable so should not be attempted. [AM, FA, FR, INV]
201			Little or none.	0	
202			Intermediate.	0	
203			Extensive.	0	
204	F40	Isolated Island	The AA contains (or is part of) an island or beaver lodge within a lake, pond, or river, and is isolated from the shore **by water depths** >1 m on all sides during an average June. The island may be solid, or it may be a floating vegetation mat that is sufficiently large and dense to support a waterbird nest.	0	[WBN]
205	F41	Floating Algae & Duckweed	At some time of the year, mats of algae and/or duckweed are likely to cover >50% of the AA's otherwise-unshaded water surface, or blanket >50% of the underwater substrate. If true, enter "1" in next column. If untrue or uncertain, enter "0".	0	[EC, PR, WBF]
206	F42	Channel Connection & Outflow Duration	The most persistent surface water connection (outlet channel or pipe, ditch, or overbank water exchange) between the AA and a downslope stream network is: [Note: If the AA represents only part of a wetland, answer this according to whichever is the **least** permanent surface connection: the one between the AA and the rest of the wetland, or the surface connection between the wetland and the downslope stream network.]		Consider the connection regardless of whether the surface water is frozen. The "downslope stream network" could consist of ditches, rivers, ponds, or lakes which eventually connect to the ocean. If this cannot be determined while visiting the AA, consult topographic maps perhaps by viewing these online with Toporama (http://atlas.nrcan.gc.ca/toporama/en/index.html) [CS, FA, FR, NR, OE, PR, Sens, SFS, SR, WCv, WS]
207			Persistent (surface water flows out for >9 months/year).	0	
208			Seasonal (surface water flows out for 14 days to 9 months/year, not necessarily consecutive).	0	
209			Temporary (surface water flows out for <14 days, not necessarily consecutive).	0	
210			None -- but maps show a stream network downslope from the AA and within a distance that is less than the AA's length. SKIP to F47 (pH Measurement).	0	
211			No surface water flows out of the wetland except possibly during extreme events (<once per 10 years). Or, water flows only into a wetland, ditch, or lake that lacks an outlet. SKIP to F47 (pH Measurement).	1	
212	F43	Outflow Confinement	During major runoff events, in the places where **surface** water exits the AA or connected waters nearby, the water:		"Major runoff events" would include biennial high water caused by storms and/or rapid snowmelt. [CS, NR, OE, PR, Sens, SR, STR, WS]
213			Mostly passes through a pipe, culvert, narrowly breached dike, berm, beaver dam, or other partial obstruction (other than natural topography) that does not appear to drain the wetland artificially during most of the growing season.	0	
214			Leaves through natural exits (channels or diffuse outflow), not mainly through artificial or temporary features.	0	
215			Is exported more quickly than usual due to ditches or pipes within the AA or connected to its outlet, or within 10 m of the AA's edge, which drain the wetland artificially, or water is pumped out of the AA.	0	
216	F44	Tributary Channel	At least once annually, surface water from a tributary channel that is >100 m long moves into the AA. Or, surface water from a larger permanent water body adjacent to the AA spills into the AA. If it enters only via a pipe, that pipe must be fed by a mapped stream or lake further upslope. If no, SKIP to F47 (pH Measurement).	0	If inlet tributaries cannot be searched for due to inaccessibility of part of the AA, follow suggestions in F42 above. [NRv, PH, PRv, SRv]
217	F45	**Input** Water Temperature	Based on lack of shade, water source characteristics, or actual temperature measurements, the inflow is likely to be warmer than surface water in the AA during part of most years. Enter 1= yes, 0= no.	0	[WCv]
218	F46	Throughflow Resistance	During its travel through the AA at the time of peak annual flow, water arriving in channels: [select only the ONE encountered by **most** of the incoming water].		[FA, FR, INV, NR, OE, PR, SR, WS]
219			Does not bump into many plant stems as it travels through the AA. Nearly all the water continues to travel in unvegetated (often incised) channels that have minimal contact with wetland vegetation, or through a zone of open water such as an instream pond or lake.	0	
220			Bumps into **herbaceous** vegetation but mostly remains in fairly straight channels.	0	
221			Bumps into **herbaceous** vegetation and mostly spreads throughout, or is in widely meandering, multi-branched, or braided channels.	0	
222			Bumps into **tree trunks and/or shrub stems** but mostly remains in fairly straight channels.	0	
223			Bumps into tree trunks and/or shrub stems and follows a fairly **indirect** path from entrance to exit (meandering, multi-branched, or braided).	0	
224	F47	pH Measurement	The pH in most of the AA's surface water:		Preferably, measure this in larger areas of ponded surface water within the AA, or in streams that have passed through (not along) most of the AA. Unless surface water is completely absent, do not dig holes or make depressions in peat in order to provide water for this measurement. Avoid measuring near roads or in puddles formed only by recent rain. [AM, FA, FR, NR, WBF, PH, PR, Sens, WBF, WBN]
225			Was measured, and is: [*enter the reading in the column to the right.*]		
226			Was not measured but surface water is present and is darkly tea-coloured. Or if no surface water, then mosses and plants that indicate peatland (e.g., Labrador tea) are prevalent. Enter "1".	0	
227			Neither of above. Enter "1".	1	
228	F48	TDS and/or Conductivity	The TDS (total dissolved solids) or conductivity off the AA's surface water is: (select the first true row with information):		See above for measurement guidance. [FR, INV, NRv, PH, PRv, Sens]
229			TDS is: [*Enter the reading* ***in ppm or mg/L*** *in the column to the right, if measured, or answer next row.*]		
230			Conductivity is [*Enter the reading* ***in µS/cm*** *in the column to the right.*]		
231			Was not measured, but plants that indicate saline conditions cover much of the vegetated AA. Enter "1".	0	
232			Neither of above	1	
233	F49	Beaver Probability	Use of the AA by beaver during the past 5 years is (select most applicable ONE):		[FA, FR, PH, SBM, Sens, WBF, WBN]
234			**Evident** from direct observation or presence of gnawed limbs, dams, tracks, dens, lodges, or extensive stands of water-killed trees (snags).	0	
235			**Likely** based on known occurrence in the region and proximity to suitable habitat, which may include: (a) a persistent freshwater wetland, pond, or lake, or a perennial low or mid-gradient (<10%) channel, and (b) a corridor or multiple stands of hardwood trees and shrubs in vegetated areas near surface water.	0	
236			Unlikely because site characteristics above are deficient, and/or this is a settled area or other area where beaver are routinely removed.	1	
237	F50	Groundwater Strength of Evidence	Select first applicable choice:		Adhere to these criteria strictly -- do not use personal judgment based on fen conditions, pH, or other evidence. Consult topographic maps to detect breaks in slope described here. Rust deposits associated with groundwater seeps may be most noticeable as orange discoloration in ice formations along streams during early winter. [AM, CS, FA, FR, INV, NR, OE, PH, PRv, SFS, WC, WS]
238			Springs are known to be present within the AA, or if groundwater levels have been monitored, that has demonstrated that groundwater primarily discharges to the wetland for longer periods during the year than periods when the wetland recharges the groundwater.	0	

	A	B	C	D	E
239			Most of the AA has a slope of >5%, or is very close to the base of a natural slope longer than 100 and much steeper than the slope of the AA, AND the pH of surface water, if known, is >5.5.	0	
240			Neither of above is true, although some groundwater may discharge to or flow through the AA. Or groundwater influx is unknown.	1	
241	F51	Internal Gradient	The gradient along most of the flow path **within** the AA is:		This is not the same as the shoreline slope. It is the elevational difference between the AA's inlet and outlet, divided by the flow-distance between them and converted to percent. If available, use a clinometer to measure this. Free clinometer apps can be downloaded to smartphones. If the wetland is large (longer than ~1 km), this may be estimated using Google Earth to determine the minimum and maximum elevation within the AA, then dividing by length and multiplying by 100. [CS, NR, OE, PR, SR, WBF, WBN, WS]
242			<2% **or** the AA has no surface water outlet (not even seasonally).	1	
243			2-5%.	0	
244			6-10%.	0	
245			>10%.	0	
246	Note for the next three questions: If the AA lacks an upland edge, evaluate based on the AA's entire perimeter, and moving outward into whatever areas are adjacent. In many situations, these questions are best answered by measuring from aerial images.				
247	F52	Vegetated Buffer as % of Perimeter	Within a zone extending 30 m laterally from the AA's edge with upland and/or other wetlands, the percentage that contains **perennial vegetation cover** (except lawns, row crops, heavily grazed land, conifer plantations) is:		[AM, FA, FR, INV, NRv, PH, POL, PRv, SBM, Sens, SRv, STR, WBN]
248			<5%.	0	
249			5 to 30%.	0	
250			30 to 60%.	0	
251			60 to 90%.	0	
252			>90%, or all the area within 30 m of the AA edge is other wetlands. **SKIP to F55.**	1	
253	F53	Type of Cover in Buffer	Within 30 m upslope of where the wetland transitions to upland, the upland land cover that is NOT perennial vegetation is mostly (mark ONE):		[AM, FA, INV, NRv, PH, POL, SBM, STR, WBN]
254			Impervious surface, e.g., paved road, parking lot, building, exposed rock.	0	
255			Bare or nearly bare pervious surface or managed vegetation, e.g., lawn, row crops, unpaved road, dike, landslide.	0	
256	F54	Buffer Slope	The steepest and/or most disturbed part of the upland area that is within 30 m of the wetland and occupies >10% of that upland area has a percent slope of:		[NRv, PRv, Sens, SRv]
257			<1% (flat -- almost no noticeable slope) or all the area within 30 m of the AA edge is other wetlands.	0	
258			2-5%.	0	
259			5-30%.	0	
260			>30%.	0	
261	F55	Cliffs or Steep Banks	In the AA or within 100 m, there are elevated terrestrial features such as cliffs, talus slopes, stream banks, or excavated pits (but not riprap) that extend at least 2 m nearly vertically, are unvegetated, and potentially contain crevices or other substrate suitable for nesting or den areas. Enter 1 (yes) or 0 (no).	0	Do not include upturned trees as potential den sites. [POL, SBM]
262	F56	New or Expanded Wetland	**Human** actions within or adjacent to the AA have persistently expanded a naturally occurring wetland or created a wetland where there previously was none (e.g., by excavation, impoundment):		Determine this using historical aerial photography, old maps, soil maps, or permit files as available [CS, NR, OE, PH, Sens]
263			No.	0	
264			Yes, and created or expanded 20 - 100 years ago.	0	
265			Yes, and created or expanded 3-20 years ago.	0	
266			Yes, and created or expanded within last 3 years.	0	
267			Yes, but time of origin or expansion unknown.	0	
268			Unknown if new or expanded within 20 years or not.	1	
269	F57	Burn History	More than 1% of the AA's previously vegetated area:		Look for charred soil or stumps (in multiple widely-spaced locations) or ask landowner. [CS, PH, STR]
270			Burned within past 5 years.	0	
271			Burned 6-10 years ago.	0	
272			Burned 11-30 years ago.	0	
273			Burned >30 years ago, or no evidence of a burn and no data.	1	
274	F58	Visibility	The maximum percentage of the wetland that is visible from the best vantage point on public roads, public parking lots, public buildings, or public maintained trails that intersect, adjoin, or are within 100 m of the AA (select one) is:		[PU, STR, WBFv]
275			<25%.	1	
276			25-50%.	0	
277			>50%.	0	
278	F59	Non-consumptive Uses - Actual or Potential	Assuming access permission was granted, select **ALL** statements that are true of the AA as it currently exists:		[PU, STR]
279			For an average person, walking is physically possible in (not just near) >5% of the AA during most of the growing season, e.g., free of deep water and dense shrub thickets.	1	
280			Maintained roads, parking areas, or foot-trails are within 10 m of the AA, or the AA can be accessed part of the year by boats arriving via contiguous waters.	0	
281			Within or near the AA, there is an interpretive center, trails with interpretive signs or brochures, and/or regular guided interpretive tours.	0	
282	F60	Unvisited Core Area	The percentage of the AA almost never visited by humans during an average growing season probably comprises: *[Note: Only include the part actually walked or driven (not simply viewed from) with a vehicle or boat. Do not include visitors on trails outside of the AA unless more than half the wetland is visible from the trails and they are within 30 m of the wetland edge. In that case include only the area occupied by the trail.]*		[AM, FAv, FRv, PH, PU, SBM, STR, WBF, WBN]
283			<5% and no inhabited building is within 100 m of the AA.	0	
284			<5% and inhabited building is within 100 m of the AA.	0	
285			5-50% and no inhabited building is within 100 m of the AA.	0	
286			5-50% and inhabited building is within 100 m of the AA.	0	
287			50-95%, with or without inhabited building nearby.	0	
288			>95% of the AA with or without inhabited building nearby.	1	
289	F61	Frequently Visited Area	The part of the AA visited by humans almost daily for several weeks during an average growing season probably comprises: *[See note above.]*		[AM, PH, PU, SBM, STR, WBF, WBN]
290			<5%. If F60 was answered ">95%" (mostly never visited), **SKIP to F64.**	1	
291			5-50%.	0	
292			50-95%.	0	
293			>95% of the AA.	0	
294	F62	BMP - Soils	Boardwalks, paved trails, fences or other infrastructure and/or well-enforced regulations appear to effectively prevent visitors from walking on soil within nearly all of the AA when the soil is unfrozen. Enter "1" if true.	0	[PH, PU]
295	F63	BMP - Wildlife Protection	Fences, observation blinds, platforms, paved trails, exclusion periods, and/or well-enforced prohibitions on motorised boats, off-leash pets, and off road vehicles appear to effectively exclude or divert visitors and their pets from the AA at critical times in order to minimize disturbance of wildlife (except during hunting seasons). Enter "1" if true.	0	[AM, PU, WBF, WBN]
296	F64	Consumptive Uses (Provisioning Services)	Recent evidence was found within the AA of the following potentially-sustainable consumptive uses. Select ALL that apply.		[FAv, FRv, WBFv]
297			Low-impact commercial timber harvest (e.g., selective thinning).	0	
298			Commercial or traditional-use harvesting of native plants, their fruits, or mushrooms.	0	
299			Waterfowl hunting.	0	
300			Fishing.	0	
301			Trapping of furbearers.	0	
302			None of the above.	1	
303	F65	Domestic Wells	The closest wells or water bodies that currently provide drinking water are:		[NRv]
304			Within 0-100 m. of the AA.	0	

	A	B	C	D	E
305			100-500 m. away.	0	
306			>500 m. away, or no information.	1	
307	F66	Calcareous Fen	The AA is, or is part of, a calcareous fen. See the Plants_Calcar worksheet in the accompanying SuppInfo file for list of plant indicators (calciphiles). Enter 1 If more than two Strong or more than five Moderate calciphile species are present; otherwise enter 0, but if not able to identify those **and** no information, change to **blank**.	0	[PH, PR]
308					

Investigator: Brady Leights and Tiffany MacAulay	**Site Identifier: WL-9**	**Date: 27 July, 2021**

Stressor (S) Data Form for Non-Tidal Wetlands. WESP-AC for Nova Scotia version 2.

		Data
S1	**Aberrant Timing of Water Inputs**	
	In the last column, place a check mark next to any item that is likely to have caused the timing of water inputs (but not necessarily their volume) to shift by hours, days, or weeks, becoming either more muted (smaller or less frequent peaks spread over longer times, more temporal homogeneity of flow or water levels) or more flashy (larger or more frequent spikes but over shorter times). [FA, FR, INV, PH, STR]	
	Stormwater from impervious surfaces that drains directly to the wetland.	
	Water subsidies from wastewater effluent, septic system leakage, snow storage areas, or irrigation.	
	Regular removal of surface or groundwater for irrigation or other consumptive use.	
	Flow regulation in tributaries or water level regulation in adjoining water body, or other control structure at water entry points that regulates inflow to the wetland.	
	A dam, dike, levee, weir, berm, or fill -- within or downgradient from the wetland -- that interferes with surface or subsurface flow in/out of the AA (e.g., road fill, wellpads, pipelines).	
	Excavation within the wetland, e.g., dugout, artificial pond, dead-end ditch.	
	Artificial drains or ditches in or near the wetland.	
	Accelerated downcutting or channelization of an adjacent or internal channel (incised below the historical water table level).	
	Logging within the wetland.	
	Subsidence or compaction of the wetland's substrate as a result of machinery, livestock, fire, drainage, or off road vehicles.	
	Straightening, ditching, dredging, and/or lining of tributary channels.	
	If any items were checked above, then for each row of the table below, assign points. However, if you believe the checked items had no measurable effect on the timing of water conditions in any part of the AA, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.	

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Spatial extent of timing shift within the wetland:	>95% of wetland.	5-95% of wetland.	<5% of wetland.	0
When most of the timing shift began:	<3 yrs ago.	3-9 yrs ago.	10-100 yrs ago.	0
Score the following 2 rows only if the altered inputs began within past 10 years, and only for the part of the wetland that experiences those.				
Input timing now vs. previously:	Shift of weeks.	Shift of days.	Shift of hours or minutes.	0
Flashiness or muting:	Became very flashy or controlled.	Intermediate.	Became mildly flashy or controlled.	0
			Sum=	0
			Stressor subscore=	0.00

		Data
S2	**Accelerated Inputs of Contaminants and/or Salts**	
	In the last column, place a check mark next to any item -- occurring in either the wetland or its CA -- that is likely to have accelerated the inputs of contaminants or salts to the AA. [AM, FA, PH, POL, STR]	
	Stormwater or wastewater effluent (including failing septic systems), landfills, industrial facilities.	
	Metals & chemical wastes from mining, shooting ranges, snow storage areas, oil/ gas extraction, other sources (download many locations from National Pollutant Release Inventory and view KMZ overlay in Google Earth. https://www.ec.gc.ca/inrp-npri/default.asp?lang=En&n=B85A1846-1	
	Road salt.	
	Spraying of pesticides, as applied to lawns, croplands, roadsides, or other areas in the CA.	
	If any items were checked above, then for each row of the table below, assign points. However, if you believe the checked items did not cumulatively expose the AA to significantly higher levels of contaminants and/or salts, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.	

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Usual toxicity of most toxic contaminants:	Industrial effluent, mining waste, unmanaged landfill.	Cropland, managed landfill, pipeline or transmission rights-of-way.	Low density residential.	0
Frequency & duration of input:	Frequent and year-round.	Frequent but mostly seasonal.	Infrequent & during high runoff events mainly.	0
AA proximity to main sources (actual or potential):	0 - 15 m.	15-100 m. or in groundwater.	In more distant part of contributing area.	0
			Sum=	0
			Stressor subscore=	0.00

		Data
S3	**Accelerated Inputs of Nutrients**	
	In the last column, place a check mark next to any item -- occurring in either the wetland or its CA -- that is likely to have accelerated the inputs of nutrients to the wetland. [NRv, PRv, STR]	
	Stormwater or wastewater effluent (including failing septic systems), landfills.	
	Fertilizers applied to lawns, ag lands, or other areas in the CA.	
	Livestock, dogs.	
	Artificial drainage of upslope lands.	
	If any items were checked above, then for each row of the table below, assign points. However, if you believe the checked items did not cumulatively expose the AA to significantly more nutrients, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.	

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Type of loading:	High density of unmaintained septic, some types of industrial sources.	Moderate density septic, cropland, secondary wastewater treatment plant.	Livestock, pets, low density residential.	0
Frequency & duration of input:	Frequent and year-round.	Frequent but mostly seasonal.	Infrequent & during high runoff events mainly.	0
AA proximity to main sources (actual or potential):	0 - 15 m.	15-100 m. or in groundwater.	In more distant part of contributing area.	0
			Sum=	0
			Stressor subscore=	0.00

		Data
S4	**Excessive Sediment Loading *from Contributing Area***	
	In the last column, place a check mark next to any item present in the CA that is likely to have elevated the load of waterborne or windborne sediment reaching the wetland from its CA. [FA, FR, INV, PH, SRv, STR]	
	Erosion from plowed fields, fill, timber harvest, dirt roads, vegetation clearing, fires.	1
	Erosion from construction, in-channel machinery in the CA.	
	Erosion from off-road vehicles in the CA.	
	Erosion from livestock or foot traffic in the CA.	
	Stormwater or wastewater effluent.	
	Sediment from road sanding, gravel mining, other mining, oil/ gas extraction.	
	Accelerated channel downcutting or headcutting of tributaries due to altered land use.	
	Other human-related disturbances within the CA.	
	If any items were checked above, then for each row of the table below, assign points (3, 2, or 1 as shown in header) in the last column. However, if you believe the checked items did not cumulatively add significantly more sediment or suspended solids to the AA, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.	

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Erosion in CA:	Extensive evidence, high intensity.*	Potentially (based on high-intensity* land use) or scattered evidence.	Potentially (based on low-intensity* land use) with little or no direct evidence.	1
Recentness of significant soil disturbance in the CA:	Current & ongoing.	1-12 months ago.	>1 yr ago.	1

	Duration of sediment inputs to the wetland:	Frequent and year-round.	Frequent but mostly seasonal.	Infrequent & during high runoff events mainly.	1
	AA proximity to actual or potential sources:	0 - 15 m.	15-100 m.	In more distant part of contributing area.	1
	* high-intensity= extensive off-road vehicle use, plowing, grading, excavation, erosion with or without veg removal; low-intensity= veg removal only with little or no apparent erosion or disturbance of soil or sediment.			Sum=	4
				Stressor subscore=	0.33
S5	**Soil or Sediment Alteration *Within the Assessment Area***				
	In the last column, place a check mark next to any item present in the wetland that is likely to have compacted, eroded, or otherwise altered the wetland's soil. Consider only items occurring within past 100 years or since wetland was created or restored (whichever is less). [CS, INV, NR, PH, SR, STR]				
	Compaction from machinery, off-road vehicles, livestock, or mountain bikes, especially during wetter periods.				1
	Leveling or other grading not to the natural contour.				
	Tillage, plowing (but excluding disking for enhancement of native plants).				
	Fill or riprap, excluding small amounts of upland soils containing organic amendments (compost, etc.) or small amounts of topsoil imported from another wetland.				
	Excavation.				
	Ditch cleaning or dredging in or adjacent to the wetland.				
	Boat traffic in or adjacent to the wetland and sufficient to cause shore erosion or stir bottom sediments.				
	Artificial water level or flow manipulations sufficient to cause erosion or stir bottom sediments.				
	If any items were checked above, then for each row of the table below, assign points. However, if you believe the checked items did not measurably alter the soil structure and/or topography, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.				
		Severe (3 points)	Medium (2 points)	Mild (1 point)	
	Spatial extent of altered soil:	>95% of wetland or >95% of its upland edge (if any).	5-95% of wetland or 5-95% of its upland edge (if any).	<5% of wetland and <5% of its upland edge (if any).	1
	Recentness of significant soil alteration in wetland:	Current & ongoing.	1-12 months ago.	>1 yr ago.	1
	Duration:	Long-lasting, minimal veg recovery.	Long-lasting but mostly revegetated.	Short-term, revegetated, not intense.	1
	Timing of soil alteration:	Frequent and year-round.	Frequent but mostly seasonal.	Mainly during one-time or scattered events.	1
				Sum=	4
				Stressor subscore=	0.33

Assessment Area (AA) Results:

Wetland ID: Uniacke Quarry Wetland 9

Date: 27 July, 2021

Observer: Brady Leights and Tiffany MacAulay

Latitude & Longitude (decimal degrees): 44.916062, -63.813515

Scores will appear below after data are entered in worksheets OF, F, and S. See Manual for definitions and descriptions of how scores were computed.

Wetland Functions or Other Attributes:	Function Score (Normalised)	Function Rating	Benefits Score (Normalised)	Benefits Rating	Function Score (raw)	Benefits Score (raw)
Water Storage & Delay (WS)	7.62	Moderate	5.08	Moderate	7.63	2.25
Stream Flow Support (SFS)	0.00	Lower	0.00	Lower	0.00	0.00
Water Cooling (WC)	0.00	Lower	0.00	Lower	0.00	0.00
Sediment Retention & Stabilisation (SR)	3.83	Moderate	1.81	Moderate	5.19	0.89
Phosphorus Retention (PR)	0.61	Lower	1.29	Moderate	4.13	1.00
Nitrate Removal & Retention (NR)	10.00	Higher	5.00	Moderate	10.00	5.00
Carbon Sequestration (CS)	6.54	Higher			8.29	
Organic Nutrient Export (OE)	6.44	Moderate			4.21	
Anadromous Fish Habitat (FA)	0.00	Lower	0.00	Lower	0.00	0.00
Resident Fish Habitat (FR)	0.00	Lower	0.00	Lower	0.00	0.00
Aquatic Invertebrate Habitat (INV)	3.81	Moderate	1.02	Lower	5.04	1.79
Amphibian & Turtle Habitat (AM)	2.88	Lower	2.36	Lower	4.63	3.71
Waterbird Feeding Habitat (WBF)	0.00	Lower	0.00	Lower	0.00	0.00
Waterbird Nesting Habitat (WBN)	0.00	Lower	0.00	Lower	0.00	0.00
Songbird, Raptor, & Mammal Habitat (SBM)	7.03	Moderate	5.00	Moderate	6.12	5.00
Pollinator Habitat (POL)	6.29	Moderate	3.33	Moderate	5.21	3.33
Native Plant Habitat (PH)	4.07	Moderate	4.89	Lower	5.53	4.89
Public Use & Recognition (PU)			1.82	Moderate		1.54
Wetland Sensitivity (Sens)			8.16	Higher		4.50
Wetland Ecological Condition (EC)			3.04	Lower		6.67
Wetland Stressors (STR) (higher score means more stress)			4.77	Moderate		2.48
Summary Ratings for Grouped Functions:						
HYDROLOGIC Group (WS)	7.62	Moderate	5.08	Moderate	7.63	2.25
WATER QUALITY SUPPORT Group (max+avg/2 of SR, PR, NR, CS)	7.62	Higher	3.85	Moderate	8.45	3.65
AQUATIC SUPPORT Group (max+avg/2 of SFS, INV, OE, WC)	4.50	Moderate	0.68	Lower	3.68	1.19
AQUATIC HABITAT Group (max+avg/2 of FA, FR, AM, WBF, WBN)	1.73	Lower	1.42	Lower	2.78	2.22
TRANSITION HABITAT Group (max+avg/2 of SBM, PH, POL)	6.42	Moderate	4.70	Lower	5.87	4.70
WETLAND CONDITION (EC)			3.04	Lower		6.67
WETLAND RISK (average of Sensitivity & Stressors)			6.46	Moderate		3.49

NOTE: A score of 0 does not mean the function or benefit is absent from the wetland. It means only that this wetland has a capacity that is equal or less than the lowest-scoring one, for that function or benefit, from among all the NS calibration wetlands that were assessed previously.

NOVA SCOTIA - Functional WSS Interpretation Tool

1. General Description of Tool:

This interpretive tool automatically determines whether the subject wetland will be regulated as a Wetland of Special Significance (WSS). This determination is made based on the WESP-AC functional results, per the Nova Scotia *Wetland Conservation Policy* .

A 'Function-Benefit Product' (FBP) is calculated based upon the Grouped Functions, and has a theoretical maximum of 100. Threshold values for the FBP are applied, in order to categorize the FBP scores into 'Low', 'Moderate' or 'High' scores. Thresholds are determined based upon the statistical distribution of WESP-AC scores compiled from various sites across the Province (N=442). These categories are subsequently used to apply various 'Functional WSS Rules', as described below.

For the purpose of defining and applying the Functional WSS rules, two supergroups are defined based on grouped functions, as follows: **(1) Support Supergroup** - includes Hydrologic, Water Quality Support, and Aquatic Support grouped functions. **(2) Habitat Supergroup** - includes Aquatic Habitat and Transition Habitat grouped functions.

2. Functional WSS Rule Definitions:

Habitat Rule: In consideration of the Habitat Supergroup, the subject wetland is a WSS if either of the following sub-rules are satisfied:

(HAB 1) Two 'High Scores' OR

(HAB 2) One 'High' and one 'Moderate' score

Support Rule: In consideration of the Support Supergroup, the subject wetland is a WSS if either of the following sub-rules are satisfied:

(SUP 1) Three 'High' scores OR

(SUP 2) Two 'High' and one 'Moderate' score

Habitat/Support Hybrid Rule: In consideration of both the Habitat and Support Supergroups, the subject wetland is a WSS if the following is satisfied:

(HYB 1) One 'High' Habitat score **AND** Two or three 'High' Support scores

3. Functional WSS Interpretation Results

Function-Benefit Product (FBP)	FBP SCORE	FBP SCORE CATEGORY
SUPPORT SUPERGROUP - HYDROLOGIC	38.69272216	Moderate
SUPPORT SUPERGROUP - WATER QUALITY SUPPORT	29.34941113	Low
SUPPORT SUPERGROUP - AQUATIC SUPPORT	3.053828646	Low
HABITAT SUPERGROUP - AQUATIC HABITAT	2.447171126	Low
HABITAT SUPERGROUP - TRANSITION HABITAT	30.17868968	Low

3a. Functional WSS Determination: Automatic Method

Habitat Rule Satisfied?	NO
Support Rule Satisfied?	NO
Habitat/Support Hybrid Rule Satisfied?	NO
CONCLUSION:	**Site is not a WSS**

3b. Functional WSS Determination - Manual Method Using Dichotomous Key

1a. (HAB) - One or more 'High' scores for AH or TH.....**2**
2a. (HAB) - Two 'High' scores.....**WSS**
2b. (HAB) - One 'High' score.....**3**
3a. (HAB) - Any combination of 'High' and 'Moderate' scores..... **WSS**
3b. (HAB) - Any combination of 'High' and 'Low' scores.....**4**
4a. (SUP) One or more 'High' Scores for HYD, WQS, or AS.....**5**
5a. (SUP) Two or Three 'High' scores ..... **WSS**
5b. (SUP) One 'High' score **6**
6a. (SUP) Any combo of one 'High', two 'Mod' scores..... **WSS**
6b. (SUP) One 'High', plus any other combo of scores.....**not WSS**
4b. (SUP) Zero 'High' Scores for HYD, WQS, or AS.....**7**
7a. (SUP) Three 'Moderate' scores..... **WSS**
7b. (SUP) Any other combination of scores .....**not WSS**
1b. (HAB) - Zero 'High' Scores for AH or TH.....**8**
8a. (SUP) Three 'High' Scores.....**WSS**
8b. (SUP) Less than three 'High' scores.....**9**
9a. (SUP) Two 'High' and one 'Moderate' score.....**WSS**
9b. (SUP) - Any other combination of scores .....**not WSS**

Cover Page: Basic Description of Assessment	**WESP-AC version 2**
Site Name:	Uniacke Quarry Wetland 10
Investigator Name:	Brady Leights
Date of Field Assessment:	27 July, 2021
Nearest Town:	Mount Uniacke, NS
Latitude (decimal degrees):	44.917385
Longitude (decimal degrees):	-63.815004
Is a map based on a formal on-site wetland delineation available?	Yes
Approximate size of the Assessment Area (AA, in hectares):	0.6
AA as percent of entire wetland (approx.). Attach sketch map if AA is smaller than the entire contiguous wetland.	100
What percent (approx.) of the **wetland** were you able to visit?	100
What percent (approx.) of the **AA** were you able to visit?	100
Were you able to ask the site owner/manager about any of the questions?	100
Indicate here if you intentionally surveyed for rare plants, calciphile plants, or rare animals:	Yes
Have you attended a WESP-AC training session? If so, indicate approximate month & year.	September 2021
How many wetlands have you assessed previously using WESP-AC? (approx.)	>100
Comments about the site or this WESP-AC assessment (attach extra page if desired):	

	A	B	C	D	E
1	Date: 27 July, 2021		Site Identifier: WL-10	Investigator: Brady Leights	
2	**Form OF (Office). Non-tidal Wetland Data Form. WESP-AC version 2 for Nova Scotia wetlands only.** DIRECTIONS: Conduct an assessment only after reading the accompanying Manual and the Explanations column of the data form. In the Data column, change the 0 (false) to a 1 (true) for the best choice, or for multiple choices where allowed and so indicated. Answering many of the questions below will require using these online map viewers: **Google Earth Pro**: https://www.google.com/earth/download/gep/agree.html **Provincial Landscape Viewer**: https://nsgi.novascotia.ca/plv/ For most wetlands, completing this office data form will require 1-2 hours. For a list of functions to which each question pertains, see bracketed abbreviations in the Definitions/Explanations column. For detailed descriptions of each WESP-AC model, see Appendix B of the accompanying Manual. Codes for functions and values are: WS= Water Storage, SFS= Stream Flow Support, WC= Water Cooling, SR= Sediment Retention & Stabilisation, PR= Phosphorus Retention, NR= Nitrate Removal, CS= Carbon Sequestration, OE= Organic Nutrient Export, INV= Invertebrate Habitat, FA= Anadromous Fish Habitat, FR= Resident Fish Habitat, AM= Amphibian & Reptile Habitat, WBF= Feeding Waterbird Habitat, WBN= Nesting Waterbird Habitat, SBM= Songbird, Raptor, & Mammal Habitat, POL= Pollinator Habitat, PH= Native Plant Habitat, PU= Public Use & Recognition, EC= Ecological Condition, Sen= Wetland Sensitivity, STR= Stressors.			
3	**#**	**Indicators**	**Condition Choices**	**Data**	**Definitions/Explanations**
4	OF1	Province	Mark the province in which the AA is located by changing the 0 in the column next to it to a "1". Mark only one.		This determines to which province's calibration wetlands the raw score of any wetland is normalised. In the function and benefits models, it also triggers the automatic exclusion of indicators for which no spatial data exists in a particular province.
5			New Brunswick	0	
6			Nova Scotia	1	
7			Prince Edward Island	0	
8			Newfoundland-Labrador	0	
9	OF2	Ponded Area Within 1 km.	The area of **surface water** ponded during most of the growing season that is both (1) in or adjacent to the AA and (2) within 1 km is:		**"Adjacent"** means not separated from the AA by a wide expanse (>50 m) of upland (including roads >50 m wide). Include ponded areas likely to be hidden by wetland vegetation. If surface water extends beyond 1 km, include only the part within 1 km. Do not include tidal areas. Measure the area from aerial imagery using Google Earth Pro (click on Ruler icon in toolbar, then Polygon in pop-up menu). [PH, SBM, WBN]
10			<0.01 hectare (about 10 m x 10 m).	0	
11			0.01 - 0.1 hectare.	0	
12			0.1 - 1 hectare.	0	
13			1 to 10 hectares.	1	
14			10 to 100 hectares.	0	
15			>100 hectares.	0	
16	OF3	Ponded Water & Wetland Within 1 km.	The area of **wetlands and surface water** ponded during most of the growing season that is both (1) in or adjacent to the AA and (2) within 1 km is:		See definition of adjacent in OF2. If the AA's wetland vegetation extends beyond 1 km, include only the part within 1 km. "Ponded" means not flowing in rivers or streams. [Sens, WBF]
17			<0.01 hectare (about 10 m x 10 m).	0	
18			0.01 - 0.1 hectare.	0	
19			0.1 - 1 hectare.	0	
20			1 to 10 hectares.	0	
21			10 to 100 hectares.	1	
22			>100 hectares.	0	
23	OF4	Size of Largest Nearby Vegetated Tract or Corridor	The largest vegetated patch or corridor that includes the AA's vegetation plus all **adjacent** upland vegetation that is not lawn, row crops, heavily grazed lands, conifer plantation is:		See definition of adjacent in OF2. Use Google Earth Pro's polygon ruler (as described above). Exclude conifer plantations only if it is obvious that trees were planted in rows. [AM, PH, SBM, Sens]
24			<0.01 hectare (about 10 m x 10 m).	0	
25			0.01 - 0.1 hectare.	0	
26			0.1 - 1 hectare.	0	
27			1 to 10 hectares.	0	
28			10 to 100 hectares.	0	
29			100 to 1000 hectares.	0	
30			>1000 hectares. [*This is nearly always the answer in relatively undeveloped landscapes.*]	1	
31	OF5	Distance to Large Vegetated Tract	The minimum distance from the **edge** of the AA to the edge of the closest ***vegetated land*** (but excluding row crops, lawn, conifer plantation) **larger than 375 hectares** (about 2 km on a side), is:		To measure distance, use Google Earth Pro (Ruler > Line tool). The 375-ha criterion is from the Fundy Model Forest Project. [AM, PH, POL, SBM, Sens]
32			<50 m, and not separated from the 375-ha vegetated area by any width of **paved** roads, stretches of open water, row crops, bare ground, lawn, or impervious surface. Or the AA itself contains >375 ha of vegetation. [This is often the answer in relatively undeveloped landscapes.]	1	
33			<50 m, but completely separated from the 375-ha vegetated area by those features, and AA does not contain >375 ha of vegetation.	0	
34			50-500 m, and **not** separated.	0	
35			50-500 m, but separated by those features.	0	
36			0.5 - 5 km, and **not** separated.	0	
37			0.5 - 5 km, but separated by those features.	0	
38			None of the above (the closest patches or corridors which are that large are >5 km away).	0	
39	OF6	Herbaceous Uniqueness	The AA's vegetation cover is >10% herbaceous* but uplands within 5 km have <10% herbaceous cover. If so, enter "3" and continue to OF7. If not, consider: The AA's vegetation cover is >10% herbaceous* but uplands within 1 km have <10% herbaceous cover. If so enter "2" and continue to OF7. If not, consider: The AA's vegetation cover is >10% herbaceous* but uplands within 100 m of the wetland edge have <10% herbaceous cover. If so, enter "1". [* NOTE: Exclude lawns, row crops, heavily grazed lands, forest, shrublands. Include moss as well as grasslike plants in this use of "herbaceous vegetation"]	1	For this question only, consider moss to be herbaceous vegetation. Determine the score by viewing aerial imagery in Google Earth after successively drawing or estimating the boundaries of the buffers of 5 km, 1 km, and 100 m radius focused on the center of the AA. Circles of specified radius can be drawn in Google Earth Pro by clicking on the Ruler icon, then Circle in the pop-up menu. [AMv, PHv, POLv, SBMv, WBFv, WBNv]
40	OF7	Woody Uniqueness	The AA's vegetation cover is >10% woody* but uplands within 5 km have <10% woody cover. If so, enter "3" and continue to OF8. If not, consider: The AA's vegetation is >10% woody* but uplands within 1 km have <10% woody cover. If so enter "2" and continue to OF8. If not, consider: The AA's vegetation is >10% woody* but uplands within 100 m of the wetland edge have <10% woody cover. If so, enter "1" [* NOTE: woody cover = trees & shrubs taller than 1 m.]	0	See above. Do not consider conifer plantations to be forest if it is obvious that trees were planted in rows. [AMv, PHv, POLv, SBMv]
41	OF8	Local Vegetated Cover Percentage	Draw a 5-km radius circle measured from the center of the AA. Ignoring all permanent water in the circle, the percent of the remaining area that is wooded or unmanaged herbaceous vegetation (NOT lawn, row crops, bare or heavily grazed land, clearcuts, or conifer plantations) is:		In Google Earth, draw the 5 km buffer and then estimate land cover percentages, or do GIS analysis of an appropriate land cover layer. [AM, PH, POL, SBM, Sens]
42			<5% of the land.	0	
43			5 to 20% of the land.	0	
44			20 to 60% of the land.	0	
45			60 to 90% of the land.	1	
46			>90% of the land. SKIP to OF10.	0	
47	OF9	Type of Land Cover Alteration	Within the **5-km** radius circle, and ignoring all permanent water, the land area that is bare or non-perennial cover is mostly:		[AM, SBM]
48			Impervious surface, e.g., paved road, parking lot, building, exposed rock.	0	
49			Bare pervious surface, e.g., lawn, recent (<5 yrs ago) clearcut, dirt or gravel road, cropland, landslide, conifer plantation.	1	
50	OF10	Distance by Road to Nearest Population Center	Measured **along** the maintained road nearest the AA, the distance to the nearest **population center** is:		"Population center" means a settled area with more than about 5 regularly- inhabited structures per square kilometer. In Google Earth Pro, click on the Ruler icon, then Path, and draw and measure the route. [FAv, FRv, NRv, PH, PU, SBM, WBFv]
51			<100 m.	0	
52			100 - 500 m.	0	
53			0.5- 1 km.	0	
54			1 - 5 km.	1	
55			>5 km.	0	

	A	B	C	D	E
56	OF11	Distance to Nearest Maintained Road	From the center of the AA, the distance to the nearest maintained public road (dirt or paved) is:		Determine this by viewing aerial imagery in Google Earth Pro and measuring with the Ruler>Line tool. [AM, FAv, FRv, NRv, PH, PU, SBM, STR, WBN]
57			<10 m.	0	
58			10 - 25 m.	0	
59			25 - 50 m.	0	
60			50 - 100 m.	0	
61			100 - 500 m.	0	
62			>500 m.	1	
63	OF12	Wildlife Access	Draw a circle of radius of 5 km from the center of the AA. If mammals and amphibians can move from the center of the AA to ALL other separate wetlands and ponds located within the circle without being forced to cross pavement (any width), lawns, bare ground, and/or marine waters, mark 1= yes can move to all, 0= no. Change to blank if there are no other wetlands within 5 km.	0	Draw the 5 km circle in Google Earth Pro using the Circle tool and search for roads and wetlands within it, being alert for roads hidden under forest canopy. [AM, SBM, STR]
64	OF13	Distance to Ponded Water	The distance from the AA center to the closest (but separate) ponded water body visible in GoogleEarth imagery is:		In Google Earth Pro, zoom in closely to examine the surrounding landscape for ponds, lakes, and wetlands that appear to be permanently flooded. [AM, PH, SBM, Sens, WBF, WBN]
65			<50 m, and not separated by any width of paved roads, stretches of open water, row crops, lawn, bare ground, or impervious surface.	0	
66			<50 m, but completely separated by those features.	0	
67			50-500 m, and not separated.	0	
68			50-500 m, but separated by those features.	0	
69			0.5 - 1 km, and not separated.	1	
70			0.5 - 1 km, but separated by those features.	0	
71			None of the above (the closest patches or corridors that large are >1 km away).	0	
72	OF14	Distance to Large Ponded Water	The distance from the AA center to the closest (but separate) non-tidal body of water that is ponded during most of the year and is larger than 8 hectares during most of a normal year is:		Determine this by viewing aerial imagery in Google Earth. [Sens, WBF, WBN]
73			<100 m.	0	
74			100 m - 1 km.	0	
75			1 -2 km.	1	
76			2-5 km.	0	
77			5-10 km.	0	
78			>10 km.	0	
79	OF15	Tidal Proximity	The distance from the AA edge to the closest tidal water body (regardless of its salinity) is:		In Google Earth, measure the distance to the ocean (including Bay of Fundy) or tidal river, whichever is closer. If you need to see how far upriver a river is tidal, see the KMZ file provided with this calculator for NS (NS Headtide). Points shown in those files are only an approximation, so local information if available may be preferable. [FA, WBF]
80			<100 m.	0	
81			100 m - 1 km.	0	
82			1 - 5 km.	0	
83			5-10 km.	0	
84			10-40 km.	1	
85			>40 km.	0	
86	OF16	Upland Edge Contact	Select one:		[NR, SBM, Sens]
87			The AA has no upland edge (or upland is <1% of perimeter). The AA is entirely surrounded by (& contiguous with) other wetlands or water.	0	
88			1-25% of the AA's perimeter abuts upland (including filled areas). The rest adjoins other wetlands or water that is mostly wider than the AA.	0	
89			25-50% of the AA's perimeter abuts upland. The rest adjoins other wetlands or water that is mostly wider than the AA.	0	
90			50-75% of the AA's perimeter abuts upland. The rest adjoins other wetlands or water that is mostly wider than the AA.	0	
91			More than 75% of the AA's perimeter abuts upland. Any remainder adjoins other wetlands or water that is mostly wider than the AA. This will be true for most assessments done with WESP-AC.	1	
92	OF17	Flood Damage from Non-tidal Waters	Within 5 km downstream or downslope of the AA (select first true choice):		Contact local authories to determine if such maps exist. Where available, LiDAR imagery can provide finer elevational resolution useful for flood modeling. [WSv]
93			Maps show Flood Zone or Flood Risk areas and there appears to be infrastructure vulnerable to river flooding not caused by tidal storm surges.	0	
94			Maps show Flood Zone or Flood Risk areas, but infrastructure is absent or is not vulnerable to floods from a non-tidal river. In some cases levees, upriver dams, or other measures may partly limit damage or risk from smaller events.	0	
95			Maps do not show Flood Zone or Flood Risk areas (or no such mapping has been done locally) and there appears to be infrastructure vulnerable to river flooding unrelated to tidal storm surges.	0	
96			Maps do not show Flood Zone or Flood Risk areas (or no such mapping has been done locally) and there is no infrastructure vulnerable to river flooding unrelated to tidal storm surges.	1	
97	OF18	Relative Elevation in Watershed	In Google Earth, enable the Terrain layer (lower left menu) and open the NS_Watersheds Secondary KMZ file that accompanies this calculator. Then determine the AA's approximate elevation (bottom right, NOT the "eye alt"). Then move cursor around to determine the watershed's maximum and minimum elevation. Divide the AA's elevation by the (max-min).	0.94	[FA, NR, Sens, SFSv, WCv, WSv]
98	OF19	Water Quality Sensitive Watershed or Area	The AA is in a Protected Water Supply area (Designated Water Supply Area, Natural Watershed Municipal Surface Water Supply Area, or Municipal Water Supply Area) according to the provided KMZ overlay ("NS Protected Water Supply Areas"). Enter 1= yes, 0= no.	0	If an ACCDC report is available for this AA, it also may contain such information. [NRv]
99	OF20	Degraded Water Upstream	Sampling indicates a problem with concentrations of metals, hydrocarbons, nutrients, or other substances (excluding bacteria, acidic water, high temperatures) being present at levels harmful to aquatic life or humans, and:		May use existing data, or sample those waters as part of this wetland assessment. "Harmful" should be evaluated with regard to current federal or provincial water quality standards. [AM, FA, FR, NRv, PRv, SRv, STR, WBF, WBN]
100			The condition is present within the AA.	0	
101			The condition is present in waters within 1 km that flow into the AA, but has not been documented in the AA itself.	0	
102			Sampling during both low water periods and times with high runoff (storms, snowmelt) indicates no problems in either the AA or inflowing waters.	0	
103			Data are insufficient (no or inadequate sampling within 1 km, or condition exists only at >1 km upstream). This is the situation for nearly all wetlands in this region.	1	
104	OF21	Degraded Water Downstream	The problem described above is downslope from the AA, and:		May use existing data, or monitor waters as part of this wetland assessment. [NRv, PRv, SRv]
105			The condition is present within 1 km downslope and connected to the AA by a channel.	0	
106			The condition is present within 5 km downslope and connected to the AA by a channel, or within 1 km but not connected to the AA by a channel.	0	
107			Sampling during both low water periods and times with high runoff (storms, snowmelt) indicates no problems in either the AA or inflowing waters.	0	
108			Data are insufficient (no or inadequate sampling within 1 km, or condition exists only at >1 km upstream). This is the situation for nearly all wetlands in this region.	1	
109	OF22	Wetland as a % of Its Contributing Area (Catchment)	From a topographic map and field observations, estimate the approximate boundaries of the catchment (CA) of the entire wetland of which the AA may be only a part. Then adjust those boundaries if necessary based on your field observations of the surrounding terrain, and/or by using procedures described in the Manual. Divide the area of the wetland (not just the AA) by the approximate area of its catchment excluding the area of the wetland itself. When doing the calculation, if ponded water is adjacent to the wetland, include that in the wetland's area. The result is:		Topographic maps may be viewed online at the National Atlas of Canada (Toporama): http://atlas.gc.ca/toporama/en/index.html [NR, PR, Sens, SR, WS]
110			<0.01, or catchment size unknown due to stormwater pipes that collect water from an indeterminate area.	1	
111			0.01 to 0.1.	0	
112			0.1 to 1.	0	
113			>1 (wetland is larger than its catchment (e.g., wetland with flat surrounding terrain and no inlet, or is entirely isolated by dikes, or is a raised bog).	0	
114	OF23	Unvegetated Surface in the Contributing Area	The proportion of the AA's contributing area (measured to no more than 1000 m upslope) that is comprised of buildings, roads, parking lots, other pavement, exposed bedrock, landslides, and other mostly-bare surface is about :		[FA, INV, NRv, PRv, SRv, STR, WCv, WSv]
115			<10%.	1	
116			10 to 25%.	0	
117			>25%.	0	

	A	B	C	D	E
118	OF24	Transport From Upslope	A relatively large proportion of the precipitation that falls farther upslope in the CA reaches this wetland quickly as runoff (surface water), as indicated by the following: (a) input channel is present, (b) input channels have been straightened, (c) upslope wetlands have been ditched extensively, (d) land cover is mostly non-forest, (e) CA slopes are steep, and/or (f) most CA soils are shallow (bedrock near surface) and/or have high runoff coefficients. This statement is:		[NRv, PRv, SRv, WSv]
119			Mostly true.	0	
120			Somewhat true.	0	
121			Mostly untrue.	1	
122	OF25	Aspect	The overland flow direction of most surface water (in streams, rivers, or runoff) that enters the AA is:		[AM, NR, SFS, WC, WS]
123			Northward (N, NE). north-facing contributing area.	0	
124			Southward (S, SW). south-facing contributing area.	1	
125			Other (E, SE, W, NW), or no detectable uphill slope or input channel (flat).	0	
126	OF26	Internal Flow Distance (Path Length)	The horizontal flow distance from the wetland's inlet to outlet is:		Identify inlets and outlets, if any, from topographic maps (use elevations to determine which are inlets and which are outlets) and augment by field inspection. With the Provincial Landscape Viewer, select Nova Scotia Topo as the Basemap. Also enable the layer Forestry>WAM Predicted Flow. Then measure the inlet-outlet distance. [NR, OE, PR, SR, WS]
127			<10 m.	0	
128			10 - 50 m.	0	
129			50 - 100 m.	0	
130			100 - 1000 m.	0	
131			1- 2 km.	0	
132			>2 km, or wetland lacks an inlet and outlet.	1	
133	OF27	Growing Degree Days	In Google Earth, open the KMZ file that accompanies this calculator, called NS_GrowingDegreeDays. Place your cursor over the AA and left-click. From the pop-up window, enter the GRIDCODE number in the next column.	2000	This layer was provided by Dr. Dan McKenney of the Canadian Forest Service [AM, CS, FR, INV, NR, OE, PH, PR, Sens, SR, WBF, WCv, WS]
134	OF28	Fish Access or Use	According to agency biologists and/or your own observations, the AA. [M*ark just the first choice that is true.]* :		Regarding the last choice, if uncertain if an AA is fishless, consider the possibility its waters have been stocked. [AM, FA, FR, INV, WBF, WBN]
135			Is known to support rearing and/or spawning by Atlantic salmon or other anadromous species or eels. Go to Provincial Landscape Viewer>Wildlife>Significant Habitat>Species at Risk. Contact local fishery biologists, review the ACCDC report, and visit these websites: http://www.salmonatlas.com/atlanticsalmon/canada-east/index.1.html http://atlanticsalmonfederation.org/rivers/introduction.html	0	
136			Has not been documented to support Atlantic salmon rearing and/or spawning, but is connected to nearby waters likely to contain Atlantic salmon or other anadromous species or eels and is probably accessed by those during some conditions.	0	
137			Is probably is not accessed by any anadromous fish species but is known or likely to have other fish at least seasonally.	0	
138			Is known or likely to be fishless (e.g., too small, dry, and/or not accessible even temporarily, and not stocked).	1	
139	OF29	Species of Conservation Concern	Within the past 10 years, in the AA (or in its adjoining waters or wetland), qualified observers have documented *[mark all applicable*]:		Request information from ACCDC and/or conduct your own survey at an appropriate season using an approved protocol. For birds, also check eBird.org. NOTE for NS: If your WESP-AC is being completed for a Wetland Alteration Application to NS-ECC, your ACCDC results and any taxon-specific survey results must be submitted along with your WESP-AC results, and application. [AMv, EC, PHv, POLv, SBMv, Sens, WBFv, WBNv]
140			Presence of one or more of the plant species listed in the Plants_Rare worksheet of the accompanying SuppInfo file, or the AA is within a mapped Atlantic Coastal Plain Flora Buffer (go to Provincial Landscape Viewer> Wildlife> Special Management Practice Zones).	0	
141			Presence of one or more of the amphibian or reptile species (AM) of conservation concern as listed in the Wildlife_Rare worksheet of the accompanying SuppInfo file.	0	
142			Presence of one or more of the waterbird species (WBF, WBN) of conservation concern as listed in the Wildlife_Rare worksheet of the accompanying SuppInfo file.	0	
143			Presence of one or more of the nesting songbird or raptor species (SBM) of conservation concern as listed in the Wildlife_Rare worksheet of the accompanying SuppInfo file, during their nesting season (May-July for most species).	0	
144			None of the above, or no data.	1	
145	OF30	Important Bird Area (IBA)	In Google Earth, open the KMZ file that accompanies this calculator, called IBAs_Canada. The AA is all or part of an officially designated IBA. Enter 1= yes, 0= no.	0	The source of this layer, which should be checked periodically for updates, is: http://www.ibacanada.com/mapviewer.jsp?lang=EN [SBMv, WBFv, WBNv]
146	OF31	Black Duck Nesting Area	In Google Earth, open the KMZ file that accompanies this calculator, called BlackDuck. Adjust its alignment and opacity. Determine the predicted density (pairs per 25 sq. km) of nesting American Black Duck in the AA's vicinity: <10 (enter 0), 10-20 (enter 1), 20-30 (enter 2), >30 (enter 3). If outside of region shown in map, change to blank.	0	This was provided by Dr. David Leske. [WBNv]
147	OF32	Wintering Deer or Moose Concentration Areas	If AA is on private land with no information, change to blank (not 0). Otherwise: With the Provincial Landscape Viewer, for Wintering Moose, go to Wildlife> Significant Habitat. For Mainland Moose Concentration Areas, go to Wildlife> Special Management Practice Zones. Enter: yes= 1, no= 0.	0	[SBM]
148	OF33	Other Conservation Designation	The AA is all or part of an area designated by government, First Nations, or the Nature Conservancy of Canada (NCC) for its exceptional ecological features or highly intact natural conditions. With Provincial Landscape Viewer, see Protected Areas. Enter: yes= 1, no= 0. If uncertain, consult NCC and agencies for more recent information.	0	See: https://novascotia.ca/parksandprotectedareas/plan/interactive-map/ [PU]
149	OF34	Conservation Investment	The AA is part of or contiguous to a wetland on which public or private organizational funds were spent to preserve, create, restore, or enhance the wetland (excluding mitigation wetlands). Ask the property owner. Enter: yes= 1, no= 0. If no information, change to blank (not 0).	0	[PU]
150	OF35	Mitigation Investment	The AA is all or part of a mitigation site used explicitly to offset impacts elsewhere. Ask the property owner. Enter: yes= 1, no= 0. If no information, change to blank.	0	[PU]
151	OF36	Sustained Scientific Use	Plants, animals, or water in the AA have been monitored for >2 years, unrelated to any regulatory requirements, and data are available to the public. Or the AA is part of an area that has been designated by an agency or institution as a benchmark, reference, or status-trends monitoring area. Ask the property owner. Enter: yes= 1, no= 0. If no information, change to blank.	0	[PU]
152	OF37	Calcareous Region	The AA is NOT in a subregion that has been heavily exposed to acid precipitation. Enter "1" if true (green or yellow in map in Appendix A of the Manual). Enter "0" if false. If no information, change to blank.		[AM, FA, FR, INV, PH]
153	OF38	Ownership	Select the ONE ownership that covers the most of the AA. In Google Earth, open KMZ file called NS_Crownlands.Use more recent information if available.		"Private lands" may include those owned or leased by non-governmental organizations, e.g., charitable conservation land trusts, DUC, TNC. [PU, STR]
154			New timber harvest, roads, mineral extraction, and intensive summer recreation (e.g., off-road vehicles) are permanently prohibited. Includes many publicly-owned Protected Lands, and private lands under long-term (30+ year) legal agreements to maintain nearly-unaltered conditions.	0	
155			Ownership is public (e.g., municipal, Crown Reservations/Notations) but some or all of the above activities are allowed.	0	
156			Ownership is private but public access is allowed, and/or a shorter-term conservation easement (whether renewable or not) is in place.	0	
157			Ownership is private and owner does not allow access, or access permission unknown, and not a conservation easement.	1	

	A	B	C	D	E
1	Date: 27 July, 2021		Site Identifier: WL-10	Investigator: Brady Leights	
2	**Form F (Field). Non-tidal Wetland Data Form. WESP-AC version 2 for Nova Scotia.** DIRECTIONS: Walk for no less than 10 minutes from the wetland edge towards its core, in the part of the AA that is proposed for alteration. If no alteration is proposed, walk in a portion that appears to be most representative of the wetland overall. Walk only where it is safe and legal to do so. Conduct the assessment only after reading the accompanying Manual and the Explanations column of the data form. In the Data column, change the 0 (false) to a 1 (true) for the best choice, or for multiple choices where allowed and so indicated. Answer these questions primarily based on your onsite observations and interpretations. Do not write in shaded parts of this data form. Answering some questions accurately may require conferring with the landowner or other knowledgable persons, and/or reviewing aerial imagery. For most wetlands, completing this field data form will require 1-2 hours on a site. For a list of functions to which each question pertains, see the accompanying Interpretations form. For detailed descriptions of each WESP-AC model, see Appendix B of the accompanying Manual. Codes for functions and values are: WS= Water Storage & Delay, SFS= Stream Flow Support, WC= Water Cooling, SR= Sediment Retention & Stabilisation, PR= Phosphorus Retention, NR= Nitrate Removal, CS= Carbon Sequestration, OE= Organic Nutrient Export, INV= Invertebrate Habitat, FA= Anadromous Fish Habitat, FR= Resident Fish Habitat, AM= Amphibian & Reptile Habitat, WBF= Feeding Waterbird Habitat, WBN= Nesting Waterbird Habitat, SBM= Songbird, Raptor, & Mammal Habitat, POL= Pollinator Habitat, PH= Native Plant Habitat, PU= Public Use & Recognition, EC= Ecological Condition, Sen= Wetland Sensitivity, STR= Stressors.		
3	**#**	**Indicators**	**Condition Choices**	**Data**	**Definitions/Explanations**
4	F1	Wetland Type	Follow the key below and mark the ONE row that best describes MOST of the vegetated part of the AA:		Ericaceous shrubs are ones in the heather family (Ericaceae). Most have leathery evergreen leaves. They include rhododendron, azalea, swamp laurel, leatherleaf, Labrador tea, and others. Most require acidic soil. Although not in the family Ericaceae, sweetgale (*Myrica gale*) should be counted also. [AM, CS, FA, FR, INV, NR, OE, PH, Sens, SFS, WBF, WBN]
5			A. Moss and/or lichen cover more than 25% of the ground. Often dominated by ericaceous shrubs (e.g., Labrador tea) or other acid-tolerant plants (e.g., bog cranberry, pitcher plant, sundew, orchids). Substrate is mostly undecomposed peat. Choose between A1 and A2 and mark the choice with a 1 in their adjoining column. Otherwise go to B below.		
6			A1. Surface water is usually absent or, if present, pH is typically <4.5 and conductivity is usually <100 µS/cm (<64 ppm TDS). Trees are absent or nearly so. Sedge cover usually sparse or absent but cottongrass and/or lichen cover may be extensive, as well as cloudberry, lingonberry, sheep laurel, and a sedge (*Carex rariflor* a). Wetland surface and surrounding landscape are seldom sloping and wetland often is domed (convex). Inlet and outlet channels are usually absent. If known, pH of peat is <4.0.	0	
7			A2. Not A1. Surface water, if present, has pH typically >4.5 and conductivity is usually >100 µS/cm (>64 ppm TDS). Sedge cover is usually extensive, and/or tree and tall shrub cover is extensive. Sometimes at toe of slope or edge of water body. An exit channel is usually present. Wetter than A1 and peat depth may be shallower (<2 m).	1	
8			B. Moss and/or lichen cover less than 25% of the ground. Soil is mineral or decomposed organic (muck). Choose between B1 and B2 and mark the choice with a 1 in their adjoining column:		
9			B1. Trees and shrubs taller than 1 m comprise more than 25% of the vegetated cover. Surface water is mostly absent or inundates the vegetation only seasonally (e.g., vernal pools or floodplain).	0	
10			B2. Not B1. Tree & tall shrubs comprise less than than 25% of the vegetated cover. Vegetation is mostly herbaceous, e.g., cattail, bulrush, burreed, pond lily, horsetail. Surface water may be extensive and fluctuates seasonally, being either persistent or drying up partly or entirely.	0	
11			*Reminder : For all questions, the AA should include all persistent waters in ponds smaller than 8 hectares (~283 m on a side) that are adjacent to the AA. The AA should also include part of the water area of adjacent ponded water larger than 8 ha and adjacent rivers wider than 20 m. Specifically, the AA should include the open water part adjacent to wetland vegetation and equal in width to the average width of that vegetated zone. Throughout this data form, " adjacent " is used synonymously with abutting, adjoining, bordering, contiguous -- and means no upland (manmade or natural) completely separates the described features along their directly shared edge. Features joined only by a channel are not necessarily considered to be adjacent -- a large portion of their edges must match. The features do not have to be hydrologically connected in order to be considered adjacent.*		
12	F2	Wetland Types - Adjoining or Subordinate	If the AA is smaller than 1 ha, mark all other types that occupy more than 1% of the vegetated AA. If the AA is larger than 1 ha, mark all other types which are within or adjacent to the AA and occupy more than 1 ha, as visible from the AA or as interpreted from aerial imagery. Do not mark again the type marked in F1.		1 hectare is 10,000 sq. m or about 2.5 acres. It could have dimensions of 100 m by 100 m, 1000 m by 10 m, or similar. [AM, INV, SBM, WBF]
13			A1.	0	
14			A2.	0	
15			B1.	0	
16			B2.	0	
17	F3	Woody Height & Form Diversity	Following EACH row below, indicate with a number code the percentage of the living vegetation in the AA which is occupied by that feature (6 if >95%, 5 if 75-95%, 4 if 50-75%, 3 if 25-50%, 2 if 5-25%, 1 if <5%, 0 if none). If the vegetated part of the AA is largely herbaceous (non-woody) vegetation, these percentages should not sum to 100%.		Deciduous shrubs in this region usually include buttonbush, Labrador tea, bayberry (*Morella*), huckleberry, cranberry, cloudberry, sweetgale, alder, willow, birch, ash, dogwood, and a few others. If you assigned a code of 3 or higher to any of the first four choices and the ground cover beneath the trees/shrubs is <25% moss, then question F1 might be "B1". [CS, INV, NR, PH, POL, SBM, Sens]
18			coniferous trees (may include tamarack) taller than 3 m.	1	
19			deciduous trees taller than 3 m.	2	
20			coniferous or ericaceous shrubs or trees 1-3 m tall not directly below the canopy of trees.	1	
21			deciduous shrubs or trees 1-3 m tall not directly below the canopy of trees.	3	
22			coniferous or ericaceous shrubs <1 m tall not directly below the canopy of taller vegetation.	1	
23			deciduous shrubs or trees <1 m tall (e.g., deciduous seedlings) not directly below the canopy of taller vegetation.	2	
24			*Note : If none of top 4 rows in F3 was marked 2 or greater , SKIP to F9 (N fixers).*		
25	F4	Dominance of Most Abundant Shrub Species	Determine which two woody plant species comprise the greatest portion of the low (<3 m) woody cover . Then choose one:		[PH, POL, SBM, Sens]
26			those species together comprise > 50% of such cover.	1	
27			those species together do not comprise > 50% of such cover.	0	
28	F5	Woody Diameter Classes	Mark ALL the types that comprise >5% of the woody canopy cover in the AA or >5% of the wooded areas (if any) along its upland edge (perimeter). The edge should include only the trees whose canopies extend into the AA.		Estimate the diameters at chest height. If small-diameter trees are overtopped (shaded) by larger ones, visualise a "subcanopy" at the average height of the smaller-dbh trees, to serve as a basis for the minimum 5% canopy requirement in this question. The trees and shrubs need not be wetland species. [AM, CS, POL, SBM, Sens, WBN]
29			coniferous, 1-9 cm diameter and >1 m tall.	1	
30			broad-leaved deciduous 1-9 cm diameter and >1 m tall.	1	
31			coniferous, 10-19 cm diameter.	1	
32			broad-leaved deciduous 10-19 cm diameter.	1	
33			coniferous, 20-40 cm diameter.	0	
34			broad-leaved deciduous 20-40 cm diameter.	0	
35			coniferous, >40 cm diameter.	0	
36			broad-leaved deciduous >40 cm diameter.	0	
37	F6	Height Class Interspersion	Follow the key below and mark the ONE row that best describes MOST of the AA:		[AM, INV, NR, PH, SBM, Sens]
38			A. Neither the vegetation taller than 1 m nor the vegetation shorter than that comprise >70% of the vegetated part of the AA. They each comprise 30-70%. Choose between A1 and A2 and mark the choice with a 1 in the adjoining column. Otherwise go to B below.		
39			A1. The two height classes are mostly scattered and intermixed throughout the AA.	0	
40			A2. Not A1. The two height classes are mostly in separate zones or bands, or in proportionately large clumps.	1	
41			B. Either the vegetation shorter than 1 m comprises >70% of the vegetated part of the AA, or the vegetation taller than that does. One size class might even be totally absent. Choose between B1 and B2 and mark the choice with a 1 in the adjoining column:		
42			B1. The less prevalent height class is mostly scattered and intermixed within the prevalent one.	0	
43			B2. Not B1. The less prevalent height class is mostly located apart from the prevalent one, in separate zones or clumps, or is completely absent.	0	
44	F7	Large Snags (Dead Standing Trees)	The number of large snags (diameter >20 cm) in the AA plus adjacent upland area within 10 m of the wetland edge is:		Snags are dead standing trees that often (not always) lack bark and foliage. Include only ones that are at least 2 m tall. [POL, SBM, WBN]
45			None, or fewer than 8/ hectare which exceed this diameter.	1	
46			Several (>8/hectare) and a pond, lake, or slow-flowing water wider than 10 m is within 1 km.	0	

	A	B	C	D	E
47			Several (>8/hectare) but above not true.	0	
48	F8	Downed Wood	The number of downed wood pieces longer than 2 m and with diameter >10 cm, and not persistently submerged, is:		Exclude temporary "burn piles." [AM, INV, POL, SBM]
49			Few or none that meet these criteria.	1	
50			Several (>5 if AA is >5 hectares, less for smaller AAs) meet these criteria.	0	
51	F9	N Fixers	The percentage of the AA's vegetated cover that contains nitrogen-fixing plants (e.g., alder, sweetgale, clover, lupine, alfalfa, other legumes) is:		Do not include N-fixing algae or lichens. [FA, FR, INV, NRv, OE, PH, SBM, Sens]
52			<1% or none.	0	
53			1-25% of the vegetated cover, in the AA or along its water edge (whichever has more).	1	
54			25-50% of the vegetated cover, in the AA or along its water edge (whichever has more).	0	
55			50-75% of the vegetated cover, in the AA or along its water edge (whichever has more).	0	
56			>75% of the vegetated cover, in the AA or along its water edge (whichever has more).	0	
57	F10	Sphagnum Moss Extent	The cover of Sphagnum moss (or any moss that forms a dense cushion many centimeters thick), including the moss obscured by taller sedges and other plants rooted in it, is:		Exclude moss growing on trees and rocks. [CS, PH]
58			<5% of the vegetated part of the AA.	0	
59			5-25% of the vegetated part of the AA.	0	
60			25-50% of the vegetated part of the AA.	0	
61			50-95% of the vegetated part of the AA.	1	
62			>95% of the vegetated part of the AA.	0	
63	F11	% Bare Ground & Thatch	Consider the parts of the AA that lack surface water at the driest time of the growing season. Viewed from directly above the ground layer, the predominant condition in those areas at that time is:		Thatch is dead plant material (stems, leaves) resting on the ground surface. Bare ground that is present under a tree or shrub canopy should be counted. Boulders count as bare ground. Wetlands with mineral soils and that are heavily shaded or are dominated by annual plant species tend to have more extensive areas that are bare during the early growing season. [AM, EC, INV, NR, OE, POL, PR, SBM, Sens]
64			Little or no (<5%) *bare ground* is visible between erect stems or under canopy anywhere in the vegetated AA. Ground is extensively blanketed by dense thatch, moss, lichens, graminoids with great stem densities, or plants with ground-hugging foliage.	1	
65			Slightly bare ground (5-20% bare between plants) is visible in places, but those areas comprise less than 5% of the unflooded parts of the AA.	0	
66			Much bare ground (20-50% bare between plants) is visible in places, and those areas comprise more than 5% of the unflooded parts of the AA.	0	
67			Other conditions.	0	
68			Not applicable. Surface water (either open or obscured by emergent plants) covers all of the AA all the time.	0	
69	F12	Ground Irregularity	Imagine the AA without any living vegetation. Excluding the portion of the AA that is always under water, the number of hummocks, small pits, raised mounds, animal burrows, ruts, gullies, natural levees, microdepressions, and other areas of peat or mineral soil that are raised or depressed >10 cm compared to most of the area within a few meters surrounding them is:		The depressions may be of human or natural origin. [AM, EC, INV, NR, PH, POL, PR, SBM, SR, WS]
70			Few or none (minimal microtopography; <1% of the land has such features, or entire AA is always water-covered).	1	
71			Intermediate.	0	
72			Several (extensive micro-topography).	0	
73	F13	Upland Inclusions	Within the AA, inclusions of upland are:		[AM, NR, SBM]
74			Few or none.	1	
75			Intermediate (1 - 10% of vegetated part of the AA).	0	
76			Many (e.g., wetland-upland "mosaic", >10% of the vegetated AA).	0	
77	F14	Soil Texture	In parts of the AA that lack persistent water, the texture of soil in the uppermost layer is mostly: [*To determine this, use a trowel to check in at least 3 widely spaced locations, and use the soil texture key (in Appendix A of the Manual).]*		[CS, NR, OE, PH, PR, Sens, SFS, WS]
78			Loamy: soils that may contain a little fine grit and do not make a "ribbon" longer than 2 cm when moistened, rolled, squeezed, and extended between thumb and forefinger.	0	
79			Fines: includes silt, clay, silt, soils that make a ribbon longer than 2 cm when moistened, rolled, squeezed, and extended between thumb and forefinger.	0	
80			Deep Peat, to 40 cm depth or greater.	1	
81			Shallow Peat or organic <40 cm deep.	0	
82			Coarse: includes sand, loamy sand, gravel, cobble, soils that do not make a ribbon when moistened, rolled, squeezed, and extended between thumb and forefinger.	0	
83	F15	Shorebird Feeding Habitats	During any 2 consecutive weeks of the growing season, the extent of mudflats, bare unshaded saturated areas not covered by thatch, and unshaded waters shallower than 6 cm is: [Include also any area that is adjacent to the AA.]		This addresses needs of many but not all migratory sandpipers, plovers, and related species. [WBF]
84			None, or <100 sq. m.	1	
85			100-1000 sq. m.	0	
86			1000 – 10,000 sq. m.	0	
87			>10,000 sq. m.	0	
88	F16	Herbaceous % of Vegetated Wetland	In aerial ("ducks eye") view, the maximum annual cover of herbaceous vegetation (all non-woody plants except moss) is:		[AM, WBF, WBN]
89			<5% of the vegetated part of the AA or <0.01 hectare (whichever is less). Mark "1" here and SKIP to F20 (Invasive Plant Cover).	0	
90			5-25% of the vegetated part of the AA.	0	
91			25-50% of the vegetated part of the AA.	0	
92			50-95% of the vegetated part of the AA.	1	
93			>95% of the vegetated part of the AA.	0	
94	F17	Forb Cover	Within parts of the AA having herbaceous cover (excluding SAV), the areal cover of forbs reaches an annual maximum of:		Forbs are flowering plants. Do not include grasses, sedges, cattail, other graminoids, ferns, horsetails, or others that lack showy flowers. [POL]
95			<5% of the herbaceous part of the AA.	1	
96			5-25% of the herbaceous part of the AA.	0	
97			25-50% of the herbaceous part of the AA.	0	
98			50-95% of the herbaceous part of the AA.	0	
99			>95% of the herbaceous part of the AA.	0	
100	F18	Sedge Cover	Sedges (*Carex* spp.) and cottongrass (*Eriophorum* spp.) occupy:		[CS]
101			<5% of the vegetated area, or none.	0	
102			5-50% of the vegetated area.	1	
103			50-95% of the vegetated area.	0	
104			>95% of the vegetated area.	0	
105	F19	Dominance of Most Abundant Herbaceous Species	Determine which two herbaceous species comprise the greatest portion of the herbaceous cover (excluding mosses and floating-leaved aquatic plants). Then choose one of the following:		For this question, include ferns as well as graminoids and forbs. [EC, INV, PH, POL, Sens]
106			those species together comprise > 50% of the areal cover of herbaceous plants at any time during the year.	1	
107			those species together do not comprise > 50% of the areal cover of herbaceous plants at any time during the year.	0	
108	F20	Invasive Plant Cover	How extensive is the cover of invasive plant species in the AA? For species, see Plants_invasive worksheet in the accompanying SuppInfo file.		[EC, PH, POL, Sens]
109			invasive species appear to be absent in the AA, or are present only in trace amount (a few individuals).	1	
110			invasive species are present in more than trace amounts, but comprise <5% of herbaceous cover (or woody cover, if the invasives are woody).	0	
111			invasive species comprise 5-20% of the herb cover (or woody cover, if the invasives are woody).	0	
112			invasive species comprise 20-50% of the herb cover (or woody cover, if the invasives are woody).	0	
113			invasive species comprise >50% of the herb cover (or woody cover, if the invasives are woody).	0	

	A	B	C	D	E
114	F21	Invasive Cover Along Upland Edge	Along the wetland-upland boundary, the percent of the upland edge (within 3 m upslope from the wetland) that is occupied by invasive plant species is:		If a plant cannot be identified to species (e.g., winter conditions) but its genus contains an exotic species, assume the unidentified plant to also be exotic. If vegetation is so senesced that exotic species cannot be identified, answer "none". [PH, STR]
115			none of the upland edge (invasives apparently absent), or AA has no upland edge.	1	
116			some (but <5%) of the upland edge.	0	
117			5-50% of the upland edge.	0	
118			most (>50%) of the upland edge.	0	
119	F22	Fringe Wetland	During most of the year, open water within or adjacent to the vegetated part of the wetland is much wider than the maximum width of the vegetated zone within the wetland. Enter "1" if true, "0" if false.	0	[WBF, WBN, WCv]
120	F23	Lacustrine Wetland	The vegetated part of the AA is within or adjacent to a body of non-tidal standing open water whose size exceeds 8 hectares during most of a normal year.	0	[FR, PR, PU, WBF, WBN]
121	F24	% of AA Without Surface Water	The percentage of the AA that never contains surface water during an average year (that is, except perhaps for a few hours after snowmelt or rainstorms), but which is still a wetland, is:		1 hectare is 10,000 sq. m or about 2.5 acres. It could have dimensions of 100 m by 100 m, 1000 m by 10 m, or similar. [AM, FA, FR, INV, NR, PH, PR, SBM, Sens, SRv, WBF, WBN, WC]
122			<1% . In other words, all or nearly all of the AA is covered by water permanently or at least seasonally.	0	
123			1-25% of the AA, or <1% but >0.01 ha never contains surface water.	0	
124			25-50% of the AA never contains surface water.	0	
125			50-75% of the AA never contains surface water.	0	
126			75-99% of the AA never contains surface water, OR >99% and there is at least one persistently ponded water body larger than 1 ha in the AA.	0	
127			99-100%. AND there is no persistently ponded water body larger than 1 ha within the AA. Enter "1" and SKIP to F42 (Channel Connection).	1	
128	F25	% of AA with Persistent Surface Water	Identify the parts of the AA that still contain surface water (flowing or ponded, open or hidden beneath vegetation) even during the driest times of a normal year, i.e., when the AA's surface water is at its lowest annual level. At that time, the percentage of the AA that still contains surface water is:		If you are unable to determine the condition at the driest time of year, ask the land owner or neighbors about it if possible. Indicators of persistence may include fish, some dragonflies, beaver, and muskrat. [AM, CS, FA, FR, INV, NR, POL, PR, SBM, WBF, WBN]
129			None. The AA dries up completely (no water in channels either) or never has surface water during most years. SKIP to F27.	0	
130			1-20% of the AA.	0	
131			20-50% of the AA.	0	
132			50-95% of the AA.	0	
133			>95% of the AA. True for many fringe wetlands.	0	
134	F26	% of Summertime Water that Is Shaded	At mid-day during the warmest time of year, the area of surface water within the AA that is shaded by vegetation and other features that are within the AA at that time is:		[FA, WC]
135			<5% of the water is shaded, or no surface water is present then.	0	
136			5-25% of the water is shaded.	0	
137			25-50% of the water is shaded.	0	
138			50-75% of the water is shaded.	0	
139			>75% of the water is shaded.	0	
140	F27	% of AA that is Flooded Only Seasonally	The percentage of the AA's area that is between the annual high water and the annual low water (surface water) is:		Flood marks (algal mats, adventitious roots, debris lines, ice scour, etc.) are often evident when not fully inundated. Also, such areas often have a larger proportion of upland and annual (vs. perennial) plant species. In riverine systems, the extent of this zone can be estimated by multiplying by 2 the bankful height and visualising where that would intercept the land along the river. [CS, FA, INV, NR, OE, PH, SR, WBF, WBN, WS]
141			None, or <0.01 hectare and <1% of the AA. SKIP to F29.	0	
142			1-20% of the AA, or <1% but >0.01 ha.	0	
143			20-50% of the AA.	0	
144			50-95% of the AA.	0	
145			>95% of the AA.	0	
146	F28	Annual Water Fluctuation Range	The annual fluctuation in surface water level within most of the parts of the AA that contain surface water at least temporarily is:		Look for flood marks (see above). Because the annual range of water levels is difficult to estimate without multiple visits, consider asking the land owner or neighbors about it. [AM, CS, INV, NR, OE, PH, PR, SR, WBN, WS]
147			<10 cm change (stable or nearly so).	0	
148			10 cm - 50 cm change.	0	
149			0.5 - 1 m change.	0	
150			1-2 m change.	0	
151			>2 m change.	0	
152	Is the AA plus adjacent ponded water smaller than 0.01 hectare (about 10m x 10m, or 1m x 100 m)? If so, enter "1" in column D and SKIP TO F42 (Connection).			0	
153	F29	Predominant Depth Class	During most of the time when surface water is present during the growing season, its depth, averaged over the entire inundated part of the AA, is:		If a boat is unavailable, estimate this by considering wetland size and local topography. Or if timing and safety allow, depths may be measured by drilling through winter ice.This question is asking about the spatial median depth that occurs during most of that time, even if inundation is only seasonal or temporary. If inundation in most but not all of the wetland is brief, the answer will be based on the depth of the most persistently inundated part of the wetland. Include surface water in channels and ditches as well as ponded areas. [CS, FA, FR, INV, OE, PH, PR, Sens, SFS, SR, WBF, WBN, WC]
154			<10 cm deep (but >0).	0	
155			10 - 50 cm deep.	0	
156			0.5 - 1 m deep.	0	
157			1 - 2 m deep.	0	
158			>2 m deep. True for many fringe wetlands.	0	
159	F30	Depth Classes - Evenness of Proportions	When present, surface water in most of the AA usually consists of (select one):		Estimate these proportions by considering the gradient and microtopography of the site. [FR, INV, WBF, WBN]
160			One depth class that comprises >90% of the AA's inundated area (use the classes in the question above).	0	
161			One depth class that comprises 50-90% of the AA's inundated area.	0	
162			Neither of above. There are 3 or more depth classes and none occupy >50%.	0	
163	F31	% of Water That Is Ponded (not Flowing)	During most times when surface water is present, the percentage that is (1) ponded (stagnant, or flows so slowly that fine sediment is not held in suspension) AND (2) is likely to be deeper than 0.5 m in some places, is:		Nearly all wetlands with surface water have some ponded water. [AM, CS, INV, NR, OE, PR, Sens, SR, WBF, WBN, WC, WS]
164			<5% of the water, or it occupies <100 sq.m cumulatively. Nearly all the surface water is flowing. SKIP to F34.	0	
165			5-30% of the water.	0	
166			30-70% of the water.	0	
167			70-95% of the water.	0	
168			>95% of the water.	0	
169	F32	Ponded Open Water - Minimum Size	During most of the growing season, the largest patch of open water that is ponded and is in or bordering the AA is >0.01 hectare (about 10 m by 10 m) and mostly deeper than 0.5 m. If true enter "1" and continue, If false, enter "0" and SKIP to F41 (Floating Algae & Duckweed).	0	Open water is not obscured by vegetation in aerial ("duck's eye") view. It includes vegetation floating on the water surface or entirely submersed beneath it.
170	F33	% of Ponded Water that is Open	In ducks-eye aerial view, the percentage of the ponded water that is open (lacking emergent vegetation during most of the growing season, and unhidden by a forest or shrub canopy) is:		[AM, CS, FA, FR, INV, NR, OE, PR, SR, WBF, WBN, WC]
171			None, or <1% of the AA and largest pool occupies <0.01 hectares. Enter "1" and SKIP to F41 (Floating Algae & Duckweed).	0	
172			1-4% of the ponded water. Enter "1" and SKIP to F41 (Floating Algae & Duckweed).	0	
173			5-30% of the ponded water.	0	
174			30-70% of the ponded water.	0	
175			70-99% of the ponded water.	0	
176			100% of the ponded water.	0	
177	F34	Width of Vegetated Zone within Wetland	At the time during the growing season when the AA's water level is lowest, the average width of vegetated area in the AA that separates adjoining uplands from open water within the AA is:		"Vegetated area" does not include underwater or floating-leaved plants, i.e., aquatic bed. Width may include wooded riparian areas if they have wetland soil or plant indicators. [AM, CS, NR, OE, PH, PR, SBM, Sens, SR, WBN]
178			<1 m.	0	
179			1 - 9 m.	0	
180			10 - 29 m.	0	
181			30 - 49 m.	0	
182			50 - 100 m.	0	
183			> 100 m, or open water is absent at that time.	0	

	A	B	C	D	E
184	F35	Flat Shoreline Extent	During most of the part of the growing season when water is present, the percentage of the AA's **water edge** length that is **nearly flat** (a slope less than about 5% measured within 5 m landward of the water) is:		If several isolated pools are present in early summer, estimate the percent of their collective shorelines that has such a gentle slope. [SR, WBN]
185			<1% of the water edge.	0	
186			1-25% of the water edge.	0	
187			25-50% of the water edge.	0	
188			50-75% of the water edge.	0	
189			>75% of the water edge.	0	
190	F36	Robust Emergents	The percentage **of the emergent vegetation** cover in the AA that is cattail (*Typha* spp.), common reed (*Phragmites*), or tall (>1m) bulrush is:		**Emergent vegetation** is herbaceous plants whose stems are partly above and partly below the water surface during most of the time water is present. [WBN]
191			<1% of the emergent vegetation, or emergent vegetation is absent. SKIP to F38.	0	
192			1-25% of the emergent vegetation.	0	
193			25-75% of the emergent vegetation.	0	
194			>75%, of the emergent vegetation.	0	
195	F37	Interspersion of Emergents & Open Water	During most of the part of the growing season when water is present, the spatial pattern of **emergent** vegetation within the water is mostly:		[AM, FA, FR, INV, NR, OE, PH, PR, SBM, SR, WBF, WBN]
196			Scattered. More than 30% of such vegetation forms small islands or corridors surrounded by water.	0	
197			Intermediate.	0	
198			Clumped. More than 70% of such vegetation is in bands along the wetland perimeter or is clumped at one or a few sides of the surface water area.	0	
199	F38	Persistent Deepwater Area	If the deepest patch of surface water (flowing or ponded) in or directly adjacent to the AA is mostly deeper than 0.5 m for >2 weeks during the growing season, enter "1" and continue. If not, enter "0" and SKIP to F42.(Connection).	0	
200	F39	Non-vegetated Aquatic Cover	During most of the growing season and in waters deeper than 0.5 m, the cover for fish, aquatic invertebrates, and/or amphibians that is provided NOT by living vegetation, but by accumulations of **dead wood and undercut banks** is:		For this question, consider only the wood that is at or above the water surface. Estimates of underwater wood based only on observations from terrestrial viewpoints are unreliable so should not be attempted. [AM, FA, FR, INV]
201			Little or none.	0	
202			Intermediate.	0	
203			Extensive.	0	
204	F40	Isolated Island	The AA contains (or is part of) an island or beaver lodge within a lake, pond, or river, and is isolated from the shore **by water depths** >1 m on all sides during an average June. The island may be solid, or it may be a floating vegetation mat that is sufficiently large and dense to support a waterbird nest.	0	[WBN]
205	F41	Floating Algae & Duckweed	At some time of the year, mats of algae and/or duckweed are likely to cover >50% of the AA's otherwise-unshaded water surface, or blanket >50% of the underwater substrate. If true, enter "1" in next column. If untrue or uncertain, enter "0".	0	[EC, PR, WBF]
206	F42	Channel Connection & Outflow Duration	The most persistent surface water connection (outlet channel or pipe, ditch, or overbank water exchange) between the AA and a downslope stream network is: [Note: If the AA represents only part of a wetland, answer this according to whichever is the **least** permanent surface connection: the one between the AA and the rest of the wetland, or the surface connection between the wetland and the downslope stream network.]		Consider the connection regardless of whether the surface water is frozen. The "downslope stream network" could consist of ditches, rivers, ponds, or lakes which eventually connect to the ocean. If this cannot be determined while visiting the AA, consult topographic maps perhaps by viewing these online with Toporama (http://atlas.nrcan.gc.ca/toporama/en/index.html) [CS, FA, FR, NR, OE, PR, Sens, SFS, SR, WCv, WS]
207			Persistent (surface water flows out for >9 months/year).	0	
208			Seasonal (surface water flows out for 14 days to 9 months/year, not necessarily consecutive).	0	
209			Temporary (surface water flows out for <14 days, not necessarily consecutive).	1	
210			None -- but maps show a stream network downslope from the AA and within a distance that is less than the AA's length. SKIP to F47 (pH Measurement).	0	
211			No surface water flows out of the wetland except possibly during extreme events (<once per 10 years). Or, water flows only into a wetland, ditch, or lake that lacks an outlet. SKIP to F47 (pH Measurement).	0	
212	F43	Outflow Confinement	During major runoff events, in the places where **surface** water exits the AA or connected waters nearby, the water:		"Major runoff events" would include biennial high water caused by storms and/or rapid snowmelt. [CS, NR, OE, PR, Sens, SR, STR, WS]
213			Mostly passes through a pipe, culvert, narrowly breached dike, berm, beaver dam, or other partial obstruction (other than natural topography) that does not appear to drain the wetland artificially during most of the growing season.	0	
214			Leaves through natural exits (channels or diffuse outflow), not mainly through artificial or temporary features.	1	
215			Is exported more quickly than usual due to ditches or pipes within the AA or connected to its outlet, or within 10 m of the AA's edge, which drain the wetland artificially, or water is pumped out of the AA.	0	
216	F44	Tributary Channel	At least once annually, surface water from a tributary channel that is >100 m long moves into the AA. Or, surface water from a larger permanent water body adjacent to the AA spills into the AA. If it enters only via a pipe, that pipe must be fed by a mapped stream or lake further upslope. If no, SKIP to F47 (pH Measurement).	0	If inlet tributaries cannot be searched for due to inaccessibility of part of the AA, follow suggestions in F42 above. [NRv, PH, PRv, SRv]
217	F45	**Input** Water Temperature	Based on lack of shade, water source characteristics, or actual temperature measurements, the inflow is likely to be warmer than surface water in the AA during part of most years. Enter 1= yes, 0= no.	0	[WCv]
218	F46	Throughflow Resistance	During its travel through the AA at the time of peak annual flow, water arriving in channels: [select only the ONE encountered by **most** of the incoming water].		[FA, FR, INV, NR, OE, PR, SR, WS]
219			Does not bump into many plant stems as it travels through the AA. Nearly all the water continues to travel in unvegetated (often incised) channels that have minimal contact with wetland vegetation, or through a zone of open water such as an instream pond or lake.	0	
220			Bumps into **herbaceous** vegetation but mostly remains in fairly straight channels.	0	
221			Bumps into **herbaceous** vegetation and mostly spreads throughout, or is in widely meandering, multi-branched, or braided channels.	0	
222			Bumps into **tree trunks and/or shrub stems** but mostly remains in fairly straight channels.	0	
223			Bumps into tree trunks and/or shrub stems and follows a fairly **indirect** path from entrance to exit (meandering, multi-branched, or braided).	1	
224	F47	pH Measurement	The pH in most of the AA's surface water:		Preferably, measure this in larger areas of ponded surface water within the AA, or in streams that have passed through (not along) most of the AA. Unless surface water is completely absent, do not dig holes or make depressions in peat in order to provide water for this measurement. Avoid measuring near roads or in puddles formed only by recent rain. [AM, FA, FR, NR, WBF, PH, PR, Sens, WBF, WBN]
225			Was measured, and is: [*enter the reading in the column to the right.*]		
226			Was not measured but surface water is present and is darkly tea-coloured. Or if no surface water, then mosses and plants that indicate peatland (e.g., Labrador tea) are prevalent. Enter "1".	0	
227			Neither of above. Enter "1".	1	
228	F48	TDS and/or Conductivity	The TDS (total dissolved solids) or conductivity off the AA's surface water is: (select the first true row with information):		See above for measurement guidance. [FR, INV, NRv, PH, PRv, Sens]
229			TDS is: [*Enter the reading* ***in ppm or mg/L*** *in the column to the right, if measured, or answer next row.*]		
230			Conductivity is [*Enter the reading* ***in µS/cm*** *in the column to the right.*]		
231			Was not measured, but plants that indicate saline conditions cover much of the vegetated AA. Enter "1".	0	
232			Neither of above	1	
233	F49	Beaver Probability	Use of the AA by beaver during the past 5 years is (select most applicable ONE):		[FA, FR, PH, SBM, Sens, WBF, WBN]
234			**Evident** from direct observation or presence of gnawed limbs, dams, tracks, dens, lodges, or extensive stands of water-killed trees (snags).	0	
235			**Likely** based on known occurrence in the region and proximity to suitable habitat, which may include: (a) a persistent freshwater wetland, pond, or lake, or a perennial low or mid-gradient (<10%) channel, and (b) a corridor or multiple stands of hardwood trees and shrubs in vegetated areas near surface water.	0	
236			Unlikely because site characteristics above are deficient, and/or this is a settled area or other area where beaver are routinely removed.	1	
237	F50	Groundwater Strength of Evidence	Select first applicable choice:		Adhere to these criteria strictly -- do not use personal judgment based on fen conditions, pH, or other evidence. Consult topographic maps to detect breaks in slope described here. Rust deposits associated with groundwater seeps may be most noticeable as orange discoloration in ice formations along streams during early winter. [AM, CS, FA, FR, INV, NR, OE, PH, PRv, SFS, WC, WS]
238			Springs are known to be present within the AA, or if groundwater levels have been monitored, that has demonstrated that groundwater primarily discharges to the wetland for longer periods during the year than periods when the wetland recharges the groundwater.	0	

	A	B	C	D	E
239			Most of the AA has a slope of >5%, or is very close to the base of a natural slope longer than 100 and much steeper than the slope of the AA, AND the pH of surface water, if known, is >5.5.	0	
240			Neither of above is true, although some groundwater may discharge to or flow through the AA. Or groundwater influx is unknown.	1	
241	F51	Internal Gradient	The gradient along most of the flow path **within** the AA is:		This is not the same as the shoreline slope. It is the elevational difference between the AA's inlet and outlet, divided by the flow-distance between them and converted to percent. If available, use a clinometer to measure this. Free clinometer apps can be downloaded to smartphones. If the wetland is large (longer than ~1 km), this may be estimated using Google Earth to determine the minimum and maximum elevation within the AA, then dividing by length and multiplying by 100. [CS, NR, OE, PR, SR, WBF, WBN, WS]
242			<2% **or** the AA has no surface water outlet (not even seasonally).	1	
243			2-5%.	0	
244			6-10%.	0	
245			>10%.	0	
246	Note for the next three questions: If the AA lacks an upland edge, evaluate based on the AA's entire perimeter, and moving outward into whatever areas are adjacent. In many situations, these questions are best answered by measuring from aerial images.				
247	F52	Vegetated Buffer as % of Perimeter	Within a zone extending 30 m laterally from the AA's edge with upland and/or other wetlands, the percentage that contains **perennial vegetation cover** (except lawns, row crops, heavily grazed land, conifer plantations) is:		[AM, FA, FR, INV, NRv, PH, POL, PRv, SBM, Sens, SRv, STR, WBN]
248			<5%.	0	
249			5 to 30%.	0	
250			30 to 60%.	0	
251			60 to 90%.	0	
252			>90%, or all the area within 30 m of the AA edge is other wetlands. **SKIP to F55.**	1	
253	F53	Type of Cover in Buffer	Within 30 m upslope of where the wetland transitions to upland, the upland land cover that is NOT perennial vegetation is mostly (mark ONE):		[AM, FA, INV, NRv, PH, POL, SBM, STR, WBN]
254			Impervious surface, e.g., paved road, parking lot, building, exposed rock.	0	
255			Bare or nearly bare pervious surface or managed vegetation, e.g., lawn, row crops, unpaved road, dike, landslide.	0	
256	F54	Buffer Slope	The steepest and/or most disturbed part of the upland area that is within 30 m of the wetland and occupies >10% of that upland area has a percent slope of:		[NRv, PRv, Sens, SRv]
257			<1% (flat -- almost no noticeable slope) or all the area within 30 m of the AA edge is other wetlands.	0	
258			2-5%.	0	
259			5-30%.	0	
260			>30%.	0	
261	F55	Cliffs or Steep Banks	In the AA or within 100 m, there are elevated terrestrial features such as cliffs, talus slopes, stream banks, or excavated pits (but not riprap) that extend at least 2 m nearly vertically, are unvegetated, and potentially contain crevices or other substrate suitable for nesting or den areas. Enter 1 (yes) or 0 (no).	0	Do not include upturned trees as potential den sites. [POL, SBM]
262	F56	New or Expanded Wetland	**Human** actions within or adjacent to the AA have persistently expanded a naturally occurring wetland or created a wetland where there previously was none (e.g., by excavation, impoundment):		Determine this using historical aerial photography, old maps, soil maps, or permit files as available [CS, NR, OE, PH, Sens]
263			No.	0	
264			Yes, and created or expanded 20 - 100 years ago.	0	
265			Yes, and created or expanded 3-20 years ago.	0	
266			Yes, and created or expanded within last 3 years.	0	
267			Yes, but time of origin or expansion unknown.	0	
268			Unknown if new or expanded within 20 years or not.	1	
269	F57	Burn History	More than 1% of the AA's previously vegetated area:		Look for charred soil or stumps (in multiple widely-spaced locations) or ask landowner. [CS, PH, STR]
270			Burned within past 5 years.	0	
271			Burned 6-10 years ago.	0	
272			Burned 11-30 years ago.	0	
273			Burned >30 years ago, or no evidence of a burn and no data.	1	
274	F58	Visibility	The maximum percentage of the wetland that is visible from the best vantage point on public roads, public parking lots, public buildings, or public maintained trails that intersect, adjoin, or are within 100 m of the AA (select one) is:		[PU, STR, WBFv]
275			<25%.	1	
276			25-50%.	0	
277			>50%.	0	
278	F59	Non-consumptive Uses - Actual or Potential	Assuming access permission was granted, select **ALL** statements that are true of the AA as it currently exists:		[PU, STR]
279			For an average person, walking is physically possible in (not just near) >5% of the AA during most of the growing season, e.g., free of deep water and dense shrub thickets.	1	
280			Maintained roads, parking areas, or foot-trails are within 10 m of the AA, or the AA can be accessed part of the year by boats arriving via contiguous waters.	0	
281			Within or near the AA, there is an interpretive center, trails with interpretive signs or brochures, and/or regular guided interpretive tours.	0	
282	F60	Unvisited Core Area	The percentage of the AA almost never visited by humans during an average growing season probably comprises: *[Note: Only include the part actually walked or driven (not simply viewed from) with a vehicle or boat. Do not include visitors on trails outside of the AA unless more than half the wetland is visible from the trails and they are within 30 m of the wetland edge. In that case include only the area occupied by the trail.]*		[AM, FAv, FRv, PH, PU, SBM, STR, WBF, WBN]
283			<5% and no inhabited building is within 100 m of the AA.	0	
284			<5% and inhabited building is within 100 m of the AA.	0	
285			5-50% and no inhabited building is within 100 m of the AA.	0	
286			5-50% and inhabited building is within 100 m of the AA.	0	
287			50-95%, with or without inhabited building nearby.	0	
288			>95% of the AA with or without inhabited building nearby.	1	
289	F61	Frequently Visited Area	The part of the AA visited by humans almost daily for several weeks during an average growing season probably comprises: *[See note above.]*		[AM, PH, PU, SBM, STR, WBF, WBN]
290			<5%. If F60 was answered ">95%" (mostly never visited), **SKIP to F64.**	1	
291			5-50%.	0	
292			50-95%.	0	
293			>95% of the AA.	0	
294	F62	BMP - Soils	Boardwalks, paved trails, fences or other infrastructure and/or well-enforced regulations appear to effectively prevent visitors from walking on soil within nearly all of the AA when the soil is unfrozen. Enter "1" if true.	0	[PH, PU]
295	F63	BMP - Wildlife Protection	Fences, observation blinds, platforms, paved trails, exclusion periods, and/or well-enforced prohibitions on motorised boats, off-leash pets, and off road vehicles appear to effectively exclude or divert visitors and their pets from the AA at critical times in order to minimize disturbance of wildlife (except during hunting seasons). Enter "1" if true.	0	[AM, PU, WBF, WBN]
296	F64	Consumptive Uses (Provisioning Services)	Recent evidence was found within the AA of the following potentially-sustainable consumptive uses. Select ALL that apply.		[FAv, FRv, WBFv]
297			Low-impact commercial timber harvest (e.g., selective thinning).	0	
298			Commercial or traditional-use harvesting of native plants, their fruits, or mushrooms.	0	
299			Waterfowl hunting.	0	
300			Fishing.	0	
301			Trapping of furbearers.	0	
302			None of the above.	1	
303	F65	Domestic Wells	The closest wells or water bodies that currently provide drinking water are:		[NRv]
304			Within 0-100 m. of the AA.	0	

	A	B	C	D	E
305			100-500 m. away.	0	
306			>500 m. away, or no information.	0	
307	F66	Calcareous Fen	The AA is, or is part of, a calcareous fen. See the Plants_Calcar worksheet in the accompanying SuppInfo file for list of plant indicators (calciphiles). Enter 1 If more than two Strong or more than five Moderate calciphile species are present; otherwise enter 0, but if not able to identify those and no information, change to blank.	0	[PH, PR]
308					

Investigator: Brady Leights	**Site Identifier: WL-10**	**Date: 27 July, 2021**

Stressor (S) Data Form for Non-Tidal Wetlands. WESP-AC for Nova Scotia version 2.

		Data
S1	**Aberrant Timing of Water Inputs**	
	In the last column, place a check mark next to any item that is likely to have caused the timing of water inputs (but not necessarily their volume) to shift by hours, days, or weeks, becoming either more muted (smaller or less frequent peaks spread over longer times, more temporal homogeneity of flow or water levels) or more flashy (larger or more frequent spikes but over shorter times). [FA, FR, INV, PH, STR]	
	Stormwater from impervious surfaces that drains directly to the wetland.	
	Water subsidies from wastewater effluent, septic system leakage, snow storage areas, or irrigation.	
	Regular removal of surface or groundwater for irrigation or other consumptive use.	
	Flow regulation in tributaries or water level regulation in adjoining water body, or other control structure at water entry points that regulates inflow to the wetland.	
	A dam, dike, levee, weir, berm, or fill -- within or downgradient from the wetland -- that interferes with surface or subsurface flow in/out of the AA (e.g., road fill, wellpads, pipelines).	
	Excavation within the wetland, e.g., dugout, artificial pond, dead-end ditch.	
	Artificial drains or ditches in or near the wetland.	
	Accelerated downcutting or channelization of an adjacent or internal channel (incised below the historical water table level).	
	Logging within the wetland.	
	Subsidence or compaction of the wetland's substrate as a result of machinery, livestock, fire, drainage, or off road vehicles.	
	Straightening, ditching, dredging, and/or lining of tributary channels.	
	If any items were checked above, then for each row of the table below, assign points. However, if you believe the checked items had no measurable effect on the timing of water conditions in any part of the AA, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.	

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Spatial extent of timing shift within the wetland:	>95% of wetland.	5-95% of wetland.	<5% of wetland.	0
When most of the timing shift began:	<3 yrs ago.	3-9 yrs ago.	10-100 yrs ago.	0
Score the following 2 rows only if the altered inputs began within past 10 years, and only for the part of the wetland that experiences those.				
Input timing now vs. previously:	Shift of weeks.	Shift of days.	Shift of hours or minutes.	0
Flashiness or muting:	Became very flashy or controlled.	Intermediate.	Became mildly flashy or controlled.	0
			Sum=	0
			Stressor subscore=	0.00

		Data
S2	**Accelerated Inputs of Contaminants and/or Salts**	
	In the last column, place a check mark next to any item -- occurring in either the wetland or its CA -- that is likely to have accelerated the inputs of contaminants or salts to the AA. [AM, FA, PH, POL, STR]	
	Stormwater or wastewater effluent (including failing septic systems), landfills, industrial facilities.	
	Metals & chemical wastes from mining, shooting ranges, snow storage areas, oil/ gas extraction, other sources (download many locations from National Pollutant Release Inventory and view KMZ overlay in Google Earth. https://www.ec.gc.ca/inrp-npri/default.asp?lang=En&n=B85A1846-1	
	Road salt.	
	Spraying of pesticides, as applied to lawns, croplands, roadsides, or other areas in the CA.	
	If any items were checked above, then for each row of the table below, assign points. However, if you believe the checked items did not cumulatively expose the AA to significantly higher levels of contaminants and/or salts, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.	

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Usual toxicity of most toxic contaminants:	Industrial effluent, mining waste, unmanaged landfill.	Cropland, managed landfill, pipeline or transmission rights-of-way.	Low density residential.	0
Frequency & duration of input:	Frequent and year-round.	Frequent but mostly seasonal.	Infrequent & during high runoff events mainly.	0
AA proximity to main sources (actual or potential):	0 - 15 m.	15-100 m. or in groundwater.	In more distant part of contributing area.	0
			Sum=	0
			Stressor subscore=	0.00

		Data
S3	**Accelerated Inputs of Nutrients**	
	In the last column, place a check mark next to any item -- occurring in either the wetland or its CA -- that is likely to have accelerated the inputs of nutrients to the wetland. [NRv, PRv, STR]	
	Stormwater or wastewater effluent (including failing septic systems), landfills.	
	Fertilizers applied to lawns, ag lands, or other areas in the CA.	
	Livestock, dogs.	
	Artificial drainage of upslope lands.	
	If any items were checked above, then for each row of the table below, assign points. However, if you believe the checked items did not cumulatively expose the AA to significantly more nutrients, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.	

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Type of loading:	High density of unmaintained septic, some types of industrial sources.	Moderate density septic, cropland, secondary wastewater treatment plant.	Livestock, pets, low density residential.	0
Frequency & duration of input:	Frequent and year-round.	Frequent but mostly seasonal.	Infrequent & during high runoff events mainly.	0
AA proximity to main sources (actual or potential):	0 - 15 m.	15-100 m. or in groundwater.	In more distant part of contributing area.	0
			Sum=	0
			Stressor subscore=	0.00

		Data
S4	**Excessive Sediment Loading *from Contributing Area***	
	In the last column, place a check mark next to any item present in the CA that is likely to have elevated the load of waterborne or windborne sediment reaching the wetland from its CA. [FA, FR, INV, PH, SRv, STR]	
	Erosion from plowed fields, fill, timber harvest, dirt roads, vegetation clearing, fires.	
	Erosion from construction, in-channel machinery in the CA.	
	Erosion from off-road vehicles in the CA.	
	Erosion from livestock or foot traffic in the CA.	
	Stormwater or wastewater effluent.	
	Sediment from road sanding, gravel mining, other mining, oil/ gas extraction.	
	Accelerated channel downcutting or headcutting of tributaries due to altered land use.	
	Other human-related disturbances within the CA.	
	If any items were checked above, then for each row of the table below, assign points (3, 2, or 1 as shown in header) in the last column. However, if you believe the checked items did not cumulatively add significantly more sediment or suspended solids to the AA, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.	

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Erosion in CA:	Extensive evidence, high intensity.*	Potentially (based on high-intensity* land use) or scattered evidence.	Potentially (based on low-intensity* land use) with little or no direct evidence.	0
Recentness of significant soil disturbance in the CA:	Current & ongoing.	1-12 months ago.	>1 yr ago.	0

	Duration of sediment inputs to the wetland:	Frequent and year-round.	Frequent but mostly seasonal.	Infrequent & during high runoff events mainly.	0
	AA proximity to actual or potential sources:	0 - 15 m.	15-100 m.	In more distant part of contributing area.	0
	* high-intensity= extensive off-road vehicle use, plowing, grading, excavation, erosion with or without veg removal; low-intensity= veg removal only with little or no apparent erosion or disturbance of soil or sediment.			Sum=	0
				Stressor subscore=	0.00
S5	**Soil or Sediment Alteration *Within the Assessment Area***				
	In the last column, place a check mark next to any item present in the wetland that is likely to have compacted, eroded, or otherwise altered the wetland's soil. Consider only items occurring within past 100 years or since wetland was created or restored (whichever is less). [CS, INV, NR, PH, SR, STR]				
	Compaction from machinery, off-road vehicles, livestock, or mountain bikes, especially during wetter periods.				
	Leveling or other grading not to the natural contour.				
	Tillage, plowing (but excluding disking for enhancement of native plants).				
	Fill or riprap, excluding small amounts of upland soils containing organic amendments (compost, etc.) or small amounts of topsoil imported from another wetland.				
	Excavation.				
	Ditch cleaning or dredging in or adjacent to the wetland.				
	Boat traffic in or adjacent to the wetland and sufficient to cause shore erosion or stir bottom sediments.				
	Artificial water level or flow manipulations sufficient to cause erosion or stir bottom sediments.				
	If any items were checked above, then for each row of the table below, assign points. However, if you believe the checked items did not measurably alter the soil structure and/or topography, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.				
		Severe (3 points)	Medium (2 points)	Mild (1 point)	
	Spatial extent of altered soil:	>95% of wetland or >95% of its upland edge (if any).	5-95% of wetland or 5-95% of its upland edge (if any).	<5% of wetland and <5% of its upland edge (if any).	0
	Recentness of significant soil alteration in wetland:	Current & ongoing.	1-12 months ago.	>1 yr ago.	0
	Duration:	Long-lasting, minimal veg recovery.	Long-lasting but mostly revegetated.	Short-term, revegetated, not intense.	0
	Timing of soil alteration:	Frequent and year-round.	Frequent but mostly seasonal.	Mainly during one-time or scattered events.	0
				Sum=	0
				Stressor subscore=	0.00

Assessment Area (AA) Results:

Wetland ID: Uniacke Quarry Wetland 10

Date: 27 July, 2021

Observer: Brady Leights

Latitude & Longitude (decimal degrees): 44.917385, -63.815004

Scores will appear below after data are entered in worksheets OF, F, and S. See Manual for definitions and descriptions of how scores were computed.

Wetland Functions or Other Attributes:	Function Score (Normalised)	Function Rating	Benefits Score (Normalised)	Benefits Rating	Function Score (raw)	Benefits Score (raw)
Water Storage & Delay (WS)	5.28	Moderate	5.30	Moderate	5.88	2.35
Stream Flow Support (SFS)	2.07	Moderate	8.46	Higher	1.67	5.63
Water Cooling (WC)	0.00	Lower	0.00	Lower	0.00	0.00
Sediment Retention & Stabilisation (SR)	4.30	Moderate	1.36	Moderate	5.56	0.67
Phosphorus Retention (PR)	1.68	Lower	1.29	Moderate	4.80	1.00
Nitrate Removal & Retention (NR)	3.98	Moderate	3.33	Lower	5.65	3.33
Carbon Sequestration (CS)	5.96	Moderate			8.02	
Organic Nutrient Export (OE)	9.41	Higher			6.15	
Anadromous Fish Habitat (FA)	0.00	Lower	0.00	Lower	0.00	0.00
Resident Fish Habitat (FR)	0.00	Lower	0.00	Lower	0.00	0.00
Aquatic Invertebrate Habitat (INV)	5.09	Moderate	0.97	Lower	5.57	1.77
Amphibian & Turtle Habitat (AM)	3.00	Lower	2.28	Lower	4.70	3.64
Waterbird Feeding Habitat (WBF)	0.00	Lower	0.00	Lower	0.00	0.00
Waterbird Nesting Habitat (WBN)	0.00	Lower	0.00	Lower	0.00	0.00
Songbird, Raptor, & Mammal Habitat (SBM)	6.79	Moderate	5.00	Moderate	5.91	5.00
Pollinator Habitat (POL)	5.89	Moderate	3.33	Moderate	4.88	3.33
Native Plant Habitat (PH)	4.40	Moderate	4.71	Lower	5.66	4.71
Public Use & Recognition (PU)			1.82	Moderate		1.54
Wetland Sensitivity (Sens)			6.65	Moderate		4.07
Wetland Ecological Condition (EC)			3.04	Lower		6.67
Wetland Stressors (STR) (higher score means more stress)			4.42	Moderate		2.31
Summary Ratings for Grouped Functions:						
HYDROLOGIC Group (WS)	5.28	Moderate	5.30	Moderate	5.88	2.35
WATER QUALITY SUPPORT Group (max+avg/2 of SR, PR, NR, CS)	4.97	Moderate	2.66	Lower	7.01	2.50
AQUATIC SUPPORT Group (max+avg/2 of SFS, INV, OE, WC)	6.78	Higher	5.80	Moderate	4.75	4.05
AQUATIC HABITAT Group (max+avg/2 of FA, FR, AM, WBF, WBN)	1.80	Lower	1.37	Lower	2.82	2.18
TRANSITION HABITAT Group (max+avg/2 of SBM, PH, POL)	6.24	Moderate	4.67	Lower	5.70	4.67
WETLAND CONDITION (EC)			3.04	Lower		6.67
WETLAND RISK (average of Sensitivity & Stressors)			5.53	Moderate		3.19

NOTE: A score of 0 does not mean the function or benefit is absent from the wetland. It means only that this wetland has a capacity that is equal or less than the lowest-scoring one, for that function or benefit, from among all the NS calibration wetlands that were assessed previously.

NOVA SCOTIA - Functional WSS Interpretation Tool

1. General Description of Tool:

This interpretive tool automatically determines whether the subject wetland will be regulated as a Wetland of Special Significance (WSS). This determination is made based on the WESP-AC functional results, per the Nova Scotia *Wetland Conservation Policy* .

A 'Function-Benefit Product' (FBP) is calculated based upon the Grouped Functions, and has a theoretical maximum of 100. Threshold values for the FBP are applied, in order to categorize the FBP scores into 'Low', 'Moderate' or 'High' scores. Thresholds are determined based upon the statistical distribution of WESP-AC scores compiled from various sites across the Province (N=442). These categories are subsequently used to apply various 'Functional WSS Rules', as described below.

For the purpose of defining and applying the Functional WSS rules, two supergroups are defined based on grouped functions, as follows: **(1) Support Supergroup** - includes Hydrologic, Water Quality Support, and Aquatic Support grouped functions. **(2) Habitat Supergroup** - includes Aquatic Habitat and Transition Habitat grouped functions.

2. Functional WSS Rule Definitions:

Habitat Rule: In consideration of the Habitat Supergroup, the subject wetland is a WSS if either of the following sub-rules are satisfied:

(HAB 1) Two 'High Scores' OR

(HAB 2) One 'High' and one 'Moderate' score

Support Rule: In consideration of the Support Supergroup, the subject wetland is a WSS if either of the following sub-rules are satisfied:

(SUP 1) Three 'High' scores OR

(SUP 2) Two 'High' and one 'Moderate' score

Habitat/Support Hybrid Rule: In consideration of both the Habitat and Support Supergroups, the subject wetland is a WSS if the following is satisfied:

(HYB 1) One 'High' Habitat score **AND** Two or three 'High' Support scores

3. Functional WSS Interpretation Results

Function-Benefit Product (FBP)	FBP SCORE	FBP SCORE CATEGORY
SUPPORT SUPERGROUP - HYDROLOGIC	27.97765997	Low
SUPPORT SUPERGROUP - WATER QUALITY SUPPORT	13.23627026	Low
SUPPORT SUPERGROUP - AQUATIC SUPPORT	39.30617239	Low
HABITAT SUPERGROUP - AQUATIC HABITAT	2.459812173	Low
HABITAT SUPERGROUP - TRANSITION HABITAT	29.17235143	Low

3a. Functional WSS Determination: Automatic Method

Habitat Rule Satisfied?	NO
Support Rule Satisfied?	NO
Habitat/Support Hybrid Rule Satisfied?	NO
CONCLUSION:	**Site is not a WSS**

3b. Functional WSS Determination - Manual Method Using Dichotomous Key

1a. (HAB) - One or more 'High' scores for AH or TH.....**2**
2a. (HAB) - Two 'High' scores.....**WSS**
2b. (HAB) - One 'High' score.....**3**
3a. (HAB) - Any combination of 'High' and 'Moderate' scores..... **WSS**
3b. (HAB) - Any combination of 'High' and 'Low' scores.....**4**
4a. (SUP) One or more 'High' Scores for HYD, WQS, or AS.....**5**
5a. (SUP) Two or Three 'High' scores ..... **WSS**
5b. (SUP) One 'High' score **6**
6a. (SUP) Any combo of one 'High', two 'Mod' scores..... **WSS**
6b. (SUP) One 'High', plus any other combo of scores.....**not WSS**
4b. (SUP) Zero 'High' Scores for HYD, WQS, or AS.....**7**
7a. (SUP) Three 'Moderate' scores..... **WSS**
7b. (SUP) Any other combination of scores .....**not WSS**
1b. (HAB) - Zero 'High' Scores for AH or TH.....**8**
8a. (SUP) Three 'High' Scores.....**WSS**
8b. (SUP) Less than three 'High' scores.....**9**
9a. (SUP) Two 'High' and one 'Moderate' score.....**WSS**
9b. (SUP) - Any other combination of scores .....**not WSS**