

Highway 140 Land Holding

Environmental Impact Study

Project Location:

Part Lots 16, 17, 18, 19 Concession 5, Port Colborne, ON

Prepared for:

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EXECUTIVE SUMMARY

MTE Consultants Inc. (MTE) has been retained by One Forty Development LP (the "Proponent") to undertake an Environmental Impact Study (EIS) to support proposed development within Part Lots 16, 17, 18, 19 Concession 5 in Port Colborne, Ontario (herein referred to as the Subject Lands).

This EIS describes natural heritage features present within the Subject Lands and documents potential impacts associated with the proposed development on a portion of the Subject Lands. The proposed development addressed in this EIS includes lands identified as the "AK Lands," an approximately 150-acre parcel located in the northeast portion of the Subject Lands and the area immediately west (approximately 20 acres).

MTE undertook a review of background information as well as field investigations in October 2023 and April through August 2024 to inform existing conditions within the Study Area and the assessment of significance for natural heritage features and functions. Preliminary site alteration has been approved by Niagara Region, the City of Port Colborne, and the Niagara Peninsula Region Conservation Authority (NPCA) within a portion of the AK Lands prior to completion of this EIS based on existing background studies, fall ecological inventories completed in 2023, and a preliminary assessment of headwater drainage features. The existing conditions portion of this report (Sections 1.0 – 6.0) is based on field work undertaken during 2023 and 2024. The assessment of impacts associated with the proposed development within the AK Lands has been undertaken with the understanding that site alteration with the approved boundary has been initiated.

The PPS (2024), *Niagara Region Official Plan* (2024), and the *City of Port Colborne Official Plan* (2017) define key natural heritage features to be considered in terms of the impact and net effects assessment. The proposed development impacts to Other Wetlands, Significant Wildlife Habitat (SWH), Fish Habitat, and Habitat of Endangered or Threatened Species are discussed within Section 8.0, with recommendations provided to mitigate impacts to the natural heritage features. Direct impacts can be mitigated using timing windows and with the implementation of an erosion and sediment control plan. Loss of Confirmed SWH is not anticipated to negatively affect the species using this habitat based on the availability of suitable habitat remaining within the Subject Lands, the buffer between the proposed development and remaining SWH, and the enhancement work to be completed within Confirmed SWH. The loss of suitable habitat for Eastern Meadowlark is being compensated for according to requirements outlined within *Ontario Regulation 830/21*.

Provided the recommendations in this EIS are followed, it is our opinion that the proposed development can proceed.

1.0 INTRODUCTION

MTE Consultants Inc. (MTE) has been retained by One Forty Development LP (the "Proponent") to undertake an Environmental Impact Study (EIS) to support proposed development within Part Lots 16, 17, 18, 19 Concession 5 in Port Colborne, Ontario (herein referred to as the Subject Lands; Figure 1).

In accordance with the Natural Heritage Reference Manual (NHRM; MNR 2010), a Study Area, including the Subject Lands and adjacent lands within 120 m, has been defined for the purposes of evaluating ecological functions (Figure 1).

This EIS describes natural heritage features present within the Subject Lands and documents potential impacts associated with the proposed development on a portion of the Subject Lands. The proposed development addressed in this EIS includes lands identified as the "AK Lands," an approximately 150-acre parcel located in the northeast portion of the Subject Lands and the area immediately west (approximately 20 acres).

Preliminary site alteration has been approved to move forward within a portion of the AK Lands prior to completion of this EIS based on existing background studies, fall ecological inventories completed in 2023, and a preliminary assessment of headwater drainage features. The existing conditions portion of this report (Sections 1.0-6.0) is based on field work undertaken during 2023 and 2024. The assessment of impacts associated with the proposed development within the AK Lands has been undertaken with the understanding that site alteration with the approved boundary has been initiated. This is further discussed in Sections 7.0 and 8.0.

1.1 Report Objective

This EIS provides an analysis of ecological constraints and opportunities to ensure the proposed development and site alteration is consistent with the Provincial Planning Statement (PPS; MMAH, 2024), the *Niagara Official Plan* (2024), the *City of Port Colborne Official Plan* (2017), and Niagara Peninsula Conservation Authority (NPCA) policy (i.e., *Ontario Regulation 41/24*). Furthermore, an evaluation of potential impacts to natural heritage features and functions, as well as recommendations for avoidance, mitigation and compensation measures are provided to address potential impacts as a result of the proposed development.

2.0 NATURAL HERITAGE LEGISLATION & POLICY CONTEXT

2.1 Planning Act

The PPS (2024) was issued under the authority of the *Planning Act, 1990* to provide direction to regional and local municipalities on matters of provincial interest related to land use planning and development in support of a comprehensive, integrated and long-term approach to planning. Land use planning decisions made by planning authorities must be consistent with the PPS (2024). With respect to natural heritage features and resources, the PPS defines eight natural heritage features or areas:

- Significant Wetlands:
- Significant Coastal Wetlands:
- Significant Woodlands;
- Significant Valleylands;
- Significant Wildlife Habitat (SWH);

- Significant Areas of Natural and Scientific Interest (ANSIs);
- Fish Habitat; and
- Habitat of Endangered and Threatened Species.

The Subject Lands are located within Ecoregion 7E. No development or site alteration shall be permitted in significant wetlands or significant coastal wetlands. Development and site alteration shall not be permitted in significant woodlands, significant valleylands, SWH, significant ANSIs or coastal wetlands unless it has been demonstrated, through an EIS or like study, that there will be no negative impact to natural heritage features or their ecological functions. As per the PPS (2024), development and site alteration shall not be permitted in habitat of endangered or threatened species, or in fish habitat, except in accordance with provincial and federal legislation.

Furthermore, the PPS (2024) indicates that development and site alteration shall not be permitted on lands adjacent to natural heritage features and areas unless it has been demonstrated that no negative impacts to these features or their ecological functions will occur.

The PPS provides area-specific land use planning policies and functions as a foundation for the development of lower-tier plans consistent with provincial policy. As such, the *Niagara Official Plan* (2024) and the *City of Port Colborne Official Plan* (2017) must be consistent with the PPS and are subject to the regulations of applicable provincial plans.

2.2 Niagara Official Plan (2024)

The *Niagara Official Plan* (2024) provides a long-term, strategic policy planning framework for managing land use planning and growth within Niagara. Natural heritage policies within the Official Plan have been developed pursuant to the *Planning Act* and outline opportunities to enhance the sustainability and resilience of the Region's natural environment. Natural heritage features and functions identified on, and adjacent to, the Subject Lands shall be reviewed in accordance with the natural heritage policies outlined in Section 3.1 of the *Niagara Official Plan* (2024).

2.2.1 Environmental Classifications

As per Schedule C1 (Natural Environment System Overlay and Provincial Natural Heritage Systems) of the *Niagara Official Plan* (2024), components of the Natural Environment System Overlay and Growth Plan area are present within the Subject Lands (Figure 2). Schedule C2 (Natural Environment System – Individual Components and Features) identifies the features overlapping the Subject Lands as "Other Wetlands" and "Non-Provincially Significant Wetlands" which are associated with the Lyons Creek Drain and connecting headwater drainage features. No other mapped features are present within the Subject Lands as per Schedule C2.

2.3 City of Port Colborne Official Plan (2017)

The City of Port Colborne Official Plan (2017) has been established to provide planning direction for the long-term protection, conservation, enhancement and management of the natural environment while recognizing that the Welland Canal provides impetus industrial development opportunities. Environmental policies defined within Section 4 (Natural Heritage) of the Official Plan are intended to provide a framework for identifying and protecting significant natural areas while providing opportunities for conservation and remediation, as appropriate. Provisions for the identification, assessment and protection of natural heritage features and associated functions defined within the Official Plan will be reviewed to ensure compliance with municipal regulations.

2.3.1 Land Use Designations

As per *Schedule A* (City Wide Land Use) of the *City of Port Colborne Official Plan* (2017), the Subject Lands are designated as Rural Employment (Figure 3). Rural Employment areas represent lands located in close proximity to the Welland Canal and along Highway 140 that occur outside of the Urban Area Boundary of the City of Port Colbourne. These lands are generally designated for dry industrial use (i.e., minimal water and wastewater requirements).

The adjacent lands, within the Study Area, are designated as a mix of Agricultural, Rural Employment, and Rural.

2.3.2 Environmental Classifications

Schedule B of the City of Port Colborne Official Plan (2017) indicates that the Subject Lands include areas designated as Environmental Protection Area (EPA), Environmental Conservation Area (ECA), Fish Habitat and Stream Corridor.

The EPA identified on the Subject Lands is associated with the main branch of the Lyons Creek Drain and occurs within the NPCA regulation limit. The southeastern portion of the Subject Lands is designated as an ECA.

As per Schedule B2 (Environmental Conservation Area) of the *City of Port Colborne Official Plan* (2017), this area has been further delineated as an Environmental Corridor. As per Section 4.3.1(b) of the Official Plan, "the degree of protection and conservation afforded to the natural features and ecological functions of these areas in large part depends on the areas significance."

2.4 City of Port Colborne Zoning By-law

Under the City's *Comprehensive Zoning By-law* (By-law 6575/30/18), the Subject Lands are zoned as a mixture of Heavy Industrial – Holding (HI-46-H) and Industrial Development (ID-47-H) (Figure 3).

2.5 Niagara Peninsula Conservation Authority (NPCA)

The NPCA administers the Prohibited Activities, Exemptions, and Permits regulation, under Ontario Regulation 41/24, pursuant to Section 28 of the Conservation Authorities Act, 1990. Areas within the jurisdiction of the authority are delineated within the "Regulation Limit" and include river or stream valleys, wetlands, shorelines, and hazardous lands.

As per NPCA regulation mapping, some of the drainage features identified on the Subject Lands are located within the regulation limit (Figure 2).

3.0 PHYSICAL ENVIRONMENT

Consideration of the larger ecological matrix contributes to developing a better understanding of potential interactions between abiotic and biotic flows and exchanges. As depicted on Figure 1, the larger local landscape setting surrounding the Subject Lands is composed of a mixture of agricultural and residential use. In terms of potential movement corridors, the primary linkage feature traversing the broader landscape is the Lyons Creek Drain, which provides a contiguous linkage across the Subject Lands.

Surrounding road networks (i.e., Highway 140 and Highway 58A) function as a physical barrier to wildlife movement and may limit abiotic and biotic exchanges from north and east of the Subject Lands.

3.1 Physiography

The Study Area is located within the Great Lakes – St. Lawrence Lowlands physiographic region of southern Ontario. This area is characterized by Clay Plain (Chapman & Putnam 1984).

3.2 Soils & Geology

Surficial geology mapping available through the Ministry of Energy, Northern Development and Mines (2012) indicates that the Study Area is underlain by man-made deposits, which is predominantly composed of fill, sewage lagoon, landfill and urban development. The man-made deposits are underlain by fine-textured glaciolacustrine deposits, which are composed of silt, clay, minor sand and gravel.

3.3 Surface Water Features & Drainage

The Study Area is situated within the Northern Lake Ontario and Niagara River Subwatershed, which forms a component of the larger Great Lakes – St. Lawrence River Watershed. The Subject Lands are bisected by a tributary of the Lyons Creek Drain, which conveys surface flows southwest across the site. Furthermore, the Welland Canal is located on adjacent lands directly west of the Subject Lands.

Surface drainage patterns within the Study Area are generally consistent with local topography. The result of historical fill and drainage channelization has created several drainage features that flow throughout the Subject Lands. These drainage features are discussed further in Section 5.5.

3.4 Hydrogeology

As per Schedule B3 (Vulnerable Aquifer Areas) of the City of Port Colborne Official Plan (2017), the Study Area is not located within a Highly Vulnerable Aquifer. The Significant Groundwater Recharge Area Delineation for the Niagara Peninsula Source Protection Area Figure 3.4 also does not depict the Study Area as within a Source Water Protection Area (NPCA 2009).

4.0 BACKGROUND REVIEW

MTE has conducted a background review to delineate designated natural heritage features and linkage corridors within, and adjacent to, the Study Area. Aerial imagery and existing natural heritage feature mapping available through the *Niagara Official Plan* (2024) and the *City of Port Colborne Official Plan* (2017), Land Information Ontario (LIO) and NPCA regulation mapping has been reviewed to provide insight into the overall character of the Subject Lands. Natural heritage databases have also been reviewed to supplement ecological field investigations.

4.1 Biological Setting

The Study Area occurs within Lake Erie - Lake Ontario Ecoregion 7E, which extends from Lake Ontario to Lake Erie and includes most of the Lake Erie shoreline. Ecoregion 7E is located within the Great Lakes Watershed and is characterized by the mild climate associated with the Deciduous Forest Region.

As per the provincial LIO geographic database (MNRF 2024), the Natural Heritage Information Centre (NHIC) mapping (2024), the *Niagara Official Plan* (2024), and the *City of Port Colborne Official Plan* (2017), designated natural heritage features were identified within the Study Area as shown on Figure 2.

4.2 Background Information

Background resources were reviewed to inform the overall character of the Study Area and to develop baseline data with regards to species and habitat with the potential to occur within the Study Area. Background documents and databases reviewed included:

- Aerial imagery;
- MNRF's NHIC database (2024);
- DFO Aquatic SAR Mapping (2024);
- Bird Studies Canada's Atlas of Breeding Birds of Ontario (2005);
- Ontario Nature's Reptile and Amphibian Atlas (Ontario Nature 2019); and
- Online citizen science databases (e.g., eBird and iNaturalist).

The results of the background review are summarized below. These data assisted in defining targeted ecological field investigations conducted on the Subject Lands as well as level of survey effort. Field investigations are intended to confirm and refine data, as applicable, for features present within the Study Area in order to inform the significance assessment provided in the subsequent sections of this report.

4.2.1 Species Occurrence Data

Species listed as endangered or threatened on the SARO list are legally protected from harm or harassment and their associated habitats are protected from damage or destruction, as per the *ESA* (2007). Species of Conservation Concern (SOCC) include those species listed as Special Concern on the SARO list as well as provincially rare species (i.e., ranked S1 to S3). Provincial conservation status rankings are established by the NHIC based on the number of occurrences in Ontario and are defined as follows:

- S1: critically imperiled; often fewer than 5 occurrences;
- S2: imperiled; often fewer than 20 occurrences;
- S3: vulnerable; often fewer than 80 occurrences;
- S4: apparently secure;
- S5: secure; and
- S?: unranked, or, if following a ranking, rank uncertain (e.g., S3?).

Provincial status rankings do not provide an indication of regional abundance or rarity (i.e., species uncommon in the province may still be locally abundant in some regions).

The NHIC database (2024) was reviewed for records of provincially significant species and/or habitats occurring within the Study Area. Occurrence data is provided for 1 km² area squares, with five squares overlapping a portion of the Study Area (17PH4457, 17PH4557, 17PH4657, 17PH4456, and 17PH4556). The Ontario Breeding Bird Atlas (OBBA; 2001-2005 occurrence data) and the Ontario Reptile and Amphibian Atlas contain detailed information regarding the distribution of bird and reptile species in Ontario. Data is presented on 100 km² area blocks, with one data squares overlapping the Study Area (17PH45). Online citizen science sources (e.g., iNaturalist and eBird) were also reviewed to identify protected species and SOCC that have the potential to occur within the Study Area.

Critical habitat and distribution data for aquatic species was reviewed through DFO's aquatic SAR mapping (2024) and showed no records for aquatic SAR or critical habitat within the Study Area.

Additional SAR with the potential to occur within the Study Area include Eastern Red Bat (Lasiurus borealis), Little Brown Myotis (Myotis lucifugus – END), Northern Hoary Bat (Lasiurus cinereus), Northern Myotis (Myotis septentrionalis – END), Silver-haired Bat (Lasionycteris noctivagans), Tri-colored Bat (Perimyotis subflavus – END), American Badger (Taxidea taxus – END), and Butternut (Juglans cinerea – END). These species are not well represented within background information sources and will therefore be considered on a site-specific basis where suitable habitat is present.

As species records only provide general occurrence data, the final determination of species presence or absence shall be subject to the availability of suitable habitat on the Subject Lands as determined through site-specific field investigations and discussed in Section 6.8. A full screening table is provided in **Appendix A**.

5.0 NATURAL ENVIRONMENT

In consideration of the type and extent of natural heritage features and areas present within the Study Area, field investigations have been conducted on the Subject Lands to evaluate feature significance. Protocol information for each of the field investigations conducted on the Subject Lands is summarized below and discussed in detail in the following sections. Surveys conducted by MTE, as well as weather conditions and date of the survey, are presented in the following sections and summarized in Table 1, below.

- Preliminary Ecological Site Assessment to document existing conditions, confirm the natural heritage features present, and inform field investigations;
- Three-season botanical inventory and vegetation community classification using sampling protocols outlined in the Ecological Land Classification for Southern Ontario (Lee et al., 1998) manual;
- Breeding Bird Surveys following protocols set forth by the Ontario Breeding Bird Atlas (OBBA) participant's guide (OBBA, 2001) for diurnal birds and by the Bobolink Survey Methodology (MNRF, 2011) for protected grassland bird species;
- Anuran Surveys conducted based on the standardized Marsh Monitoring Program (BSC, 2009a) protocols for amphibians, which have been adapted based on professional experience;
- Aquatic Habitat Assessment and Stream Analysis consistent with Ontario Stream Assessment Protocol methodology (Stanfield, 2017); and
- Headwater Drainage Feature Assessment conducted in accordance with Credit Valley Conservation and Toronto and Region Conservation Authority protocols (CVC/TRCA, 2014).

Table 1: Ecological Field Investigations

Curvey Type	Date	Ti	me	Temperature
Survey Type	Date	Start	End	(°C)
Preliminary Ecological Land Classification	October 12, 2023	09:00	16:00	13
Anuran (Amphibian) Survey	April 16, 2024	20:30	23:30	14
Anuran (Amphibian) Survey	May 29, 2024	21:00	23:15	13
Anuran (Amphibian) Survey	June 19, 2024	21:15	23:45	25
Spring Plant Inventory	May 31, 2024	10:00	16:15	16

Survey Type	Date	Ti	me	Temperature	
Survey Type	Date	Start	End	(°C)	
Summer Plant Inventory	June 14, 2024	10:00	14:14	20	
Fall Plant Inventory	October 12, 2023	09:00	16:00	13	
Breeding Bird Survey	May 31, 2024	08:45	10:00	16	
Breeding Bird Survey	June 14, 2024	08:14	10:00	20	
Breeding Bird Survey	July 4, 2024	08:00	10:00	24	
Aquatic Habitat Assessment	August 28, 2024	14:30	16:15	23	
Headwater Drainage Feature Assessment	April 16, 2024	12:30	20:00	30	
Headwater Drainage Feature Assessment	May 29, 2024	14:30	20:30	19	
Headwater Drainage Feature Assessment	August 28, 2024	11:00	14:30	23	

5.1 Ecological Land Classification

Ecological Land Classification (ELC) was completed in accordance with the sampling protocols outlined in the Ecological Land Classification for Southern Ontario (Lee et al., 1998) manual. Vegetation communities were sampled, verified and revised, if necessary to determine the provincial and regional significance of features present within the Subject Lands based on the rankings assigned by the NHIC (2024).

Ten vegetation cover types were identified within the Subject Lands, as illustrated on Figure 4 and summarized in Table 2, below. Vegetation communities on the Subject Lands are predominantly composed of cultural meadow. All vegetation communities are ranked secure in Ontario. Maternity roost surveys were completed as part of the preliminary ELC (October 12, 2023) and suitable maternity roost trees were determined to be absent from the Subject Lands.

Field data collection sheets are provided in **Appendix B**.

Table 2: Ecological Land Classification

Community	ELC Code	Description	Area (ha)
1	CUM1	Mineral Cultural Meadow	27.51 ha
2	CUT1	Mineral Cultural Thicket	4.21 ha
3	CUM1/OPEN GROUND	Mineral Cultural Meadow (includes Phragmites Inclusions)	67.08 ha
4	CUT1	Mineral Cultural Thicket	1.48 ha
5	CUW1	Mineral Cultural Woodland	1.72 ha
6	CUT1	Mineral Cultural Thicket	20.62 ha
7	MAM2	Mineral Meadow Marsh	1.78 ha
8	SWT	Swamp Thicket	4.32 ha
9	CUW/SWD	Cultural Woodland/Deciduous Swamp	4.03 ha
10	CUT	Cultural Thicket	2.36 ha
-	-	Agricultural Lands	40.49 ha

Community 1 is classified as a Mineral Cultural Meadow (CUM1) community and is located on the northern portion of the Subject Lands (Figure 4). The canopy for this community is considered to be open (less than 10% coverage) with Silver Maple (*Acer saccharinum*) the dominate canopy species. The understory provides 10-25% coverage and primarily consists of Gray Dogwood (*Cornus racemosa*). The ground layer is dominated by Common Reed (*Phragmites australis*), Goldenrod species (*Solidago* spp.), and grasses.

Community 2 is classified as a Mineral Cultural Thicket (CUT1) community and is located on the northern portion of the Subject Lands, south of Community 1 (Figure 4). The canopy for this community is dominated by Autumn Olive (*Elaeagnus umbellata*) with a ground layer dominated by Goldenrod species and grasses.

Community 3 is classified as a Mineral Cultural Meadow (CUM1) / Open Ground community and is located within the mid-portion of the Subject Lands (Figure 4). This ground layer of this community is dominated by areas of open ground as well as Common Reed, Goldenrod species, and grasses. Existing phragmites inclusions and areas of anthropogenic disturbance (e.g., ATV trails) are also present throughout Community 3.

Community 4 is classified as a Mineral Cultural Thicket (CUT1) community and is located southeast of Community 3 and north of the agricultural lands (Figure 4). The canopy for this community is dominated by Eastern Cottonwood (*Populus deltoides*) with an understory dominated by Common Buckthorn (*Rhamnus cathartica*) and Red-osier Dogwood (*Cornus sericea*).

Community 5 is classified as a Mineral Cultural Woodland (CUW1) community and is located east of Community 4 and northeast of the agricultural lands (Figure 4). The canopy of this community is dominated by Pin Oak (*Quercus palustris*), Bur Oak (*Quercus macrocarpa*), and Silver Maple with an understory dominated by Common Buckthorn and Red-osier Dogwood. The average width of Community 5 is approximately 15 m. Despite being classified as a cultural woodland through ELC, the community does not meet the 40 m minimum width requirement to be identified as a woodland as per the NHRM (2010).

Community 6 is classified as a Mineral Cultural Thicket (CUT1) community and is located within the southwestern portion of the Subject Lands (Figure 4). The canopy of this community is dominated by Eastern Cottonwood with a ground layer of various grass species.

Community 6 can be further subdivided into 6A and 6B given the disparity in canopy cover within the two areas. Both areas meet the requirements of a cultural thicket designation (tree cover <25% and shrub cover >25%) and contain similar species composition; however, the communities are subdivided as Community 6A contains more shrub and tree cover while Community 6B is more open due to more recent disturbances.

Community 7 is classified as a Mineral Meadow Marsh (MAM2) community and is located east of Community 6 and west of the agricultural lands (Figure 4). The canopy of this community is open (10% coverage) with vegetation limited to Silver Maple with some dead Green Ash. Subcanopy and understory layer vegetation is absent from the community.

Community 8 is classified as a Swamp Thicket (SWT) community and is located within the southwestern portion of the Subject Lands, southeast of community 6 (Figure 4). The canopy of this community is dominated by Silver Maple and White Willow (*Salix alba*) and an understory dominated by willow species and Common Buckthorn.

Community 9 is classified as a Cultural Woodland / Deciduous Swamp (CUW/SWD) mixed community and is located within the southern portion of the Subject Lands, immediately south of the agricultural lands (Figure 4). The canopy for this community is dominated by Silver Maple with an understory dominated by Tartarian Honeysuckle (*Lonicera tatarica*), Red-osier Dogwood, and Riverbank Grape (*Vitis riparia*).

Community 10 is classified as a Mineral Cultural Thicket (CUT1) community and is located south of Community 3 and north of the agricultural lands (Figure 4). The canopy for this community is dominated by Willow species while (*Salix* spp.) the ground layer is dominated by Canada Goldenrod (*Solidago canadensis*).

5.2 Vascular Plants

A three-season botanical inventory was completed to confirm the provincial status of vascular plant species on the Subject Lands. Spring ephemerals were surveyed in April to May while summer and fall flowering periods were captured in June to August and September to October, respectively. The status of all plant species is based on the provincial NHIC database (2022) and the List of Vascular Plants for Ontario's Carolinian Zone (Oldham, 2017).

A total of 113 vascular plant species were identified on the Subject Lands, of which 67 or 59% are native to Ontario and 46 or 41% are introduced species. A full species list is provided in **Appendix B**. All species observed on the Subject Lands are ranked S4 or S5 (apparently secure or secure in Ontario).

Coefficient of Conservatism (CoC) values were applied to species in each vegetation community to assist in the identification of potentially sensitive native plants. CoC values range from 0 to 10 and are assigned based on a species tolerance of disturbance and degree of fidelity to certain ecological parameters (Oldham et al., 1995; Wilhelm and Masters, 1995). Species occurring within a wide range of habitat types are assigned a low CoC value, while species occurring only within a narrow range of habitat parameters are assigned a high CoC value. Pin Oak (*Quercus palustris*) was the only species identified on the Subject Lands that had a high CoC value (of 9).

Floristic Quality Analysis

Floristic quality is generally defined by the mean CoC and the Floristic Quality Index (FQI). This evaluation system provides an assessment of the fundamental character of the site, without relying on ambiguous parameters such as frequency, dominance, physiognomy, or productivity. Floristic quality allows for an objective numerical comparison between two or more natural areas or vegetation community types by evaluating native plant species' tolerance to disturbance and their degree of fidelity to specific habitats. Each native species is assigned a numerical value in order to calculate a mean CoC that may be used to compare the relative quality of natural areas based on species degree of fidelity to a range of ecological parameters (Wilhelm and Ladd, 1988; Wilhelm and Masters, 1995).

Botanical inventories conducted on the Subject Lands were used to inform associated vegetation community assessments using the Southern Ontario Floral Inventory Analysis (SOFIA; Lebedyk 2018). SOFIA assigns quantitative plant community values based on floral inventories to evaluate the ecological significance and natural quality of vegetation communities. Results of the floristic quality analysis are provided in Table 3 for each ELC unit identified on the Subject Lands.

Through SOFIA, the mean CoC of vegetation communities was calculated based on all species observed to provide a measure of floristic quality (Lebedyk, 2018). A mean CoC greater than 3.5 is indicative of a floristic quality characteristic of remnant natural habitats. A mean CoC greater than 4.5 indicates a relatively intact natural area with high floristic quality (Oldham et al., 1995; Wilhelm and Masters, 1995).

The FQI defined through SOFIA is intended to quantify the overall vegetative quality of a community based on the mean CoC and the number of species present (Oldham et al., 1995). A community with a FQI less than 20 is considered to have minimal significance from a natural

quality perspective, while a community with a FQI greater than 20 is of high floristic quality and a community with a FQI greater than 35 is considered to have sufficient conservatism and richness to be floristically important from a provincial perspective (Wilhelm and Ladd, 1988). No mean CoC or FQI values identified for community types on the Subject Lands are higher than the minimum thresholds for moderate floristic quality (i.e., 3.5 and 20, respectively).

Based on the annotated assessment of community conditions determined through SOFIA, all 10 communities were determined to be of poor floristic quality and minimal natural quality. Given the existing plant species composition, it is expected that the ecological value of the natural heritage communities on the landscape is low.

Table 3: Southern Ontario Floral Inventory Analysis (SOFIA) Results

Vegetation Community	Mean CoC	FQI	Native Species	Non-Native Species	Conservative Species (CoC ≥7)
Community 1 Mineral Cultural Meadow (CUM1)	1.25	8.66	26	22	0
Community 2 Mineral Cultural Thicket (CUT1)	1.43	8.45	18	17	1
Community 3 Mineral Cultural Meadow / Open Ground (CUM1/OPEN GROUND)	1.60	6.20	9	6	0
Community 4 Mineral Cultural Thicket (CUT1)	1.62	8.73	15	14	0
Community 5 Mineral Cultural Woodland (CUW1)	2.23	12.39	22	9	2
Community 6 (A & B) Mineral Cultural Thicket (CUT1)	1.00	5.74	19	14	0
Community 7 Mineral Meadow Marsh (MAM2)	1.83	7.78	10	8	1
Community 8 Swamp Thicket (SWT)	2.89	14.70	14	5	4
Community 9 Cultural Woodland/Deciduous Swamp (CUW/SWD)	1.88	10.79	21	12	2
Community 10 Cultural Thicket (CUT)	2.45	10.96	17	3	0

Invasive Species

Invasive species are introduced, or exotic species characterized by high propagation rates and rapid colonization that may be harmful or cause irreparable damage to habitats and ecosystems. The *Invasive Species Act* (2015) explicitly regulates the prevention and management of invasive species in Ontario.

Category 1 species are defined as species that can dominate a site to exclude all other species and remain dominant on the site indefinitely (Urban Forest Associates 2002). These species pose a threat to local biodiversity and the ecological functions of natural areas. Category 1

species are a top priority for invasive species management and should be addressed in accordance with the best management practises outlined by the Ontario Invasive Plant Council (2023). Of the 22 invasive plant species documented on the Subject Lands, 10 are ranked as Category 1 (i.e., Manitoba Maple, Autumn Olive, Glossy Buckthorn, Dame's Rocket, Tartarian Honeysuckle, Purple Loosestrife, Common Reed, Common Buckthorn, Multiflora Rose, and Common Crown-vetch).

5.3 Breeding Birds

Breeding bird surveys were conducted following protocols set forth by Ontario Breeding Bird Atlas participant's guide (OBBA 2001) for diurnal birds, and by the Bobolink Survey Methodology (MNRF, 2011) for protected grassland bird species. Point count stations were established in various habitat types present on the Subject Lands to characterize breeding bird communities (Figure 5). Point count surveys were conducted at least ten days apart between dawn and five hours after dawn during the peak breeding season (i.e., Round 1: May 24 to June 17 and Round 2: June 15 to July 10) when no high winds, heavy fog or precipitation was present. All species within a 100 m radius of the sampling station were recorded during a five-minute period. The number of individuals present, and the highest level of breeding evidence were recorded for all avian species observed. As per the OBBA protocol, surveys are required to be completed between dawn and 5 hours after dawn. MTE completed all surveys within this timeframe (specifically between 08:00 and 10:00).

Open grassland habitats were surveyed in accordance with the Marsh Breeding Bird Program (BSC 2009b) between May 24 and July 10. Point count stations were located within, or adjacent to, marsh bird habitat patches (e.g., marshes, open bogs, or open fens) and species were recorded during a ten-minute survey interval at each station (Figure 5).

Results

A total of 33 breeding bird species were identified throughout the breeding bird surveys conducted on the Subject Lands. Of these species, all are provincially ranked secure (i.e., S5) or apparently common and secure (i.e., S4: NHIC 2022) in Ontario.

Eastern Meadowlark (*Sturnella magna*) is the only species listed as threatened or endangered on the SARO list that was observed on the Subject Lands during the breeding bird surveys. Two potential pairs were identified during the breeding bird surveys near the western edge of Community 6.

5.4 Amphibians

Targeted surveys for calling anurans (i.e., frogs and toads) were completed for suitable habitats (e.g., wetlands, ponds) located on, and immediately adjacent to, the Subject Lands in accordance with the standardized Marsh Monitoring Program (BSC 2009a) protocols for amphibians. Surveys were conducted at least 15 days apart in early spring (i.e., April 16 to April 30), mid-spring (i.e., May 15 to May 31), and late spring (i.e., June 15 to June 30) when nighttime air temperatures exceeded 5°C, 10°C and 17°C, respectively. Each station was surveyed for a total of three minutes and call levels of all amphibians detected within a 100 m radius were recorded. Surveys began no earlier than 30 minutes after sunset and were completed before midnight.

A summary of observations is provided in Table 4, below. Complete data sheets are provided in **Appendix B** and station locations are shown on Figure 5.

Table 4: Amphibian Call Count Survey Results

	ဟ				Spe	cies				
Station	Survey Round	No Amphibians	American Toad	Bullfrog	Chorus Frog	Gray Tree Frog	Green Frog	Northern Leopard Frog	Spring Peeper	Wood Frog
	1		1-2		2-5					
Α	2	X								
	3	Х								
	1				1-5					
В	2	Х								
	3						1-1 ¹			
	1				2-6					
С	2	Х								
	3	X								
	1				1-2					
D	2	X								
	3	X								
	1				1-2					
Е	2	X								
	3	Х								
	1				2-9				1-1 ¹	
F	2	Х								
	3	Х								
	1				1-3 ¹					
G	2	Х								
	3	Х								
	1				1-4					
Н	2	Х								
	3	Х								
	1		2-3		1-3					
I	2	Х								
	3	X								
	1				2-3					
J	2	Х								
	3	X								
	1				1-4					
K	2	X								
	3	Х								

	ဟ				Spec	cies				
Station	urvey Round	No Amphibians	American Toad	Bullfrog	Chorus Frog	Gray Tree Frog	Green Frog	Northern Leopard Frog	Spring Peeper	Wood Frog
	1				2-4					
L	2	Х								
	3	X								

¹Indicates calls detected outside of the 100 m radius of the call count station (Figure 5).

A total of four amphibian species (Chorus Frog, American Toad, Green Frog, and Spring Peeper) were detected during amphibian call count surveys on the Subject Lands. One Green Frog was heard during the second survey; all other individuals were heard during the first survey. All amphibian species are provincially ranked secure (i.e., S5) or apparently common (i.e., S4) in Ontario.

5.5 Headwater Drainage Feature Assessment

Under the Evaluation, Classification and Management of Headwater Drainage Features Guidelines, hydrologic features are assessed in three stages: Evaluation (Part 1), whereby the physical and biological characteristics of a feature are determined, Classification (Part 2), which assigns a rating of functional significance to segments of the hydrologic feature, and Management Recommendations (Part 3), wherein a management recommendation is provided based on the flow attributes and functions of the drainage feature. Part 1 was informed through a review of background resources (i.e., hydrology classification, fish habitat classification, riparian classification, and terrestrial habitat classification) as well as site reconnaissance (i.e., feature location, feature type, modifiers and riparian classification) to evaluate the classification criteria applied through Part 2 of the assessment. As per Part 3, management recommendations were assigned to each feature.

Three tributaries (twenty reaches) of the Lyons Creek Drain were identified on the Subject Lands (Figure 5). Assessment locations were defined by the confluence of two distinct drainage lines, and changes in feature type, vegetation, flow or other habitat conditions that may influence the final management recommendation applied to the segment. All tributaries of the drainage system, and associated reaches, identified on the Subject Lands are discussed below. A summary of the HDFA evaluation criteria and final management recommendations assigned to each reach is provided in Table 5.

Table 5: Headwater Drainage Feature Functional Classifications and Management Recommendations

Drainage Feature Segment	STEP 1		STEP 2	STEP 3	STEP 4	Management
	Hydrology	Modifiers	Riparian	Fish Habitat	Terrestrial	Recommendation
H1	Contributing	Fill Accumulation	Valued	Contributing	Limited	Mitigation
H1A-S1	Contributing	Fill Accumulation	Valued	Contributing	Limited	Mitigation
H1A-S2	Contributing	Fill Accumulation	Valued	Contributing	Limited	Mitigation

Drainage	STE	P 1	STEP 2	STEP 3	STEP 4	Managamant
Feature Segment	Hydrology	Modifiers	Riparian	Fish Habitat	Terrestrial	Management Recommendation
H1B-S1	Contributing	Fill Accumulation	Valued	Contributing	Limited	Mitigation
H1B-S1A	Contributing	Fill Accumulation	Valued	Contributing	Limited	Mitigation
H1B-S1B	Contributing	Fill Accumulation	Valued	Contributing	Limited	Mitigation
H1B-S1C	Contributing	Fill Accumulation	Valued	Contributing	Limited	Mitigation
H2S1	Contributing	Fill Accumulation	Important	Contributing	Important	Protection
H2S2	Contributing	Fill Accumulation	Important	Contributing	Important	Protection
H2S3	Contributing	Fill Accumulation	Valued	Contributing	Contributing	Mitigation
H2S3A	Contributing	Fill Accumulation	Valued	Contributing	Contributing	Mitigation
H2S3B	Contributing	Fill Accumulation	Valued	Contributing	Limited	Mitigation
H2S3C	Contributing	Fill Accumulation	Valued	Contributing	Limited	Mitigation
H2S3C1	Contributing	Fill Accumulation	Valued	Contributing	Limited	Mitigation
H2S3C2	Contributing	Fill Accumulation	Valued	Contributing	Limited	Mitigation
H3	Contributing	Fill Accumulation	Valued	Contributing	Contributing	Mitigation
H3S1	Contributing	Fill Accumulation	Valued	Contributing	Limited	Mitigation
H3S2	Contributing	Fill Accumulation	Valued	Contributing	Limited	Mitigation
H3S3	Contributing	Fill Accumulation	Valued	Contributing	Limited	Mitigation
H3S4	Contributing	Fill Accumulation	Valued	Contributing	Contributing	Mitigation

As per the NPCA Open Data Portal and confirmed during field investigations, all features on the Subject Lands were assigned a Contributing hydrology classification based on ephemeral flows within the HDFs which is consistent with the intermittent flow regime of the Lyons Creek Drain.

Through the Evaluation, Classification and Management of Headwater Drainage Features Guidelines (CVC/TRCA 2014), ephemeral flow is defined as water that "flows for a short period of time in response to localized precipitation (e.g., spring freshet or storm events)." The surface water channel of ephemeral features typically occurs above the local groundwater table, which is consistent with groundwater monitoring results collected through the Phase I and Phase II Environmental Site Assessments (MTE, 2023) (i.e., groundwater was encountered at depths ranging from 12.6 m to 27.5 m).

5.5.1 Headwater Drainage Feature H1

The H1 network is generally comprised of poorly defined surface drainage depressions/swales that convey overland flows in a southeasterly direction towards the Lyons Creek Drain throughout the eastern portion of the Subject Lands. Drainage features have generally been artificially imposed on the landscape as a consequence of the undulating topography associated with the historic deposition of soils excavated from the Welland Canal. Due to the high degree of site alteration, various functional impairments (e.g., invasives plant species monocultures) and limited hydrologic functions were noted.

Feature H1 was characterized as a channelized feature based on the presence of defined banks and evident historic straightening of the channel. Through the NPCA Open Data Portal, H1 was further defined as a constructed, open water ditch with ephemeral flows. The feature originates within the northeastern portion of the Subject Lands and flows south to the confluence of the Lyons Creek Drain. Riparian areas are dominated by "Important" vegetation communities (e.g., cultural thicket); however, the majority of the vegetation communities are fragmented and impacted by historical soil deposition / anthropogenic disturbance and have therefore been assessed as "valued." Therefore, the feature was assigned a "Mitigation" management recommendation.

H1A-S1 was identified as channelized feature based on the presence of defined banks. H1A-S1 conveys flows in an easterly direction along the northern boundary of the agricultural lands to H1 and was further defined as a constructed, open water agricultural drainage ditch across four sampling locations through the NPCA Open Data Portal. Riparian vegetation was assessed as "valued" as one bank consisted of a mix of meadow and scrubland and the other was dominated by agricultural land. As such, this feature was assigned a "Mitigation" management recommendation.

H1B-S1 was also identified as channelized features based on the presence of defined banks. H1B-S1 conveys flows from the northeastern portion of the Subject Lands in a southeasterly direction to H1. H1B-S1 was further defined as a rural drainage feature with ephemeral flows across seven sampling locations through the NPCA Open Data Portal. Although thicket riparian vegetation is present, this feature was assigned a "Mitigation" management recommendation as the dominant riparian cover type is cultural meadow and cropped lands.

Through the NPCA Open Data Portal, all other HDFs (i.e., H1A-S2, H1B-S1A, H1B-S1B, H1B-S1C) associated with H1 were characterized as rural drainage swales with ephemeral flows. These features predominantly occur within sparsely vegetated cultural meadow communities resulting in a moderate degree of erosion within several of the features. Each of these features were assigned a "Mitigation" management recommendation based on the limited hydrologic and ecological functions associated with each reach.

5.5.2 Headwater Drainage Feature H2

Feature H2 is contiguous with H1A-S1 on the landscape but conveys flows from the western portion of the Subject Lands in a southwesterly direction towards the roadside ditch along Forks Road.

The upstream portion of the feature (i.e., H2S3) is a channelized reach confined between the northern boundary of the agricultural field and the areas of infilling that characterize the northern portion of the Subject Lands. H2S3 was defined as a constructed, open water rural drainage feature with ephemeral flows across five sampling locations through the NPCA Open Data Portal. Although thicket riparian vegetation is present, this feature was assigned a "Mitigation" management recommendation as the dominant riparian cover type is cultural meadow and

cropped lands. Associated drainage features conveying flows to the downstream reach of H2S3 include H2S3A, H2S3B, H2S3C, H2S3C1 and H2S3C2. These features occur within sparsely vegetated meadow habitats where bare soils have resulted in a high degree of erosion and the subsequent entrenchment of several swale features. Each of these features were characterized as rural drainage features with ephemeral flows through the NPCA Open Data Portal and assigned a "Mitigation" management recommendation.

H2S1 and H2S2 were characterized as constructed drainage ditches with ephemeral flows through the NPCA Open Data Portal. Riparian areas of the downstream reaches of H2 (i.e., H2S1 and H2S2) are associated with naturalized wetland vegetation communities including Mineral Meadow Marsh (MAM2) and Swamp Thicket (SWT) ecosites. Wetland vegetation appears to be encroaching on the agricultural lands along the upstream segment of H2S2 and wetland communities associated with the roadside ditch along H2S1 have extended into riparian areas. Adjacent wetland communities are expected to support important riparian and terrestrial habitat functions; as such, H2S1 and H2S2 have been assigned a "Protection" management recommendation.

5.5.3 Headwater Drainage Feature H3

H3 is a constructed channel associated with the access road along the northern rail line that connects Highway 140 to Canal Road and is largely constrained by the tiered topography associated with the rail line corridor. The feature is located south of the access route and flows in a westerly direction across the Subject Lands before discharging into the Welland Canal and the roadside ditch located east of Canal Road. Both culverts at the downstream extent of H3 were observed to be dry, with the perched culvert connecting to the Welland Canal functioning as a migratory barrier to fish movement. The feature was characterized as a constructed, open water ditch with ephemeral flows through the NPCA Open Data Portal and was observed to have various wetland tree species growing within the thalweg of the channel, which would suggest that high water levels are not present within the feature for long periods. Standing water (4 cm depth) was observed within downstream pockets of the reach and Northern Leopard Frog (*Lithobates pipiens*) was heard calling incidentally during the October 19, 2023, field visit. Given that H3 primarily functions as a roadside ditch associated with disturbed areas and meadow habitat, this feature was assigned a "Mitigation" management recommendation.

Overland flows from the adjacent hydro corridor are conveyed to H3 by H3S1, H3S2, H3S3, and H3S4. These features function as ephemeral drainage swales and were characterized as rural drainage through the NPCA Open Data Portal. H3S1 is bisected by an ATV trail crossing and H3S2 appears to be more characteristic of a rill/gully than a drainage swale based on conditions observed in fall 2023. All features were poorly defined and appear to provide limited terrestrial habitat functions. As such, H3S1, H3S2, H3S3, and H3S4 were assigned a "Mitigation" management recommendation.

5.6 Aquatic Habitat Assessment & Stream Analysis

An aquatic habitat assessment and stream analysis consistent with OSAP methodology (Stanfield 2017) was conducted for the main segment of the Lyons Creek Drain flowing through the Subject Lands. Two sampling locations occurred within the Lyons Creek Drain (Figure 5). Representative stream sections were sampled over a 40 m stream length, as per OSAP protocols.

An aquatic habitat assessment was completed within two reaches of the Lyons Creek Drain to evaluate fish habitat availability and the suitability of habitat to support a range of life cycle functions. Aquatic habitat was characterized based on channel morphology, bed and bank

substrate, in-stream and riparian cover, flow condition, movement barriers and the presence of potential critical habitat features. The results of the assessment are outlined in Table 6 and 7.

As per the findings of the aquatic habitat assessment, the portion of Lyons Creek Drain flowing through the Subject Lands was identified as indirect fish habitat due to its intermittent flow regime. The watercourse may provide temporary access for migration during high flow events; however, large portions of the watercourse were dry during the aquatic habitat assessment and no fish were observed within the areas with minimal flow. In addition, the municipal drain provided no habitat features characteristic of quality fish spawning, nursery, or rearing habitat.

Aquatic habitat assessment field notes are provided in **Appendix B**.

Table 6: Aquatic Habitat Station 1 Characteristics

Site Length:	40.5 m	Average Width:	1.5 m	Average Depth:	35 mm					
Flow Regime:	Ephemera	Ephemeral								
Thermal Regime:	Warmwate	Warmwater								
Watercourse Substrate:	Silt and C	Silt and Clay								
Channel Structure:	100% poo	100% pool (0-100 mm depth)								
Instream Cover:	None	None								
Aquatic Vegetation:	Cattails									
Bank Stability:	Vulnerable	e (60%) and eroding	(40%)							
Watercourse Shade:	20% (limit	ed bank vegetation, i	n-stream ca	attails provide limited	shade)					
Land Use(s):	Adjacent L	and uses consist of	cropland (ri	ght and left bank)						
Pollution Sources:	Agricultural Inputs and Sediment Deposition									
Migratory Obstructions:	Upstream	Upstream culvert dry due to intermittent flow								

Table 7: Aquatic Habitat Station 2 Characteristics

Site Length:	40.5 m	Average Width:	1.5 m	Average Depth:	35 mm					
Flow Regime:	Ephemera	Ephemeral								
Thermal Regime:	Warmwate	Warmwater								
Watercourse Substrate:	Silt and C	Silt and Clay								
Channel Structure:	100% poo	100% pool (0-100 mm depth)								
Instream Cover:	None	None								
Aquatic Vegetation:	Cattails									
Bank Stability:	Eroding (5	50%) and vulnerable	(50%)							
Watercourse Shade:	20% (limit	ed bank vegetation, i	n-stream c	attails provide limited	shade)					
Land Use(s):	Adjacent I	_and uses consist of	cropland (ri	ght and left bank)						
Pollution Sources:	Agricultural Inputs and Sediment Deposition									
Migratory Obstructions:	Upstream	Upstream culvert dry due to intermittent flow								

5.7 Fish Community Inventory

Fish community sampling was planned for the portion of Lyons Creek Drain found within the Subject Lands in accordance with the standard single pass electrofishing methodology defined within S3.M1 of the OSAP protocol (Stanfield, 2017) and using the electrofishing techniques outlined in S3.M2. Sampling was to be completed as specified within the License to Collect Fish for Scientific Purposes permit (AYGU-2024-FWCA-00698) issued by MNRF; however, sampling did not occur due to insufficient water depth during the survey window.

No fish were observed within the portion of Lyons Creek Drain found within the Subject Lands during the aquatic habitat assessment.

6.0 EVALUATION OF SIGNIFICANCE

In accordance with applicable federal, provincial, municipal and conservation authority regulatory policies, the significance of natural heritage features and ecological functions identified within the Study Area was reviewed to determine the appropriate level of protection to be applied to each feature. To inform subsequent planning stages, features were further reviewed to identify potential constraints and opportunities for proposed development and/or site alteration.

As per the PPS (2024) and the *Niagara Region Official Plan* (2024), the following significant natural heritage features and areas shall be evaluated to assess significance and ecological functions on the landscape to inform the planning process:

- Significant Wetlands;
- Significant Coastal Wetlands;
- Significant Woodlands:
- Significant Valleylands;
- Significant Wildlife Habitat;
- Significant Areas of Natural and Scientific Interest;
- Fish Habitat;
- Habitat of Endangered and Threatened Species;
- Key Hydrologic Areas, Key Hydrologic Features, and Other Important Water Resources
- Supporting Features and Areas; and
- Linkages.

Technical guidance provided within the NHRM (MNR, 2010) has been referenced to inform the identification of potentially significant natural areas, and their associated forms and functions on the landscape, as defined within the PPS (2024). The presence or absence of these features within the Study Area is discussed in the following sections.

6.1 Significant Wetlands

In accordance with the PPS (2024), significant wetlands are defined as areas identified as provincially significant by MNRF or their designates, using evaluation criteria established by the province (i.e., Ontario Wetland Evaluation System; MNRF, 2022).

As per the LIO database, no provincially significant wetlands were identified on, or adjacent to, the Subject Lands (MNRF 2021).

Other Wetlands

The *Niagara Official Plan* (2024) also provides mapping which is designated as "Other Wetlands" and included as part of its Natural Environment System. The following criteria is also provided within Table 4-1 of the *Niagara Official Plan* for identifying "Other Wetlands":

- All wetlands that meet an Ecological Land Classification wetland system classification and have not been evaluated to determine provincial significance;
- Wetlands evaluated as non-provincially significant wetlands or non-evaluated wetlands;
 and
- Wetlands that provide an ecological and hydrological function or only a hydrological function.

The following communities were identified within the Subject Lands and meet the criteria for designation as Other Wetlands:

- Community 7: Mineral Meadow Marsh (1.78 ha);
- Community 8: Swamp Thicket (4.32 ha); and
- Community 9: Cultural Woodland / Deciduous Swamp mix (4.03 ha).

The *Niagara Official Plan* (2024) identifies all wetlands as Key Hydrologic Features that are subject to the policies outlined within Section 3.1.10.

6.2 Significant Coastal Wetlands

As with significant wetlands, significant coastal wetlands are identified by MNRF or their designates and are defined under the NHRM (MNR, 2010) as:

- "any wetland that is located on one of the Great Lakes or their connecting channels (Lake St. Clair, St. Mary's, St. Clair, Detroit, Niagara and St. Lawrence Rivers); or
- any other wetland that is on a tributary to any of the above-specified water bodies and lies, either wholly or in part, downstream of a line located 2 kilometres upstream of the 1:100 year floodline (plus wave run-up) of the large water body to which the tributary is connected."

No significant coastal wetlands were identified within the Study Area.

6.3 Significant Woodlands

Significant woodlands should be defined and designated by the planning authority in accordance with the evaluation criteria outlined within Section 7.0 of the NHRM (MNR, 2010). Criteria for the designation of significant woodlands include size, shape, proximity to other woodlands or natural features, linkages, species diversity, uncommon characteristics, and economic and social value (per NHRM Table 7-2).

In accordance with the NHRM (MNR 2010), woodland size criteria are defined by the special extent of the woodland relative to the percentage of woodland coverage among the physical sub-units (e.g., watersheds, biophysical regions) within the planning area. Woodland patches with bisecting openings 20 m or less in width are considered part of the same continuous woodland. Furthermore, minimum patch widths may be applied as a size threshold at the

discretion of planning authority when delineating woodlands to exclude relatively narrow linear treed areas such as hedgerows (e.g., a minimum 40 m average width where the size threshold is 4 ha or 60 m width where the size threshold is 10 ha).

No forested communities that require consideration as a Significant Woodland (i.e., FOC, FOD, FOM, SWC, SWD, SWM, CUW or CUP) were identified within the Study Area.

Other Woodlands

The Niagara Official Plan (2024) also provides mapping with areas designated as "Other Woodlands," which are included as part of its Natural Environment System. "Other Woodlands" are identified within Table 4-1 of the Niagara Official Plan as a terrestrial treed area per ELC methodology with >25 percent tree cover that meet one or more of the following criteria:

- An average minimum width of 40 m and > 0.3 ha, measured to crown edges; or
- Any size abutting (within 20 m) a significant woodland, wetland, or permanent stream.

Community 9: Cultural Woodland / Deciduous Swamp mix (4.03 ha) was identified within the Subject Lands and meets the criteria for designation as Other Woodlands.

6.4 Significant Valleylands

Significant valleylands are defined as natural areas occurring within a valley or other landform depression with flowing or standing water that are "ecologically important in terms of features, functions, representation or amount, and contributing to the quality and diversity of an identifiable geographic area or natural heritage system" (MMAH, 2024). Significant valleylands are defined and designated by the planning authority based on the general guidelines for determining valleyland significance that are outlined within Section 8.0 of the NHRM (MNR, 2010). Recommended evaluation criteria for determining valleyland significance include landform prominence, degree of naturalness, community and species diversity, habitat value, linkage functions and restoration potential.

Significant Valleylands are mapped on Schedule B2 of the *City of Port Colborne Official Plan* (2017) and are not mapped as present within the Study Area.

No significant valleylands have been identified by the planning authority within the Study Area.

6.5 Significant Wildlife Habitat

The Significant Wildlife Habitat Technical Guide (MNRF, 2000), Criteria Schedules for Ecoregion 7E (MNRF, 2015) and the NHRM (MNR, 2010) provide technical guidance for the identification and evaluation of SWH in the context of the municipal planning process. Candidate habitat has been evaluated in accordance with ELC Ecosite Codes and habitat criteria defined within the Criteria Schedules for Ecoregion 7E (MNRF, 2015) to identify potential protection areas.

Four categories of SWH are defined within the Criteria Schedules for Ecoregion 7E (MNRF, 2015): Seasonal Concentration Areas of Animals, Rare Vegetation Communities or Specialized Habitat for Wildlife, Habitat for Species of Conservation Concern and Animal Movement Corridors. Based on the results of the SWH assessment and targeted field investigations completed, the following habitat types were identified on or adjacent to, the Subject Lands:

Confirmed Significant Wildlife Habitat (Subject Lands)

- Special Concern and Rare Wildlife Species:
 - Grasshopper Sparrow (Community 1).

Candidate Significant Wildlife Habitat (Adjacent Lands)

- Waterfowl Stopover and Staging Areas (Terrestrial).
- Bat Maternity Colonies.
- Bald Eagle and Osprey Nesting, Foraging, Perching.
- Terrestrial Crayfish.
- Special Concern and Rare Wildlife Species:
 - Eastern Wood-Pewee, Grasshopper Sparrow, Wood Thrush, Mapleleaf Mussel, Snapping Turtle, and Monarch.

A detailed screening of each SWH type with the potential to occur within the Study Area is provided in **Appendix C**.

6.6 Significant Areas of Natural and Scientific Interest

Significant Areas of Natural and Scientific Interest (ANSIs) are identified as provincially significant by MNRF in accordance with evaluation procedures established by the province.

The *Niagara Region Official Plan* (2024) states that identification of both provincial and regional Life Science ANSIs and Earth Science ANSIs is determined by the province and are included within the Natural Environment System designation.

As per Schedule C2 (Natural Environment System: Individual Components and Features) of the *Niagara Official Plan* (2024), no Life Science or Earth Science ANSIs are present within the Study Area.

6.7 Fish Habitat

Fish habitat, as defined under the federal Fisheries Act, "means water frequented by fish and any other areas on which fish depend directly or indirectly to carry out their life processes, including spawning grounds and nursery, rearing, food supply and migration areas.".

The *Niagara Region Official Plan* (2024) uses the Fisheries Act definition for defining fish habitat and provides the following criteria to determine watercourses that fit this definition within the region:

- Any permanent or intermittent waterbodies excluding constructed offline ponds; or
- Intermittent or ephemeral watercourses, headwater drainage features, and/or shoreline features that provide inputs important for downstream fish habitat and fish habitat in the Great Lakes.

The *Niagara Official Plan* (2024) also identifies all permanent and intermittent streams as Key Hydrologic Features that are subject to the policies outlined within Section 3.1.10.

Based on MTE field investigations, direct fish habitat regulated under the *Fisheries Act* is present within the portion of Lyons Creek Drain located on the Subject Lands; however, it is considered seasonal due to ephemeral flows and poor connectivity downstream and upstream. HDFs and the portion of Lyons Creek Drain within the Subject Lands may also provide some flow and organic matter contributions to downstream fish habitat; however, critical habitat features were not present within the Lyons Creek Drain and upstream fish movement is limited due to ephemeral flow. In addition, there was no channel in some HDFs where flow was limited to overland.

Based on MTE field investigations, the Lyons Creek Drain was assessed as direct fish habitat due to its seasonal availability for fish migration. In consideration of potential biophysical and ecological contributions to downstream fish habitat, the HDFs on the Subject Lands have been evaluated as indirect fish habitat.

6.8 Habitat of Endangered or Threatened Species

Based on background review, three threatened species (Spoon-leaved Moss, Bobolink, and Eastern Meadowlark) with the potential to occur within the Study Area were identified (**Appendix A**). Through ecological field investigations, suitable habitat for Eastern Meadowlark and Bobolink was identified on the Subject Lands, and Eastern Meadowlarks were observed using the habitat. In addition, the presence of woodland communities within the Study Area requires that SAR bat species known to use treed habitats (Eastern Red Bat, Little Brown Myotis, Northern Hoary Bat, Northern Myotis, Silver-haired Bat, and Tri-colored Bat) also be considered.

A comprehensive SAR assessment has been provided in **Appendix A**. Species confirmed or with potential to occur within the Study Area based on the results of ecological field investigations and the availability of suitable habitat are discussed in detail below.

Eastern Meadowlark:

Eastern Meadowlark breeds mostly in moderately tall grasslands (native prairies and savannahs), as well as pastures, hayfields, herbaceous fencerows, roadsides, orchards, airports, shrubby overgrown fields, or other open areas. Eastern Meadowlarks may not be strongly area sensitive (McCracken et al., 2013), however, large tracts of grasslands (5 ha or greater) are preferred over smaller fragments (Herkert 1991, Vickery et al. 1994).

Two potential breeding pairs were observed within the Subject Lands during the 2024 breeding bird surveys in an area identified as suitable Eastern Meadowlark habitat (Figure 5).

Bobolink:

This species was not observed during the 2024 field investigations; however, it is known to use similar habitat to that of Eastern Meadowlark and, as such, there is potential for this species to use suitable grassland habitat within the Subject Lands.

Spoon-leaved Moss:

Spoon-leaved Moss populations are typically located on soil in low-lying areas that are seasonally flooded under trees or shrub thickets. No populations were observed during the field investigations completed in 2024; however, suitable habitat may be present on adjacent lands, within the Study Area.

All other species occurrences detected through the background review were evaluated in the context of the Subject Lands based on the availability of suitable habitat and detailed ecological field investigations. No other threatened or endangered species or associated suitable habitats for these species were detected on, or adjacent to, the Subject Lands.

SAR Bats:

Maternity roost habitat for bats is known to include forests, swamps and woodlands. While the Subject Lands contains swamp and woodland communities, and suitable maternity roost trees were determined to be absent.

6.9 Supporting Features and Areas

The *Niagara Region Official Plan* (2024) defines supporting features and areas as lands that have the potential to be restored (or have been restored), and include:

- a. grasslands, thickets, and meadows that support the ecological functions of adjacent key natural heritage features, key hydrologic features, and/ or natural heritage features and areas;
- valleylands, which includes lands that may have ecological and/or hydrologic functions, that are not significant valleylands, and are not the site of a permanent or intermittent stream that is regulated by the Conservation Authority;
- c. wildlife habitat that is not considered to be significant wildlife habitat; and
- d. enhancement areas, which are the subject of Section 3.1.16 of this Plan.

Cultural thickets and meadows were identified within the Subject Lands and wildlife habitat is present within all communities.

Valleylands consist of natural areas that occur in a valley or other landform depression that has water flowing through or standing for some period of the year and are present in the Subject Lands; however, all valleylands within the Subject Lands are regulated by the NPCA.

Wildlife habitat is present within the Subject Lands within areas where plants, animals and other organisms live, and find adequate amounts of food, water, shelter, and space needed to sustain their populations. All communities within the Subject Lands provide potential wildlife habitat.

Despite the presence of cultural thickets, meadows, and wildlife habitat within the Subject Lands that meet the general definition within *Niagara Region Official Plan* (2024) for consideration as Supporting Features and Areas, all communities were determined to be of poor floristic quality and minimal natural quality through SOFIA analysis. Given the existing plant species composition, it is expected that the ecological value of the natural heritage communities on the landscape is low, and they are therefore unlikely to support ecological functions or provide much opportunity for enhancement.

6.10 Linkages

The *Niagara Region Official Plan* (2024) identifies linkages as an area that provides and maintains ecological connectivity between core areas while supporting a range of processes that enable plants and animals to move among natural heritage features. Mapped linkages include areas with a minimum width of 60 m that connect core areas with a combined area of at least ten hectares and are not present within the Subject Lands.

6.11 Summary of Natural Heritage Features

The PPS (2024), *Niagara Region Official Plan* (2024), and the *City of Port Colborne Official Plan* (2017) define key natural heritage features to be considered in terms of the impact and net effects assessment. Based on the defined natural heritage features, publicly available mapping, and the field investigations outlined within this report, the following ecological components are identified within the Study Area:

- Other Wetlands.
- Other Woodlands.
- Confirmed Significant Wildlife Habitat (Subject Lands):

- Special Concern and Rare Wildlife Species (Community 1):
 - Grasshopper Sparrow.
- Candidate Significant Wildlife Habitat (Adjacent Lands):
 - Waterfowl Stopover and Staging Areas (Terrestrial).
 - Bat Maternity Colonies.
 - Bald Eagle and Osprey Nesting, Foraging, Perching.
 - Terrestrial Crayfish.
 - Special Concern and Rare Wildlife Species:
 - Eastern Wood-Pewee, Grasshopper Sparrow, Wood Thrush, Mapleleaf Mussel, Snapping Turtle, and Monarch.
- Fish Habitat.
- Suitable Habitat of Endangered and Threatened Species:
 - o Bobolink (Subject Lands and Adjacent Lands).
 - Spoon-leaved Moss (Adjacent Lands).
- Confirmed Habitat of Endangered and Threatened Species:
 - Eastern Meadowlark (Subject and Adjacent Lands).

Figure 7 depicts all potential constraints identified on the Subject Lands.

7.0 PROPOSED DEVELOPMENT

The proposed development is within lands identified as the AK Lands, an approximately 150-acre parcel located in the northeast portion of the Subject Lands and the area immediately west (approximately 20 acres).

The proposed development within the AK Lands include a manufacturing facility (approximately 185,806 m²) with a parking lot that is anticipated to have a minimum of 1,525 parking spaces, three Stormwater Management Facility (SWMF) ponds, and a tank yard with a wastewater treatment plant, water softening building, fire pump house, above ground cooling towers, hydro substations building, gas boiler building, and other ancillary buildings that will be used for outdoor storage and processing. The development proposal for the 20-acre parcel to the west (Part 16 and Part 20) consists of a high voltage electric substation, a SWMF pond, and berms along the outside of the development with a noise wall installed along the top of the berm (Figure 8).

Site alteration was permitted to move forward within a portion of the AK Lands (Figure 9) prior to the completion of this EIS based on correspondence with the City of Port Colborne, the Niagara Region, and the NPCA. In accordance with Niagara Official Plan Policy 3.1.18.2, natural heritage features and key hydrologic features within the Site Alteration Permit Approved Boundary illustrated on Figure 9 that were disturbed in advance of this EIS do not require restoration.

In addition, Ontario Regulation (*O. Reg.*) 830/21 outlines an exemption from the *ESA* (2007), which was utilized for an area within the development footprint that was previously assessed as potential SAR habitat. This exemption, along with the payment of a conservation charge, was used to allow for site alteration to move forward in advance of the completion of this EIS.

8.0 IMPACTS & MITIGATION RECOMMENDATIONS

In accordance with provincial standards, potential impacts, predicted effects, mitigation and enhancement measures associated with the proposed development and/or site alteration should be assessed through an EIS, or like study, prepared to the satisfaction of the municipality and appropriate conservation authority. The impact assessment and mitigation measures presented herein shall address the requirements of the PPS (2024) to ensure that the test of no negative impacts to natural heritage features and areas or their ecological functions is demonstrated. Potential impacts to the natural heritage features and environmental functions that occur on, and adjacent to, the proposed development area have been evaluated over the short and long term to ensure that proposed avoidance and/or mitigation strategies will contribute to the sustainability and resiliency of a diverse ecosystem over the long term.

As discussed in Sections 1.0 and 7.0, site alteration within a portion of the AK Lands was permitted prior to completion of this impact assessment. As such, this assessment of impacts has been undertaken with the understanding that site alteration with the approved boundary has been initiated.

The predominant natural heritage features present on, and adjacent to, the proposed development area includes Other Wetlands, Significant Wildlife Habitat, Fish Habitat, and Habitat of Endangered and Threatened Species.

Potential impacts of proposed development and/or site alteration on ecological features and functions shall be reviewed in the context of direct and indirect impacts with a summary of general recommended mitigation and restoration strategies provided below.

8.1 Direct Impacts

Direct impacts associated with the proposed limit of development are reviewed in the following section. Potential effects on the the viability and integrity of natural heritage features and associated ecological functions within the proposed development area and its adjacent lands (120 m) have been evaluated over the short and long term.

8.1.1 Other Wetlands

As per the *Niagara Region Official Plan* (2024), Community 7 (Mineral Meadow Marsh) is identified as Other Wetland and is present within the proposed development area. Furthermore, all wetlands outside of the settlement areas are defined as key hydrologic features and therefore require a 30-metre-wide vegetation protection zone as per Policy 3.1.9.2.

As per Policies outlined within 3.1.10 (Key Hydrologic Areas, Key Hydrologic Features, and Other Important Water Resources), development or site alteration shall not have negative impacts on key hydrologic areas, their hydrologic functions, interaction between key hydrologic areas and other components of the natural environment system, or natural hydrologic characteristics. If there is potential for negative impacts to groundwater quality or quantity, the completion of a subwatershed study or a hydrological evaluation is required prior to development being permitted (Policy 3.1.10.7). Furthermore, large-scale development may be permitted within a key hydrologic area where it is determined that the quality and quantity of water will be protected and/or enhanced (Policy 3.1.10.8).

Community 7 (Mineral Meadow Marsh) was determined to be of poor floristic quality and minimal natural quality with an open canopy (<10% canopy cover). The portion of Community 7 proposed for removal is a small projection of the community that is surrounded by disturbed areas within Community 3 and a *Phragmites* inclusion.

The proposed development is not anticipated to negatively affect wetland function of Community 7 as SWMF No. 2 (i.e., the southwestern SWMF pond) will include a 450 mm pipe to convey outflows from the pond to the drain with excess conveyance capacity of the pipe directed straight to the Welland Canal as outlined within the Stormwater Management Report (Stantec, 2025) completed as part of the proposed development.

Given the existing plant species composition and the lack of amphibian call counts, it is expected that the ecological value of Community 7 on the landscape is low. Given that flows will be maintained downstream post-development, the removal of the portion of the feature within the AK Lands is not expected to have a significant impact on the natural heritage landscape or hydrologic functions while the adjacent features will be protected from the proposed development provided sediment and erosion control mitigation measures are followed (Section 8.2.1). In accordance with Niagara Official Plan Policy 3.1.9.5.6 b) iii), no negative impact on the ecological function of Community 7 will be achieved through restoration and seeding within areas of temporary disturbance associated with previously approved earthwork activities.

8.1.2 Significant Wildlife Habitat

As discussed above, the following SWH was identified within the Subject Lands:

Confirmed Significant Wildlife Habitat (Subject Lands)

- Special Concern and Rare Wildlife Species:
 - Grasshopper Sparrow (Community 1).

Timing windows provided in Section 8.2.2 will mitigate direct impacts to Grasshopper Sparrow.

Within the AK Lands, a portion of Community 1 providing SWH will be retained (Figure 9). Per Niagara Official Plan Policy 3.1.9.8.2, given the variable function of SWH, the width of required minimum buffers to SWH is to be established through an EIS. The areas within the Site Alteration Permit Approved Boundary immediately east and south of Community 1 will require temporary disturbance and will be restored and seeded according to the Landscape Plan (under separate cover). East of Community 1, the restored area between the Site Alteration Permit Boundary and the proposed development is approximately 17.7 m. Per the Landscape Plan, this 17.7 meters includes a Significant Wildlife Habitat Buffer of approximately 8 m to be seeded and unmaintained, with a row of coniferous trees to act as a barrier between the buffer and proposed development. South of Community 1, the restored area between Site Alteration Permit Boundary and the proposed development is approximately 36.1 m. Per the Landscape Plan, this 36.1 meters includes a Significant Wildlife Habitat Buffer of (minimum) 20 m to be seeded and unmaintained, with a row of coniferous trees to act as a barrier between the buffer and proposed development.

Furthermore, temporary disturbance associated with the previously approved earthwork activities west of the SWMF are identified as North Existing Drainage Ditch on the Landscape Plan and are to be restored and seeded according to the Landscape Plan. In total, enhancement areas are approximately 2.61 ha. Given the pre-disturbance plant species composition, it is expected that seeding areas of temporary disturbance will improve the overall condition of the restored portion of Community 1.

It is anticipated that that these restored areas, functioning to provide buffers and enhancement, will result in no net negative impact to the SWH provided by Community 1.

Invasive species management, soil preparation, and appropriate seeding composition and rates will be necessary to enhance the remaining Grasshopper Sparrow habitat within Community 1.

Additional text and recommendations to enhance habitat within Community 1 are provided below.

Invasive Species Management

Several priority species from the Ontario Invasive Species Council Plan have been identified within the AK Lands and proposed enhancement areas with the most dominant species being Phragmites. Management of invasive Phragmites should be completed following Best Management Practices, such as those published by Ontario Invasive Plant Council, with high prolific seed producers prioritized. Invasive species control and removal should be completed prior to earthworks to prepare the enhancement area for seeding (e.g., decompaction and topsoil addition).

Decompaction

The soils within the proposed restoration area are recommended to be decompacted prior to any restoration activities. Decompaction breaks up the soil which improved water flow, aeration, nutrient accessibility, root grows, and microsite availability (Natural Resources Canada, 2017). Methods of decompaction depend on the soil composition of the site, and the access of machinery into the site. Methods may include tilling with a rototiller, chisel plow or backhoe, or excavation and replacement with uncompacted soils (TRCA, 2012). Moisture levels and temperatures can influence the machinery appropriate for the site. Additionally, prairie grasses and flowers germinate and establish better when seeded in a bed of lose, well-drained soil.

Topsoil Depths

Areas identified as North Existing Drainage Ditch and Significant Wildlife Habitat Buffer will be restored with 150 mm depth screened topsoil in accordance with the Landscape Plan.

Seeding

Seed mixes have been recommended based on their suitability to the local soil, moisture, and light conditions of the site, and their compatibility with the adjacent vegetation communities.

The recommended seed mixtures for the enhancement area are: Quality Seeds Canada's Custom Native Stabilizer and Pollinator Seed Mix and Ontario Seed Company's Seasonally Flooded Native Seed Mix (**Table 1**), or an approved equivalent. Areas seeded with the Flooded Native Seed Mix will be overseeded with an application of Blue Vervain, New England Aster, Black-Eyed Susan, Spotted Joe-Pye Weed, and Swamp Milkweed. The recommended seed mix for the buffer area is Quality Seeds Canada's Custom Native Stabilizer and Pollinator Seed Mix. These seed mixes are ideal for the required drain restoration as well as meadow habitat creation due to their diversity and quick establishment, while providing wildlife food and cover.

These mixes are recommended to be sown at a ratio of 25 kg/ha. Nurse crop seed [Annual Rye (*Lolium multiflorum*) or Oats (*Avena sativa*)] should be added to the native seed blend at a rate of 22-25 kg/ha to help prevent soil erosion and seed movement, reduce weed competition, and provide shelter for targeted species' seed during the establishment period.

Seed mix species lists and additional seeding notes are provided in the Landscape Plan.

Recommendation 1: Earthworks and proposed vegetation removals in proximity to an identified natural heritage feature have the potential to mobilize sediment into the adjacent natural heritage feature. Erosion and sediment control measures should be installed and monitored throughout construction to mitigate potential impacts. Additional details regarding ESC recommendations are provided in Section 8.2.1.

Recommendation 2: Scarify or de-compact existing soils within restoration areas.

Recommendation 3: Soil decompaction activities should be undertaken in dry conditions.

Recommendation 4: Decompaction equipment, timing, and depth must be planned accordingly to avoid damaging or destabilizing subsoils.

Recommendation 5: Topsoil should restored in accordance with the Landscape Plan.

Recommendation 6: Nurse crop seed [Oats (*Avena sativa*)] should be added to native seed blend at a rate of 22-25 kg/ha to help prevent soil erosion and seed movement, reduce weed competition, and provide shelter for targeted species' seeds during the establishment period.

Recommendation 7: Native seeding should be done in the fall (approximately October 15 – November 15) to allow for natural stratification. If this timing is not possible, seeds can also be sown in early spring (e.g. April); however, this may cause seeds to remain dormant and not germinate until the following spring.

Recommendation 8: This EIS should be read in conjunction with the Landscape Plan. A Restoration and Monitoring Plan has been developed to address the enhancement and buffer areas and forms part of the Landscape Plan.

8.1.3 Fish Habitat

Fish habitat within the proposed development area is limited to the HDFs with fish habitat that was characterized as contributing (i.e., indirect) through the HDFA. The proposed development is not anticipated to negatively impact fish habitat if flows are maintained downstream given that the primary impact of indirect fish habitat is the supply of nutrients and/or food downstream. As per the HDFA, all HDFs within the proposed development area were recommended for "mitigation" which includes the recommendation to maintain on-site and outlet flows.

As outlined within the Stormwater Management Plan (Stantec, 2025), outlet structures for SWMF ponds are designed to maintain baseflow to downstream drainage features without exceeding existing target flow rates. Therefore, fish habitat located downstream is not anticipated to be impacted by the proposed development provided that standard erosion and sediment control (ESC) measures are adhered to.

Recommendation 9: Earthworks and proposed vegetation removals in proximity of an identified headwater drainage feature have the potential to mobilize sediment into downstream habitats and impact fish and fish habitat. Erosion and sediment control measures should be installed and monitored throughout construction to mitigate potential impacts to fish and fish habitat downstream. Additional details regarding ESC recommendations are provided in Section 8.2.1.

8.1.4 Habitat of Endangered or Threatened Species

Habitat for two species (Eastern Meadowlark and Bobolink) protected under the provincial *ESA* (2007) was identified within the proposed limit of development (Figure 9). As per the PPS (2024), permit development or site alteration is not permitted within the critical habitat of endangered species and threatened species except in accordance with provincial and federal requirements.

Subsection 13 (1) of Ontario Regulation (*O. Reg.*) 830/21 outlines an exemption from the *Endangered Species Act, 2007* whereas an activity that is likely to damage or destroy Eastern Meadowlark and/or Bobolink habitat less than 30 ha is not considered to be in contravention of the *Endangered Species* Act, 2007 provided the following conditions are met:

13. (1) Clause 9 (1) (a) and subsection 10 (1) of the Act do not apply to a person who, while carrying out an activity described in subsection (3), kills, harms, harasses, captures or takes a bobolink or an eastern meadowlark, or damages or destroys its habitat, if the size of the

area of habitat of bobolinks or eastern meadowlarks that is damaged or destroyed by the activity is equal to or less than 30 hectares and,

- (a) the person satisfies all of the conditions set out in section 14; or
- (b) the person,
 - (i) pays a species conservation charge to the Species at Risk Conservation Trust in accordance with paragraph 5 of subsection 20.3 (1) of the Act and Ontario Regulation 829/21 (Species Conservation Charges) made under the Act, and
 - (ii) satisfies the conditions in paragraphs 1 to 4 of section 14. O. Reg. 830/21, s. 37 (5).

The proponent has moved forward with the exemption outlined in Section 13. (1) (b) that includes the requirement to complete the submission of a Notice of Activity form, mitigation measures (outlined within Section 15 of *O. Reg. 830/21*), and the completion of an Eastern Meadowlark and Bobolink Management Plan.

The area of impact to Bobolink and Eastern Meadowlark habitat that has been registered is 3.906 ha. A Notice of Activity form has been submitted, and Confirmation of Registration was received February 12, 2025. Receipt of payment to the Species at Risk Conservation Trust was received February 27, 2025. A copy of the Bobolink and Easten Meadowlark Habitat Management Plan is included in **Appendix D**.

Spoon-leaved Moss was identified as potentially having suitable habitat within the Study Area; however, no suitable habitat is present within the proposed development area or its adjacent lands. No other threatened or endangered species or associated suitable habitats for these species were detected on, or adjacent to, the proposed development area.

Recommendation 10: Follow the requirements outlined within the *Ontario Regulation 830/21* exemption for Eastern Meadowlark and Bobolink habitat impact which includes the submission of a Notice of Activity form, mitigation measures outlined within Section 15 of *Ontario Regulation 830/21*, and implementation of the Eastern Meadowlark and Bobolink Management Plan.

8.2 Indirect Impacts & Mitigation

Indirect impacts include potential adverse effects on the biophysical environment that may occur as a result of proposed development. This may include erosion from the work area and associated sedimentation into natural features, accidental spills, impacts to migratory birds, and the introduction of exotic and/or invasive plant species. Each of these are discussed in the following sections.

8.2.1 Sediment and Erosion Control Measures

The most critical time for the protection of natural heritage features is during the construction phase. For all works, and especially those within 30 m of adjacent natural heritage features, an ESC Plan will be required to contain ground disturbances on site and to protect adjacent natural heritage features identified in this report from sediment transport and potential sedimentation.

Recommendation 11:

A multi-barrier approach for sediment and erosion control should be used for this development and contained within a project-specific ESC Plan. Prior to works on site, robust sediment and erosion control fencing should be installed in areas immediately adjacent to natural features and across low-lying areas prone to receiving overland runoff. The fencing will act as a barrier to keep construction equipment and spills away from vulnerable natural areas and features where sediment loading has the potential to negatively impact fish and wildlife habitat.

Recommendation 12:

During construction, the lands between the sediment and erosion control fencing must be maintained. The fencing should remain in place until construction is complete and the remainder of the natural areas to remain are stabilized and/or naturalized.

Recommendation 13:

Sediment and erosion control fencing should be inspected prior to construction to ensure it has been installed correctly and during construction to ensure that the fencing is being maintained and is functioning properly. Any issues that are identified are to be resolved in the same day.

Recommendation 14:

Sediment and erosion control fencing must be installed according to the Guidelines for Erosion and Sediment Control for Urban Construction Sites (TRCA 2019) and the applicable standards established in the Ontario Provincial Standard Specification/Ontario Provincial Standard Drawings (OPSS/OPSD) documents.

Recommendation 15:

Sediment and erosion control fencing should not be removed until adequate re-vegetation and site stabilization has occurred. Additional re-vegetation plantings and/or time for vegetation to establish may be required; however, two growing seasons are typically sufficient to stabilize most sites.

Recommendation 16:

Re-seed all disturbed areas as soon as possible to maximize erosion protection and to minimize the establishment of invasive species, which may spread to the adjacent natural features.

8.2.2 Migratory Birds & Wildlife

Recommendation 17:

The removal of Milkweed plants should be completed outside of the active breeding season (i.e., June 1 to September 30) to avoid any direct impacts to Monarch life stages. Where clearing activities must proceed within this window, Milkweed plants should be inspected prior to removal. Where caterpillars or larvae are detected, Milkweed plants should be transplanted, under the direction of a qualified professional.

Recommendation 18:

As per the *MBCA* (1994), it is recommended that any vegetation removals occur outside of the migratory breeding bird season (i.e., April 1 to August 31). If this window cannot be avoided, nest searches to determine the presence or absence of nesting birds or breeding habitat should be conducted until clearing is complete, or until August 31, whichever comes first.

Recommendation 19:

Advise workers of potential encounters with wildlife during construction. If an animal enters the work site, work at that location will stop and the animal should be permitted to leave unharassed. If there are repeat observations of wildlife in the work area, barrier fencing (e.g., silt fence) may be needed to direct wildlife away from active construction and toward natural areas.

8.2.3 Invasive Species Management

Recommendation 20:

Invasive species management should be completed using best management practices (Ontario Invasive Plant Council 2023) for communities retained.

9.0 CONCLUSIONS

MTE was retained by One Forty Development LP to undertake an EIS to support proposed development within the Subject Lands. This EIS determines and defines natural heritage features present within the Subject Lands and documents potential impacts associated with the proposed development within the AK Lands.

Site alteration was permitted to move forward within a portion of the AK Lands prior to completion of this EIS. As such, the existing conditions portion of this report is based on field work undertaken during 2023 and 2024, while the assessment of impacts associated with the proposed development within the AK Lands has been undertaken with the understanding that site alteration with the approved boundary has been initiated.

The PPS (2024), *Niagara Region Official Plan* (2024), and the *City of Port Colborne Official Plan* (2017) define key natural heritage features to be considered in terms of the impact and net effects assessment. The proposed development impacts to Other Wetlands, Significant Wildlife Habitat, Fish Habitat, and Habitat of Endangered or Threatened Species are discussed within Section 8.0 with recommendations provided to mitigate impacts to the natural heritage features.

Impacts to Eastern Meadowlark habitat were addressed in accordance with the *ESA* (2007) through the submission of a Notice of Activity form, mitigation measures outlined within Section 15 of *Ontario Regulation 830/21*, and the creation of an Eastern Meadowlark and Bobolink Management Plan for the proposed development area. Provided the recommendations in this EIS are followed; it is our opinion that the proposed development can proceed.

MTE seeks comments from the City of Port Colborne, the Niagara Region, and the NPCA with respect to the contents of the EIS. Formal comments can be submitted in writing to MTE of behalf of the client. Should you wish to clarify any questions or require additional information as part of the review of this EIS, do not hesitate to contact us.

All of which is respectfully submitted,

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https://mte85.sharepoint.com/sites/53689-101/Shared Documents/04-ECOLOGY/03-Reports/Environmental Impact Study/Project Eagle, Part 20, and Part 16 Development - EIS/53689-101_2025-06-23_rpt_Environmental Impact Study.docx

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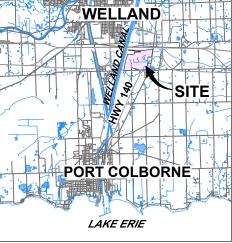
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Figures







KEY PLAN (nts)

LEGEND

——— SUBJECT SITE STUDY AREA

(120m Buffer from Subject Site)

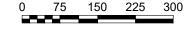
REFERENCES

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NOTES

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ALL LOCATIONS ARE APPROXIMATE.





ENVIRONMENTAL IMPACT STUDY HIGHWAY 140 LAND HOLDING PORT COLBORNE, ONTARIO

PROJECT LOCATION

Drawn	Scale	F
DCH	1:7,500	
Checked	Project No. 53689-101	
Date	Rev No.	
2024-12-17	0	



LEGEND

——— SUBJECT SITE

STUDY AREA

(120m Buffer from Subject Site)

WATERCOURSE (LIO)

/////, NPCA REGULATED LAND

NATURAL ENVIRONMENT SYSTEM OVERLAY

GROWTH PLAN NATURAL HERITAGE SYSTEM

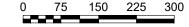
REFERENCES

NIAGARA OFFICIAL PLAN, SCHEDULE C-1, NATURAL ENVIRONMENT SYSTEM OVERLAY AND PROVINCIAL NATURAL HERITAGE SYSTEMS, MAY 2024; AND NIAGARA PENINSULA CONSERVATION AUTHORITY (NPCA), APPROXIMATED REGULATION LANDS, OPEN DATA SET, AS OF OCTOBER 27 - 2023.

NOTES

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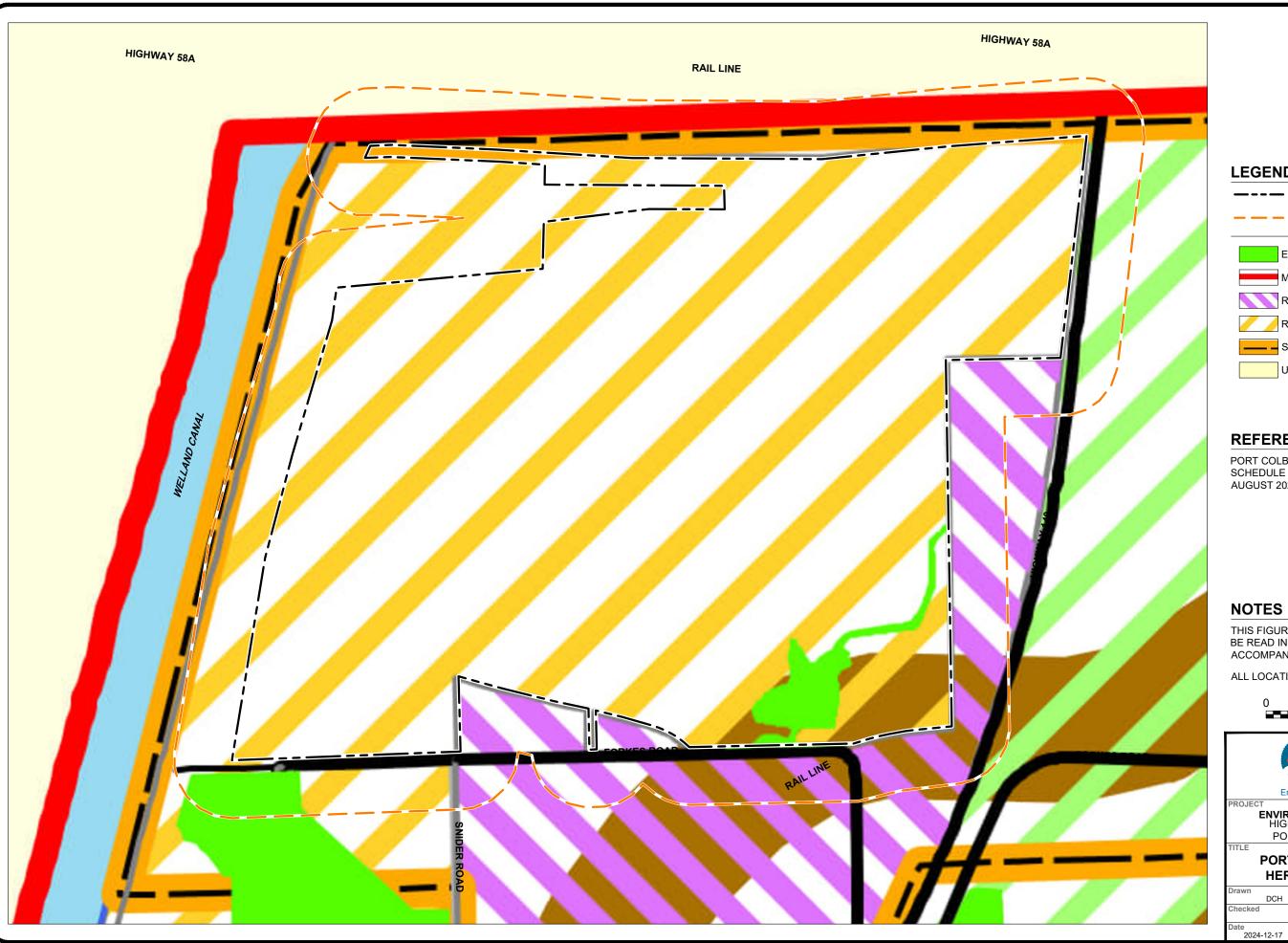
Engineers, Scientists, Surveyo

ENVIRONMENTAL IMPACT STUDY HIGHWAY 140 LAND HOLDING PORT COLBORNE, ONTARIO

LIMITS MAPPING

Drawn	Scale	Fi
DCH	1:7,500	
Checked	Project No. 53689-101	
Date	Rev No.	
2024-12-17	0	

2





LEGEND

——— SUBJECT SITE

STUDY AREA

(120m Buffer from Subject Site)

MUNICIPAL BOUNDARY

RURAL

RURAL EMPLOYMENT



URBAN RESIDENTIAL

REFERENCES

PORT COLBORNE, OFFICIAL PLAN, SCHEDULE A: CITY-WIDE LAND USE, AUGUST 202.

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0 75 150 225 300

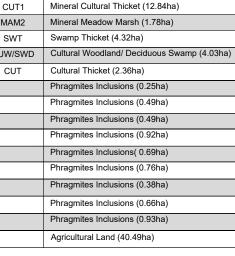


ENVIRONMENTAL IMPACT STUDY HIGHWAY 140 LAND HOLDING PORT COLBORNE, ONTARIO

PORT COLBORNE NATURAL HERITAGE AND LAND USE

Drawn	Scale	F
DCH	1:7,500	
Checked	Project No. 53689-101	
Date 2024-12-17	Rev No.	





Mineral Cultural Meadow (27.29ha)

Mineral Cultural Meadow (67.08ha)

Mineral Cultural Thicket (4.21ha)

Mineral Cultural Thicket (1.48ha)

Mineral Cultural Thicket (7.91ha)

Mineral Cultural Woodland (1.72ha)

LEGEND

--- SUBJECT SITE



VEGETATION COMMUNITY **VEGETATION COMMUNITY**

(Phragmites Inclusions)

WATERCOURSE (LIO)

REFERENCES

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NOTES

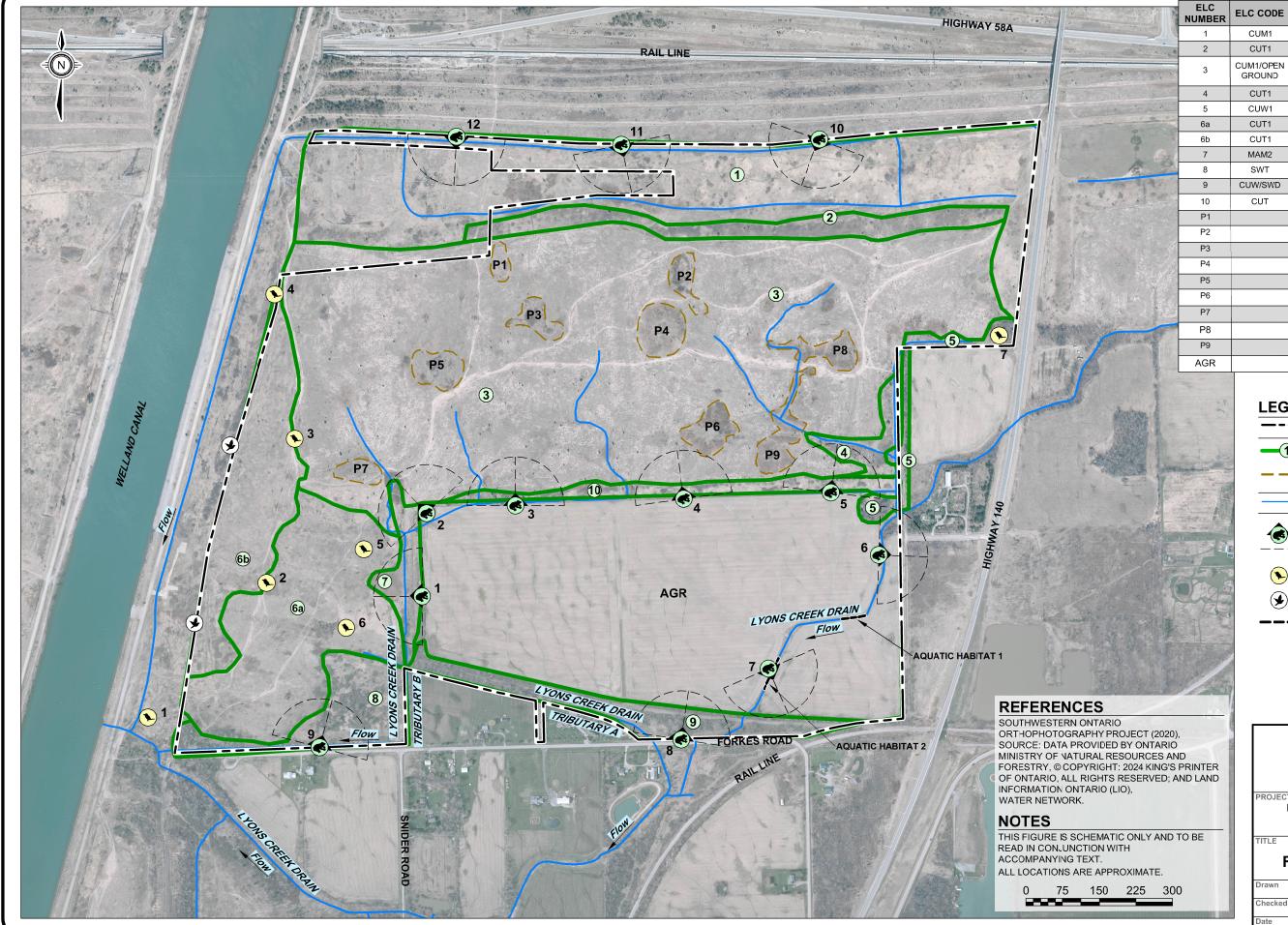
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ENVIRONMENTAL IMPACT STUDY HIGHWAY 140 LAND HOLDING PORT COLBORNE, ONTARIO

ECOLOGICAL LAND CLASSIFICATION

Drawn	Scale
DCH	1:7,500
Checked	Project No. 53689-101
Date	Rev No.
2025-04-07	0





——— SUBJECT SITE

Description

Mineral Cultural Meadow (27.29ha) Mineral Cultural Thicket (4.21ha)

Mineral Cultural Veadow (67.08ha)

Mineral Cultural Thicket (1.48ha)

Mineral Cultural Thicket (7.91ha)

Mineral Cultural Thicket (12.84ha)

Mineral Meadow Marsh (1.78ha)

Phragmites Inclusions (0.25ha)

Phragmites Inclusions (0.49ha)

Phragmites Inclusions (0.49ha) Phragmites Inclusions (0.92ha)

Phragmites Inclusions(0.69ha) Phragmites Inclusions (0.76ha)

Phragmites Inclusions (0.38ha) Phragmites Inclusions (0.66ha) Phragmites Inclusions (0.93ha)

Agricultural Lanc (40.49ha)

Cultural Woodland/ Deciduous Swamp (4.03ha)

Swamp Thicket (4.32ha)

Cultural Thicket (2.36ha)

1 VEGETATION COMMUNITY



VEGETATION COMMUNITY (Phragmites Inclusions)

WATERCOURSE (LIO)



AMPHIBIAN BREEDING SURVEY STATION (location, viewing direction, and 100m radius shown)



BIRD SURVEY STATION



EASTERN MEADOWLARK



--- AQUATIC HABITAT ASSESSMENT



ENVIRONMENTAL IMPACT STUDY HIGHWAY 140 LAND HOLDING PORT COLBORNE, ONTARIO

FIELD INVESTIGATIONS

Drawn	Scale	Fig
DCH	1:7,500	`
Checked	Project No. 53689-101	
Date 2025-04-07	Rev No.	





——— SUBJECT SITE

VEGETATION COMMUNITY **VEGETATION COMMUNITY**

(Phragmites Inclusions) WATERCOURSE (LIO)

Mineral Cultural Meadow (27.29ha)

Mineral Cultural Meadow (67.08ha)

Mineral Cultural Woodland (1.72ha)

Mineral Cultural Thicket (4.21ha)

Mineral Cultural Thicket (1.48ha)

Mineral Cultural Thicket (7.91ha)

Mineral Cultural Thicket (12.84ha)

Mineral Meadow Marsh (1.78ha)

Cultural Woodland/ Deciduous Swamp (4.03ha)

Swamp Thicket (4.32ha)

Cultural Thicket (2.36ha)

Phragmites Inclusions (0.25ha)

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Phragmites Inclusions (0.49ha) Phragmites Inclusions (0.92ha)

Phragmites Inclusions(0.69ha)

Phragmites Inclusions (0.76ha)

Phragmites Inclusions (0.38ha)

Phragmites Inclusions (0.66ha) Phragmites Inclusions (0.93ha)

Agricultural Land (40.49ha)

MITIGATION **PROTECTION**

REACH BREAK

< FLOW DIRECTION

REFERENCES

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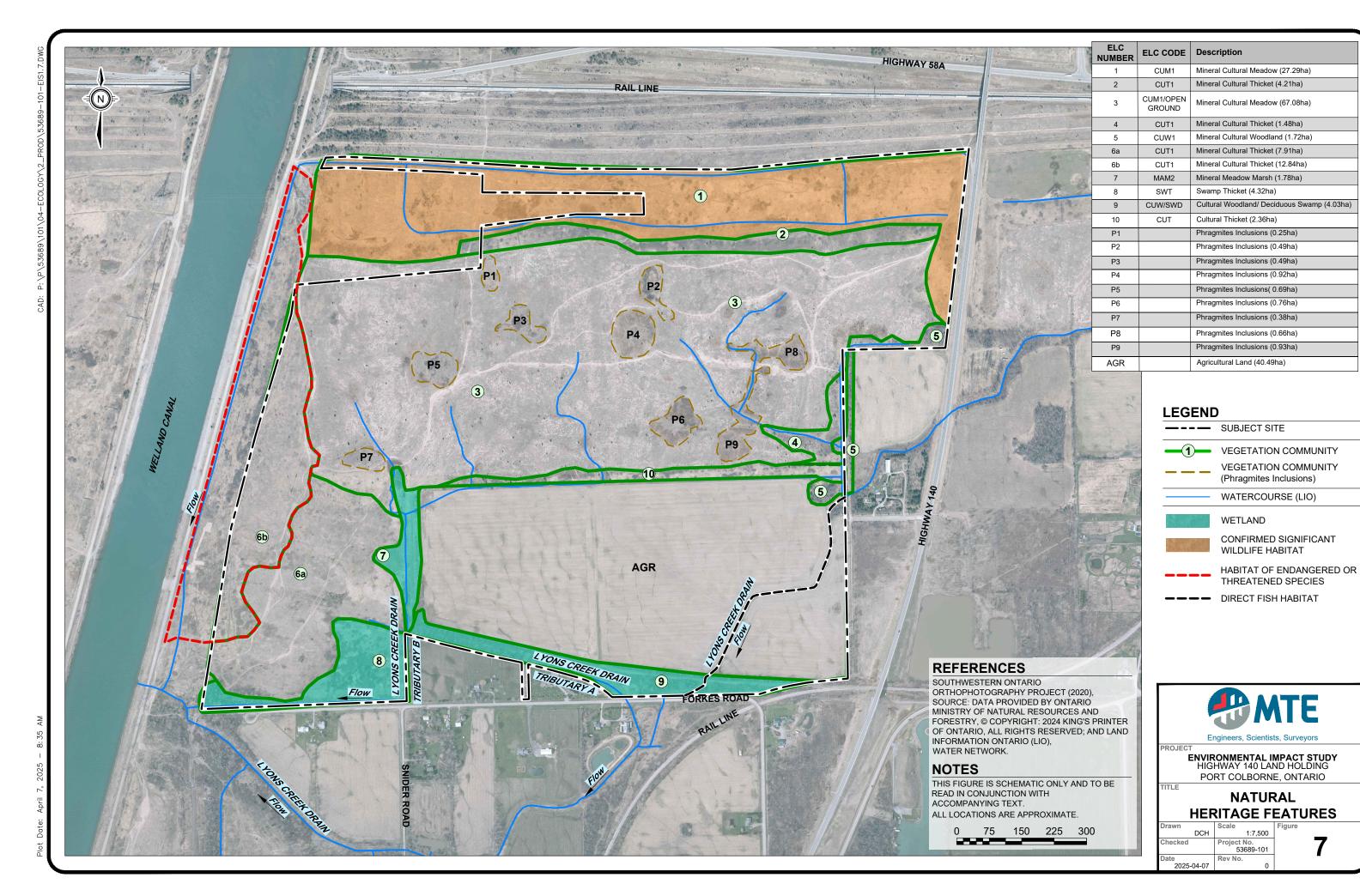


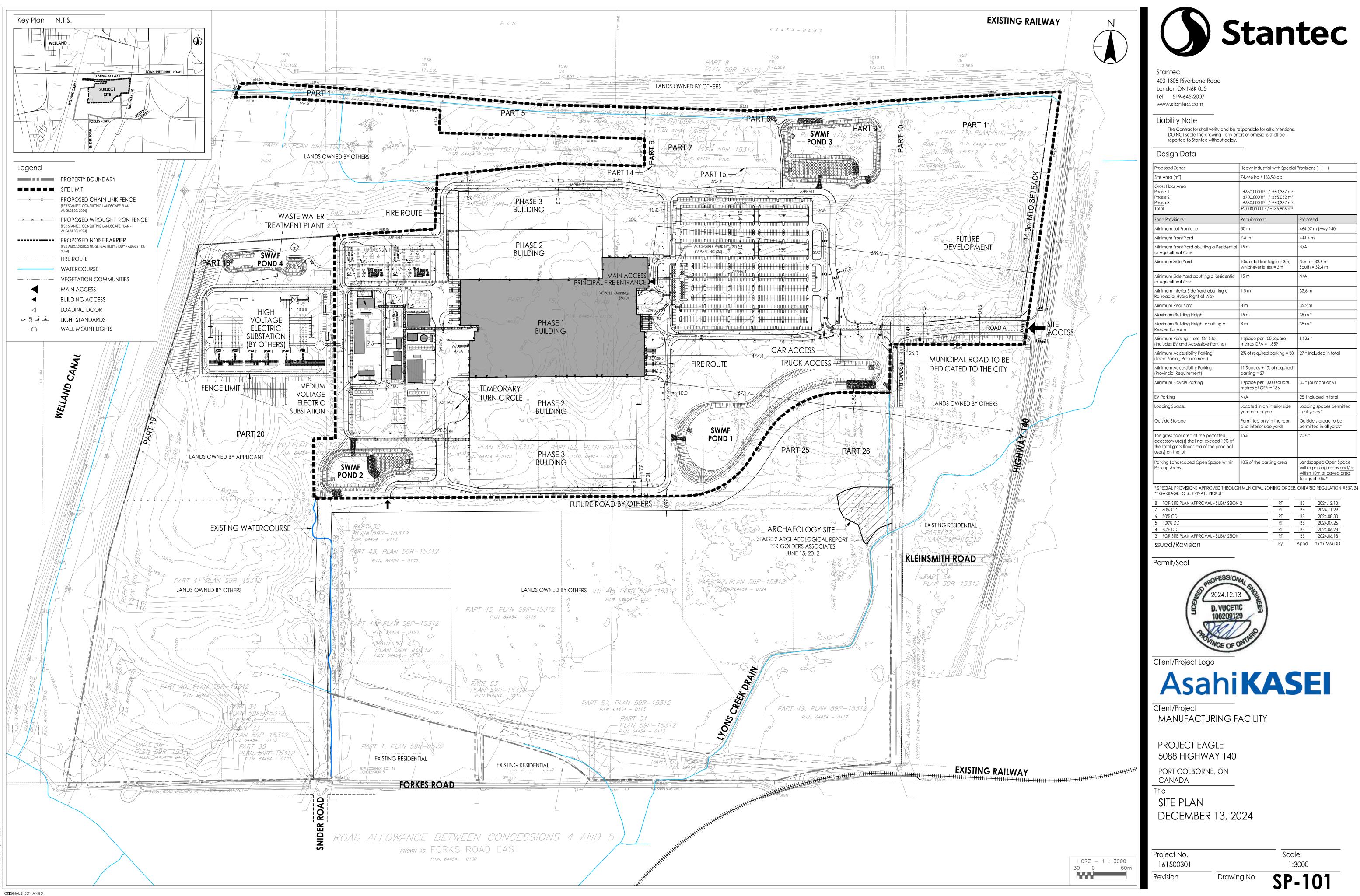
ENVIRONMENTAL IMPACT STUDY HIGHWAY 140 LAND HOLDING PORT COLBORNE, ONTARIO

HEADWATER DRAINAGE FEATURES

6

Drawn	Scale	F
DCH	1:7,500	
Checked	Project No. 53689-101	
Date 2025-04-07	Rev No.	







400-1305 Riverbend Road London ON N6K 0J5 Tel. 519-645-2007 www.stantec.com

Liability Note

The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to Stantec without delay.

Design Data

Proposed Zone:	Heavy Industrial with Special Provisions (HI)					
Site Area (m²)	74.446 ha / 183.96 ac					
Gross Floor Area Phase 1 Phase 2 Phase 3 Total	±650,000 ft ² / ±60,387 m ² ±700,000 ft ² / ±65,032 m ² ±650,000 ft ² / ±60,387 m ² ±2,000,000 ft ² / ±185,806 m ²					
Zone Provisions	Requirement	Proposed				
Minimum Lot Frontage	30 m	464.07 m (Hwy 140)				
Minimum Front Yard	7.5 m	444.4 m				
Minimum Front Yard abutting a Residential or Agricultural Zone	15 m	N/A				
Minimum Side Yard	10% of lot frontage or 3m, whichever is less = 3m	North = 32.6 m South = 32.4 m				
Minimum Side Yard abutting a Residential or Agricultural Zone	15 m	N/A				
Minimum Interior Side Yard abutting a Railroad or Hydro Right-of-Way	1.5 m	32.6 m				
Minimum Rear Yard	8 m	35.2 m				
Maximum Building Height	15 m	35 m *				
Maximum Building Height abutting a Residential Zone	8 m	35 m *				
Minimum Parking - Total On Site (Includes EV and Accessible Parking)	1 space per 100 square metres GFA = 1,859	1,525 *				
Minimum Accessibility Parking (Local Zoning Requirement)	2% of required parking = 38	27 * Included in total				
Minimum Accessibility Parking (Provincial Requirement)	11 Spaces + 1% of required parking = 27					
Minimum Bicycle Parking	1 space per 1,000 square metres of GFA = 186	30 * (outdoor only)				
EV Parking	N/A	25 Included in total				
Loading Spaces	Located in an interior side yard or rear yard	Loading spaces permitted in all yards *				
Outside Storage	Permitted only in the rear and interior side yards	Outside storage to be permitted in all yards*				
The gross floor area of the permitted accessory use(s) shall not exceed 15% of the total gross floor area of the principal use(s) on the lot	15%	20% *				
Parking Landscaped Open Space within Parking Areas	10% of the parking area	Landscaped Open Space within parking areas <u>and/or</u> <u>within 10m of paved area</u> to equal 10% *				

FOR SITE PLAN APPROVAL - SUBMISSION 2

4 80% DD FOR SITE PLAN APPROVAL - SUBMISSION 1 By Appd YYYY.MM.DD Issued/Revision

Permit/Seal



Client/Project Logo

AsahiKASEI

Client/Project MANUFACTURING FACILITY

PROJECT EAGLE 5088 HIGHWAY 140

PORT COLBORNE, ON CANADA

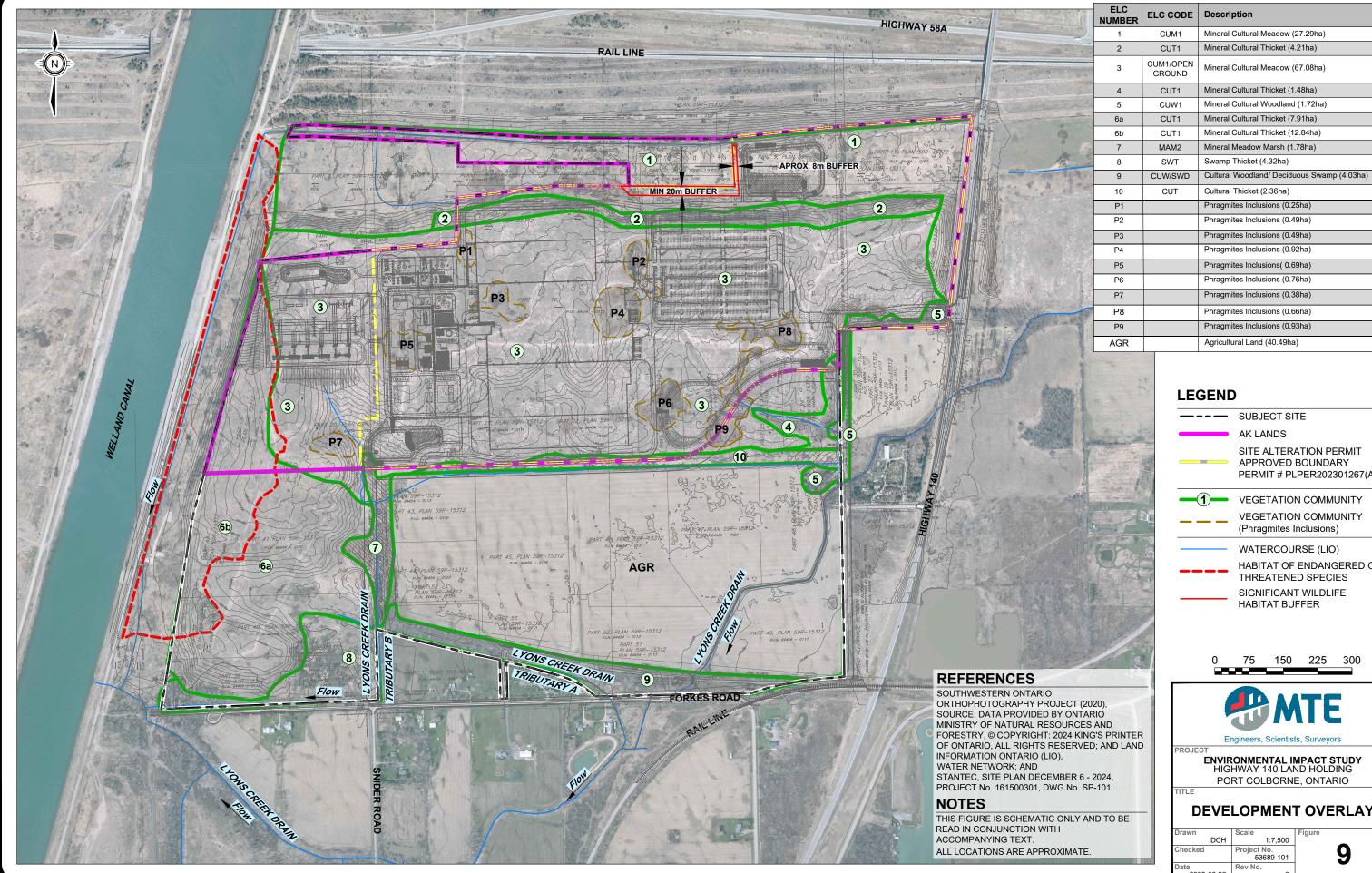
SITE PLAN DECEMBER 13, 2024

Project No.

161500301 Drawing No. Revision

1:3000

Scale





SUBJECT SITE **AK LANDS**

SITE ALTERATION PERMIT APPROVED BOUNDARY PERMIT # PLPER202301267(A)

VEGETATION COMMUNITY VEGETATION COMMUNITY

(Phragmites Inclusions)

WATERCOURSE (LIO) HABITAT OF ENDANGERED OR THREATENED SPECIES

SIGNIFICANT WILDLIFE HABITAT BUFFER





ENVIRONMENTAL IMPACT STUDY HIGHWAY 140 LAND HOLDING PORT COLBORNE, ONTARIO

DEVELOPMENT OVERLAY

Drawn	Scale	Fig
DCH	1:7,500	
Checked	Project No. 53689-101	
Date 2025-06-23	Rev No.	
	DCH Checked	DCH

Appendix A

Species at Risk Screening



Threatened or Endangered Species

Common Name	SARO	Habitat Requirements and Range	Habitat on Subject Lands?	Habitat on Adjacent Lands?	Rationale
Spoon-leaved Moss <i>Bryoandersonia illecebra</i>	THR	Most populations are located on soil in low-lying areas that are seasonally flooded under trees or shrub thickets.		Potential	The Subject Lands contain areas that are seasonally flooded under trees and shrub thickets. Potential habitat may be present within the Adjacent Lands.
biyoandeisonia illecebia		Range: Restricted to a few sites in southern Ontario – Elgin, Essex and Welland counties, and the Niagara region.			This species was not observed within the Subject Lands during targeted field investigations.
Acadian Flycatcher	END	Typically found in mature, interior forest habitat within shady forest ravines with American Beech or Eastern hemlock. Nest placement near the tip of a lower limb on a tree, often over water. Nest often looks messy and scraggly.	No	No	The Study Area does not contain suitable mature, interior forest habitat within shady forest ravines to provide suitable habitat for this species.
Empidonax virescens		Range: Nests only in southwestern Ontario, mostly in large forest and forested ravines near the shore of Lake Erie.			This species was not observed within the Subject Lands during targeted field investigations.
Bank Swallow		Nests in natural and disturbed settings where there are vertical faces in silt and sand deposits. Many found along rivers and lakes, but also in active sand and gravel pits.			The Study Area does not contain vertical faces in silt and sand deposits to provide suitable habitat for this species.
Riparia riparia	THR	Range: Found across southern Ontario, sparse in northern Ontario. Largest populations found along Lake Erie and Lake Ontario shorelines, and along the Saugeen River.	No	No	This species was not observed within the Subject Lands during targeted field investigations.
Bobolink	THR	Found in large, open expansive grasslands with dense ground cover; hayfields, meadows or fallow fields, marshes. Grasslands size requirements have been reported to range from 5 ha to 50 ha depending on the study (MNR, n.d.).	Yes	Potential	The Subject Lands contain suitable large, open meadows that provide suitable habitat for this species. Though not observed in 2024, this species has been observed within the Subject Lands during previous field investigations completed in 2012 (MMM Group Ltd., 2012).
Dolichonyx oryzivorus		Range: Widely distributed throughout most of the province south of the boreal forest. May be found in the north where suitable habitat exists.			The Adjacent Lands also likely support potential habitat for this species. This species was not observed within the Subject Lands during targeted 2024 field investigations.
Chimney Swift Chaetura pelagica	THR	Found in urban and rural areas near buildings. Nest and roosts in hollow trees, crevices of rock cliffs and, most commonly, in unlined chimneys. Suitable sites are reused annually. Range: Estimated 7500 breeding individuals in Ontario; most widely distributed in the	No	No	The Study Area does not provide suitable unlined chimneys to habitat for this species. This species was not observed within the Subject Lands during
		Carolinian south and southwest.			targeted field investigations.
Eastern Meadowlark Sturnella magna	THR	Breeds mostly in moderately tall grasslands (native prairies and savannahs), also pastures, hayfields, herbaceous fencerows, roadsides, orchards, airports, shrubby overgrown fields, or other open areas. Eastern Meadowlarks may not be strongly area-sensitive (McCracken et al. 2013), however large tracts of grasslands (5 ha or greater) are preferred over smaller fragments (Herkert 1991, Vickery et al. 1994). Range: Primarily found south of the Canadian Shield, but also inhabits Lake Nipissing, Timiskaming, and Lake of Woods areas.	Yes	Yes	The Subject Lands contain suitable large, open meadows that are confirmed habitat for this species. The Adjacent Lands also contain suitable habitat for this species. This species was observed along the border of the Subject Lands during targeted field investigations.
Eastern Whip-poor-will Antrostomus vociferus	THR	Prefers semi-open or patchy dry forests with clearings, such as barrens or regenerating forests, but can also be found in wide-open spaces or dense forests associated with pine and oak. Requires an undisturbed area 50 to 1000ha to maintain breeding population. Range: Fragmented populations in the central Great Lakes region, reaching up to Lake Superior.	No	No	The Study Area does not contain dry forest habitat with clearings or dense forests associated with pine and oak to provide suitable habitat for this species. This species was not observed within the Subject Lands during targeted field investigations.
Henslow's Sparrow Ammodramus henslowii	END	Nests only in moist to wet multi-year fallow fields of primarily tall grasses interspersed with tall herbaceous plants or shrubs. Distribution is extremely low and unpredictable in most of southern Ontario; no confirmed breeding was documented in the second Ontario Breeding Bird Atlas (2001-2005; Cadman et al. 2008). Adults infrequently observed as they remain below thatch.	No	No	The Study Area contains tall grasses and field habitat. However, previous studies have concluded that the grass density/ composition is not suitable for this species (MMM Group Ltd, 2012) and the findings were confirmed to still be relevant during our field investigations.
		Range: Breeds in southern Ontario.			This species was not observed within the Subject Lands during targeted field investigations.

Threatened or Endangered Species

Common Name	SARO	Habitat Requirements and Range	Habitat on Subject Lands?	Habitat on Adjacent Lands?	Rationale
Least Bittern Ixobrychus exilis	THR	Found in large marshes (> 5ha) or marshy borders of lakes, ponds, streams, ditches with dense emergent vegetation of cattails, bulrush, and sedges. Nests in primarily in cattails, 10m from open water. Range: Majority of the 1500 Canadian pairs found south of the Canadian Shield in central, eastern, and southern Ontario.	No	No	The Study Area does not contain suitable large marsh habitat to provide habitat for this species. This species was not observed within the Subject Lands during targeted field investigations.
Red-headed Woodpecker Melanerpes erythrocephalus	END	Found in a variety of habitats, including oak and beech forests, forest edges, orchards, pastures, riparian forests, roadsides, etc. Uncommon in Ontario, elsewhere within its range often found in parks, golf courses, and cemeteries with dead trees for perching and nesting. Range: Across southern Ontario; widespread but rare.	No	No	The Study Area does not provide suitable forested habitat for this species. This species was not observed within the Subject Lands during targeted field investigations.
Blanding's Turtle Emydoidea blandingii	THR	Lives in shallow water, usually large wetlands, and shallow lakes with lots of water vegetation – darkly coloured water with high productivity, but also observed in clear waters. Sometimes hundreds of meters from water when finding a new nesting site or mate. Nestings sites are open habitats with low vegetation cover and high sun exposure, with sand, organic soil, gravel, cobblestone substrates. Overwinters in substrate beneath standing permanent or temporary water bodies, can overwinter in relatively shallow water (7cm).Can make long-distance overland movements between wetlands. Range: Great Lakes/St. Lawrence population primarily in southern Ontario. (4E,5E,6E,7E).	No	No	The Study Area does not contain suitable wetland or shallow lake habitat to provide suitable habitat for this species. This species was not observed within the Subject Lands; however, targeted field investigations did not occur.
Eastern Red Bat Lasiurus borealis	END	Roosts in foliage of coniferous and deciduous trees and shrubs typically prefer tall trees at least the height of the canopy; however, will use shrubs and trees greater than 5 m. Foraging habitat includes both forested and unforested habitat (COSEWIC, 2023).	No	Potential	
Little Brown Myotis Myotis lucifugus	END	Little Brown Myotis roosts in caves, quarries, tunnels, hollow trees, or buildings. Little Brown Myotis typically prefer buildings or building-associated features for maternity roosting rather than natural features (Gerson, 1984; Humphrey & Fotherby, 2019). This species hibernates in humid caves and forages in wetlands and forest edges. Range: Widespread across southern Ontario.	No	Potential	The Subject Lands does not contain woodland with suitable
Northern Hoary Bat Lasiurus cinereus	END	Roosts in foliage of coniferous and deciduous trees and shrubs typically prefer tall trees at		Potential	maternity roosting trees or other features that could be used for roosting. The adjacent lands may contain suitable roosting habitat for this species This species was not observed within the Subject Lands;
Northern Myotis Myotis septentrionalis	END	Roosts in houses, manmade structures, but prefers hollow trees or under loose bark. Hunts in forests. Range: Throughout forested areas in southern Ontario.	No	Potential	however, targeted field investigations did not occur.
Silver-haired Bat Lasionycteris noctivagans	END	Roosts in coniferous and deciduous tree cavities and under bark. May occasionally roost in buildings (COSEWIC, 2023).	No	Potential	
Tricolored Bat Perimyotis subflavus	END	Roosts in older forests and occasionally barns/structures. Hibernate in damp, draft-free caves. Hunt over water and along streams in a forest.	No	Potential	

Special Concern Species

Common Name	Habitat Requirements	Habitat on Subject Lands?	Habitat on Adjacent Lands?	Rationale
Swamp Rose-mallow Hibiscus moscheutos	Restricted to shoreline marshes, found in deep-water cattail marshes and meadow marshes. Also in open wet woods, thickets, spoil banks, and drainage ditches. Range: Lake Erie and Lake St. Clair in Carolinian and Great Lakes forest regions.	No	No	The Study Area does not contain coastal wetlands to provide suitable habitat for this species. This species was not observed within the Subject Lands during targeted field investigations.
Barn Swallow Hirundo rustica	Barn Swallows are typically found nesting in close association with human rural settlements, such as in old sheds, barns, and under bridges or culverts. This species forages for aerial insects in open habitats including grassy fields, pastures, agricultural fields and farms, lake and river shorelines, wetlands, and clearings. Range: Throughout southern Ontario and as far north as Hudson Bay.	No	No	The Study Area does not provide suitable structures to provide nesting habitat for this species. This species was not observed within the Subject Lands during targeted field investigations.
Eastern Wood-Pewee Contopus virens	Lives in mid-canopy layer of forest clearings and the edges of deciduous and mixed forests. Abundant in middle-aged forests with little understory. Range: Found across most of southern and central Ontario.	No	Yes	The Subject Lands do not provide suitable forested habitat for this species. However, the Babion Woods area of the Adjacen Lands contains suitable habitat for this species and was confirmed habitat for this species according to 2012 studies (MMM Group Ltd. 2012).
				This species was not observed within the Subject Lands durin targeted field investigations.
Grasshopper Sparrow	Lives in open grasslands with well-drained sandy soil. Nests in hayfields and pastures, preferring areas with sparse vegetation.	Yes	Potential	The Subject Lands contain suitable grassland habitat for this species. The grassland and pasture habitat within the Adjace Lands may also provide suitable habitat for this species.
Ammodramus savannarum	Range: Southern Ontario, occasionally the Canadian Shield.			This species was observed within the Subject Lands during targeted field investigations.
Wood Thrush Hylocichla mustelina	Lives in mature deciduous and mixed forests, seeking moist stands with well-developed undergrowth. Prefer large forests but will use smaller. Range: Across southern Ontario, less common up north to Lake Superior.	No	Yes	The Subject Lands do not provide suitable forested habitat for this species. However, the Babion Woods area of the Adjace Lands contains suitable habitat for this species and was confirmed habitat for this species according to 2012 studies (MMM Group Ltd. 2012).
	Training of the second of the			This species was not observed within the Subject Lands durin targeted field investigations.
Mapleleaf Mussel Quadrula quadrula	Found in medium to large rivers with packed sand, gravel, or clay and mud bottoms, and slow to moderate currents. Range: Several large rivers that drain into Lake St. Clair and Lake Erie; Sydenham, Ausable, Grand, Thames and Welland Rivers. (The fish host of the Mapleleaf is the	No	Potential	The Subject Lands do not provide suitable medium to large ri to support habitat for this species. The Welland Canal located to the west in the Adjacent Lands may provide suitable habitat.
·	Channel catfish. Presence of the fish host is one of the key features determining whether the body of water can support a healthy mussel population).			Targeted surveys were not conducted for this species.
Snapping Turtle Chelydra serpentina	Spend most of their time in water, preferring shallow waters to hide in soft mud and leaf litter. Nest in gravelly or sandy areas along streams, taking advantage of man-made structures for nesting sites, including roads, dams, and aggregate pits.	No	Potential	The Subject Lands do not provide suitable habitat for this species. However, suitable habitat may be present within the area of the Welland Canal located within the Adjacent Lands.
enorgala corporana	Range: Limited to southern part of Ontario.			Targeted surveys were not conducted for this species.
Monarch	Caterpillars confined to areas with milkweed. Adults use diverse habitats with a variety of wildflowers.	Yes	Potential	The Subject Lands provide suitable habitat for this species. T Adjacent Lands may also provide suitable habitat for this spe
Danaus plexippus	Range: Most abundant in southern Ontario. During migration, thousands can be seen along the north shores of Lakes Ontario and Erie.			Targeted surveys were not conducted for this species.

References

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Appendix B

Field Sheets



									Floral Inventory	(2023-10-12, 2024-05-31, 20	24-06	-14)					
1	2	3 4	5	6	7	8	9	10	Scientific Name	Common Name	CW	COSEWIC	SARO	SRank	NG	Type	Invasive
П			Х		Х		Х		Acer negundo	Manitoba Maple	0.0			S5	Х	TR	Υ
Н	\dashv	\top	T		Н	\rightarrow	\mathbf{x}		Acer platanoides	Norway Maple	5.0			SE5	IX	TR	Υ
Н	\dashv	+	t		Н	\dashv	\mathbf{x}		Acer saccharinum	Silver Maple	-3.0			S5	Х	TR	
X	7	+	T			\dashv	┪		Achillea millefolium	Common Yarrow	3.0			SE		FO	
Ĥ	+	+	T	Χ	X	\dashv	x		Agrostemma githago var. githago	Common Corncockle	3.0			SE3		FO	
X	$\frac{1}{x}$	+	+	_	X		X		Agrostis stolonifera	Creeping Bentgrass	-3.0			SE5	IC	GR	
Н		+		Х					Ambrosia trifida	Great Ragweed	0.0			S5	С	FO	
X	$\frac{1}{x}$	 x	T	_	Н	\dashv	\dashv		Arctium minus	Common Burdock	3.0			SE5	IC	FO	
H		+	X	Н	Н	X	\dashv	X	Asclepias incarnata	Swamp Milkweed	-5.0			S5	С	FO	
H	1	+	-	Χ	Н	-	Х	_	Asclepias syriaca	Common Milkweed	5.0			S5	С	FO	
Н	\dashv	+	Ť	X	Н	\dashv			Bidens frondosa	Devil's Beggarticks	-3.0			S5	С	FO	
X	x	+	x		Н	\dashv	\dashv		Bromus inermis	Smooth Brome	5.0			SE5	IC	GR	Υ
Н	\dashv		t		Н	X	┪		Carex aquatilis	Water Sedge	-5.0			S5	R	SE	
Х	1	+	t		Н		\dashv		Carex aurea	Golden Sedge	-3.0			S5	U	SE	
H	1	T _X	T	Н	Н	\dashv	\dashv		Carex bebbii	Bebb's Sedge	-5.0			S5	С	SE	
Н	\dashv		t		X	\dashv	┪		Carex blanda	Woodland Sedge	0.0			S5	С	SE	
Н	1	X	t				\dashv		Carex crinita	Fringed Sedge	-5.0			S5	С	SE	
Н	1	+	X	Н	Н	\dashv	\dashv		Carex cristatella	Crested Sedge	-3.0			S5	U	SE	
Н	\dashv	+	Ť	Н	х	\dashv	\dashv	Χ	Carex Iupulina	Hop Sedge	-5.0			S5	С	SE	
Н	1	+	Х				\dashv		Carex tenera	Tender Sedge	0.0			S5	С	SE	
X	\dashv	+	-	Х	х	\dashv	X	X	Carex vulpinoidea	Fox Sedge	-5.0			S5	С	SE	
X	$\frac{1}{x}$	+	 	X	Ĥ	\dashv	\rightarrow	X	Centaurea jacea	Brown Knapweed	5.0			SE5	IU	FO	
Ĥ	$\stackrel{\sim}{\exists}$	+	X	Ĥ	Н	х	\dashv		Cephalanthus occidentalis	Eastern Buttonbush	-5.0			S5	С	SH	
X	\mathbf{x}	${x}$	r	Х	Н	$\stackrel{\sim}{}$	\dashv		Cichorium intybus	Chicory	3.0			SE5	IC	FO	
-		$\frac{x}{x}$	x	X	Н	X	\dashv		Cornus racemosa	Gray Dogwood	0.0			S5	С	SH	
Ĥ		X	_	X	ш	X	x		Cornus sericea	Red-osier Dogwood	-3.0			S5	U	SH	
Н	\dashv	+^	X	Ĥ	$\boldsymbol{\vdash}$	X	\rightarrow		Crataegus crus-galli	Cockspur Hawthorn	0.0			S4	С	SH	
X	\dashv	x	╫	Н	Н	$\stackrel{\wedge}{\dashv}$	$\frac{1}{X}$		Dactylis glomerata	Orchard Grass	3.0			SE5	IC	GR	
\vdash	Х	$\stackrel{\sim}{+}$	\vdash		Н				Daucus carota	Wild Carrot	5.0			SE5	IC	FO	
Ĥ	Ĥ	+	x	Н	Н	Х	\dashv		Dipsacus fullonum	Common Teasel	3.0			SE5	IC	FO	Υ
Н	\dashv	+	Ĥ	Х	Н	$\stackrel{\sim}{+}$	\dashv		Echinochloa crus-galli	Large Barnyard Grass	-3.0			SE5	IC	GR	'
Н	Х	+	+	$\stackrel{\wedge}{\vdash}$	Н	\dashv	\dashv		Elaeagnus angustifolia	Russian Olive	3.0			SE3	IR	SH	Υ
Н	\rightarrow	x	+		Х	\dashv	\dashv		Elaeagnus umbellata	Autumn Olive	3.0			SE3	IU	SH	Y
Н	Ĥ	$\frac{1}{x}$	+	Н	Ĥ	\dashv	\dashv	X	Eleocharis obtusa	Blunt Spikerush	-5.0			S5	С	SE	'
Н	\dashv	+^	+	Χ	Н	\dashv	\dashv		Elymus repens	Creeping Wildrye	3.0			SE5	IC	GR	
Н	\dashv	+	+	$\hat{}$	Н	\dashv	\dashv	X	Equisetum arvense	Field Horsetail	0.0			S5	_	FE	
Н	\dashv	+	+	Н	Н	\dashv	X	_	Erigeron annuus	Annual Fleabane	3.0			S5		FO	
X	$\frac{1}{x}$	+	+	Х	Н	\dashv	쉬		Euthamia graminifolia	Grass-leaved Goldenrod	0.0			S5	С	FO	
x	4	+	Х		Н	\dashv	Х		Festuca rubra	Red Fescue	3.0			S5	۲	GR	
$\stackrel{\sim}{\vdash}$	\dashv	x	⊬	Ĥ	Н	\dashv	$\stackrel{\sim}{+}$		Festuca trachyphylla	Hard Fescue	5.0			SE4	IR	GR	
X	\rightarrow	$\frac{2}{x}$	+	Н	Н	\dashv	\dashv		Fragaria virginiana	Wild Strawberry	3.0			S5	''\	FO	
X	_	^ x	+	H	Н	Х	\dashv		Franquia ainus	Glossy Buckthorn	0.0			SE5	IC	SH	Υ
$\stackrel{\sim}{\vdash}$	쉬	+^	X	H	Н	\exists	\dashv		Fraxinus americana	White Ash	3.0			S4	С	TR	•
X	\dashv	 x	-	x	Х	X	X	Х	Fraxinus pennsylvanica	Green Ash	-3.0			S4	С	TR	
-	Х	+^	+	$\stackrel{\sim}{\vdash}$	Ĥ	$\stackrel{\sim}{}$		^	Galium aparine	Cleavers	3.0			S5	С	FO	
Н	쉬	+	+	Н	Н	X	\dashv		Geum aleppicum	Yellow Avens	0.0			S5	С	FO	
Н	\dashv	+	X	Н	Н	\exists	\dashv		Geum canadense	White Avens	0.0			S5	С	FO	
H	\dashv	+	X	H	Н	\dashv	\dashv		Glyceria striata	Fowl Mannagrass	-5.0			S5	С	GR	
Н	\dashv	+		Н	Н	Х	$\frac{1}{x}$		Hesperis matronalis	Dame's Rocket	3.0			SE5		FO	Υ
X	\dashv	xl^	+	H	Н	$\stackrel{\sim}{+}$	$\stackrel{\sim}{+}$		Hieracium vulgatum	Common Hawkweed	5.0			SE2?		FO	
Ĥ	\dashv	^ x	+	H	Н	\dashv	\dashv		Hypericum perforatum	Common St. John's-wort	5.0			SE5		FO	Υ
X	¥	+^	+	Н	Н	\dashv	\dashv		Inula helenium	Elecampane	3.0			SE5	IC	FO	
Ĥ	쉬	+	+	H	Н	\dashv	\dashv		Juncus canadensis	Canada Rush	-5.0			S5	R	RU	
Н	\dashv	+^	X	Н	Х	\dashv	\dashv	X	Juncus effusus	Soft Rush	-5.0			S5	ri .	RU	
Н	\dashv	 x		Х	H	\dashv	\dashv	^	Juncus tenuis	Path Rush	0.0			S5	С	RU	
Ш		^	_	$^{\sim}$	Ш	Ш					0.0	L		رد		1	

								ĺ	Floral Inventory	(2023-10-12, 2024-05-31, 20	24-06	-14)					
1	2	3 4	5	6	7	8 9	al -	10	Scientific Name	Common Name	CW	COSEWIC	SAPO	SPank	NG	Type	Invasive
X	-	7 7		4	+	+	+	_	Juncus torreyi	Torrey's Rush	-3.0	COSEVVIC	JAKO	S5	U	RU	iiivasive
-	X	X	Н	x	+	+	+	\dashv	Juniperus virginiana	Eastern Red Cedar	3.0			S5	С	TR	
X	弁	$\hat{+}$	Н	X	┰┤	+	+	\dashv	Leucanthemum vulgare	Oxeye Daisy	5.0			SE5	IC	FO	
Ĥ	\dashv	- V	X	7	4	- -	/	\dashv	Ligustrum vulgare	European Privet	3.0			SE5	IC	SH	Υ
Н	+	+^	H	+	+	╁	-	-	Lonicera tatarica	Tartarian Honeysuckle	3.0			SE5	IC	SH	Y
X	\dashv	+	Н	X	+	+	+	\dashv	Lotus corniculatus	Garden Bird's-foot Trefoil	3.0					FO	Y
H	\dashv	+^	Н	_	X	+	+	\dashv	Lysimachia nummularia	Creeping Jennie	-3.0			SE5	IC IC	FO	Y
Н	+	+	Н	\rightarrow	$\frac{2}{x}$	+	+	\dashv	Lythrum salicaria	Purple Loosestrife	-5.0			SE5	IC	FO	Y
Н	+	—	X	+	4	+	-	\rightarrow	Malus pumila	Common Apple	5.0			SE5		SH	Y
\forall	\dashv	+^	11	\dashv	+	-	+	-	Medicago lupulina	Black Medic				SE4	IC	FO	
M	\dashv	+	Н	X	+	+	+	\dashv	Medicago sativa	Alfalfa	3.0 5.0			SE5	IC	FO	
Н	+	x	Н	4	+	+	+	\dashv		Yellow Sweet-clover				SE5		FO	
\mathbb{H}	4	1	Н	4	4	+	+	\dashv	Melilotus officinalis		3.0			SE5	IC		Υ
X	\dashv	+	Н	\dashv	\dashv	4	+	\dashv	Oenothera biennis	Common Evening Primrose	3.0			S5	С	FO	
		_			4	— i	4	\dashv	Parthenocissus vitacea	Thicket Creeper	3.0			S5	С	VW	
X	겍	_	X	X	4	X	+	4	Phalaris arundinacea	Reed Canary Grass	-3.0			S5	С	GR	Υ
Ш	_	_	Ш	X	_	_	+		Phleum pratense	Common Timothy	3.0			SE5	IC	GR	
M	X	_	X	X	_	X		\Box	Phragmites australis	Common Reed	-3.0			S4?		GR	Υ
Ш	X		Ш	_	4	_	1	_	Pilosella officinarum	Mouse-ear Hawkweed	5.0			SE5	IR	FO	
X			Ц				1		Plantago major	Common Plantain	3.0			SE5	IC	FO	
Ш	_		Ш	_	_		4	\Box	Poa palustris	Fowl Bluegrass	-3.0			S5	С	GR	
X	_		\perp	X	_		╧	\Box	Poa pratensis	Kentucky Bluegrass	3.0			S5		GR	
X	X	Х	Ш			<u></u>	<u> </u>		Populus deltoides	Eastern Cottonwood	0.0			S5		TR	
Ш	X		Ш						Potentilla recta	Sulphur Cinquefoil	5.0			SE5	IC	FO	
)	(Prunus avium	Sweet Cherry	5.0			SE4	IC	TR	
X	X	X	X	X	X		Τ		Pyrus communis	Common Pear	5.0			SE4	IC	SH	
П			X		X.	X			Quercus bicolor	Swamp White Oak	-3.0			S4	С	TR	
X	X	X		T	T				Quercus macrocarpa	Bur Oak	3.0			S5	U	TR	
П			X			ΧÞ	₹ <u></u>	T	Quercus palustris	Pin Oak	-3.0			S4	С	TR	
X	X	Х	Х	X	X	x >	<		Rhamnus cathartica	Common Buckthorn	0.0			SE5	IC	SH	Υ
X	x	X	П	T	T	\rightarrow	₹	ヿ	Rhus typhina	Staghorn Sumac	3.0			S5	С	SH	
П	x		П	7	T	T	†	\exists	Rosa multiflora	Multiflora Rose	3.0			SE5	IC	SH	Υ
X			X				T		Rumex crispus	Curly Dock	0.0			SE5	IC	FO	
П	寸		П	寸	1	xb	↲	d	Salix alba	White Willow	-3.0			SE4	IU	TR	
П	┪		П	┪	T	\top	7	↲	Salix amygdaloides	Peach-leaved Willow	-3.0			S5	С	TR	
Н	1	\top	Н	1	1	T	 	_	Salix bebbiana	Bebb's Willow	-3.0			S5	С	SH	
	xl	x x	Н	x	1	\overline{x}			Salix discolor	Pussy Willow	-3.0			S5		SH	
X	\forall	+	Н	_	x	\top			Salix interior	Sandbar Willow	-3.0			S5		SH	
X	+	x	Н	x	7	+	Ť	_	Schoenoplectus tabernaemontani	Soft-stemmed Bulrush	-5.0			S5		SE	
X	_	+	X	+	\dashv	+	+	_	Scirpus atrovirens	Dark-green Bulrush	-5.0			S5	_	SE	
X	_	+x	x	ᅿ	+	+	+	-	Securigera varia	Common Crown-vetch	5.0			SE5	IU	FO	Υ
X		+^	+	\dashv	\dashv	+	+	\dashv	Sisyrinchium montanum	Strict Blue-eyed-grass	0.0			S5	С	FO	,
X	_	X	Н	\dashv	\dashv	+	 	. 	Solidago canadensis	Canada Goldenrod	3.0			S5		FO	
	á		Н	\dashv	+	+	+	- 1	Solidago nemoralis	Gray-stemmed Goldenrod	5.0			S5		FO	
H	+	+	Н	X	+	+	+	\dashv	Sonchus asper	Prickly Sow-thistle	3.0			SE5	IC	FO	
Н	\dashv	+	X	\rightarrow	x	+	()	$\overline{}$	Spiraea alba	White Meadowsweet	-3.0			S5		SH	
\forall	쉬	+	H	X	4	+	+	\dashv	Symphyotrichum ericoides	White Heath Aster						FO	
-	X X		Н	\rightarrow	+	+	+	\dashv	Symphyotrichum novae-angliae		3.0			S5	_	FO	
	\rightarrow	-	H	X	\dashv	+	+	\dashv		New England Aster	-3.0			S5	С	FO	
Н	4	X	H	X	+	+	+	\dashv	Symphyotrichum pilosum Tovicadandran radicans	White Heath Aster	3.0			S5		VW	
H	\dashv	+	Н	\dashv	\dashv	4	4	4	Toxicodendron radicans Trifolium pratonso	Poison Ivy	0.0			S5			
X		X	-	4	4	4.	_	_	Trifolium pratense	Red Clover	3.0			SE5		FO FO	
X	겍	\perp	X	4	4	4	4	\perp	Typha angustifolia	Narrow-leaved Cattail	-5.0			SE5	_	FO	Υ
Ц	4	1	Н	4	\dashv	4	<u> </u>	\Box	Typha latifolia	Broad-leaved Cattail	-5.0			S5		FO	
Ц	_	_X	X	_	_)	4	_	Ulmus americana	American Elm	-3.0			S5	С	TR	
Ц	\perp	\perp	Ц	\perp	_	X	\perp	_	Urtica dioica	Stinging Nettle	0.0			S5		FO	
Ш	X		Ш	\perp		/>	<u> </u>		Viburnum recognitum	Smooth Arrowwood	0.0			S4	С	SH	

									Floral Inventory	(2023-10-12, 2024-05-31, 20	24-06	-14)					
	1 2	3 4	1 5	6	7	8	9	10	Scientific Name	Common Name	cw	COSEWIC	SARO	SRank	NG	Туре	Invasive
[X							Vicia cracca	Tufted Vetch	5.0			SE5	IC	VI	Υ
Γ			X				X		Vitis riparia	Riverbank Grape	0.0			S5	С	VW	
5	(X		Т			T			Xanthium strumarium	Rough Cocklebur	0.0			S5	С	FO	

Wind Felton: Shelf Cloud Cover (%) Precipitation O Calm	₩ M	TE	Project	53	finished: C	-	Project No bined colled not provi	fanage Visit #	r: #: ours:	or .
Man-made Structures: None observed	Temp. Wind: Direction: DATA FOCUS Birds 1_2_ Mammals Amphibians 1 Reptiles Inverterbrates	Mig	ELC's Floral VSA Wetland Butternut (BHA) other SAR	Today: Yesterd	Dripline/Tree Survey Aquatic - Physical Aquatic - Biological Faunal Habitat	1 2 3 4 5 6 7	Calm Smoke Drit Wind Felt of Leaves in of Wind raises Small trees Large brand Lots of resis Limbs breal	fts on Face constant s dust a sway ches sw stance v	nd paper ay when wa trees	lking into
Yes No Barns/Footings/Wells/other(list) Rock Piles Garbage Natural Vegetation: Brush Piles Snags (raptor perch) Tree Cavities (nesting) Sentinel Trees Butternut Identified Mast Trees (6E) Berry Shrubs (6E) Wildlife Features: None observed Wildlife Features: None observed Exposed Banks (nesting swallows) Stick Nests Animal Burrows (>10cm) Heronry Crayfish mounds Sand/gravel on site Marsh/open country/shrub Winter Deer yards Corridor from pond to woods (ampiblian movement) Bat corridor (screines, escapments) Bat hibernacula (caves, mines, crevices, etc.) Aquatic Features: Perm. pond in woodland emergents/submergents/logs temp. Water in woodland pools flowing dry Water ways flowing dry None observed None observed			where applicable)							
Barns/Footings/Wells/other(list) Rock Piles Garbage Natural Vegetation: None observed Fallen Logs outside woods (#s) Brush Piles Snags (raptor perch) Tree Cavities (nesting) Sentinel Trees Butternut Identified Mast Trees (6E) Berry Shrubs (6E) Wildlifer Features: Waterfowl nesting (large #s, # of species) Exposed Banks (nesting swallows) Stick Nests Animal Burrows (>10cm) Heronry Crayfish mounds Sand/gravel on site Mars/Yopen country/shrub Winter Deer yards Corridor from pond to woods (ampibian movement) Bat corridor (shorelines, escarpments) Bat hibemacula (caves, mines, crevices, etc.) Aquatic Features: Perm. pond in woodland emergents/submergents/logs temp. Perm. pond in open emergents/submergents/logs temp. Perm. pond in open emergents/submergents/logs temp. Water in woodland pools flowling dry Watervays flowing dry pools natural stream Seeps/Springs Incidental Observations/Notes:					None observed		UIW	Yes	No	vvno
Bat hibernacula (caves, mines, crevices, etc.) Aquatic Features: Perm. pond in woodland emergents/submergents/logs temp. Perm. pond in open emergents/submergents/logs temp. Water in woodland pools flowing dry Waterways flowing dry pools natural stream swale open drain Seeps/Springs Incidental Observations/Notes:	Barns/Footing Rock Piles Garbage Natural Vegetation: Fallen Logs of Brush Piles Snags (raptor) Tree Cavities Sentinel Tree Butternut Ide Mast Trees (if Wildlife Features: Waterfowl ne Exposed Barn Stick Nests Animal Burror Heronry Crayfish mout Sand/gravel of Winter Deer y Corridor from	utside woods (# perch) (nesting) s ntified SE) sting (large #s, ks (nesting swa ws (>10cm) nds on site ountry/shrub ards pond to woods	Berry Shrubs (6E) # of species) flows) (ampibian movement)							
Bat hibernacula (caves, mines, crevices, etc.) Aquatic Features: Perm. pond in woodland emergents/submergents/logs temp. Perm. pond in open emergents/submergents/logs temp. Water in woodland pools flowing dry Waterways flowing dry pools natural stream swale open drain Seeps/Springs Incidental Observations/Notes:	Bat corridor (s	horelines, esca	rpments)							-
Aquatic Features: Perm. pond in woodland emergents/submergents/logs temp. Perm. pond in open emergents/submergents/logs temp. Water in woodland pools flowing dry Waterways flowing dry pools natural stream None observed open drain Seeps/Springs Incidental Observations/Notes:	Bat hibernacu	la (caves, mine	s, crevices, etc.)							
HDFA vilit #1 and Frag surveys	Aquatic Features: Perm. pond in Perm. pond in Water in wood Waterways natural stream swale open drain Seeps/Springs	woodland open open older open open open open open open open open	emergents/submerge emergents/submerge s	nts/logs	temp.					
	Incidental Observation	s/Notes:						-	+	-
	HOFA VIIIT	# I and	J	1	Drain (AZ)					

Graphic I		Attached or Name\ENV\Biological Services\Templates\Mfe\Ref\Portage\Por	☐ Date:	
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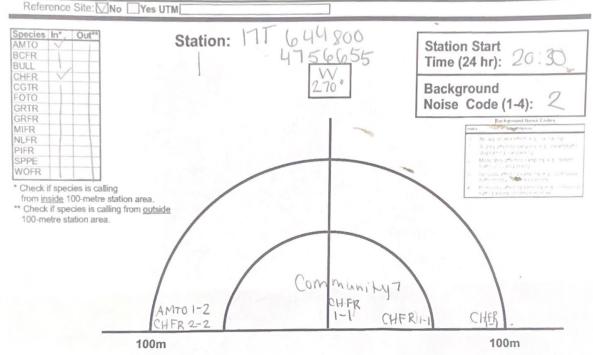


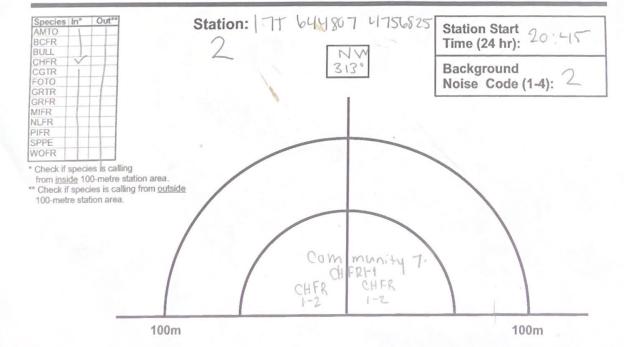
Project: \$269 - [6]

Date: April 16/24 Project Manager: 14K

Collector(s): V D + ER Visit #: 1

WEATH	ER CONDITIONS				T	WIND SCALE	
Temp.	Wind:	HKMA	Cloud Cover (%)	Precipitation	0	Calm	
11/00	Direction:	NE	90	None/Dry Drizzle	-	Smoke Drifts Wind Felt on Face	-
CALLL	EVEL CODES				A 1000m	Leaves in constant motion	
		eous, number of	of individuals can be	accurately counted		Wind raises dust and paper	
Code 2:	Some calls simult	aneous, numbe	r of individuals can	be reliably estimated r of individuals cannot be reliab	ly e	stimated	







Project: 53 (89 -10)

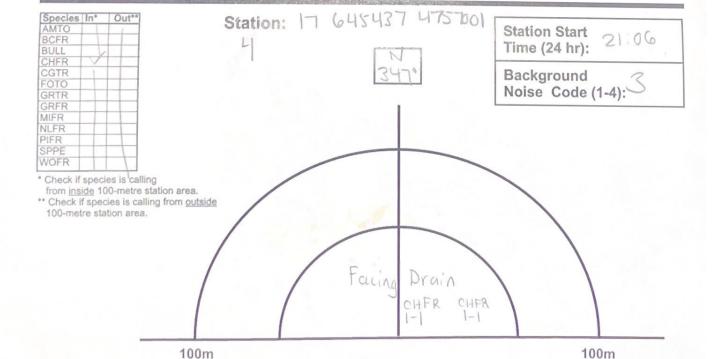
Date: Abvil 16/24

Collector(s): VAT+FR

Project Manager: Hy Visit #:

Temp.	Wind:	14 Kmyh	Cloud Cover (%)	Pregipliation	10	INMIND SCALE
1 1	Direction:	NE	90	SiNonalbry Drizzle GampiFos Rain		Smoke Drifts
	EVEL CODES Calls not simultane	Ous number	of individuals and in	e accurately counted	3	Lagves in constant motion
Code 2:	Some calls simulta	neous, numbe	r of individuals can	e accurately counted t be reliably estimated or of individuals cannot be reliab	Errores	Wind raises dust and paper

reference Site: No Yes UTM Species In* Out** Station: 17 644 989 475 6841 Station Start Time (24 hr): 20:53 BCFR BULL CHFR Background FOTO Noise Code (1-4): GRFR MIFR **NLFR** No appreciable effect (e.g., owl calling) Slightly affecting sampling (e.g., distant traffic, dog banking; our passing) Moderately affecting sampling (e.g., distant traffic, 2.5 cars passing) SPPE WOFR Seriously affecting sampling (e.g., continuous traffic nearby, 6-10 cars passing) * Check if species is calling Profoundly affecting sampling (e.g., continuitraffic passing, construction noise) from inside 100-metre station area. ** Check if species is calling from outside 100-metre station area. Facing Prain CHFR CHFR CHFR CHFR 1-1 1-2 1-1 2-2 100m 100m





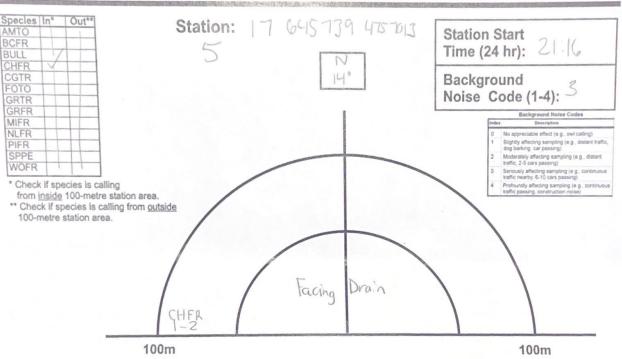
Project: 53/189 10

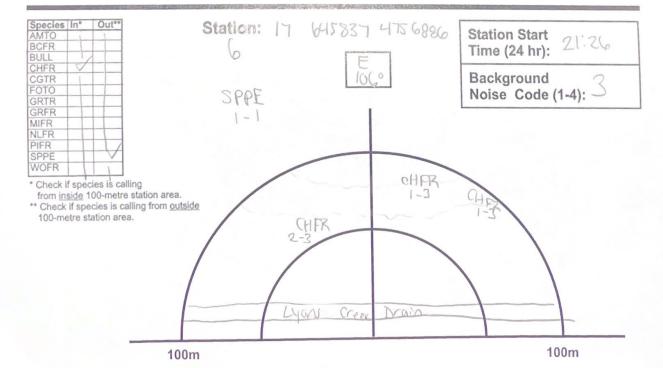
Date: April 6/24 Project Manager: HK

Collector(s): Vs LER Visit #: 1

emp.	R CONDITIONS Wind:	14 km/h	Cloud Cover (%)	Presibilitation	10	Calm
	Direction:	NE	90	Whose/Dry Drizz	0 1	Smoke Drifts Wind Felt on Face
	EVEL CODES		and the state of t		3	Leaves in constant motion
Code 2:	Some calls simulta	neous, number	r of Individuals can	s accurately counted be reliably estimated at of Individuals cannot be rel	Institute	Wind raises dust and paper

Reference Site: No Yes UTM





MATE

100m

AMPHIBIAN MONITORING FIELD SHEET

Project: 53(,99 10)

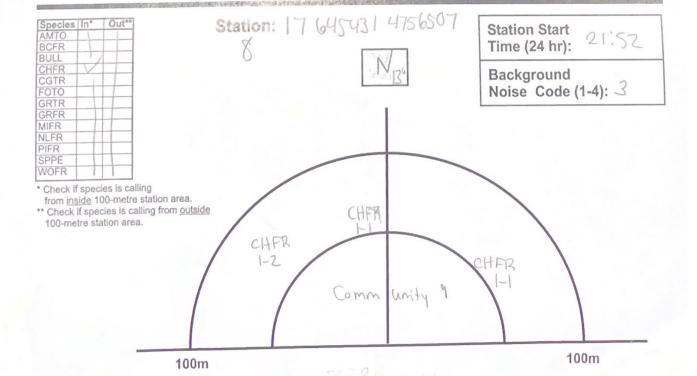
Date: April 16/24 Project Manager: HK

Collector(s): VI + ER Visit #: 1

100m

WEATHE	ER CONDITIONS	No. of Lot of		A PART OF THE PART			WIND SCALE
	Wind:	Lykonh	Cloud Cover (%)	Precipitation		-	Calm
148	Direction:	NF	90	None/Dry Damp/Fog	Drizzle Rain	(20)	Smoke Drifts Wind Felt on Face
CALL LI	EVEL CODES	EDY (5-5) (45					Leaves in constant motion
Code 1:	Calls not simultane	ous, number	of individuals can be	accurately counted	1	4	Wind raises dust and paper
Code 2:	Some calls simulta	neous, numbe	er of individuals can loverlapping, number	be reliably estimate	d	y es	stimated

Reference Site: No Yes UTM Station: 17 645 609 475 6654 Species in* Qut** **Station Start** AMTO 21:38 Time (24 hr): BCFR CHFR Background FOTO Noise Code (1-4): GRTR MIFR No appreciable effect (e.g. owi calling). Sightly affecting sampling (e.g. distant traffic, dop barking car passing). Moderately affecting sampling (e.g., distant traffic, 2-6 cars passing). Seriously affecting sampling (e.g., continuous traffic hearby, 6-10 cars passing). Prefoundly affecting sampling (e.g., continuous traffic passing, construction noise). No appreciable effect (e.g., owl calling) CHFR NLFR 1-2 (From Point 6) SPPE WOFR * Check if species is calling from inside 100-metre station area. ** Check if species is calling from outside 100-metre station area. CI+ FA Lyon CLEOK D 1-1

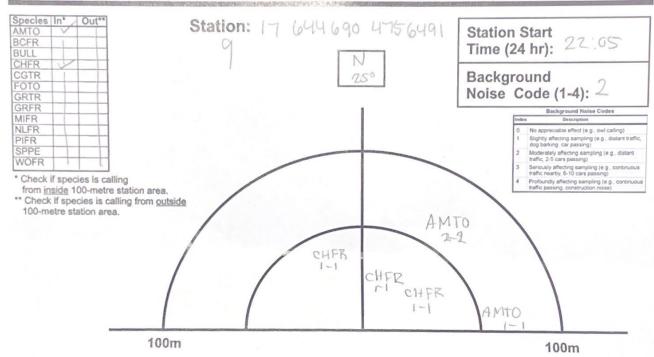


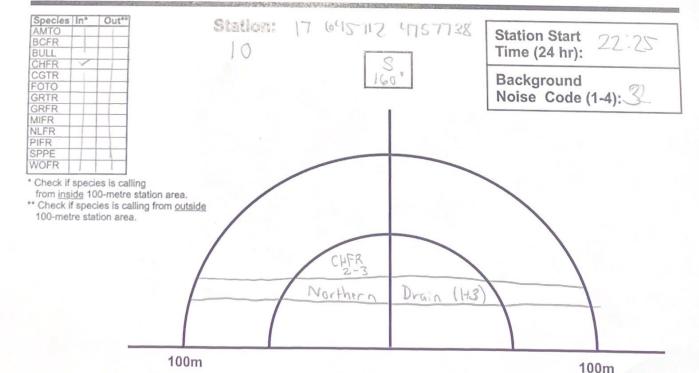


Project: 53689-10 Date: Project Manager: Visit #:

Direction: Call Direction: The property Drizzle 1 Smoke Drifts 1 2 Wind Felt on Face 2 Wind Felt on Face 2 Leaves in constant motion 2 Wind Felt on Face 2 Calls not simultaneous, number of individuals can be appropriately counted 4 Wind raises dust and paper 2 Wind raises dust and paper 2 Wind raises dust and paper 2 Wind raises dust and paper 3 Wind raises dust and paper	Temp.	Wind:	114KMh1	Cloud Carret (%)	Prexipitation		0	Calm
	HE	Direction:	NE	90	land of	the state of the s	-	
Code 1: Calls not simultaneous number of Individuals can be supported. 4 Wind raises dust and paper	CALLL	EVEL CODES	AND SHAPE		THE STATE OF		3	Leaves in constant motion
2 A LANG LOSS CONTROL OF ENTRANCED CONTROL OF ENTRANCED CONTROL	Code 1:	Calls not simultane	eous, number o	Individuais can be	s accurately counted		4	Wind raises dust and paper
Code 2: Some calls simultaneous, number of Individuals can be safety estimated					or of systemous can		lv er	etimated

Reference Site: No Yes UTM



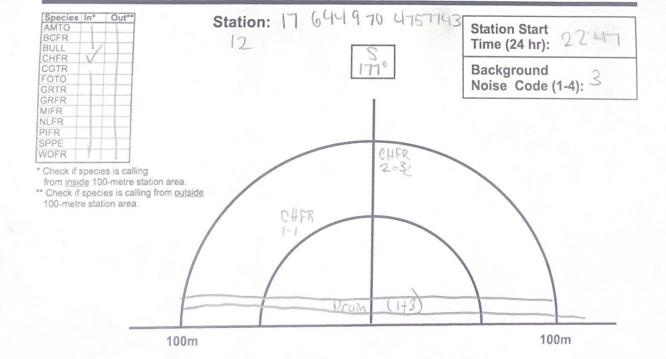




Project: 53689-101
Date: April 16/2024 Project Manager: 14K
Collector(s): VI FR Visit #: 1

WEATHE	R CONDITIONS					WIND SCALE
Temp.	Wind:	HIKMA	Cloud Cover (%)	Precipitation	-	Calm
148	Direction:	NE	90	None/Dry Drizzle Damp/Fog Rain	6	Smoke Drifts Wind Felt on Face
CALL LE	EVEL CODES					Leaves in constant motion
Code 1:	Calls not simultane	ous, number o	of individuals can be	accurately counted	4	Wind raises dust and paper
Code 2:	Some calls simultar	neous, numbe	r of individuals can	be reliably estimated or of individuals cannot be reliab	ly es	stimated

Reference Site: No Yes UTM Station: 17 645309 4757727 **Station Start** AMTO 22:37 BCFR Time (24 hr): BULL CHFR Background Noise Code (1-4): 3 FOTO GRTR GRFR MIFR **NLFR** PIFR Moderately affecting sampling (e.g., distant traffic, 2-5 cars passing) SPPE WOFR Check if species is calling from inside 100-metre station area. refoundly affecting sampling (e.g., co affic passing, construction noise) ** Check if species is calling from outside 100-metre station area. 1-1 1-2 1-1 CHFR CHFR CHFR (H3) Drain 100m 100m



		9				E INFORMATIO	N	IELD 2	1221		
		-		Project: Date:		rt Colsorne		Project Ma	anager:		
		BMT		Collector(s):		are 19/24	-	r roject ivi	Visit #:		
	-11			Time started: Q Dr	2 Tim	ne finished: 12; (c) Co	omb	ined collec		ırs: /	
				NHIC List	MNI	R EO's none	7	not provid	ded to co	ollector	
					- 342.003						
_		ER CONDITIONS Wind:	104 x x1	Cloud Cover (9/)	Drobin	itation	0	WIND SCA Calm	LE		
Ten		wina:	4km/h	Cloud Cover (%)	Today	oitation r: No	1	Smoke Drif	te		
29	\mathcal{D}^{o}	Direction:	SW	30	Yester			Wind Felt o			
DA	TA F	ocus			Treate		3	Leaves in c		notion	
T		Birds 1 2 Mig		ELC's		Dripline/Tree Survey	4	Wind raises	s dust an	d paper	
	7	Mammals		Floral VSA_		Aquatic - Physical	5	Small trees	sway		
0	7	Amphibians 1_2_3/		Wetland		Aquatic - Biological	6	Large brand			
		Reptiles		Butternut (BHA)		Faunal Habitat	7	Lots of resi			king into
		Inverterbrates		other SAR		Other - see notes	8	Limbs brea	king off t	rees	-
		RES (with GPS co-ord	dinates w	nere applicable)				Mapped		ow-up R	
		de Structures:				None observed	-	UTM	Yes	No	Who
Yes	No	D	7 H W 40 4	, <u>, , , , , , , , , , , , , , , , , , </u>					(2. A.)		
H	Н	Barns/Footings/Wells	s/other(list)							
H	H	Rock Piles Garbage									
Nat	ural	Vegetation:				None observed		-			
H		Fallen Logs outside	woods (#'s	1	id.	Tronc observes					
H	H	Brush Piles	110000 (110	/							
	П	Snags (raptor perch)	-	-t:							
	П	Tree Cavities (nestin									
		Sentinel Trees	¥/								
		Butternut Identified									
		Mast Trees (6E)		Berry Shrubs (6E)							
Wil	dlife	Features:				None observed					
Ļ	\vdash	Waterfowl nesting (la					_		ļ		
_	\vdash	Exposed Banks (nes	ting swallo	ows)					-		
H		Stick Nests Animal Burrows (>10	laml				_		-		
H	\vdash	Heronry	JCITI)						-		
H	\vdash	Crayfish mounds									
╟	H	Sand/gravel on site									
		Marsh/open country/	shrub								
		Winter Deer yards									
		Corridor from pond to	o woods (a	ampibian movement)							
		Bat corridor (shoreling	nes, escar	oments)							
		Bat hibernacula (cav	es, mines,	crevices, etc.)							
Aqı	ıatic	Features:									
L		Perm. pond in woodl		emergents/submerger					<u> </u>		
H	-	Perm. pond in open		emergents/submerger		temp.			-		
_		Water in woodland Waterways flo	pools pwing	flowing c	iry				-		
L	느	natural stream	JWING	dry pools					 		
	_	Inatural stream				None observed			 		
	F	open drain	\Box			None observed	_				
	r	Seeps/Springs									
Inci		al Observations/Not	es:						i —		
-			-								
de	100	trea Visit									
		J									
10		dental1:	14								
_	ol	ecented Deka	JI Br	run Shake							
~		7 20 21 6	drock		7.87.37	THE PART OF THE PARTY OF THE PA	20.00				-
-	_1	copand frig	05400	red but her	Call		1733				
	1	Green Folia	052	ervod but hat a	alling	JIT 695874 4757	151				

Graphic ☐ Attached or Name\ENV\Biological Services\Templates\Mftenventor \text{Venture} \text{Venture} \text{Mansage} \text{ ☐ Date:_



100m

AMPHIBIAN MONITORING FIELD SHEET

Project:	Ara Col	50110		
Date:	June	9/24	Project Manager:	
Collector(s):	1/5 -+	(G	Visit #:	

100m

WEATH	IER CONDITIONS			1		WIND SCALE
Temp.	Wind:	5km/n	Cloud Cover (%)	Precipitation	0	Calm
1120	Di	0	00	None/Dry Drizzle	1	Smoke Drifts
200	Direction:)	80	Damp/Fog Rain	2	Wind Felt on Face
CALL LEVEL CODES						Leaves in constant motion
Code 1: Calls not simultaneous, number of individuals can be accurately counted						Wind raises dust and paper
				be reliably estimated er of individuals cannot be reliab	ly e	stimated

Reference Site: No Yes UTM Station: 1 64 4902 4756791 Species In* Out** **Station Start** AMTO 22:26 **BCFR** Time (24 hr): BULL CHFR **Background** CGTR FOTO Noise Code (1-4): **GRTR** GRFR Background Noise Codes MIFR No appreciable effect (e.g. owl calling) Slightly affecting sampling (e.g. distant traffic dog barking, car passang) NLFR **PIFR** Moderately affecting sampling (e.g. distant traffic 2-5 cars passing) SPPE WOFR Senously affecting sampling (e.g. continuous traffic nearby 6-10 cars passing) Profoundly affecting sampling (e.g., continuous traffic passing, construction noise) * Check if species is calling from inside 100-metre station area, ** Check if species is calling from outside 100-metre station area. Facing Thicker - No frogs 100m 100m Species In* Out**
AMTO /
BCFR Station: **Station Start** 22:33 Time (24 hr): BULL CHFR Background Noise Code (1-4): CGTR **FOTO GRTR GRFR** CRER MIFR NLFR **PIFR** SPPE WOFR Check if species is calling from inside 100-metre station area. ** Check if species is calling from outside 100-metre station area.

Facing Prain 10,00 ar

MTE

100m

AMPHIBIAN MONITORING FIELD SHEET

Project:	Pact	Colhagne		
Date:	line	FG /2 L	Project Manager:	
Collector(s):	+ 21/7	(9	Visit #:	

WEATH	ER CONDITIONS		girkton projektych,			WIND SCALE
Temp.	Wind:	5 Km/r	Cloud Cover (%)	Precipitation	0	Calm
200	Direction:	0	W .	None/Dry Drizzle	(1)	Smoke Drifts
45 C	Direction.	C	00	Damp/Fog Rain	2	Wind Felt on Face
CALL L	EVEL CODES			County County April 18 In 1891	3	Leaves in constant motion
Code 1:	Code 1: Calls not simultaneous, number of individuals can be accurately counted					Wind raises dust and paper
Code 2:	Code 2: Some calls simultaneous, number of individuals can be reliably estimated Code 3: Full chorus, calls continuous and overlapping, number of individuals cannot be reliably estimated					

Reference Site: No Yes UTM Species In* Out** Station: 177 645 024 4756987 **Station Start** Time (24 hr): 12:43 **BCFR** BULL CHFR **Background** CGTR **FOTO** Noise Code (1-4): **GRTR GRFR** MIFR NLFR No appreciable effect (e.g. owl calling) Slightly affecting sampling (e.g. distant traffic dog barking car passing) PIFR SPPE Moderately affecting sampling (e.g., distant traffic, 2-5 cars passing) WOFR Seriously affecting sampling (e.g., continuous traffic nearby, 6-10 cars passing) * Check if species is calling Profoundly affecting sampling (e.g., continuous traffic passing, construction noise) from inside 100-metre station area. * Check if species is calling from outside 100-metre station area. 100m Facing Dram - No From 100m Species In* Out** Station: 171 645431 4-156999 **Station Start** 22:53 BCFR Time (24 hr): BULL CHFR **Background** CGTR FOTO Noise Code (1-4): **GRTR GRFR** MIFR **NLFR PIFR** SPPE WOFR Check if species is calling from inside 100-metre station area. ** Check if species is calling from outside 100-metre station area.

Facing Drain - No Frag

100m



100m

AMPHIBIAN MONITORING FIELD SHEET

Project:	Part Colharne		
Date:	Jun-0 19/20	Project Manager:	
Collector(s):	V5 + CG	Visit #:	N

WEATH	ER CONDITIONS						WIND SCALE
Temp.	Wind:	16 km in	Cloud Cover (%)	Precipitation		0	Calm
1/ 500	Dinastiana	- France	00	None/Dry	☐ Drizzle		Smoke Drifts
~ ·	Direction:		83	Damp/Fog	Rain	(2)	Wind Felt on Face
CALL LEVEL CODES					3	Leaves in constant motion	
Code 1: Calls not simultaneous, number of individuals can be accurately counted						4	Wind raises dust and paper
Code 2:	Code 2: Some calls simultaneous, number of individuals can be reliably estimated						
Code 3:	code 3: Full chorus, calls continuous and overlapping, number of individuals cannot be reliably estimated						

Reference Site: No Yes UTM Station: 177 645 740 4157009 Species In* Out** **Station Start** AMTO 23:04 BCFR Time (24 hr): BULL CHFR **Background** CGTR FOTO Noise Code (1-4): GRTR GRFR MIFR Background Noise Codes NLFR Slightly affecting sampling (e.g. distant traffic dog barlung car passing) PIFR SPPE Moderately affecting sampling (e.g. distant traffic, 2-5 care passing) WOFR Seriously affecting sampling (e.g. continuous traffic nearby 6-10 cars passing) Profoundly affecting sampling (e.g., continuous traffic passing, construction noise) * Check if species is calling from inside 100-metre station area. ** Check if species is calling from outside 100-metre station area. 100m 100m Facing Drain - No Frost Station: 17T 645846 41756883 Species In* Out** **Station Start** AMTO 23:12 BCFR BULL Time (24 hr): CHFR CGTR **Background** Noise Code (1-4): 2 FOTO **GRTR** GRFR MIFR NLFR PIFR SPPE WOFR Check if species is calling from inside 100-metre station area. ** Check if species is calling from outside 100-metre station area.

Forcing Lyon Creek Drain - NO Frogs

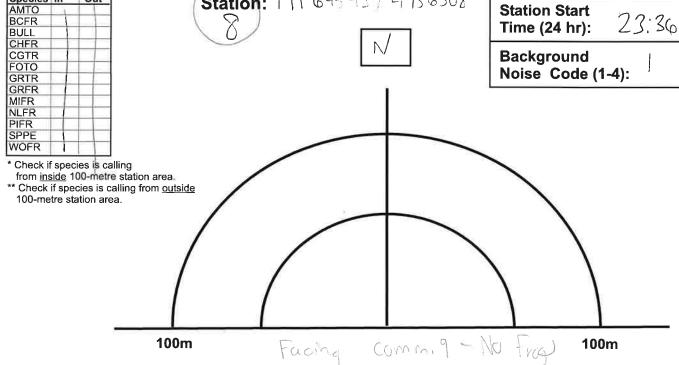
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AMPHIBIAN MONITORING FIELD SHEET

Project:	Port Colourne		
Date:	NV 19/2U	Project Manager:	
Collector(s):	V2 - CG1	Visit #:	

WEATH	ER CONDITIONS		WIND SCALE			
Temp.	Wind:	UKM/h	Cloud Cover (%)	Precipitation	0	Calm
24°C	Direction:	0	80)	None/Dry Drizzle	(1,	Smoke Drifts
124	Direction.	7	00	Damp/Fog Rain	2	Wind Felt on Face
CALL LEVEL CODES						Leaves in constant motion
Code 1: Calls not simultaneous, number of individuals can be accurately counted					4	Wind raises dust and paper
Code 2:	Some calls simult	aneous, numbe	r of individuals can	be reliably estimated	_	
Code 3:	Full chorus, calls	continuous and	overlapping, number	er of individuals cannot be relia	bly e	stimated

Reference Site: No Yes UTM Station: 17 645611 4756650 Species In* Out** Station Start AMTO 23:24 BCFR Time (24 hr): BULL CHFR Background CGTR FOTO Noise Code (1-4): **GRTR GRFR** MIFR **NLFR** Slightly affecting sampling (e.g. distant trafficog barking car passing) PIFR SPPE Moderately affecting sampling (e.g., distant traffic, 2-5 cars passing) WOFR Seriously affecting sampling (e.g., continuous triaffic nearby, 6-10 cars passing) * Check if species is calling Profoundly affecting sampling (e.g., continuous traffic passing, construction noise) from inside 100-metre station area. ** Check if species is calling from outside 100-metre station area. Facing Lyons Creek Prain - No Frage 100m 100m Station: 177 645 437 475 6508 Species In* Out** **Station Start** AMTO 23:36 BCFR Time (24 hr): BULL CHFR CGTR Background FOTO



MTE

AMPHIBIAN MONITORING FIELD SHEET

Project:	Part	Colborne		
Date:	June	19/24	Project Manager:	
Collector(s):	NS + 6	9	Visit #:	

Гетр.	IER CONDITIONS Wind:	Munch	Cloud Cover (%)	Precipitation	0	Calm
02		0.7	40	None/Dry Drizz		Smoke Drifts
20	Direction:	20	lO	Damp/Fog Rain	(Q	Wind Felt on Face
CALLL	EVEL CODES					Leaves in constant motion
Code 1	: Calls not simultar	neous, number	of individuals can be	e accurately counted	4	Wind raises dust and paper
Code 2	: Some calls simul	taneous, numb	er of individuals can	be reliably estimated		
Code 3	· Full chorus calls	continuous and	d overlapping, number	er of individuals cannot be rel	ably e	estimated

Reference Site: No Yes UTM Station: 17 645 715 4757735 Species In* Out** **Station Start** 01:53 AMTO Time (24 hr): **BCFR** BULL CHFR **Background CGTR** FOTO Noise Code (1-4): **GRTR** GRFR MIFR No appreciable effect (e.g. owl calling) NLFR Signity affecting sampling (e.g. distant traffic dog barking, car passing) PIFR Moderately affecting sampling (e.g., distant traffic, 2-5 cars passing) SPPE Seriously affecting sampling (e.g. continuous traffic naurby 6-10 care passing) WOFR Profoundly affecting sampling (e.g., continuous traffic passing, construction noise) * Check if species is calling from inside 100-metre station area. ** Check if species is calling from outside 100-metre station area. Facing Drain - No Frogs 100m 100m Species In* Out** Station: 177 649685 4756483 **Station Start** 23:46 Time (24 hr): BCFR BULL CHFR **Background** CGTR Noise Code (1-4): FOTO **GRTR** GRFR MIFR NLFR PIFR SPPE WOFR Check if species is calling from inside 100-metre station area. ** Check if species is calling from outside 100-metre station area. Facing dran/ thicket - No Frage 100m 100m

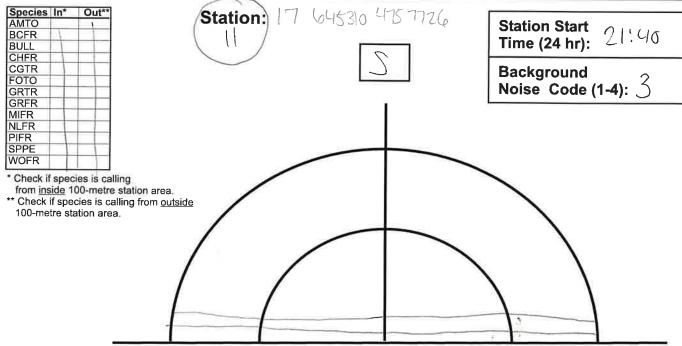


Project:	Part Calbarne		
Date:	June 19/24	Project Manager:	
Collector(s):	Vs + CG	Visit #:	

WEATH	ER CONDITIONS					WIND SCALE
Temp.	Wind:	TKMIN	Cloud Cover (%)	Precipitation	0	Calm
28°C	Direction:	SW	40	None/Dry Drizzle	1	Smoke Drifts
-		12 4 4	40	Damp/Fog Rain	(2	Wind Felt on Face
	EVEL CODES	3	Leaves in constant motion			
Code 1: Calls not simultaneous, number of individuals can be accurately counted					4	Wind raises dust and paper
Code 2:	Some calls simult	aneous, numbe	er of individuals can	be reliably estimated er of individuals cannot be reliab	_	

Reference Site: No Yes UTM Station: 177 644967 4757743 Species In* AMTO **Station Start** Time (24 hr): 21:30 **BCFR** BULL CHFR **CGTR Background** FOTO Noise Code (1-4): GRTR **GRFR** MIFR NLFR No appreciable effect (e.g. owl calling) Slightly affecting sampling (e.g. distant traffic dog barking car passing)

Moderately affecting sampling (e.g. distant traffic 2-5 cars passing) PIFR SPPE WOFR Seriously affecting sampling (e.g., continuous traffic nearby, 6-10 care passing) * Check if species is calling from inside 100-metre station area. ** Check if species is calling from outside 100-metre station area. Facing drain - No Freque 100m 100m



Facing Drain - No Fregs

100m

1

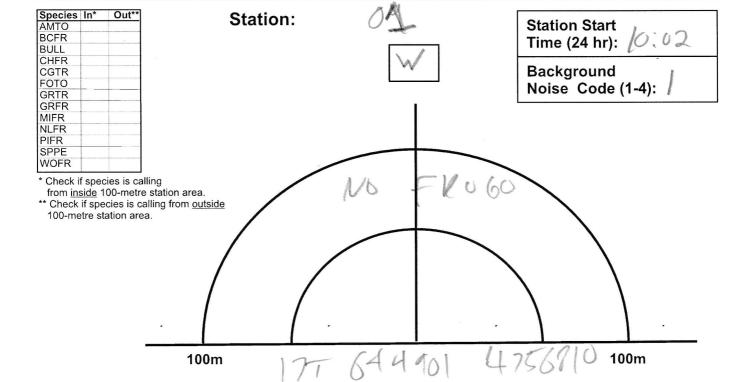
100m



AMPHIBIA	AN MONITORING F	IELD SHEET
Project:	53689-101	Port colorne
Date:	May 29/2024	Project Manager: HK
Collector(s):	US AA	Visit #:

WEATHER CONDITIONS					WIND SCALE	
Temp. Wind: < 8Km	Cloud Cover (%)	Precipitation		0	Calm	
Direction: \./	16	⊠ None/Dry	Drizzle	1	Smoke Drifts	
190 Direction: W	15	Damp/Fog	Rain	2	Wind Felt on Face	
CALL LEVEL CODES				3	Leaves in constant motion	
Code 1: Calls not simultaneous,	number of individuals can be	e accurately counte	d	4	Wind raises dust and paper	
Code 2: Some calls simultaneous	s, number of individuals can	be reliably estimat	ed			
Code 3: Full chorus, calls continu	ous and overlapping, number	er of individuals ca	nnot be reliab	ly e	stimated	

Reference Site: No Yes UTM Species In* AMTO Out** Station: Station Start Time (24 hr): 9 132 **BCFR** BULL CHFR **Background** CGTR FOTO Noise Code (1-4): GRTR GRFR Background Noise Codes MIFR No appreciable effect (e.g., owl calling) NLFR Slightly affecting sampling (e.g., distant traffic dog banking, car passing) PIFR Moderately affecting sampling (e.g. distant traffic, 25 cars passing).
Senously affecting sampling (e.g., continuous traffic nearby, 6-10 cars passing). SPPE WOFR Check if species is calling Profoundly affecting sampling (e.g., continuous traffic passing, construction hoise) from inside 100-metre station area. ** Check if species is calling from outside 100-metre station area. 100m 100m

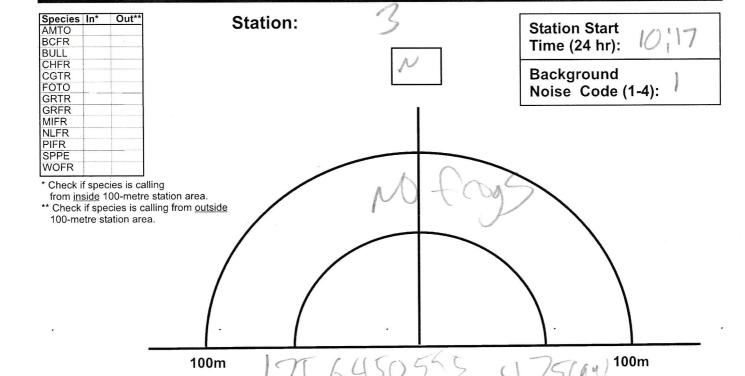




Project: 53689-101 Date: May 29/2020 (01 Project Manager: Visit #: Collector(s):

WEATH	ER CONDITIONS				WIND SCALE
Temp.	Wind: < 8XM	Cloud Cover (%)	Precipitation	0	Calm
12	Discotions	10	⊠None/Dry ☐ Drizzle		Smoke Drifts
1	Direction: 🔍	10	Damp/Fog Rain	2	Wind Felt on Face
CALL L	EVEL CODES			3	Leaves in constant motion
Code 1:	Calls not simultaneous, nui	mber of individuals can be	accurately counted	4	Wind raises dust and paper
	Some calls simultaneous, r				
Code 3:	Full chorus, calls continuou	is and overlapping, numbe	er of individuals cannot be relia	oly e	stimated

Reference Site: No Yes UTM Species In* Out** Station: **Station Start BCFR** Time (24 hr): BULL CHFR **Background CGTR FOTO** Noise Code (1-4): GRTR Background Noise Codes Description **GRFR** MIFR No appreciable effect (e.g., owl calling) **NLFR** Slightly affecting sampling (e.g., distant traffic dog banking, car pateing) **PIFR** Moderately affecting sampling (e.g. distant traffic 2-5 cars passing).
Seriously affecting sampling (e.g. continuous traffic nearby, 6-10 cars passing). SPPF WOFR Profoundly affecting sampling (e.g., continuous traffic passing, construction noise) * Check if species is calling from inside 100-metre station area. ** Check if species is calling from outside 100-metre station area. 4756973 100m 100m

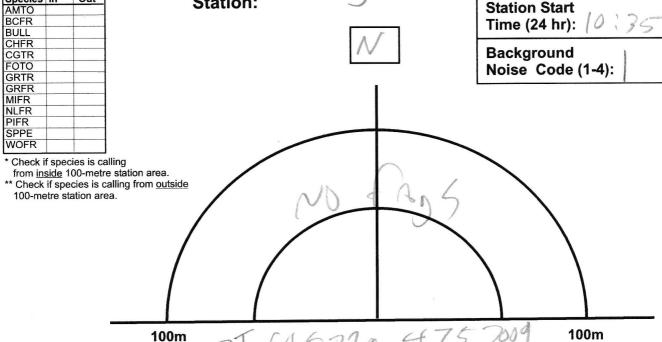




Project:	53689-101	Port Colborne
Date:	May 29-2024	Project Manager: H
Collector(s):	VS AA	Visit #:

WEATH	IER CONDITIONS				WIND SCALE	
Temp.	Wind: < 3Km	Cloud Cover (%)	Precipitation		0 Calm	
10	Discortions &	12	None/Dry Dr	rizzle	1 Smoke Drifts	
15	Direction:	10	Damp/Fog Ra	ain 🗍	2 Wind Felt on Face	
CALL L	EVEL CODES				3 Leaves in constant motion	
Code 1	: Calls not simultaneous, nur	nber of individuals can be	accurately counted		4 Wind raises dust and paper	
	: Some calls simultaneous, n			_		
Code 3	Code 3: Full chorus, calls continuous and overlapping, number of individuals cannot be reliably estimated					

Reference Site: No Yes UTM Species In* Out** Station: **Station Start** AMTO BCFR Time (24 hr): BULL CHFR **Background CGTR** FOTO Noise Code (1-4): **GRTR GRFR** Background Noise Codes MIFR **NLFR** Slightly affecting sampling (e.g. distant traffic dog backing car passing) **PIFR** Moderately affecting sampling (e.g., distant traffic, 2-5 cars passing) SPPE WOFR Senously affecting sampling (e.g. continuous traffic nearby, 6-10 cars passing) Profoundly affecting sampling (e.g. contraction construction noise) * Check if species is calling from inside 100-metre station area. ** Check if species is calling from outside 100-metre station area. 100m 100m Station: Species In* Out** **Station Start** AMTO



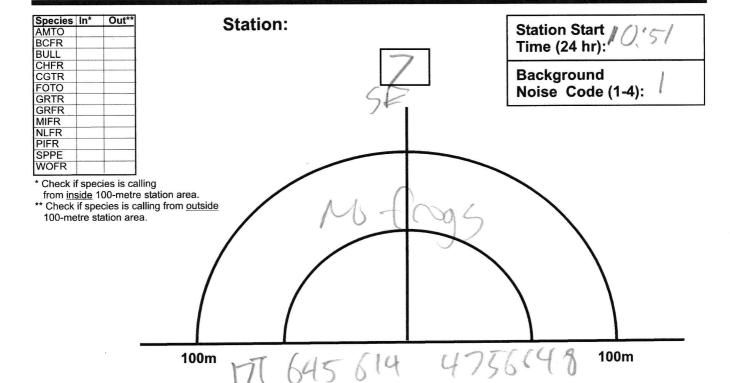


	A	MPHIB	IAN N	LINON	ORING	FIELD	SHEET
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Project:	53689-101	Port Colborne	
Date:	May 29 . 2024	Project Manager: TK	
Collector(s):	VS AA	Visit #:	

WEATH	IER CONDITIONS					WIND SCALE
Temp.	Wind: 43Kn	Cloud Cover (%)	Precipitation		0	Calm
10	Discotions	10	None/Dry	Drizzle	1	Smoke Drifts
YS	Direction:	10	Damp/Fog	Rain	2	Wind Felt on Face
CALL L	EVEL CODES				3	Leaves in constant motion
Code 1	: Calls not simultaneous	, number of individuals can be	accurately counte	d	4	Wind raises dust and paper
Code 2	: Some calls simultaned	ous, number of individuals can	be reliably estimate	∍d		
Code 3	: Full chorus, calls conti	nuous and overlapping, numbe	r of individuals car	nnot be reliab	ly e	stimated

Reference Site: No Yes UTM Out* Station: **Station Start** AMTO **BCFR** Time (24 hr): BULL CHFR **Background** CGTR FOTO Noise Code (1-4): **GRTR GRFR** Background Noise Codes MIFR **NLFR** Sightly affecting sampling (e.g., distant traffic dog barking, car passing) PIFR Moderately affecting sampling (e.g., distant traffic, 2-5 cars passing) SPPE WOFR Senously affecting sampling (e.g. continuous traffic nearby 6-10 cars passing) Check if species is calling Profoundly affecting sampling (e.g., continuous traffic passing, construction noise) from inside 100-metre station area. ** Check if species is calling from outside 100-metre station area. 4756980 100m 100m





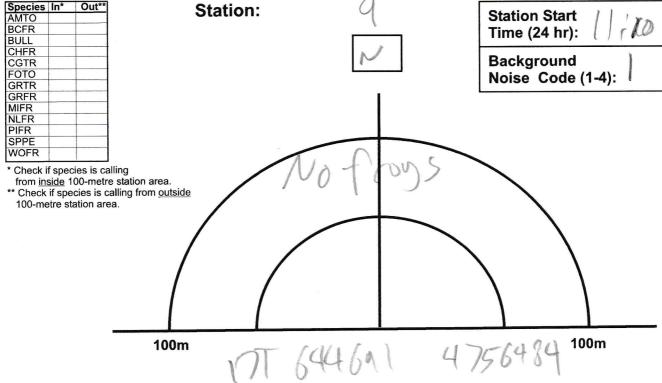
 Project:
 \$3689-101
 Port
 Colloctorus

 Date:
 May 20 3024
 Project Manager:
 HK

 Collector(s):
 V5 AA
 Visit #:

WEATH	ER CONDITIONS					WIND SCALE
Temp.	Wind: (3KM)	Cloud Cover (%)	Precipitation		0	Calm
13	Bi di l		None/Dry	Drizzle	0	Smoke Drifts
\ /	Direction:	10	Damp/Fog	Rain	2	Wind Felt on Face
CALL L	EVEL CODES				3	Leaves in constant motion
Code 1:	Calls not simultaneous, nu	mber of individuals can be	accurately counte	d	4	Wind raises dust and paper
	Some calls simultaneous,					
Code 3:	Full chorus, calls continuou	us and overlapping, numbe	er of individuals ca	nnot be reliab	y e	stimated

Reference Site: No Yes UTM Species In* Out** Station: **Station Start** AMTO **BCFR** Time (24 hr): BULL CHFR **Background** CGTR FOTO Noise Code (1-4): GRTR GRFR Background Noise Codes MIFR **NLFR** Slightly affecting sampling (e.g. distant traffic dog barking, car passing) PIFR SPPE Moderately affecting sampling (e.g., distant traffic, 2-5 cars passing) WOFR Seriously affecting sampling (e.g., continuous traffic nearby, 6-10 cars passing) rotoundly affecting sampling (e.g., continuation noise) * Check if species is calling from inside 100-metre station area. ** Check if species is calling from outside 100-metre station area. 100m 100m Species In* Out**

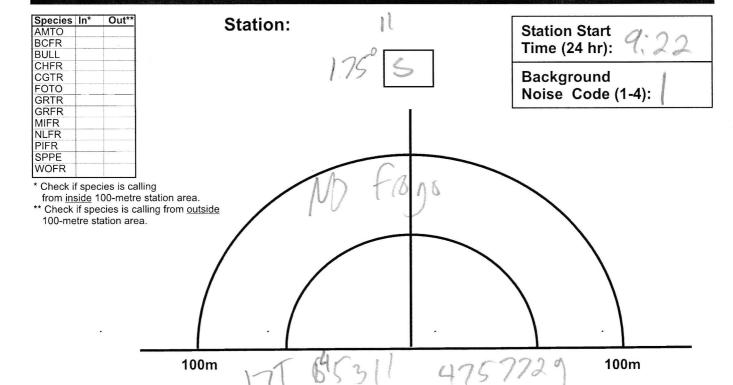




Project: Collector(s): VS AA Project Manager: Visit #:

WEATH	IER CONDITIONS					WIND SCALE
Temp.	Wind:	Cloud Cover (%)	Precipitation		0	Calm
10	Direction: QKM W	10	None/Dry	Drizzle	1	Smoke Drifts
10	Direction: Of the M	17	Damp/Fog	Rain	2	Wind Felt on Face
CALL L	EVEL CODES				3	Leaves in constant motion
Code 1:	: Calls not simultaneous, num	ber of individuals can be	accurately counte	ed .	4	Wind raises dust and paper
Code 2	: Some calls simultaneous, no	umber of individuals can	be reliably estimat	ed		
Code 3:	: Full chorus, calls continuous	and overlapping, number	er of individuals ca	nnot be reliab	ly e	stimated

Reference Site: No Yes UTM Station: \2 Species In* AMTO Out** **Station Start** Time (24 hr): 4 BCFR BULL CHFR **Background** CGTR **FOTO** Noise Code (1-4): GRTR **GRFR** MIFR No appreciable effect (e.g., owl calling) **NLFR** no appreciative effect (e.g., over calling): Slightly affecting sampling (e.g., distant traffic, dog berking, car passing). Moderately affecting sampling (e.g., distant traffic, 2-5 cars passing). Senously affecting sampling (e.g., continuous traffic nearby, 6-10 cars passing). **PIFR** SPPE WOFR * Check if species is calling Profoundly affecting sampling (e.g., continitraffic passing, construction hoise) from inside 100-metre station area. ** Check if species is calling from outside 100-metre station area. 4757745 CU4970 100m 100m



Port Colborn HDFA

Visit 1

H3

	Unconstrained Headwater Drainage Feature Assessment
Date (yyyy/mm/dd)	
Stream Name:	Stream Code: Site Code: H3 (Ups+ccum) Point
Site Limits:	Upstream WP# WP# WP Field Assessment: Sample 1 Unconnected HDF:
	Downstream WP# 475 777 N Sample 2 Not connected to
Direction of Assessment	Upstream Downstream Sample 3 downstream network
Flow Influence	☐ Freshet (1) ☐ Spate (2) ☐ Baseflow (3)
Flow Condition	□ Bry (1) □ Interstitial Flow (3) □ Substantial Flow (5)
	Standing Water (2) ☐ Minimal Flow (4) □ Defined Natural Channel (1) ☐ No Defined Feature (4) ☐ Swale (7)
Feature Type	
	☐ Channelized or Constrained (2) ☐ Tiled Feature (5) ☐ Roadside Ditch (8)
	Multi-thread (3) Wetland (6) Pond (9)
Feature Vegetation	None (1) ☐ Lawn (2) ☐ Cropped (3) ☐ Meadow (4) ☐ Scrubland (5) ☐ Wetland (6) ☐ Forest (7)
Riparian Vegetation	
0 - 1.5 m Left Bank	None (1) Cawn (2) Cropped (3) Meadow (4) Scrubland (5) Wetland (6) Forest (7)
Right Bank	None (1) Lawn (2) Cropped (3) Meadow (4) Scrubland (5) Wetland (6) Forest (7)
1.5 - 10 m Left Bank	None (1) Lawn (2) Cropped (3) Meadow (4) Scrubland (5) Wetland (6) Forest (7)
Right Bank	None (1) Lawn (2) Cropped (3) Meadow (4) Scrubland (5) Wetland (6) Forest (7)
10 - 30 m Left Bank	□ None (1) □ Lawn (2) □ Cropped (3) Meadow (4) □ Scrubland (5) □ Wetland (6) □ Forest (7)
Right Bank	□ None (1) □ Lawn (2) □ Cropped (3) □ Meadow (4) □ Scrubland (5) □ Wetland (6) □ Forest (7)
Channel Gradient (S4.	M7) Visual (1) Clinometer (2) Laser Level (3) Survey Level (4) Other (5) LiDAR (6)
Distance (m): 5	Elevation (cm): Gradient (°):
	Clay (Hard Pan) Silt Sand (0.06-2 mm) Gravel (22-66 mm) Cobble (67-249 mm) Boulder (250 mm) Bedrock
Dominant Substrate (S	(2.M3)
Sub-Dominant Substra	ate (S2.M3)
Feature Roughness	< 10% Minimal (1) 10 - 40% Moderate (2) 40 - 60% High (3) > 60% Extreme (4)
Width Measurement	Can't Measure (1) Amean Width (3) Estimated (4) GIS (5) Measure/GIS (6)
Channel Dimensions	Feature Width (m): 530 Bankfull Depth (mm)
Entrenchment To	otal: 340 m Set Bank m Right Bank m Total width m
Surface Flow Method	Perched Culvert (1) Hydraulic Head (2) Distance by Time (3) Estimated (4)
Wetted Width (m)	Wetted Depth (mm) Hydraulic head (mm) Volume (L) Distance (m) Time (s)
	1 2 3 1 2 3 1 2 3 1 2 3
1.6	35 28 40 0 0 0 - NG Flow
	Adjacent None (1) Rill (2) Rill and Gully (3) Gully (4) Outlet Scour (5)
Sediment Transport	☐ Sheet Erosion (6) ☐ Instream Bank Erosion (7) ☐ Other (8)
	Feature None (1) Rill (2) Rill and Gully (3) Gully (4) Outlet Scour (5)
	Sheet Erosion (6) Instream Bank Erosion (7) Other (8)
Sediment Deposition	Measures (mm):
1	Minimal: < 5 mm (2)
None (1)	Immuniar 2.5 min (2) Imposition 5.50 min (2)

Date:	yyyy/mm/	THE RESERVE TO THE PARTY OF THE	d#: RI-L	Field Assessment: Sample #1 Sample #2 Sample #3
	-14414	dila.	10011	POINT FEATURE DATA
Ground	rrier Measurer	WP#	None 🔲	Perched Height (mm): Jumping Height (mm): Perched Height (mm): Jumping Height (mm): Watercress Seepage Bubbling Stained Other: Present Comment:
WP#	Photo#	Code	Category	Description
		la la la		
		Factors T.		ture Modifier Flow Conditions Feature Vegetation Riparian Vegetation
Site Br		Feature Type Other: Com		woulder
Trigger Point D		Other. Com	Ongoing and A	Active (1) Historic Evidence (2) Reported but No Evidence (3)
Catego			No Evidence (The state of the s
	DATA KEY:			
				.5 l/sec; measure temp

		ter Drainage Feature Asse	
Date (vvv/mm/dd): Z	024041 GProject#: PG11	Culbarre Recorder/Crew:	VS +ER
Stream Name:	Stream Code:	Site Code:	H3 Point 2
Site Limits:	thetream WP# [645639E	Field Assessment:	Sample 1 Unconnected HDF:
Site Limits:	Downstream 17T WP# [U175 7721 N	Tield Assessment.	Sample 2 Not connected to
Direction of Assessmen		Downstream	Sample 3 downstream netw
Flow Influence	Freshet (1)	Spale (2)	Baseflow (3)
TOTA HITTOGICO		— Opero (2)	
Flow Condition	□ , Dry (1)	☐ Interstitial Flow (3)	Substantial Flow (5)
	Standing Water (2)	Minimal Flow (4)	
Feature Type	Defined Natural Channel (1)	☐ No Defined Feature (4)	Swale (7)
	☐ Channelized or Constrained (2)	☐ Tiled Feature (5)	Roadside Ditch (8)
	Multi-thread (3)	☐ Wetland (6)	Pond (9)
eature Vegetation	□ None (1) □ Lawn (2) □ Cropped (3)	☐ Meadow (4) ☐ Scrublan	d (5) Wetland(6) G Forest (7)
Riparian Vegetation		Division II Comblem	d (5) Wetland (6) Forest (7)
- 1.5 m Left Bank	□ None (1) □ Lawn (2) □ Cropped (3)		- (-)
Right Bank	□ None (1) □ Lawn (2) □ Cropped (3)	Meadow (4) Scrublan	d (5) Wetland (6) Diffest (7)
5 - 10 m Left Bank	□ None (1) □ Lawn (2) □ Cropped (3)	Meadow (4) Scrublan	d (5) Wetland (6) Forest (7)
Right Bank	□ None (1) □ Lawn (2) □ Cropped (3)	Meadow (4) Scrublan	d (5) Wetland (6) Forest (7)
		□ 11 1 10 □ S-+tles	d (5) Wetland (6) Forest (7)
- 30 m Left Bank	None (1) Lawn (2) Cropped (3)		a (a)
Right Bank	□ None (1) □ Lawn (2) □ Cropped (3)	Meadow (4) Scrublan	d (5) Wetland (6) Forest (7)
ominant Substrate (SZ b-Dominant Substrat	2.M3)	06-2 mm) Gravel (22-66 mm) Co	bble (67-249 mm) Boulder (250 mm) Bedr
. D. L	< 10% Minimal (1)	40% Moderate (2) 40 - 60%	High (3)
ature Roughness			
	Can't Managemen (4) A Donkfull (2)	Mean Width (3) Fetimated	
dth Measurement	Can't Measure (1) Bankfull (2)	Mean Width (3) Estimated	
dth Measurement annel Dimensions	Can't Measure (1) Bankfull (2) Feature Width (m): 5.5	Mean Width (3) Estimated	(4) GIS (5) Measure/GIS (6)
annel Dimensions	Feature Width (m): 5.5 M	Bankfull Depth (mm) m Right Bank	(4) GIS (5) Measure/GIS (6)
annel Dimensions F trenchment Tota face Flow Method	Feature Width (m): 5.5 M al: >40 m <40 m Left Bank Perched Culvert (1) Hydraulic	Bankfull Depth (mm) m Right Bank — C Head (2) Distance by Tin	m Total width me (3) Estimated (4)
annel Dimensions	Feature Width (m): 5.5 M	Bankfull Depth (mm) m Right Bank — C Head (2) Distance by Tin	Measure/GIS (6) GIS (5) Measure/GIS (6) GIS (7) Measure/GIS (6) Total width
annel Dimensions F trenchment Tota face Flow Method	Feature Width (m): 5.5 M al: >40 m < 40 m Left Bank Perched Culvert (1)	Bankfull Depth (mm) m Right Bank c Head (2) Distance by Tin mm) Volume (L) 3 1 2 3	m Total width me (3) Distance (m) Measure/GIS (6) Measure/GIS (6)
annel Dimensions trenchment Total face Flow Method Wetted Width (m)	Feature Width (m): 5.5 M al: >40 m	Bankfull Depth (mm) m Right Bank c Head (2) Distance by Tin mm) Volume (L) 3 1 2 3	m Total width me (3) Distance (m) Measure/GIS (6) Measure/GIS (6)
annel Dimensions trenchment Total face Flow Method Wetted Width (m)	Feature Width (m): 5.5 M al: >40 m <40 m Left Bank Perched Culvert (1)	Bankfull Depth (mm) m Right Bank c Head (2) Distance by Tin mm) Volume (L) 3 1 2 3	(4)
renchment Total face Flow Method Wetted Width (m)	Feature Width (m): 5.5 M al: >40 m <40 m Left Bank Perched Culvert (1)	Bankfull Depth (mm) m Right Bank Head (2) Distance by Tin mm) Volume (L) 3 1 2 3 Rill and Gully (3) Instream Bank Erosion (7)	(4)
renchment Total face Flow Method Wetted Width (m)	Feature Width (m): 5.5 M al: 340 m 440 m Left Bank Perched Culvert (1) Hydraulic head (r 1 2 3 1 2 170 155 165 Rill (2) Sheet Erosion (6) Feature None (1) Rill (2)	Bankfull Depth (mm) m Right Bank C Head (2) Distance by Tin mm) Volume (L) 3 1 2 3 C Rill and Gully (3) C Instream Bank Erosion (7) C Rill and Gully (3)	(4)
renchment Total face Flow Method Wetted Width (m)	Feature Width (m): 5.5 M al: >40 m <40 m Left Bank Perched Culvert (1)	Bankfull Depth (mm) m Right Bank Head (2) Distance by Tin mm) Volume (L) 3 1 2 3 Rill and Gully (3) Instream Bank Erosion (7)	(4)
annel Dimensions trenchment Tota face Flow Method Wetted Width (m)	Feature Width (m): 5.5 M al: 340 m 440 m Left Bank Perched Culvert (1) Hydraulic head (r 1 2 3 1 2 170 155 165 Rill (2) Sheet Erosion (6) Feature None (1) Rill (2)	Bankfull Depth (mm) m Right Bank C Head (2) Distance by Tin mm) Volume (L) 3 1 2 3 C Rill and Gully (3) C Instream Bank Erosion (7) C Rill and Gully (3)	(4)

			Lincon	strained Headwater Drainage Feature Assessment Pg. 2 of 2
Date:	20240		ed#: Po, +	oranica ricadirator promogo i occasioni
		1 1110	10/1	POINT FEATURE DATA
Ground	arrier Measure dwater Indica ollection	tors 🔽	None D	Perched Height (mm): Perched Height (mm): Jumping Height (mm): Watercress Seepage Bubbling Stained Other: Present Comment:
WP#	Photo#	Code	Category	Description
Additi	onal Notes			
Co	nfluen	ce w	H3 -	S3 Feature
	,			
Site Bre		Feature Type		re Modifier Flow Conditions Feature Vegetation Riparian Vegetation
Trigger Point D		Other: Com	Ongoing and A	ctive (1) Historic Evidence (2) Reported but No Evidence (3)
Categor			No Evidence (4	
	ATA KEY:			
B S S S S S S S S S S S S S S S S S S S	Seepage area Vatercress - es Outlet (tile or other of tile or other other of the tile or other other of the tile or other of the tile of tile of the tile of tile of the tile of the tile of tile of tile of the tile of tile	measure or estimate total sither) - record flores record f	estimate length o urface area occu flow status as per f ned height and jui riched height and nt ce (storm sewer of d by rip-rap, armo whether or no chan	r feature flow. Estimate volume <0.5 l/sec or >0.5 l/sec. Measure temperature, eature flow. Estimate volume to be <0.5 l/sec or >0.5 l/sec. mping height jumping height putlet or industrial discharge pipe). four stone, or gabion baskets. erched. If perched record perched height and jumping height. ges from dry to standing water, independent of segment break ges from minimal to substantial surface flow, independent of segment break anges from dry/standing water to interstitial flow, independent of segment break

	Unconstrained Headwater	Drainage Feature Assessment
Date (yyyy/mm/dd): 2	0 2 4 0 4 1 4 Project # P0/4	Colbarna Recorder/Crew VS + ER
Stream Name:	Stream Code	Site Code: H3 Point 3
Site Limits:	Upstream WP# (645481 F Downstream TI WP# (4757718 N	Field Assessment: Sample 1 Unconnected HDF: Sample 2 Not connected to
Direction of Assessment:	☐ Upstream → ☐ Do	wnstream Sample 3 downstream network
Flow Influence	Freshet (1)	Spate (2) Baseflow (3)
Flow Condition	☐ Dry (1) ☐ Standing Water (2)	☐ Interstitial Flow (3) ☐ Substantial Flow (5) ☐ Minimal Flow (4)
Feature Type	☐ Defined Natural Channel (1) ☐ Channelized or Constrained (2) ☐ Multi-thread (3)	No Defined Feature (4) □ Swale (7) □ Tiled Feature (5) □ Roadside Ditch (8) □ Wetland (6) □ Pond (9)
Feature Vegetation	□ None (1) □ Lawn (2) □ Cropped (3)	Meadow (4) Scrubland (5) Wetland (6) Forest (7)
Riparian Vegetation		
0 - 1.5 m Left Bank Right Bank	None (1) □ Lawn (2) □ Cropped (3) □ None (1) □ Lawn (2) □ Cropped (3)	Meadow (4) Scrubland (5) Wetland (6) Forest (7) Meadow (4) Scrubland (5) Wetland (6) Forest (7)
1.5 - 10 m Left Bank Right Bank	□ None (1) □ Lawn (2) □ Cropped (3) □ None (1) □ Lawn (2) □ Cropped (3)	Meadow (4) ☐ Scrubland (5) ☐ Wetland (6) ☐ Forest (7) Meadow (4) ☐ Scrubland (5) ☐ Wetland (6) ☐ Forest (7)
10 - 30 m Left Bank Right Bank	□ None (1) □ Lawn (2) □ Cropped (3) □ None (1) □ Lawn (2) □ Cropped (3)	✓ Meadow (4) ✓ Scrubland (5) ✓ Wetland (6) ✓ Forest (7) ✓ Meadow (4) ✓ Scrubland (5) ✓ Wetland (6) ✓ Forest (7)
Channel Gradient (S4.M	7) Visual (1) Clinometer (2) Las	ser Level (3) Survey Level (4) Other (5) LiDAR (6)
Distance (m): 5	Elevation (cm)	
Dominant Substrate (SZ		Gravel (22-66 mm) Cobble (67-249 mm) Boulder (250 mm) Bedrock
Sub-Dominant Substrat	(SZ.MO)	
Feature Roughness Width Measurement	Can't Measure (1) Bankfull (2)	0% Moderate (2) 40 - 60% High (3) > 60% Extreme (4) Mean Width (3) Estimated (4) GIS (5) Measure/GIS (6)
Channel Dimensions	Feature Width (m): 5, 9	Bankfull Depth (mm) 1280
Entrenchment To	tal: 340 m 40 m Left Bank	m Right Bank m Total width m
Surface Flow Method	Perched Culvert (1) Hydraulic H	Head (2) Distance by Time (3) Estimated (4)
Wetted Width (m)	Wetted Depth (mm) Hydraulic head (mr	m) Volume (L) Distance (m) Time (s) 3 1 2 3 1 2 3
1.7	160 151 139 0 0 0 No Flow	
Sediment Transport	Adjacent None (1) Rill (2)	
Geuillent Hansport	Feature Sheet Erosion (6) None (1) Rill (2) Sheet Erosion (6)	☐ Instream Bank Erosion (7) ☐ Other (8) ☐ Rill and Gully (3) ☐ Gully (4) ☐ Outlet Scour (5) ☐ Instream Bank Erosion (7) ☐ Other (8)
Outleast Description	Measures (mm):	
Sediment Deposition		Cubatantial 24 00 mm (A)
None (1)	Minimal: < 5 mm (2)	Substantial: 31-80 mm (4) Extensive: > 80 mm (5)

	yyyy/mm	/dd	Unconstrair	ned Headwater Drainage Feature Assessment Pg. 2 of 2
Date:	20240		ect#: Port C	Field Assessment: Sample # 1 Sample # 2 Sample # 3
5010.	199710	1110,100	10/7	
				POINT FEATURE DATA
Fish Ba	arrier Measure	ments: WP#	the state of the s	ned Height (mm) Jumping Height (mm):
		WP#	Perch	ned Height (mm) Jumping Height (mm):
Ground	dwater Indicat	ors 🖸	None Water	cress Seepage Bubbling Stained Other.
	ollection		Absent Preser	
WP#	Photo#	Code	Category	Description
_				
	-			
-	-		-	
Site B	Break	Feature Typ	e Feature N	Modifier Flow Conditions Feature Vegetation Riparian Vegetation
Trigge	ar [Other: Con	nmente	
Point		TOTIEL COL	Ongoing and Active	(1) Historic Evidence (2) Reported but No Evidence (3)
			No Evidence (4)	Unknown (5)
Categ	DATA KEY:		INU EVIDENCE (4)	Olikilowii (o)
A B C D E F G H	Seepage are Watercress - Outlet (tile or Inlet (tile or of Beaver dam Manmade da	a - measure o estimate total other) - record - measure per	surface area occupied d flow status as per feat flow status as per feat ched height and jumpin perched height and jum	nk where seepage occurs I sture flow. Estimate volume <0.5 l/sec or >0.5 l/sec. Measure temperature. Ure flow. Estimate volume to be <0.5 l/sec or >0.5 l/sec. In height
H	Potential cor	tamination so	urce (storm sewer outle	et or industrial discharge pipe).
j j	Channel har	denina - indica	ited by rip-rap, armour	stone, or gabion baskets.
K	Culvert - not	e type, size an	d whether or not perch	ed. If perched record perched height and jumping height.
L	Flow transition	on point D/S -	flow condition changes	from dry to standing water, independent of segment break
М	Flow transiti	on point M/S-1	low condition changes	from minimal to substantial surface flow, independent of segment break
N				es from dry/standing water to interstitial flow, independent of segment break
0			fish sampling activities	
Q	Potential nut Dredging of			
R	Offline pond			
S	Other			

	Unconstrained	d Headwater	Drainage Feature Asse	ssment
Date (yyyy/mm/dd) 2	024041 (Project :	* Ruct (Charas Recorder/Crew:	Vs + ER
Stream Name	Stream		Site Code:	HS Point 4
Site Limits:		1774 E	Field Assessment:	Sample 1 Unconnected HDF:
ONO CHING	Downstream TWP# 197		Figid Assessment.	Sample 2 Not connected to
Direction of Assessment		And the second second second second	wnstream	Sample 3 downstream network
Flow Influence	☐ Freshet (1)	7 23 00	☐ Spale (2)	Baseflow (3)
			— Oparo (2)	
Flow Condition	☐ Dry (1)		Interstitial Flow (3)	Substantial Flow (5)
	☐ Standing Water (2)		Minimal Flow (4)	-
Feature Type	□ Defined Natural Channel		☐ No Defined Feature (4)	Swale (7)
	☐ Channelized or Constrain	ned (2)	☐ Tiled Feature (5)	Roadside Ditch (8)
	Multi-thread (3)		☐ Wetland (6)	Pond (9)
Feature Vegetation	☐ None (1) ☐ Lawn (2)	Cropped (3)	☐ Meadow (4) ☐ Scrublan	d (5) Wetland(6) Forest (7)
District Manager				
Riparian Vegetation	[] Nove (4) [] Leve (2)	Conned (2)	Meadow (4) Scrublan	d (5) Wetland (6) Forest (7)
0 - 1.5 m Left Bank		Cropped (3)	Meadow (4) Scrublan	**
Right Bank	□ None (1) □ Lawn (2)	Cropped (3)	/	
1.5 - 10 m Left Bank	□ None (1) □ Lawn (2)	Cropped (3)	Meadow (4) Scrublan	d (5) Wetland (6) Forest (7)
Right Bank	□ None (1) □ Lawn (2)	Cropped (3)	Meadow (4) Scrublan	nd (5) Wetland (6) Forest (7)
10 00 1 00 1	DN (4) D 1 (9)	C	☐ Meadow (4) ☐ Scrublar	d (E) T Welland (E) T Formet (7)
10 - 30 m Left Bank		Cropped (3)		
Right Bank	□ None (1) □ Lawn (2)	Cropped (3)	☐ Meadow (4) ☐ Scrublar	nd (5) Wetland (6) Forest (7)
Distance (m): 5		Silt Sand (0.0		Gradient (°): Obble (67-249 mm) Boulder (250 mm) Bedrock
Sub-Dominant Substr	ate (52.M3)			
Feature Roughness	< 10% Minimal (1)	SM0-4	0% Moderate (2) 40 - 60%	High (3)
Width Measurement	Can't Measure (1)	ankfull (2)	Mean Width (3) Estimate	ed (4) GIS (5) Measure/GIS (6)
Channel Dimensions	Feature Width (m):		Bankfull Depth (mr	n) 1.34
Entrenchment _T	otal: >40 m <<40 m	Left Bank	m Right Bank	m Total width m
Surface Flow Method	Perched Culvert (1)	Hydraulic	Head (2) Distance by 7	Time (3) Estimated (4)
Wetted Width (m)	Wetted Depth (mm)	Hydraulic head (n	nm) Volume (L) 3 1 2 3	Distance (m) Time (s) 1 2 3 1 2 3
1.47	132 130 156			1 1 1 7.1 6.26.5
	Adjacent None (1)	☐ Rill (2)	☐ Rill and Gully (3)	Gully (4) Outlet Scour (5)
Sediment Transport	t ☐ Speet Erosion	1 (6)	☐ Instream Bank Erosion (7)	☐ Other (8)
	Feature None (1)	Rill (2)		Gully (4) Utilet Scour (5)
	Sheet Erosion		☐ Instream Bank Erosion (7)	Other (8)
Codiment Description	Measures (mm):		THOUGHT DAIR LIVEOUT (1)	- June (o)
Sediment Deposition				
None (1) [Minimal: < 5 mm (2)N	foderate: 5-30 mm	(3) Substantial: 31-80 mm	n (4) Extensive: > 80 mm (5)

-	yyyy/mm/	dd	Uncons	strained Headwater Drainage Feature Assessment Pg. 2 of 2
ate:	20240	41 Proje	ct#: Poct	Field Assessment: Sample #1 Sample #2 Sample #3
	1000		// 1 13770	POINT FEATURE DATA
ish Bar	rier Measurer	ments. WP#		Perched Height (mm): Jumping Height (mm):
		WP#		Perched Height (mm) Jumping Height (mm):
round	water Indicati	ors 🗔	None D	Watercress Seepage Bubbling Stained Other:
ish Col	lection	Q	Absent	Present Comment:
WP#	Photo#	Code	Category	Description
			Category	
_				
\neg				
-				
-				
T	ire to	rack	dista	vbance Straight through feature
Fu	(m)	ATV	U.10	
te Bre		Feature Type		ture Modifier Flow Conditions Feature Vegetation Riparian Vegetation
				are modified Transfer of the modified Transfer
rigger		Other: Com		Astice (4) Fistorio Fridance (9) Fistorio Fridance (9)
oint Da			Ongoing and A No Evidence (5 C 5 C 5 C 5 C 5 C 5 C 5 C 5 C 5 C 5 C
tegor			INO EVIDENCE (4) Unknown (5)
DINT D	ATA KEY:			
S V C C III B M C C C F F F F F	deepage area Vatercress - e Dutlet (tile or	- measure or estimate total softher) - record flower) - record flowers perceived in - measure perceived in measure perceived in measure perceived in movement of the movement	estimate length surface area occ flow status as per hed height and justice the design of the surface (storm sewered by rip-rap, arm whether or not pow condition chairs occ (storm chairs occ occ (storm sewered by rip-rap, arm whether or not pow condition chairs occ (storm chairs occ occ (storm sewered by rip-rap, arm whether or not pow condition chairs occ (storm chairs occ occ (storm sewered by rip-rap, arm whether or not pow condition chairs occ (storm sewered by rip-rap, arm whether or not pow condition chairs occ (storm sewered by rip-rap, arm whether or not pow condition chairs occ (storm sewered by rip-rap, arm whether or not pow condition chairs occ (storm sewered by rip-rap, arm whether or not pow condition chairs occ (storm sewered by rip-rap, arm whether or not pow condition chairs occ (storm sewered by rip-rap, arm whether or not pow condition chairs occ (storm sewered by rip-rap, arm whether or not pow condition chairs occ (storm sewered by rip-rap, arm whether or not pow condition chairs occ (storm sewered by rip-rap, arm whether or not pow condition chairs occ (storm sewered by rip-rap, arm whether or not pow condition chairs occ (storm sewered by rip-rap, arm whether or not pow condition chairs occ (storm sewered by rip-rap).	er feature flow. Estimate volume <0.5 l/sec or >0.5 l/sec. Measure temperature. If feature flow. Estimate volume to be <0.5 l/sec or >0.5 l/sec. Implies the discontinuous flow of the feature flow. Estimate volume to be <0.5 l/sec. If perchapted flow of the feature flow of the feature flow of the feature flow of the feature flow. If perchapted flow of the feature flow of the featur
D	redging of ch	annel		
	redging of cha ffline pond	annel		

		ter Drainage Feature Assessment
Date (yyyy/mm/dd): 2	0 2 4 0 4 1 6 Project #: Pag	Colbarno Recorder/Crew: VS + EP
Stream Name:	Stream Code	
Site Limits:	Upstream WP# [644627	The take the team is on
	Downstream WP# 47-77 40	Doumple 1 Officonfficted ADP.
Direction of Assessment:	Upstream -	Downstream Sample 2 Not connected to downstream network
Flow Influence	Freshet (1)	Spate (2) Baseflow (3)
Flow Condition		Dasellow (3)
riow Condition	☐ Dry (1)	□ Interstitial Flow (3) □ Substantial Flow (5)
Feature Type	Standing Water (2)	Minimal Flow (4)
· catalo Type	Defined Natural Channel (1)	□ No Defined Feature (4) □ Swale (7)
	☐ Channelized or Constrained (2) ☐ Multi-thread (3)	☐ Tiled Feature (5) ☐ Roadside Ditch (8)
Feature Vegetation		☐ Wetland (6) ☐ Pond (9)
- Tatal o Vegetation	None (1) Lawn (2) Cropped (3	B)
Riparian Vegetation	/	5 5 cm2554 1
0 - 1.5 m Left Bank	□ None (1) □ Lewn (2) □ Cropped (3	A) Manday (4) C C
Right Bank	None (1) Lawn (2) Cropped (3	D Mark (1) D controlled (0) Li Porest (1)
1.5 - 10 m Left Bank		B) Meadow (4) Scrubland (5) Wetland (6) Forest (7)
	None (1) Lawn (2) Cropped (3	Vietnam (i) — ocidorand (i) — Wellship (b)
Right Bank	None (1) Lawn (2) Cropped (3	3)
10 - 30 m Left Bank	□ None (1) □ Lawn (2) □ Cropped (3	
Right Bank	None (1) Lawn (2) Cropped (3	Portest (1)
Channel Gradient (S4.	1171 Die	Torest (7)
The state of the s	M7) Visual (1) Clinometer (2)	Laser Level (3) Survey Level (4) Other (5) LIDAR (6)
Distance (m): 5	Elevation (c	cm): Gradient (°):
Dominant Substrate (S	Clay (Hard Pan) Silt Sand (0	0.06-2 mm) Gravel (22-66 mm) Cobble (67-249 mm) Boulder (250 mm) Bedrock
Sub-Dominant Substra	nte (S2.M3)	
Feature Roughness	< 10% Minimal (1) 10	- 40% Moderate (2) 40 - 60% High (3) > 60% Extreme (4)
Width Measurement	Can't Measure (1) Bankfull (2)	Mean Width (3) Estimated (4) GIS (5) Measure/GIS (6)
Channel Dimensions	Feature Width (m):	Bankfull Depth (mm)
Entrenchment To	otal: >40 m	m Right Bank m Total width m
Surface Flow Method	Perched Culvert (1) Hydrau	lic Head (2) Distance by Time (3) Estimated (4)
Wetted Width (m)	Wetted Depth (mm) Hydraulic head 1 2 3 1 2	3 1 2 2 4 0
1.8	[60 5855	3 1 2 3 1 2 3 6.95.7 &
Sediment Transport	Adjacent None (1) Rill (2) Sheet Erosion (6) Feature None (1) Rill (2) Sheet Erosion (6)	☐ Instream Bank Erosion (7) ☐ Other (8)
Sediment Deposition	Measures (mm):	
None (1)	Minimal: < 5 mm (2) Moderate: 5-30 mr	(2)
L	Minimal: < 5 mm (2) Moderate: 5-30 mr	m (3) Substantial: 31-80 mm (4) Extensive: > 80 mm (5)

	yyyy/mm/dd		Uncor	nstrained Headwater Drainage Feature Assessment Pg. 2 of 2
Date:		Proje	ct #:	Field Assessment: Sample # 1 Sample # 2 Sample # 3
				POINT FEATURE DATA
	Measurements or Indicators dion	WP#		Perched Height (mm) Jumping Height (mm): Perched Height (mm). Jumping Height (mm): Watercress Seepage Bubbling Stained Other; Present Comment:
WP# Ph	oto# C	ode	Category	Description
Ho Ho Site Break	McI	1 (An	y C	ana Flow Conditions Feature Vegetation Riparian Vegetation
rigger	Othe	r. Com	District of the last of	OWNITERAM Paint
Point Data Category			Ongoing and No Evidence	Troported but No Evidence (5)
POINT DAT	A KEY:		INO EVIDENCE	e (4) Unknown (5)
B See C Wat D Outl E Inlet F Bea G Mar H Oth I Pote J Cha K Culh L Flow M Flow N Flow O Fish P Pote Q Dree	page area - me ercress - estim let (tile or other) - ver dam - meanmade dam - mer barrier to fishential contamin viransition poir viransition poir viransition poir observed duniential nutrient sidging of channer	easure or ate total) - record - record f sure perd easure p n movem ation sou) - indicat , size and nt D/S - fi nt M/S- fi nt D-S/IF ng non-fi ource	estimate lengi surface area of diflow status as flow status as p ched height an perched height hent urce (storm sevited by rip-rap, did whether or no low condition of ow condition of - flow condition	as per feature flow. Estimate volume <0.5 l/sec or >0.5 l/sec. Measure temperature. per feature flow. Estimate volume to be <0.5 l/sec or >0.5 l/sec. Ind jumping height It and jumping height It and jumping height It are outlet or industrial discharge pipe). It armour stone, or gabion baskets. In arm
R Offli	ine pond			
S Oth	er			

Port Colborne HDFA

Visit

H2S1

	Unconstrained Headwater	Drainage Feature Assessment
Date (yyyy/mm/dd): 2	024041 G Project# Port C	Olborn Recorder/Crew: V5 + ER
Stream Name:	Stream Code:	Site Code: H251 (Upstream) Poin
Site Limits:	Upstream WP# 644 860 E Downstream WP# 415 65 0 H	Field Assessment: Sample 1 Unconnected HDF: Sample 2 Not connected to
Direction of Assessment:	Upstream Do	
Flow Influence	Freshet (1)	Spale (2) Baseflow (3)
Flow Condition	☐ Ory (1) ☑ Standing Water (2)	Interstitial Flow (3) Substantial Flow (5) Minimal Flow (4)
Feature Type	Defined Natural Channel (1)	☐ No Defined Feature (4) ☐ Swale (7)
	☐ Channelized or Constrained (2) ☐ Multi-thread (3)	☐ Tiled Feature (5) ☐ Roadside Ditch (8) ☐ Wetland (6) ☐ Pond (9)
Feature Vegetation	□ None (1) □ Lawn (2) □ Cropped (3)	Meadow (4) Scrubland (5) Wetland(6) Forest (7)
Riparian Vegetation		(Phragmites)
0 - 1.5 m Left Bank Right Bank	□ None (1) □ Lawn (2) □ Cropped (3) □ None (1) □ Lawn (2) □ Cropped (3)	Meadow (4) Scrubland (5) Wetland (6) Forest (7) Meadow (4) Scrubland (5) Wetland (6) Forest (7)
1.5 - 10 m Left Bank Right Bank	□ None (1) □ Lawn (2) □ Cropped (3) □ None (1) □ Lawn (2) □ Cropped (3)	Meadow (4)
10 - 30 m Left Bank Right Bank	None (1) ☐ Lawn (2) ☐ Cropped (3) ☐ None (1) ☐ Lawn (2) ☐ Cropped (3)	Meadow (4)
Channel Gradient (S4.)		Iser Level (3) Survey Level (4) Other (5) LiDAR (6)
Distance (m): 5	Elevation (cm)	: Gradient (°):
Dominant Substrate (S Sub-Dominant Substra		6-2 mm) Gravel (22-66 mm) Cobble (67-249 mm) Boulder (250 mm) Bedrock
Feature Roughness	< 10% Minimal (1) \(\sqrt{10 - 41}	0% Moderate (2) 40 - 60% High (3) > 60% Extreme (4)
Width Measurement	Can't Measure (1) Bankfull (2)	Mean Width (3) Estimated (4) GIS (5) Measure/GIS (6)
Channel Dimensions	Feature Width (m): 2 - 3	Bankfull Depth (mm) 53 c)
Entrenchment Tot	al: >40 m \ <40 m Left Bank	m Right Bank m Total width m
Surface Flow Method	Perched Culvert (1) Hydraulic H	lead (2) Distance by Time (3) Estimated (4)
Wetted Width (m)	Wetted Depth (mm) Hydraulic head (mr	m) Volume (L) Distance (m) Time (s) 3 1 2 3 1 2 3
1.0	5455 40 000	NO Flaw
Sediment Transport	Adjacent None (1) Rill (2) Sheet Erosion (6) Feature None (1) Rill (2) Sheet Erosion (6)	Rill and Gully (3) Gully (4) Outlet Scour (5) Instream Bank Erosion (7) Other (8) Rill and Gully (3) Gully (4) Outlet Scour (5) Instream Bank Erosion (7) Other (8)
Sediment Deposition None (1)	Measures (mm): Minimal: < 5 mm (2) Moderate: 5-30 mm (3)	Substantial: 31-80 mm (4)

	yyyy/mm	/dd	Uncons	strained Hea	dwater Drainage	Feature Assessi	ment	Pg. 2 of 2
Date:	2 9 2 -10		ect#: Port	cultour	Field Assessm	ent: Sample # 1	Sample # 2	Sample # 3
					NT FEATURE	DATA		
Ground	arrier Measure dwater Indical ollection	wp#	None D	Perched Height (Perched Height (Watercress [Present	mm). Ju	mping Height (mm): mping Height (mm): bblingStained	Other:	
WP#	Photo#	Code	Category			Description		
					A star of the			
				- 12				
				76-6	47.4.1.11		£	
					-16-17-17			
-								
								1
Site Br	eak 🔲	Feature Type		ure Modifier	Flow Conditions	Feature Vege	etation Ripar	ian Vegetation
Trigger Point [Other: Com	Ongoing and A	ativo (1)	Historic Evidence	o (2) Departed but	N = F : id==== (0)	
Catego			No Evidence (4		Unknown (5)	e (z) Reported but	t No Evidence (3)	
ABCDEFGHIJKLMNO	Seepage area Watercress - Outlet (tile or Inlet (tile or ot Beaver dam - Manmade dar Other barrier I Potential cont Channel harde Culvert - note Flow transitior Flow transitior Flow transitior	- measure or estimate total sother) - record flownessure percinal measure percinal measure percinal movements of the measure percinal movements of the measure percinal movements of the movement	estimate length of surface area occu- flow status as per own sever the design of the surface (storm sewer own sever own sever own	er feature flow. Esting	page occurs timate volume <0.5 l/sec nate volume to be <0.5 l/ discharge pipe). on baskets. I record perched height a tanding water, independe to substantial surface flo	and jumping height.	ent break	

	Unconstrained	Headwater Dra	ainage Feature Asse	ssment	
Date (yyyy/mm/dd). 2	0 2 4 0 4 1 6 Project #.	Poirt Colb	Recorder/Crew:	Vs +ER	
Stream Name:	Stream C		Site Code:	H2SI - Point Z	
Site Limits:	Upstream 1- WP# 644		Field Assessment:	Sample 1 Unconnected	HDF:
		6497	I N	Sample 2 Not conn	
Direction of Assessment	Upstream	Downstr	ream		am network
Flow Influence	☐ Freshet (1)		Spate (2)	Baseflow (3)	
Flow Condition	□ Dry (1)		Interstitial Flow (3)	☐ Substantial Flow (5)
F	Standing Water (2)		Minimal Flow (4)		
Feature Type	Defined Natural Channel (No Defined Feature (4)	Swale (7)	
	☐ Channelized or Constraine ☐ Multi-thread (3)	10 (2)	Tiled Feature (5)	Roadside Ditch (8)	
Feature Vegetation			Wetland (6)	Pond (9)	. (70%)
	☑ None (1) ☐ Lawn (2) ☐	Cropped (3)	Meadow (4) Scrubland	(5) Wetland(6) Fore:	st (7)
Riparian Vegetation			,		
0 - 1.5 m Left Bank		Cropped (3)	Meadow (4) Scrubland		
Right Bank	□ None (1) □ Lawn (2) □	Cropped (3)	Meadow (4) Scrubland	(5) Wetland (6) Fore	st (7)
1.5 - 10 m Left Bank	□ None (1) □ Lawn (2) □	Cropped (3)	Meadow (4) Scrubland	(5) Wetland (6) Fores	st (7)
Right Bank	□ None (1) □ Lawn (2) □	☐ Cropped (3) ☐	Meadow (4) Scrubland	(5) Welland (6) Fores	st (7)
10 - 30 m Left Bank	□ None (1) □ Jawn (2) □	Cropped (3)	Meadow (4) Scrubland	(5) Wetland (6) Fores	+ (7)
Right Bank		Cropped (3)	Meadow (4) Scrubland		
Channel Gradient (S4.			A & D LUNCE 1001100	Other (5) LiDAI	
Distance (m): 5		Elevation (cm) :		Gradient (°):	
Dominant Substrate (S	Clay (Hard Pan) Si		n) Gravel (22-66 mm) Cobb	ole (67-249 mm) Boulder (250 mm)	Bedrock
Sub-Dominant Substra					
Feature Roughness	< 10% Minimal (1)	10 - 40% Mo	oderate (2) 40 - 60% H	gh (3)	1)
Width Measurement	Can't Measure (1) Bank	cfull (2) Me	an Width (3) Estimated (
Channel Dimensions	Feature Width (m): 2.3		Bankfull Depth (mm)	460	
Entrenchment Tot	al: >40 m <40 m	Left Bank	m Right Bank	m Total width	m
Surface Flow Method	Perched Culvert (1)	Hydraulic Head (2	2) Distance by Time	Estimated (4)	
Wetted Width (m)	Wetted Depth (mm) Hyd	draulic head (mm) 1 2 3	Volume (L) 1 2 3	4	e (s)
1, 9	133 125 175	000 NO FIW		1 2 3 1 2	3
	Adjacent None (1)		Rill and Gully (3)	sully (4)	
Sediment Transport	Feature Sheet Erosion (6) Sheet Erosion (6) Sheet Erosion (6)	□ Rill (2) □	Instream Bank Erosion (7)	Other (8) ully (4) Outlet Scour (5)	
Codiment Descript			The state of the s	Other (8)	
Sediment Deposition	Measures (mm):				
None (1)	Minimal: < 5 mm (2) Mode	rate: 5-30 mm (3)	Substantial: 31-80 mm (4)	Extensive: > 80 mm (5)	

	sage down 14	d	Uncon	strained Headwa	ater Drainage Feature Assessment Pg. 2 of 2
Date:	yyyy/mm/d	-	ect#:		Field Assessment: Sample # 1 Sample # 2 Sample # 3
				POINT	FEATURE DATA
Groun	dwater Indicato	WP		Perched Height (mm): Perched Height (mm): Watercress Se Present Comm	Jumping Height (mm): Jumping Height (mm): eepage Bubbling Stained Other: ment:
WP#	Photo#	Code	Category		Description
		4			
dditio	nal Notes:				
- D	Chage	Calv	lect the	+ (rolled	Forker Rd located at 177 6445130F
1	unage	Coj			4756481mN
Site Bro		ature Type		ure Modifier	Flow Conditions Feature Vegetation Riparian Vegetation
rigger Point D		her: Com	Ongoing and A	Active (1)	Historic Evidence (2) Reported but No Evidence (3)
Catego			No Evidence (Unknown (5)
POINT I	DATA KEY:		O E 1/000 00 20	5 l/sec; measure temp	
3 C C C C C C C C C C C C C C C C C C C	Seepage area - Watercress - est Outlet (tile or oth Inlet (tile or othe Beaver dam - me Manmade dam - Other barrier to f Potential contam Channel hardeni Culvert - note typ Flow transition pi	measure or imate total sier) - record for record for easure percish moveme ination sour ng - indicate size and bint D/S - floopint M/S- floopint D-S/IF- rring non-fish source	estimate length surface area occ flow status as per the deight and just erched height and ent ce (storm sewer d by rip-rap, arm whether or not provided whether or	of bank where seepage upied er feature flow. Estimate of feature flow. Estimate of the second process of the second process from dry to standinges from dry/standinges	e volume <0.5 l/sec or >0.5 l/sec. Measure temperature. volume to be <0.5 l/sec or >0.5 l/sec. harge pipe).

	Unconstrained Headwater Drainage Feature Assessment	
Date (yyyy/mm/dd): 2	0 24 641 Project #: Part Colonia Recorder/Crew: Vs + EL	
Stream Name:	Stream Code: Site Code: HZS 1 Point 3	
Site Limits:	Upstream J WP# 644420 P Field Assessment: ☑ Sample 1 Unconnected HDF:	
	Downstream WP# L175 6482 Not connected to	
Direction of Assessment:		work
Flow Influence	☐ Freshet (1) ☐ Spate (2) ☐ Baseflow (3)	
Flow Condition	☐ Ory (1) ☐ Interstitial Flow (3) ☐ Substantial Flow (5) ☐ Standing Water (2) ☐ Minimal Flow (4)	
Feature Type	☐ Defined Natural Channel (1) ☐ No Defined Feature (4) ☐ Swale (7)	
	☐ Channelized or Constrained (2) ☐ Ifled Feature (5) ☐ Roadside Ditch (8)	
	Multi-thread (3) Wetland (6) Pond (9)	
Feature Vegetation	□ None (1) □ Lawn (2) □ Cropped (3) □ Meadow (4) □ Scrubland (5) ☑ Wetland(6) □ Forest (7)	
Riparian Vegetation		
0 - 1.5 m Left Bank Right Bank	None (1) ☐ Lawn (2) ☐ Cropped (3) ☐ Meadow (4) ☐ Scrubland (5) ☐ Wetland (6) ☐ Forest (7) ☐ None (1) ☐ Lawn (2) ☐ Cropped (3) ☐ Meadow (4) ☐ Scrubland (5) ☐ Wetland (6) ☐ Forest (7)	
4 E 40 m LoB Dook	□ None (1) □ Lawn (2) □ Cropped (3) □ Meadow (4) □ Scrubland (5) □ Wetland (6) □ Forest (7)	
1.5 - 10 m Left Bank Right Bank	Thoracter (i)	
10 - 30 m Left Bank	□ None (1) □ Lawn (2) □ Cropped (3) □ Meadow (4) □ Scrubland (5) □ Wetland (6) □ Forest (7)	
Right Bank		
Channel Gradient (S4.)	.M7) Visual (1) Clinometer (2) Laser Level (3) Survey Level (4) Other (5) LiDAR (6)	
Distance (m): 5	Elevation (cm): Gradient (°):	
Dominant Substrate (S.	Clay (Hard Pan) Silt Sand (0.06-2 mm) Gravel (22-66 mm) Cobble (67-249 mm) Boulder (250 mm) Bedr	ock
Sub-Dominant Substrat		
Facture Poughness	< 10% Minimal (1) 10 - 40% Moderate (2) 40 - 60% High (3) 560% Extreme (4)	
Feature Roughness Width Measurement	Can't Measure (1) Bankfull (2) Mean Width (3) Estimated (4) GIS (5) Measure/GIS (6)	
Channel Dimensions	Feature Width (m): - 99 Not safe to measure Bankfull Depth (mm) 680	
Entrenchment Tot	otal: >40 m C 40 m Left Bank m Right Bank m Total width m	n
Surface Flow Method	Perched Culvert (1) Hydraulic Head (2) Distance by Time (3) Estimated (4)	
Wetted Width (m)	Wetted Depth (mm) Hydraulic head (mm) Volume (L) Distance (m) Time (s) 1 2 3 1 2 3 1 2 3 1 2	3
-99	MO 80 190 COX+ mogrape	
not safe to measure	Adjacent None (1) Rill (2) Rill and Gully (3) Gully (4) Outlet Scour (5)	
Sediment Transport	☐ Sheet Erosion (6) ☐ Instream Bank Erosion (7) ☐ Other (8)	
	Feature None (1) Rill (2) Rill and Gully (3) Gully (4) Outlet Scour (5) Sheet Erosion (6) Instream Bank Erosion (7) Other (8)	
Sediment Deposition	Measures (mm):	
. /	Minimal: < 5 mm (2)	

	yyyy/mm/	MA	Uncon	strained Headwater Drainage Feature Assessment Pg. 2 of 2
Date:	20240			+ (ulbana Field Assessment: Sample #1 Sample #2 Sample #3
			101	POINT FEATURE DATA
Ground	arrier Measurer fwater Indicat ollection	WP#	None	Perched Height (mm): Jumping Height (mm): Perched Height (mm): Jumping Height (mm): Watercress Seepage Bubbling Stained Other: Present Comment:
WP#	Photo#	Code	Category	Description
Additio	onal Notes:			
Site Bro		Feature Typ Other: Corr	ments	ture Modifier Flow Conditions Feature Vegetation Riparian Vegetation
Point D Catego	ry		Ongoing and A No Evidence (, , , , , , , , , , , , , , , , , , , ,
A SB	Seepage area Watercress - e Outlet (tile or of Inlet (tile or oth Beaver dam - I Manmade dam Other barrier to Potential conta Channel harde Culvert - note t Flow transition Flow transition	- measure or stimate total other) - record finesure percontant measure percontant measure percontant measure point movement of the measure point movement of the movement of t	estimate length surface area occ flow status as per hed height and juerched height and ent roe (storm sewered by rip-rap, arm whether or not pow condition chairs occ occ in the sewere of the sewere occ occ in the sewere occ occ occ occ occ occ occ occ occ oc	per feature flow. Estimate volume <0.5 l/sec or >0.5 l/sec. Measure temperature. If reature flow. Estimate volume to be <0.5 l/sec or >0.5 l/sec. Ijumping height If outlet or industrial discharge pipe). If outlet or gabion baskets. If perched record perched height and jumping height. If perched record perched height and jumping height and

	Unc	onstraine	d Headwater	Drainage	e Feature Asso	essment	
Date (yyyy/mm/dd): 2	02404	Project Stream			Recorder/Crew:	VS + ED H251 (c	lownstram Point
Site Limits:	Upstream Downstream	WP# [644	367	E N	Field Assessment:	Sample 1	Unconnected HDF:
Direction of Assessment:		☐ Upstream	m 🗆 Do	wnstream		☐ Sample 3	downstream network
Flow Influence	☐ Freshet (1)		☐ Spate	(2)	Ba.	seflow (3)
Flow Condition	☐ Dry (1) ☐ Standing	Water (2)		1	itial Flow (3) al Flow (4)	☐ Su	bstantial Flow (5)
Feature Type	Defined I	Natural Channe zed or Constra		☐ No De	fined Feature (4) Feature (5)	☐ Ros	ale (7) adside Ditch (8) nd (9)
Feature Vegetation	None (1)	1 Lawn (2)	Cropped (3)		ow (4) Scrublan		
Riparian Vegetation							
0 - 1.5 m Left Bank Right Bank	□ None (1) □ None (1) □	Lawn (2)	☐ Cropped (3) ☐ Cropped (3)		ow (4) Scrublan	1 /	.,
1.5 - 10 m Left Bank Right Bank	None (1)	Lawn (2) Lawn (2)	☐ Cropped (3) ☐ Cropped (3)		ow (4) Scrublan ow (4) Scrublan		
10 - 30 m Left Bank Right Bank	□ None (1) □ None (1) □		☐ Cropped (3) ☐ Cropped (3)		ow (4) Scrublan		
Channel Gradient (S4.	M7) Visual (1	1) Clinon	neter (2) La	ser Level (3)	Survey Level (4)	LiDAR (6)
Distance (m): 5		_	Elevation (cm)	:		Gradient ((0): 2
Dominant Substrate (S	Clay (Ha	ard Pan)	Silt Sand (0.06	i-2 mm) Gr	avel (22-66 mm) Co	bble (67-249 mm) B	oulder (250 mm) Bedrock
Sub-Dominant Substra	te (S2.M3)						
Feature Roughness	[V/<1	0% Minimal (1)	10 - 40)% Moderate	(2) 40 - 60%	High (3)	60% Extreme (4)
Width Measurement	Can't Measure		ankfull (2)	Mean Widt			Measure/GIS (6)
Channel Dimensions	Feature Width (m):	3			Bankfull Depth (mm	390	
Entrenchment To	tal: >40 m	<40 m	Left Bank	m	Right Bank	m Total	width m
Surface Flow Method	Perched Culv	ert (1)	Hydraulic H	Head (2)	Distance by Tir	me (3)	Estimated (4)
Wetted Width (m)	Wetted Depth 1 2	1 (mm) 3	Hydraulic head (mr 1 2	n) V 3 1	olume (L) 2 3	Distance (m)	Time (s) 3 1 2 3
15	95 150	90	A	9			
Sediment Transport	Feature 🖂	None (1) Sheet Erosion None (1) Sheet Erosion	☐ Rill (2)	☐ Rill and	m Bank Erosion (7)	Gully (4)	utlet Scour (5) her (8) utlet Scour (5) ther (8)
Sediment Deposition	Measures Minimal: < 5 mm (2		oderate: 5-30 mm (3)	bstantial: 31-80 mm (4	4) Extensive	: > 80 mm (5)

	yyyy/mm/	dd	Uncons	trained Headwater Drainage Feature Assessment Pg. 2 of 2
Date:		Projec		Field Assessment: Sample # 1 Sample # 2 Sample # 3
				POINT FEATURE DATA
Ground	mier Measurer water Indicat	WP#	None UV	Perched Height (mm) Jumping Height (mm): Perched Height (mm): Jumping Height (mm): Vatercress Seepage Bubbling Stained Other: Present Comment:
WP#	Photo#	Code	Category	Description
		1		
Site Br	eak	Feature Type Other: Com	Featu	nt a + Confluence W Linu Creek Drain ure Modifier Flow Conditions Feature Vegetation Riparian Vegetation
Point I	Data		Ongoing and A	(-)
	DATA KEY:		No Evidence (4	Unknown (5)
A B C D	Spring/upwell Seepage are: Watercress - Outlet (tile or	a - measure or estimate total s other) - record ther) - record fl	estimate length of surface area occi- flow status as per ow status as per	5 l/sec; measure temp of bank where seepage occurs upied er feature flow. Estimate volume <0.5 l/sec or >0.5 l/sec. Measure temperature. feature flow. Estimate volume to be <0.5 l/sec or >0.5 l/sec. umping height d jumping height

Port Colborne HDFA

Visit 1

H2S3

	Unconstrained Headwater	r Drainage Feature Assessment
Date (yyyy/mm/dd): 2 (Stream Name: Site Limits: Direction of Assessment:	Upstream 7 WP# 645 220 Downstream WP# 415 6 856	Colbaine Recorder/Crew: VS + ER Site Code: H2S3 (Upstream) Point WSample 1 Unconnected HDF: 1 Sample 2 Not connected to ownstream of downstream network
Flow Influence	☐ Freshet (1) ☐ Dry (1) ☐ Standing Water (2)	□ Spate (2) □ Baseflow (3) □ Interstitial Flow (3) □ Substantial Flow (5) □ Minimal Flow (4)
Feature Type	Defined Natural Channel (1) Channelized or Constrained (2) Multi-thread (3)	□ No Defined Feature (4) □ Swale (7) □ Tiled Feature (5) □ Roadside Ditch (8) □ Wetland (6) □ Pond (9)
Feature Vegetation Riparian Vegetation	□ None (1) □ Lawn (2) □ Cropped (3)	☐ Meadow (4) ☐ Scrubland (5) ☐ Wetland(6) ☐ Forest (7)
0 - 1.5 m Left Bank Right Bank 1.5 - 10 m Left Bank	None (1) □ Lawn (2) □ Cropped (3) □ None (1) □ Lawn (2) □ Cropped (3) □ None (1) □ Lawn (2) □ Cropped (3)	☐ Meadow (4) ☐ Scrubland (5) ☐ Wetland (6) ☐ Forest (7) ☐ Meadow (4) ☐ Scrubland (5) ☐ Wetland (6) ☐ Forest (7) ☐ Meadow (4) ☐ Scrubland (5) ☐ Wetland (6) ☐ Forest (7)
Right Bank 10 - 30 m Left Bank Right Bank		☐ Meadow (4) ☐ Scrubland (5) ☐ Wetland (6) ☐ Forest (7) ☐ Meadow (4) ☐ Scrubland (5) ☐ Wetland (6) ☐ Forest (7) ☐ Meadow (4) ☐ Scrubland (5) ☐ Wetland (6) ☐ Forest (7)
Channel Gradient (S4 Distance (m):	Elevation (cm	
Dominant Substrate (Sub-Dominant Substrate		O6-2 mm Gravel (22-66 mm Cobble (67-249 mm Boulder (250 mm Bedrock
Feature Roughness Width Measurement	Can't Measure (1) Bankfull (2)	40% Moderate (2)
Channel Dimensions Entrenchment	Feature Width (m): otal: >40 m	Bankfull Depth (mm) m Right Bank m Total width m
Surface Flow Method Wetted Width (m)	Perched Culvert (1) Wetted Depth (mm) 1 2 3 1 2	
4.45	45 50 51	Rill and Gully (3) Gully (4) Outlet Scour (5)
Sediment Transport		☐ Instream Bank Erosion (7) ☐ Other (8) ☐ Rill and Gully (3) ☐ Gully (4) ☐ Outlet Scour (5) ☐ Instream Bank Erosion (7) ☐ Other (8)
Sediment Deposition None (1)	Measures (mm):	(3) Substantial: 31-80 mm (4) Extensive: > 80 mm (5)

			Uncone	trained Headwater Drainage Feature Assessment Pg. 2 of 2
ate:	202 u 0			Colog ne Field Assessment: Sample # 1 Sample # 2 Sample # 3
10.	-01-140	1116,100	TON	POINT FEATURE DATA
Tab Da	mina Managaria	ANDA		
ish Ba	rrier Measurer	nents: WP# WP#		Perched Height (mm): Jumping Height (mm): Jumping Height (mm):
raund	water Indicat			/atercress Seepage Bubbling Stained Other.
	water indicat			resent Comment:
				SOLITION SOLITION
WP#	Photo#	Code	Category	Description
			Juliagory	y .
_				
	_			
			- 1	
ite Br	reak	Feature Typ		ure Modifier Flow Conditions Feature Vegetation Riparian Vegetation
rigge		Other: Con	Annual Control of the last of	tream Point
oint			Ongoing and A	
ateg			No Evidence (4) Unknown (5)
OINT	DATA KEY:			
A	Spring/upwe	ling - estimate	<0.5 Vsec or >0.5	5 l/sec; measure temp
3	Seepage are	a - measure o	r estimate length	of bank where seepage occurs
			surface area occ	upied er feature flow. Estimate volume <0.5 l/sec or >0.5 l/sec. Measure temperature.
			and the same of th	relature flow. Estimate volume to be <0.5 l/sec or >0.5 l/sec.
	Beaver dam	- measure per	ched height and j	umping height
3				nd jumping height
1		to fish moven		r outlet or industrial discharge pipe).
				nour stone, or gabion baskets.
(Culvert - not	e type, size an	nd whether or not	perched. If perched record perched height and jumping height.
-				anges from dry to standing water, independent of segment break
M N	Flow transition	on point M/S-1 on point D-S/IF	F- flow condition cha	nges from minimal to substantial surface flow, independent of segment break hanges from dry/standing water to interstitial flow, independent of segment break
0			fish sampling activ	
0	Potential nut	rient source		
2	Offline pond	channel		
R S	Offline pond Other			

	Unconstrained Headwater	Drainage Feature Assessment
Date (yyyy/mm/dd): 2	0240411 Project# Port	Calbarre Recorder/Crew: VS + ER
Stream Name:	Stream Code:	Sile Code: 1-1253 (Downstream) Point
Site Limits:	Upstream 7 WP# 10950 23 Downstream WP# 1975 6 9 9 9 9	Field Assessment: Sample 1 Unconnected HDF: 2
Direction of Assessment	- /	ownstream Sample 3 downstream network
Flow Influence	Freshet (1)	□ Spale (2) □ Baseflow (3)
Flow Condition	☐ Dry (1) ☑ Standing Water (2)	☐ Interstitial Flow (3) ☐ Substantial Flow (5) ☐ Minimal Flow (4)
Feature Type	☐ Defined Natural Channel (1) ☐ Channelized or Constrained (2) ☐ Multi-thread (3)	No Defined Feature (4) Tiled Feature (5) Wetland (6) Swale (7) Roadside Ditch (8) Pond (9)
Feature Vegetation	□ None (1) □ Lawn (2) □ Cropped (3)	☐ Meadow (4) ☐ Scrubland (5) ☐ Wetland(6) ☐ Forest (7)
Riparian Vegetation		Both (Phras + Willow Sp.)
0 - 1.5 m Left Bank Right Bank	□ None (1) □ Lawn (2) □ Cropped (3) □ None (1) □ Lawn (2) □ Cropped (3)	Meadow (4) Scrubland (5)
1.5 - 10 m Left Bank Right Bank	None (1) □ Lawn (2) □ Cropped (3) □ None (1) □ Lawn (2) □ ✓ Cropped (3)	☐ Meadow (4) ☐ Scrubland (5) ☐ Wetland (6) ☐ Forest (7) ☐ Meadow (4) ☐ Scrubland (5) ☐ Wetland (6) ☐ Forest (7)
10 - 30 m Left Bank Right Bank	□ None (1) □ Lawn (2) □ Cropped (3) □ None (1) □ Lawn (2) □ Cropped (3)	☐ Meadow (4) ☐ Scrubland (5) ☐ Wetland (6) ☐ Forest (7) ☐ Meadow (4) ☐ Scrubland (5) ☐ Wetland (6) ☐ Forest (7)
Distance (m): 5 Dominant Substrate (S Sub-Dominant Substra	/ _	
Feature Roughness	< 10% Minimal (1) Can't Measure (1) Bankfull (2)	0% Moderate (2) 40 - 60% High (3) > 60% Extreme (4) Mean Width (3) Estimated (4) GIS (5) Measure/GIS (6)
Width Measurement Channel Dimensions		Bankfull Depth (mm)
F-t	otal: >40 m	m Right Bank m Total width m
Surface Flow Method	Perched Culvert (1) Hydraulic	Head (2) Distance by Time (3) Estimated (4)
Wetted Width (m)	Wetted Depth (mm) Hydraulic head (m	
1.5	10 8 10 0 0 0	
	Adjacent ☑None (1) ☐ Rill (2)	☐ Rill and Gully (3) ☐ Gully (4) ☐ Outlet Scour (5)
Sediment Transport	Feature None (1) Rill (2) Sheet Erosion (6)	☐ Instream Bank Erosion (7) ☐ Other (8) ☐ Rill and Gully (3) ☐ Gully (4) ☐ Outlet Scour (5) ☐ Instream Bank Erosion (7) ☐ Other (8)
Sediment Deposition	Measures (mm):	
None (1)	Minimal: < 5 mm (2) Moderate: 5-30 mm (3	3) Substantial: 31-80 mm (4) Extensive: > 80 mm (5)

yyyy/mm/	dd Uncons	strained Headwater Drainage Feature Assessment Pg. 2 of 2
late: 20 2 40	4 1 6 Project #: Port	Colborn Field Assessment: Sample # 1 Sample # 2 Sample # 3
	4	POINT FEATURE DATA
ish Barrier Measurer , Groundwater Indication	WP# None V	Perched Height (mm): Jumping Height (mm): Perched Height (mm): Jumping Height (mm): Stained Other: Present Comment:
WP# Photo #	Code Category	Description
/	Feature Type Feature Other: Comments Ongoing and A	
ategory	No Evidence (4	Unknown (5)
Seepage area Watercress - (Outlet (tile or of Inlet (tile or of Beaver dam - Manmade dan Other barrier t Potential cont	her) - record flow status as per measure perched height and ju n - measure perched height an o fish movement amination source (storm sewer ening - indicated by rip-rap, arm	of bank where seepage occurs upied er feature flow. Estimate volume <0.5 l/sec or >0.5 l/sec. Measure temperature. feature flow. Estimate volume to be <0.5 l/sec or >0.5 l/sec. umping height d jumping height outlet or industrial discharge pipe).

Port Colborne HDFA

Visit 1

H252

	Unconstrained Headwater D	Orainage Feature Assessment
Date (yyyy/mm/dd): 2 Stream Name: Site Limits:	0240414 Project #: Port Co Stream Code.	Site Code: Site Code: VS ER
Direction of Assessment	Downstream WP# U75698 Down	nstream Sample 3 downstream network
Flow Influence	Freshet (1)	☐ Spate (2) ☐ Baseflow (3)
Flow Condition	☐ Dry (1) [☐ Interstitial Flow (3) ☐ Substantial Flow (5) ☐ Minimal Flow (4)
Feature Type	☐ Defined Natural Channel (1) ☐ Channelized or Constrained (2) ☐ Multi-thread (3) ☐	No Defined Feature (4) Swale (7) Roadside Ditch (8) Wetland (6) Pond (9)
Feature Vegetation	□ None (1) □ Lawn (2) □ Cropped (3) □	☐ Meadow (4) ☐ Scrubland (5) ☐ Wetland(6) ☐ Forest (7)
Riparian Vegetation		
0 - 1.5 m Left Bank Right Bank	□ None (1) □ Lawn (2) □ Cropped (3) □ □ None (1) □ Lawn (2) □ Cropped (3) □	☐ Meadow (4) ☐ Scrubland (5) ☐ Wetland (6) ☐ Forest (7) ☐ Meadow (4) ☐ Scrubland (5) ☐ Wetland (6) ☐ Forest (7)
1.5 - 10 m Left Bank Right Bank	□ None (1) □ Lawn (2) □ Cropped (3) □ □ None (1) □ Lawn (2) □ Cropped (3) □	✓ Meadow (4) ✓ Scrubland (5) ✓ Wetland (6) ✓ Forest (7) ✓ Meadow (4) ✓ Scrubland (5) ✓ Wetland (6) ✓ Forest (7)
10 - 30 m Left Bank Right Bank		Meadow (4) Scrubland (5) Wetland (6) Forest (7) Meadow (4) Scrubland (5) Wetland (6) Forest (7)
Channel Gradient (S4.	.M7) Visual (1) Clinometer (2) Laser	Level (3) Survey Level (4) Other (5) LiDAR (6)
Distance (m): 5	Elevation (cm) :	Gradient (°):
Dominant Substrate (S	Clay (Hard Pan) Silt Sand (0.06-2 l	mm) Gravel (22-66 mm) Cobble (67-249 mm) Boulder (250 mm) Bedrock
Sub-Dominant Substra	ite (S2.M3)	
Feature Roughness Width Measurement	- (0/0 (Minimized (1))	Moderate (2)
Channel Dimensions	Feature Width (m):	Bankfull Depth (mm)
Entrenchment To	otal: >40 m <a><40 m Left Bank	m Right Bank m Total width m
Surface Flow Method	Perched Culvert (1) Hydraulic Hear	d (2) Distance by Time (3) Estimated (4)
Wetted Width (m)	Wetted Depth (mm) Hydraulic head (mm) 1 2 3 1 2 3	Volume (L) Distance (m) Time (s) 1 2 3 1 2 3 1 2 3
21.3	45 50 60 0 0 0	
	Adjacent None (1) Rill (2)	☐ Rill and Gully (3) ☐ Gully (4) ☐ Outlet Scour (5)
Sediment Transport	☐ Sheet Erosion (6)	☐ Instream Bank Erosion (7) ☐ Other (8)
in the second	1 001010	☐ Rill and Gully (3) ☐ Gully (4) ☐ Outlet Scour (5) ☐ Instream Bank Erosion (7) ☐ Other (8)
Sediment Deposition	Measures (mm):	
None (1)	Minimal: < 5 mm (2) Moderate: 5-30 mm (3)	Substantial: 31-80 mm (4) Extensive: > 80 mm (5)

*

	yyyylmmic			ined Headwater Drainage Feature Assessment Pg. 2 of 2
Date:	20240	4 Le Proje	d# Port Co	
				POINT FEATURE DATA
Ground	arrier Measuren Iwater Indicate	WP#	Perc	ched Height (mm): Jumping Height (mm): Sched Height (mm): Jumping Height (mm): Sched Height (mm): Stained Stained Stained Comment: Stained Sta
WP#	Photo#	Code	Category	Description
		80 pm		
(18stream	n feo	ture fed	by phragmites patch
Site Br	reak 🔯	Feature Typ	e Feature	Modifier Flow Conditions Feature Vegetation Riparian Vegetation
Trigge	er 🗆	Other: Con	nments	
Point			Ongoing and Activ	re (1) Historic Evidence (2) Reported but No Evidence (3)
Categ	ory		No Evidence (4)	Unknown (5)
POINT	DATA KEY:			
A B C D E F G H	Seepage are: Watercress - Outlet (tile or or Inlet (tile or or Beaver dam - Manmade da Other barrier	a - measure o estimate total other) - record ther) - record measure per m - measure to fish moven	surface area occupied flow status as per fea flow status as per fea ched height and jump perched height and junent	ank where seepage occurs and but cature flow. Estimate volume <0.5 l/sec or >0.5 l/sec. Measure temperature. ture flow. Estimate volume to be <0.5 l/sec or >0.5 l/sec. ing height
J K L M N O P	Channel hard Culvert - note Flow transitio Flow transitio Flow transitio	lening - indica type, size an n point D/S - n point M/S- t n point D-S/IF d during non-	ted by rip-rap, armout d whether or not perc flow condition change low condition change	r stone, or gabion baskets. thed. If perched record perched height and jumping height. Is from dry to standing water, independent of segment break Is from minimal to substantial surface flow, independent of segment break ges from dry/standing water to interstitial flow, independent of segment break
QRS	Dredging of o Offline pond Other			

	Unconstrained Headwater	Drainage Feature Assessment
Date (yyyy/mm/dd); 2k	024041 GProject #: Po(+)	Color no Recorder/Crew: V5 - 1 E12
Stream Name:	Stream Code:	Site Code: HZSZ Point Z
Site Limits:	Upstream / WP#	Field Assessment: Sample 1 Unconnected HDF:
	Downstream WP#	Sample 2 Not connected to
Direction of Assessment:	☐ Upstream ☐ Do	wnstream Sample 3 downstream network
Flow Influence	Freshet (1)	Spate (2) Baseflow (3)
Flow Condition	Dry (1) Standing Water (2)	☐ Interstitial Flow (3) ☐ Substantial Flow (5) ☐ Minimal Flow (4)
Feature Type	Defined Natural Channel (1)	No Defined Feature (4) Swale (7)
Toutare Type	☐ Channelized or Constrained (2)	☐ Tiled Feature (5) ☐ Roadside Ditch (8)
	☐ Multi-thread (3)	☐ Wetland (6) ☐ Pond (9)
Feature Vegetation	□ None (1) □ Lawn (2) □ Cropped (3)	☐ Meadow (4) ☐ Scrubland (5) ☐ Wetland(6) ☐ Forest (7)
Riparian Vegetation		
0 - 1.5 m Left Bank	□ None (1) □ Lawn (2) □ Cropped (3)	☐ Meadow (4) ☐ Scrubland (5) ☐ Wetland (6) ☐ Forest (7)
Right Bank	□ None (1) □ Lawn (2) □ Cropped (3)	☐ Meadow (4) ☐ Scrubland (5) ☐ Wetland (6) ☐ Forest (7)
1.5 - 10 m Left Bank	□ None (1) □ Lawn (2) □ Cropped (3)	☐ Meadow (4) ☐ Scrubland (5) ☐ Wetland (6) ☐ Forest (7)
Right Bank	□ None (1) □ Lawn (2) □ Cropped (3)	☐ Meadow (4) ☐ Scrubland (5) ☐ Wetland (6) ☐ Forest (7)
10 - 30 m Left Bank	□ None (1) □ Lawn (2) □ Cropped (3)	Meadow (4) ☐ Scrubland (5) ☐ Wetland (6) ☐ Forest (7)
Right Bank	□ None (1) □ Lawn (2) □ Cropped (3)	Meadow (4) ☐ Scrubland (5) ☐ Wetland (6) ☐ Forest (7)
Channel Gradient (S4.	M7) Visual (1) Clinometer (2) La:	ser Level (3) Survey Level (4) Other (5) LiDAR (6)
Distance (m): 5	Elevation (cm)	:- Gradient (°):
Dominant Substrate (S	Clay (Hard Pan) Silt Sand (0.06	6-2 mm) Gravel (22-66 mm) Cobble (67-249 mm) Boulder (250 mm) Bedrock
Sub-Dominant Substra		
Fortuna Davishmana	< 10% Minimal (1) 10 - 40	0% Moderate (2) 40 - 60% High (3) > 60% Extreme (4)
Feature Roughness Width Measurement	Can't Measure (1) Bankfull (2)	Mean Width (3) Estimated (4) GIS (5) Measure/GIS (6)
Channel Dimensions	Feature Width (m):	Bankfull Depth (mm)
Entrenchment To	tal: >40 m <40 m Left Bank	m Right Bank m Total width m
Surface Flow Method	Perched Culvert (1) Hydraulic H	
Wetted Width (m)	Wetted Depth (mm) Hydraulic head (mr	m) Volume (L) Distance (m) Time (s) 3 1 2 3 1 2 3 1 2 3
5	20 30 25 000	
	Adjacent Wone (1) RH (2)	☐ Rill and Gully (3) ☐ Gully (4) ☐ Outlet Scour (5)
Sediment Transport	Sheet Erosion (6)	☐ Instream Bank Erosion (7) ☐ Other (8)
	Feature None (1) Rill (2)	☐ Rill and Gully (3) ☐ Gully (4) ☐ Outlet Scour (5)
	Sheet Erosion (6)	☐ Instream Bank Erosion (7) ☐ Other (8)
Sediment Deposition	Measures (mm):	
None (1)	Minimal: < 5 mm (2)	Substantial: 31-80 mm (4)

	yyyy/mm/dd					rainage Fe	ature Assessr	nent Sample # 2	Pg. 2 of 2
Date:	2012/10/4	Proje	d#: [POCT	Colborne				Campio a c	
	ner Measureme water Indicator lection	WP#	None Absent	Perched Height (Perched Height (Watercress	mm):		g Height (mm):	Other:	
WP#	Photo#	Code	Category				Description		
					78.7		1 1 1		
Additiona	Il Notes:								
Site Break	k ∏ Fea	ature Type	Feat	ure Modifier	Flow (Conditions	Feature Vege	etation Ripari	an Vegetation
Trigger		ner: Comn							•
Point Dat			Ongoing and A			c Evidence (2) Reported but	No Evidence (3)	
Category POINT DA			No Evidence (4	1)	Unkno	wn (5)			
B SeC W.D Out Into Be G Ma H Oth I Po Ch K Cu L Flow M Flow N Flow O Fis P Poil Q Dre	pepage area - natercress - esti- utlet (tile or other, eaver dam - me anmade dam - her barrier to fix stential contami- nannel hardenin alvert - note type ow transition po ow transition po	neasure or e mate total si er) - record flo asure perch measure per sh moverner nation source g - indicated e, size and v int D/S - flov int M/S- flow int D-S/IF- flor ing non-fish source	estimate length ourface area occilow status as per we status as per ed height and jurched height and the (storm sewer d by rip-rap, armyhether or not pw condition charvordition charvor	er feature flow. Est feature flow. Estin imping height d jumping height outlet or industrial four stone, or gabi- terched. If perched- inges from dry to st iges from dry/sta langes from dry/sta	page occurs timate volume to l discharge pip on baskets. I record perch tanding water, to substantial	e). ed height and juindependent of surface flow, in	umping height.	ent break	

	Unconstrained Headwate	r Drainage Feature Assessment
Date (yyyy/mm/dd): 2	014041 GProject#: Part	Collegene Recorder/Crew: Vs +ER
Stream Name:	Stream Code:	Site Code: H252 Point 3
Site Limits:	Upstream WP# [gH(8%)	Field Assessment: Sample 1 Unconnected HDF:
	Downstream WP# 1756666	Sample 2 Not connected to
Direction of Assessment		ownstream Sample 3 downstream network
Flow Influence	☐ Freshet (1)	Spale (2) Baseflow (3)
	**	
Flow Condition	□ <i>p</i> (1)	☐ Interstitial Flow (3) ☐ Substantial Flow (5)
	Standing Water (2)	Minimal Flow (4)
Feature Type	Defined Natural Channel (1)	□ No Defined Feature (4) □ Swale (7)
	☐ Channelized or Constrained (2)	☐ Tiled Feature (5) ☐ Roadside Ditch (8)
	Multi-thread (3)	☐ Wetland (6) ☐ Pond (9)
Feature Vegetation	□ None (1) □ Lawn (2) □ Cropped (3)	☐ Meadow (4) ☐ Scrubland (5) ☐ Welland(6) ☐ Forest (7)
Riparian Vegetation		
0 - 1.5 m Left Bank	☐ None (1) ☐ Lawn (2) ☐ Cropped (3)	☐ Meadow (4) ☐ Scrubland (5) ☐ Wetland (6) ☐ Forest (7)
Right Bank	□ None (1) □ Lawn (2) □ Cropped (3)	☐ Meadow (4) ☐ Scrubland (5) ☐ Wetland (6) ☐ Forest (7)
1.5 - 10 m Left Bank	□ None (1) □ Lawn (2) □ Cropped (3)	☐ Meadow (4) ☐ Scrubland (5) ☐ Wetland (6) ☐ Forest (7)
Right Bank	□ None (1) □ Lawn (2) □ Cropped (3)	☐ Meadow (4) ☐ Scrubland (5) ☐ Wetland (6) ☐ Forest (7)
10 - 30 m Left Bank	None (1) Lawn (2) Cropped (3)	☐ Meadow (4) ☐ Scrubland (5) ☐ Wetland (6) ☐ Forest (7)
Right Bank	□ None (1) □ Lawn (2) □ Cropped (3)	☐ Meadow (4) ☐ Scrubland (5) ☐ Wetland (6) ☐ Forest (7)
Channel Gradient (S4	.M7) Visual (1) Clinometer (2) L	aser Level (3) Survey Level (4) Other (5) LiDAR (6)
Distance (m):	Elevation (cm	Gradient (°):
Dominant Substrate (S		06-2 mm) Gravel (22-66 mm) Cobble (67-249 mm) Boulder (250 mm) Bedrock
Sub-Dominant Substra	ate (S2.M3)	
Feature Roughness	< 10% Minimal (1) 10 - 4	40% Moderate (2) 40 - 60% High (3) > 60% Extreme (4)
Width Measurement	Can't Measure (1) Bankfull (2)	Mean Width (3) Estimated (4) GIS (5) Measure/GIS (6)
Channel Dimensions	Feature Width (m):	Bankfull Depth (mm) 3.55
Entrenchment To	otal: >40 m 2<40 m Left Bank	m Right Bank m Total width m
Surface Flow Method	Perched Culvert (1) Hydraulic	Head (2) Distance by Time (3) Estimated (4)
Wetted Width (m)	Wetted Depth (mm) Hydraulic head (n	
1.9	1 2 3 1 2	3 1 2 3 1 2 3
	Adjacent None (1) Rill (2)	☐ Rill and Gully (3) ☐ Gully (4) ☐ Outlet Scour (5)
Sediment Transport	Feature Sheet Erosion (6) Feature None (1) Rill (2)	☐ Instream Bank Erosion (7) ☐ Other (8) ☐ Rill and Gully (3) ☐ Gully (4) ☐ Outlet Scour (5) ☐ Instream Bank Erosion (7) ☐ Other (8)
	☐ Sheet Erosion (6)	☐ Instream Bank Erosion (7) ☐ Other (8)
Sediment Deposition	Measures (mm):	
None (1)	Minimal: < 5 mm (2) Moderate: 5-30 mm	(3) Substantial: 31-80 mm (4) Extensive: > 80 mm (5)

POINT FEATURE DATA sh Barner Measurements. WP# Perched Height (mm) Jumping Height (mm) habring delight (mm). Perched Height (mm) Jumping Height (mm) sh Collection Absent Present Comment. VP# Photo # Code Category Description Description Description Description		
POINT FEATURE DATA Sample # 1		
arian Vegetation		
ar		

	Unconstrained Headwater Drainage Feature Assessment
Date (yyyy/mm/dd): 2	0 Z 4 0 4 1 6 Project #: Part Colburne Recorder/Crew: VS + ER
Stream Name:	Stream Code: Site Code: H2S2 (Downtream) Point
Site Limits:	Upstream WP# Field Assessment: Sample 1 Unconnected HDF: L
	Downstream WP# Sample 2 Not connected to
Direction of Assessment	Upstream Downstream Sample 3 downstream networ
Flow Influence	☐ Freshet (1) ☐ Spate (2) ☐ Baseflow (3)
Flow Condition	□ Dry (1) □ Interstitial Flow (3) □ Substantial Flow (5) □ Standing Water (2) □ Minimal Flow (4)
Feature Type	Defined Natural Channel (1) No Defined Feature (4) Swale (7)
	Channelized or Constrained (2) Tiled Feature (5) Roadside Ditch (8)
	Multi-thread (3) Wetland (6) Pond (9)
Feature Vegetation	None (1) Lawn (2) Cropped (3) Meadow (4) Scrubland (5) Wetland(6) Forest (7)
Riparian Vegetation	Phrsiqi
0 - 1.5 m Left Bank	□ None (1) □ Lawn (2) □ Cropped (3) □ Meadow (4) □ Scrubland (5) □ Wetland (6) □ Forest (7)
Right Bank	□ None (1) □ Lawn (2) □ Cropped (3) □ Meadow (4) □ Scrubland (5) □ Wetland (6) □ Forest (7)
1.5 - 10 m Left Bank	□ None (1) □ Lawn (2) □ Cropped (3) □ Meadow (4) □ Scrubland (5) □ Wetland (6) □ Forest (7)
Right Bank	
10 - 30 m Left Bank Right Bank	None (1) Lawn (2) Cropped (3) Meadow (4) Scrubland (5) Wetland (6) Forest (7) None (1) Lawn (2) Cropped (3) Meadow (4) Scrubland (5) Wetland (6) Forest (7)
Channel Gradient (S4	Total (7)
Distance (m): 5	Elevation (cm): Gradient (°):
Dominant Substrate (Clay (Hard Pan) Silt Sand (0.06-2 mm) Gravel (22-66 mm) Cobble (67-249 mm) Boulder (250 mm) Bedrock (\$2.M3)
Sub-Dominant Substi	rate (S2.M3)
Feature Roughness	< 10% Minimal (1) 10 - 40% Moderate (2) 40 - 60% High (3) > 60% Extreme (4)
Width Measurement	Can't Measure (1) Bankfull (2) Mean Width (3) Estimated (4) GIS (5) Measure/GIS (6)
Channel Dimensions	Feature Width (m): Bankfull Depth (mm) 400
Entrenchment	Total: >40 m V <40 m Left Bank m Right Bank m Total width m
Surface Flow Method	Perched Culvert (1) Hydraulic Head (2) Distance by Time (3) Estimated (4)
Wetted Width (m)	Wetted Depth (mm) Hydraulic head (mm) Volume (L) Distance (m) Time (s) 1 2 3 1 2 3 1 2 3 1 2 3 1 2 3 3 1 2 3 3 1 2 3
0.86	35214 000 -
	Adjacent None (1) Rill (2) Rill and Gully (3) Gully (4) Outlet Scour (5)
Sediment Transport	☐ Sheet Erosion (6) ☐ Instream Bank Erosion (7) ☐ Other (8)
	Feature
Sediment Deposition	Measures (mm):
None (1)	Minimal: < 5 mm (2)

Date:	POINT FEATURE DATA Sish Barrier Measurements WP#			
	Date:			
Fish B	arrier Measure	ments: WP	# Pe	
		WP	the same of the sa	
		tors 💟	None Wa	tercress Seepage Bubbling Stained Other:
Fish C	WP# Perched Height (mm) Jumping Height (mm): Jumping Height (mm):			
WP#	Photo #	Code	Category	Description
			720043	
-				
Additio	onal Notes:			
-Ca	aflice	0/0	C 11.	25
- 0;	1.	.1.	121	La Maria La La Cara Chala
				Den les said les
Site Br	eak 🔲	Feature Type	e Feature	Modifier Flow Conditions Feature Vegetation Riparian Vegetation
Trigger		Other: Com		
Point D)ata		177	
Catego	ry		No Evidence (4)	Unknown (5)
POINT I	DATA KEY:			
A	Spring/unwelli	na - estimate	<0.5 l/sec or >0.5 l/s	ec: measure temp
0	Watercress - e	stimate total	surface area occupie	ed .
	Outlet (file or o	ther) - record	flow status as per fe	eature flow. Estimate volume <0.5 l/sec or >0.5 l/sec, Measure temperature.
4 (Other barrier to	fish moveme	ent	
	Potential conta	mination sour	rce (storm sewer out	llet or industrial discharge pipe).
	Culvert note 1	ning - indicate	ed by rip-rap, armour	r stone, or gabion baskets. hed. If perched record perched height and jumping height.
(ype, size allu	whether of flot bero	s from dry to standing water, independent of segment break
((Flow transition	point D/S - flo	ow condition change:	
((. F	Flow transition Flow transition	point M/S- flo	w condition changes	s from minimal to substantial surface flow, independent of segment break
) (((- F M F	Flow transition Flow transition Flow transition	point M/S- flo point D-S/IF-	w condition changes flow condition chang	s from minimal to substantial surface flow, independent of segment break ges from dry/standing water to interstitial flow, independent of segment break
J () () () () () () () () () () () () ()	Flow transition Flow transition Flow transition Fish observed of	point M/S- flo point D-S/IF- during non-fis	w condition changes	s from minimal to substantial surface flow, independent of segment break ges from dry/standing water to interstitial flow, independent of segment break
J (((((((((((((((((((Flow transition Flow transition Flow transition Fish observed of Potential nutries	point M/S- flo point D-S/IF- during non-fis nt source	w condition changes flow condition chang	s from minimal to substantial surface flow, independent of segment break ges from dry/standing water to interstitial flow, independent of segment break
(((((((((((((((((((Flow transition Flow transition Flow transition Fish observed of	point M/S- flo point D-S/IF- during non-fis nt source	w condition changes flow condition chang	s from minimal to substantial surface flow, independent of segment break ges from dry/standing water to interstitial flow, independent of segment break

Visit 1

HIA-SI

	Unconstrained Headwater	Drainage Feature Assessment	
Date (yyyy/mm/dd):	0 2 4 0 4 1 6 Project #: Part C	Olbocan Recorder/Crew: VS + F.R	
Stream Name:	Stream Code:		troam Point
Site Limits:	Upstream WP#		nected HDF:
One Litting.	Downstream WP#		ot connected to
Direction of Assessment:			wnstream network
Flow Influence	☐ Freshet (1)	☐ Spate (2) ☐ Baseflow (3)	
		Spate (2)	
Flow Condition	☐ 9ry (1)	☐ Interstitial Flow (3) ☐ Substantial F	Flow (5)
	Standing Water (2)	☐ Minimal Flow (4)	
Feature Type	□ Defined Natural Channel (1)	No Defined Feature (4) Swale (7)	
	☐ Channelized or Constrained (2)	☐ Tiled Feature (5) ☐ Roadside Di	tch (8)
	☐ Multi-thread (3)	☐ Welland (6) ☐ Pond (9)	
Feature Vegetation	□ None (1) □ Lawn (2) □ Cropped (3)	Meadow (4) Scrubland (5) Wetland(6)	Forest (7)
Riparian Vegetation			
0 - 1.5 m Left Bank	□ None (1) □ Lawn (2) □ Cropped (3)		Forest (7)
Right Bank	None (1) Lawn (2) Cropped (3)	Meadow (4) Scrubland (5) Wetland (6)	☐ Forest (7)
1.5 - 10 m Left Bank	(Cgn/f/u(chon)) ☑ None (1) ☐ Lawn (2) ☐ Cropped (3)	☐ Meadow (4) ☐ Scrubland (5) ☐ Wetland (6) ☐	☐ Forest (7)
Right Bank	None (1) Lawn (2) Cropped (3)		☐ Forest (7)
	(construction)		= 1 0.001(//
10 - 30 m Left Bank	None (1) Lawn (2) Cropped (3)	☐ Meadow (4) ☐ Scrubland (5) ☐ Wetland (6) ☐	☐ Forest (7)
Right Bank	□ None (1) □ Lawn (2) □ Cropped (3)	☐ Meadow (4) ☐ Scrubland (5) ☐ Wetland (6) ☐	Forest (7)
Channel Gradient (S4.	M7) Visual (1) Clinometer (2) La	ser Level (3) Survey Level (4) Other (5)	LiDAR (6)
Distance (m): 5	Elevation (cm)	: Gradient (°):	
Dominant Substrate (S	Clay (Hard Pan) Silt Sand (0.06	3-2 mm) Gravel (22-66 mm) Cobble (67-249 mm) Boulder (2	50 mm) Bedrock
Sub-Dominant Substra	te (S2.M3)		
Feature Roughness	< 10% Minimal (1) 10 - 40	0% Moderate (2) 40 - 60% High (3) > 60% Ext	treme (4)
Width Measurement	Can't Measure (1) Bankfull (2)		ure/GIS (6)
	Feature Width (m): 8,64	Bankfull Depth (mm)	
Entrenchment To	tal: >40 m < <40 m Left Bank	m Right Bank m Total width	m
Surface Flow Method	Perched Culvert (1) Hydraulic H		ated (4)
Wetted Width (m)	Wetted Depth (mm) Hydraulic head (mr	m) Volume (L) Distance (m) 3 1 2 3 1 2 3	Time (s)
7.1	1550 45 0 0 0 0 Nov Flax		1 2 3
	Adjacent None (1) Rill (2)	☐ Rill and Gully (3) ☐ Gully (4) ☐ Outlet Scor	ır (5)
Sediment Transport			ur (3)
	Feature Sheet Erosion (6) Rill (2)	Instream Bank Erosion (7) Other (8)	
	Sheet Erosion (6)	☐ Rill and Gully (3) ☐ Gully (4) ☐ Outlet Scot ☐ Instream Bank Erosion (7) ☐ Other (8)	ur (5)
Sediment Deposition	Measures (mm):		
None (1)	Minimal: < 5 mm (2)	Substantial: 31-80 mm (4) Extensive: > 80 m	m (5)

yyyy/mm/d 2 4 C Measurem Indicato on	nents: WP# WP#	ci#: Part	Calbara	PINT FEAT	Assessment: URE DA Jumpin	ng Height (mm):		her:	Pg, 2 of 2 Sample # 3
Measurem Indicator	ments: WP# WP#	None Absent	Perched Height Perched Height Watercress	ot (mm): Seepage	Jumpin	ng Height (mm): ng Height (mm): ng			
oto#	WP#	NoneAbsent	Perched Height Perched Height Watercress	nt (mm):	Jumpin Jumpin	ng Height (mm): ng Height (mm): gStained		her:	
oto#	WP#	NoneAbsent	Perched Height Watercress	nt (mm):	Jumpin	ng Height (mm):	Ott	her:	
oto#	ors Q	None Absent]Watercress	Seepage		g Stained		her:	
oto#	Q	Absent _			Bubbling			her.	
oto#			JPresent	Comment		Description			
	Code	Category				Description			
	Code	Category				Description			
lotes:									
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lotes:			- 4						
lotes:				101,777,771				13 1 - 12 1 - 12	
lotes:									
	esture Type	□ Eos	tura Madifiar	□ Flow C	onditions	▼ Feature Ver	retation	Rinar	ian Vegetation
-			ildie Modillei		Onditions	roduic vo	gotation	Плара	iair vogotation
	Other: Com					storic Evidence (2) Reported but No Evidence (3)			
						z) Reported b	UL INO LAIC	uence (o)	
KEY:		110 211001100	(1)	Omaro	WII (0)				7
ge area - cress - es (tile or other or dam - or ade dam barrier to ial contar el harder t - note ty ransition ransition joserved o ial nutrier ng of cha	- measure or stimate total sther) - record for record flor neasure percial remains a movement of the record flor neasure percial remains a movement of the record flor neasure percial remains a movement of the record flor neasure percial remains a movement of the record flor neasure of the r	estimate length surface area of flow status as ow status as po- hed height and erched height a ent roce (storm sew- ed by rip-rap, a whether or not ow condition ch flow condition ch flow condition	n of bank where coupled per feature flow. er feature flow. E jumping height and jumping height er outlet or industration er outlet or industration e	Estimate volume to the strial discharge pip gabion baskets. Ched record perchato standing water, mal to substantial	be <0.5 l/sec be). ed height and independent surface flow,	c or >0.5 l/sec. d jumping height. t of segment break, independent of seg	ment brea	k	
/u 99 cr (file r ad balant a a a a a a a a a a a a a a a a a a	EY: Inpwelling e area ess - erectifie or or other dam - rectifie on the dam arrier to the dam - note to the street of the stree	EY: Ipwelling - estimate of e area - measure or ess - estimate total sille or other) - record findam - measure percited dam - mote type, size and insition point D/S - fix insition point D/S - fix insition point D-S/IF-served during non-fix I nutrient source g of channel	Other: Comments Ongoing and No Evidence EY: Ipwelling - estimate < 0.5 l/sec or > 0 e area - measure or estimate length ess - estimate total surface area or ille or other) - record flow status as e or other) - record flow status as pe dam - measure perched height and de dam - measure perched height and ille contamination source (storm sew) I hardening - indicated by rip-rap, ai - note type, size and whether or not nistion point D/S - flow condition ch nistion point D/S - flow condition ch reved during non-fish sampling act I nutrient source g of channel	Other: Comments Ongoing and Active (1) No Evidence (4) EY: Ipwelling - estimate <0.5 l/sec or >0.5 l/sec; measure e area - measure or estimate length of bank where ess - estimate total surface area occupied lile or other) - record flow status as per feature flow. Edam - measure perched height and jumping height de dam - measure perched height and jumping height de dam - measure perched height and jumping height all contamination source (storm sewer outlet or indust hardening - indicated by rip-rap, armour stone, or enote type, size and whether or not perched. If perconsition point D/S - flow condition changes from dry insition point D-S/IF- flow condition changes from discreved during non-fish sampling activities.	Ongoing and Active (1) Historic No Evidence (4) Unkno EY: Ipwelling - estimate <0.5 l/sec or >0.5 l/sec; measure temp e area - measure or estimate length of bank where seepage occurs ess - estimate total surface area occupied ille or other) - record flow status as per feature flow. Estimate volume to dam - measure perched height and jumping height de dam - measure perched height and jumping height arrier to fish movement il contamination source (storm sewer outlet or industrial discharge pip I hardening - indicated by rip-rap, armour stone, or gabion baskets note type, size and whether or not perched. If perched record perch nsition point D/S - flow condition changes from dry to standing water, nsition point D/S-flow condition changes from dry/standing water served during non-fish sampling activities I nutrient source g of channel	Ongoing and Active (1) Historic Evidence (No Evidence (4) Unknown (5) EY: Ipwelling - estimate <0.5 l/sec or >0.5 l/sec; measure temp e area - measure or estimate length of bank where seepage occurs ess - estimate total surface area occupied ille or other) - record flow status as per feature flow. Estimate volume <0.5 l/sec or a or other) - record flow status as per feature flow. Estimate volume to be <0.5 l/sec dam - measure perched height and jumping height de dam - measure perched height and jumping height arrier to fish movement all contamination source (storm sewer outlet or industrial discharge pipe). I hardening - indicated by rip-rap, armour stone, or gabion baskets note type, size and whether or not perched. If perched record perched height and insition point D/S - flow condition changes from dry to standing water, independent insition point D/S-flow condition changes from dry/standing water to interstitial the served during non-fish sampling activities I nutrient source g of channel	Other: Comments Ongoing and Active (1) Historic Evidence (2) Reported by No Evidence (4) Unknown (5) EY: Ipwelling - estimate < 0.5 l/sec or > 0.5 l/sec; measure temp e area - measure or estimate length of bank where seepage occurs ess - estimate total surface area occupied ille or other) - record flow status as per feature flow. Estimate volume < 0.5 l/sec or > 0.5 l/sec. Measure e or other) - record flow status as per feature flow. Estimate volume to be < 0.5 l/sec or > 0.5 l/sec. dam - measure perched height and jumping height de dam - measure perched height and jumping height arrier to fish movement il contamination source (storm sewer outlet or industrial discharge pipe). I hardening - indicated by rip-rap, armour stone, or gabion baskets note type, size and whether or not perched. If perched record perched height and jumping height. Insition point D/S - flow condition changes from dry to standing water, independent of segment break insition point M/S- flow condition changes from minimal to substantial surface flow, independent of served during non-fish sampling activities I nutrient source g of channel	Other: Comments Ongoing and Active (1) Historic Evidence (2) Reported but No Evidence (4) Unknown (5) EY: Ipwelling - estimate <0.5 l/sec or >0.5 l/sec; measure temp e area - measure or estimate length of bank where seepage occurs ess - estimate total surface area occupied ille or other) - record flow status as per feature flow. Estimate volume <0.5 l/sec or >0.5 l/sec. Measure temperate or other) - record flow status as per feature flow. Estimate volume to be <0.5 l/sec or >0.5 l/sec. dam - measure perched height and jumping height die dam - measure perched height and jumping height arrier to fish movement il contamination source (storm sewer outlet or industrial discharge pipe). I hardening - indicated by rip-rap, armour stone, or gabion baskets note type, size and whether or not perched. If perched record perched height and jumping height. Insition point D/S - flow condition changes from dry to standing water, independent of segment break insition point D/S - flow condition changes from minimal to substantial surface flow, independent of segment break insition point D-S/IF- flow condition changes from dry/standing water to interstitial flow, independent of segment levered during non-fish sampling activities I nutrient source g of channel	Ongoing and Active (1) Historic Evidence (2) Reported but No Evidence (3) No Evidence (4) Unknown (5) EY: Ipwelling - estimate <0.5 l/sec or >0.5 l/sec; measure temp e area - measure or estimate length of bank where seepage occurs ess - estimate total surface area occupied ille or other) - record flow status as per feature flow. Estimate volume <0.5 l/sec or >0.5 l/sec. Measure temperature. e or other) - record flow status as per feature flow. Estimate volume to be <0.5 l/sec or >0.5 l/sec. dam - measure perched height and jumping height de dam - measure perched height and jumping height arrier to fish movement all contamination source (storm sewer outlet or industrial discharge pipe). I hardening - indicated by rip-rap, armour stone, or gabion baskets note type, size and whether or not perched. If perched record perched height and jumping height. Insition point D/S - flow condition changes from dry to standing water, independent of segment break insition point M/S- flow condition changes from dry/standing water to interstitial flow, independent of segment break insition point D-S/IF- flow condition changes from dry/standing water to interstitial flow, independent of segment break insition point D-S/IF- flow condition changes from dry/standing water to interstitial flow, independent of segment break insition point D-S/IF- flow condition changes from dry/standing water to interstitial flow, independent of segment break insition point D-S/IF- flow condition changes from dry/standing water to interstitial flow, independent of segment break insition point D-S/IF- flow condition changes from dry/standing water to interstitial flow, independent of segment break insition point D-S/IF- flow condition changes from dry/standing water to interstitial flow, independent of segment break

	Unconstrained	Headwater Dra	ainage Feature Asse	essment	
Date (yyyy/mm/dd). 2	0 2 4 0 4 1 6 Project #:	Port Col	Recorder/Crew:	VS + ER	
Stream Name:	Stream Co		Site Code:	HIASSI Rin	+ 2
Site Limits:	Upstream 17 WP# 1645		Field Assessment:	-	connected HDF:
Site Cirries.	Downstream WP# 475		I N Field Assessifierit.		Not connected to
Direction of Assessment	Upstream Upstream	Downstr	ream	Sample 3	downstream network
Flow Influence	Freshet (1)		Spate (2)	Baseflow	(3)
Flow Condition	□ Pfy (1)			☐ Substantia	al Flow (5)
riow Condition	Standing Water (2)		Interstitial Flow (3) Minimal Flow (4)	Substantia	al Flow (5)
Feature Type	☐ Defined Natural Channel (1) 🗆		Swale (7)	
restare Type	☐ Channelized or Constrained		Tiled Feature (5)	☐ Roadside	Ditch (8)
	☐ Multi-thread (3)			Pond (9)	Ditori (0)
Feature Vegetation		Cropped (3)			Forest (7)
reacure vegetation	Lawii (2)	Cropped (5)	(4) LI Schuball	a (5) Les Welland(6) Les	1 01031 (1)
Riparian Vegetation					
0 - 1.5 m Left Bank	□ None (1) □ Lawn (2) □	Cropped (3)	Meadow (4) Scrubland	d (5) Wetland (6)	☐ Forest (7)
Right Bank	□ None (1) □ Lawn (2) □	Cropped (3)	Meadow (4) D Scrublan	d (5)	☐ Forest (7)
1.5 - 10 m Left Bank	□ None (1) □ Lawn (2) □	Cropped (3)	Meadow (4) Scrublan	d (5) Wetland (6)	☐ Forest (7)
Right Bank		Cropped (3)	Meadow (4) Scrubland	d (5) Wetland (6)	☐ Forest (7)
10 - 30 m Left Bank	□ None (1) □ Lawn (2) □	Cropped (3)	Meadow (4) Scrubland	d (5) Wetland (6)	Forest (7)
Right Bank		Cropped (3)	Meadow (4) Scrubland		Forest (7)
Channel Gradient (S4			111		LiDAR (6)
Onemier Oresient (O-	T VISUAL (1) VI OINTOTTEE	.i (2)	ever(o) Godivey Level (4) Outer (5)	LIDAR (0)
Distance (m): 5		Elevation (cm):		Gradient (°):	
Dominant Substrate (S	Clay (Hard Pan) Si		m) Gravel (22-66 mm) Col	bble (67-249 mm) Boulder	(250 mm) Bedrock
Sub-Dominant Substra	ate (S2.M3)				
Feature Roughness	< 10% Minimal (1)	10 - 40% M	oderate (2) 40 - 60%	High (3)	Extreme (4)
Width Measurement	Can't Measure (1) Bank	kfull (2) Me	ean Width (3) Estimated	(4) GIS (5) Mea	asure/GIS (6)
Channel Dimensions	Feature Width (m): 5.5		Bankfull Depth (mm)	610	
Entrenchment To	otal: >40 m <<40 m	Left Bank	m Right Bank	m Total width	m
Surface Flow Method	Perched Culvert (1)	Hydraulic Head	(2) Distance by Tin	ne (3) Esti	mated (4)
Wetted Width (m)		draulic head (mm)	Volume (L)	Distance (m)	Time (s)
9,9	1 2 3	000	2 3	1 2 3	1 2 3
	Adjacent None (1)	□ Rill (2) □	Rill and Gully (3)	Gully (4)	cour (5)
Sediment Transport	☐ Sheet Erosion (6)		Instream Bank Erosion (7)	Other (8)	
	Feature None (1)		_	Gully (4) Outlet So	
-16	Sheet Erosion (6)		Instream Bank Erosion (7)	Other (8)	
Sediment Deposition	Measures (mm):				
None (1)	Minimal: < 5 mm (2) Mode	erate: 5-30 mm (3)	Cuhetantial 24 00 /		
L Mone (1)		nate. 5-30 Mill (3)	Substantial: 31-80 mm (4	Extensive: > 80	mm (5)

	yyyy/mn	v/dd	Uncor	nstrained Hea	adwater Dr	ainage F	eature Assessment		Pg. 2 of 2
Date:	20240	41 GPro	ject#: Pav	+ Colberns	Field	Assessment	Sample #1	Sample # 2	Sample # 3
	The second				INT FEAT	URE D	ATA		
Fish E	Barrier Measure	ements: WP	#	Perched Height			ing Height (mm):		
		WP	# -	Perched Height			ing Height (mm):		
Groun	dwater Indica	tors 🔼	None [Watercress	Seepage	Bubbli	ing Stained	Other:	
Fish (Collection		Absent _	Present	Comment:		K		
WP#	Photo #	Code	Category				Description		
			1						
			-						
-									
Site Bro	ank []	Feature Type	□ Fool	ture Modifier	T Flow Co	onditions	Tooks Vesta		
rigger		Other: Com		ure Modifier	Flow Co	onditions	Feature Vegetation	I Riparia	an Vegetation
oint D			Ongoing and A	Active (1)	Historic	Evidence ((2) Paparted but No E	vidence (2)	
Catego			No Evidence (Unknow		(2) Reported but No E	vidence (3)	
	DATA KEY:		The Later of the L		OTHERON	11 (0)	7,000		
	Control of the		A.F.U						
3	Spring/upwellir Seepage area	g - estimate < - measure or	*0.5 l/sec or >0. estimate length	5 l/sec; measure to of bank where see	emp epage occurs				
7	Watercress - e	stimate total s	surface area occ	cupied					
)	Outlet (tile or o Inlet (tile or oth	ther) - record fly	flow status as p	er feature flow, Est r feature flow, Estin	timate volume <	0.5 Vsec or	>0.5 l/sec. Measure tempera	iture.	
	Beaver dam - r	measure perch	hed height and ji	umping height	nate volume to i	ue <0.5 l/sec	or >0.5 l/sec.		
3	Manmade dam	- measure pe	erched height an	nd jumping height					
	Other barrier to Potential conta			r outlet or industrial	l discharge nine	1		न हो	
	Channel harde	ning - indicate	d by rip-rap, arm	nour stone, or gabi	ion baskets.				
	Culvert - note t	ype, size and	whether or not p	perched. If perched	d record perched	d height and	jumping height.		
	Flow transition	point D/S - 110 point M/S- flor	w condition char w condition char	inges from dry to si	tanding water, in	ndependent	of segment break independent of segment bre	-1.	
	Flow transition	point D-S/IF-1	flow condition cl	hanges from dry/st	anding water to	interstitial fl	ow, independent of segment ow, independent of segment	ak break	
	Fish observed of Potential nutries	during non-fish	h sampling activ	ities			31101		
	Potential nutrie Dredging of cha								
	Offline pond								
(Other								

	Unconstrained Headwater	Drainage Feature Assessment
Data (sass/mm/dd) [O]	0 240 41 GProject#: Poct (Oborno Recorder/Crew: VS + ER
Stream Name:	Stream Code.	Site Code: It IA - SI (Pownition) Po
-		
Site Limits:	Downstream 7 WP# 645 70 19	Field Assessment: Sample 1 Unconnected HDF: Sample 2 Not connected to
Direction of Assessment		ownstream Sample 3 downstream network
low Influence	Freshet (1)	Spale (2) Baseflow (3)
low Condition	☐ Dry (1)	Interstitial Flow (3)
	Standing Water (2)	Minimal Flow (4)
eature Type	☐ Defined Natural Channel (1)	No Defined Feature (4) Swale (7)
	Channelized or Constrained (2)	Tiled Feature (5) Roadside Ditch (8)
	Multi-thread (3)	☐ Wetland (6) ☐ Pond (9) ☐ Meadow (4) ☐ Scrubland (5) ☐ Wetland(6) ☐ Forest (7)
eature Vegetation	□ None (1) □ Lawn (2) □ Cropped (3)	☐ Meadow (4) ☐ Scrubland (5) ☐ Wetland (6) ☐ Forest (7)
Riparian Vegetation	□ None (1) □ Cropped (3)	☐ Meadow (4) ☐ Scrubland (5) ☐ Wetland (6) ☐ Forest (7)
) - 1.5 m Left Bank		Meadow (4) Scrubland (5) Wetland (6) Forest (7)
Right Bank	None (1) Lawn (2) Cropped (3)	
1.5 - 10 m Left Bank	□ None (1) □ Lawn (2) □ Cropped (3)	☐ Meadow (4) ☐ Scrubland (5) ☐ Wetland (6) ☐ Forest (7)
Right Bank	□ None (1) □ Lawn (2) □ Cropped (3)	☐ Meadow (4) ☐ Scrubland (5) ☐ Wetland (6) ☐ Forest (7)
10 20 - 1-8 D	□ None (1) □ Lawn (2) □ Cropped (3)	☐ Meadow (4) ☐ Scrubland (5) ☐ Wetland (6) ☐ Forest (7)
10 - 30 m Left Bank		Meadow (4) Scrubland (5) Wetland (6) Forest (7)
Right Bank	,	
Channel Gradient (S4	.M7) Visual (1) Clinometer (2) La	aser Level (3) Survey Level (4) Other (5) LiDAR (6)
Distance (m): 5	Elevation (cm)	
D in and Cult of soles (Clay (Hard Pan) Silt Sand (0.0	6-2 mm) Gravel (22-66 mm) Cobble (67-249 mm) Boulder (250 mm) Bedrock
Dominant Substrate (oz.mo,	
Sub-Dominant Substr	rate (S2.M3)	
Feature Roughness Width Measurement		0% Moderate (2)
Channel Dimensions	Feature Width (m):	Bankfull Depth (mm)
Entrenchment T	otal: >40 m < <40 m Left Bank	m Right Bank m Total width m
Surface Flow Method	Perched Culvert (1) Hydraulic	Head (2) Distance by Time (3) Estimated (4)
Wetted Width (m)	Wetted Depth (mm) Hydraulic head (m	m) Volume (L) Distance (m) Time (s)
wetten winti (III)	1 2 3 1 2	3 1 2 3 1 2 3 1 2 3
3.23	13 15 62 000	
	Adjacent None (1) Rill (2)	☐ Rill and Gully (3) ☐ Gully (4) ☐ Outlet Scour (5)
Sediment Transport	Speet Erosion (6)	☐ Instream Bank Erosion (7) ☐ Other (8)
	Feature None (1) Rill (2)	☐ Rill and Gully (3) ☐ Gully (4) ☐ Outlet Scour (5)
	☐ Sheet Erosion (6)	☐ Instream Bank Erosion (7) ☐ Other (8)
4		
Sediment Deposition	Measures (mm):	

		3191	Unconstr	ninad Llaa	dustes Declares F	- at A - a - a - a - a - a - a - a - a -	h D 0.10
Date:	yyyylmn				dwater Drainage Fe		
Date:	40144	19 [] Proje	ed#: Port	Coltune	Field Assessment:	Sample #1	Sample # 2 Sample # 3
				POI	NT FEATURE DA	ATA	
Fish Ba	arrier Measure	ments: WP#		erched Height (i		ng Height (mm):	
		WP#	P	erched Height (I	mm): Jumpir	ng Height (mm):	
	lwater Indica	tors	None Wa	itercress [Seepage Bubblir	ng Stained	Other:
Fish Co	ollection		Absent Pre	esent (Comment:	1	
		1					
WP#	Photo#	Code	Category			Description	
_							
Additio	onal Notes						
- Hi	ahly	diste	whed Co	in See	fire track	& through	feature
	0 1					0.	
Site Br	eak	Feature Type	e Featur	e Modifier	Flow Conditions	Feature Vegetat	ion. Riparian Vegetation
Trigge	r 🔯		nments Drun		Extent		on
Point	-	Outor. Con	Ongoing and Act		Historic Evidence	(2) Reported but No	Evidence (3)
Categ	ory		No Evidence (4)	(.)	Unknown (5)	(2) Reported but 140	Lyiderice (3)
POINT	DATA KEY:		14 4 1				
A B	Spring/upwe	lling - estimate	<0.5 l/sec or >0.5 l r estimate length of	/sec; measure t	lemp		
C	Watercress -	estimate total	surface area occup	bank where ser	epage occurs		
D	Outlet (tile o	r other) - record	d flow status as per	feature flow. Es	stimate volume <0.5 l/sec or	r >0.5 l/sec. Measure temp	perature.
E	Inlet (tile or o	other) - record t	flow status as per fe	eature flow. Esti	imate volume to be <0.5 l/se	ec or >0.5 l/sec.	
F	Beaver dam	- measure per	ched height and jun	nping height			
G H		m - measure p to fish movem	perched height and	jumping height			
ï			urce (storm sewer o	utlet or industri	al discharge pine)		
J	Channel har	dening - indica	ted by rip-rap, armo	our stone, or gal	bion baskets.		
K	Culvert - not	e type, size an	d whether or not pe	rched. If perche	ed record perched height an	nd jumping height.	
M	Flow transiti	on point M/S-f	low condition chang	jes from dry to	standing water, independer al to substantial surface flow	nt of segment break	benel
N	Flow transiti	on point D-S/IF	- flow condition cha	anges from dry/	standing water to interstitial	flow independent of segment	Dreak nent break
0	Fish observe	ed during non-fi	ish sampling activiti	es	g so interedudi	madpoilders of segn	ICH DIEGK
P	Potential nut						
1()							
Q R	Dredging of Offline pond						

Visit 2

H3

Date (yyyy/mm/dd): 2 k	02405	2 9 Projec	1# 536Y	9-101	Recorder/Crew	Vs	+ AA		
Stream Name:			n Code		Site Code:	HR	Por	+1	
Site Limits:	Upstream Downstream	lamina and	16149		Field Assessme	nt: Sam	ple 1	Unconnected H	
Direction of Assessment		Upstre:	named a Million and the construction of the co	ownstream		Sam		downstream	
Flow Influence	☐ Freshe	et (1)	ment of the second	☐ Spate	(2)			flow (3)	
Flow Condition	Dry (1)	ng Water (2)			itial Flow (3) al Flow (4)		☐ Subst	tantial Flow (5)	
Feature Type	☐ Define	d Natural Channelized or Constr		☐ No De	fined Feature (4) Feature (5)		Swale Roads	(7) side Ditch (8)	
Feature Vegetation	None (1)	The second liverage and the se	Cropped (3)	Wetian Mead	nd (6) ow (4)	pland (E)	Pond	1	THE .
Riparian Vegetation 0 - 1.5 m Left Bank	□ None (1)	□ Lawn (2)	☐ Cropped (3)	₩ Méado	ow (4) 🗆 Scru	bland (5)	Wetland (6)	☐ Forest	
Right Bank 1.5 - 10 m Left Bank Right Bank	□ None (1)	☐ Lawn (2) ☐ Lawn (2) ☐ Lawn (2)	☐ Cropped (3) ☐ Cropped (3) ☐ Cropped (3)	□ Mead	ow (4) Scru Scru Scru Scru Scru Scru Scru Scru	bland (5)	Wetland (6)	☐ Forest	(7)
10 - 30 m Left Bank	□ None (1)	☐ Lawn (2)	Cropped (3)	Mand	ow (4) Scru	bland (5)	Wetland (6)	☐ Forest	
Right Bank Channel Gradient (S4 Distance (m):	M7) Visual	Lawn (2) (1) Clino Hard Pan)	Cropped (3) meter (2) La Elevation (cm Silt Sand (0.0	aser Level (3)	Survey Lev	bland (5) el (4)	Wetland (6) Other (5) Gradient (°)	☐ Forest	(7)
Channel Gradient (S4	Clay (1	(1) Clino	emeter (2) La	aser Level (3)		bland (5) el (4)	Wetland (6) Other (5) Gradient (°)	☐ Forest	(7)
Channel Gradient (S4 Distance (m): Dominant Substrate (S Sub-Dominant Substra	Clay (1 S2.M3)	Hard Pan)	Elevation (cm	Mead aser Level (3) 1): 30 106-2 mm) Gr	Survey Lev	bland (5)	Wetland (6) Other (5) Gradient (°) 49 mm) Boo	LiDAR LiDAR Lider (250 mm)	(7) (6) Bedro
Channel Gradient (S4 Distance (m): Dominant Substrate (S Sub-Dominant Substrate Feature Roughness Width Measurement	Clay (1 S2.M3)	Hard Pan)	Elevation (cm	aser Level (3)	Survey Lev	bland (5)	Wetland (6) Other (5) Gradient (°) 49 mm) Box	☐ Forest	(7) (6) Bedro
Channel Gradient (S4 Distance (m): Dominant Substrate (S Sub-Dominant Substrate Feature Roughness Width Measurement Channel Dimensions	Clay (1) S2.M3) Clay (1) Clay	Hard Pan)	Elevation (cm Sitt Sand (0.0	Mead: aser Level (3) aser Level (3) b): 3	Survey Lev	bland (5)	Wetland (6) Other (5) Gradient (°) 49 mm) Box	LiDAR LiDAR Lider (250 mm) Lider (250 mm) Lider (250 mm)	(7) (6) Bedro
Channel Gradient (S4 Distance (m): Dominant Substrate (S Sub-Dominant Substrate Feature Roughness Width Measurement Channel Dimensions	Clay (1 S2.M3) Clay (1 Can't Measu Feature Width (m):	Hard Pan) 10% Minimal Mare (1)	Elevation (cm Sitt Sand (0.0	Mead: aser Level (3) aser Level (3) b): 3	Survey Lev avel (22-66 mm) (2) 40 - (4)))))))))))))))))))))))))))))))))))	bland (5)	Wetland (6) Other (5) Gradient (°) 49 mm) Boo	LiDAR LiDAR LiDAR Lider (250 mm) Lid	(7) (6) Bedro
Channel Gradient (S4 Distance (m): Dominant Substrate (S Sub-Dominant Substrate Feature Roughness Width Measurement Channel Dimensions Entrenchment To	Clay (1 S2.M3) Clay (1 Can't Measu Feature Width (m):	Hard Pan) 10% Minimal Mare (1) 4. 7	Elevation (cm Silt Sand (0.0	Meading aser Level (3) 1): 30 106-2 mm) Ging and a ser Level (3) 10% Moderate mean Widte mean Mean Widte mean widte mean widte mean mean mean mean mean mean mean mea	Survey Lev avel (22-66 mm) (2) 40 - ((3) Estin Bankfull Depth	bland (5)	Wetland (6) Other (5) Gradient (°) 49 mm) Boo	LiDAR LiDAR LiDAR Lider (250 mm) Lid	(7) (6) Bedro
Channel Gradient (S4 Distance (m): Dominant Substrate (S Sub-Dominant Substra Feature Roughness Width Measurement Channel Dimensions	Clay (1 S2.M3) Clay (1 S2.M3) Clay (1 S2.M3) Clay (1 S2.M3) Can't Measu Feature Width (m): tal: >40 m Perched Cult Wetted Dept	Hard Pan) 10% Minimal A re (1) 40 m vert (1) th (mm)	Elevation (cm Silt Sand (0.0 Silt Sand (0.0 Bankfull (2) Left Bank Hydraulic Hydraulic head (m	Mead aser Level (3) aser Level (3) b): 3 o Graph aser Level (3) b): 4 o Graph aser Level (4) b): 4 o Gr	Survey Lev avel (22-66 mm) (2) 40 - (1) (3) Estin Bankfull Depth Right Bank Distance to	bland (5)	Wetland (6) Other (5) Gradient (°) 49 mm) Boo	LiDAR LiDAR LiDAR LiDAR Lider (250 mm) Lider (250 m	(7) (6) Bedro
Channel Gradient (S4 Distance (m): Dominant Substrate (S Sub-Dominant Substra Feature Roughness Width Measurement Channel Dimensions Entrenchment To	Clay (1 S2.M3) Clay (1 S2.M3) Ate (S2.M3) Can't Measu Feature Width (m): tal:	Hard Pan) 10% Minimal Arre (1) 40 m Vert (1)	Elevation (cm Sitt Sand (0.0	Mead aser Level (3) aser Level (3) b): 3	Survey Lev avel (22-66 mm) (2) 40 - (4) (40 - (4)))))))))))))))))))))))))))))))) Distance	bland (5)	Wetland (6) Other (5) Gradient (°) 49 mm) Boo	LiDAR LiDAR LiDAR LiDAR Lider (250 mm) Lider (250 m	(7) (6) Bedro
Channel Gradient (S4 Distance (m): Dominant Substrate (S Sub-Dominant Substrat Feature Roughness Width Measurement Channel Dimensions Entrenchment To Surface Flow Method Wetted Width (m)	Clay (1 S2.M3) Clay (1 S2.M3) ate (S2.M3) Can't Measu Feature Width (m): tal:	Hard Pan) 10% Minimal A re (1) 40 m vert (1) th (mm) 3	Elevation (cm Silt Sand (0.0 Silt Sa	Mead (3) i): 3	Survey Lev avel (22-66 mm) (2) 40-0 th (3) Estin Bankfull Depth Right Bank Distance the standard	bland (5)	Wetland (6) Other (5) Gradient (°) 49 mm) Boo Total v tance (m) 2	LiDAR LiDAR LiDAR LiDAR LiDAR Lider (250 mm) Lider	(7) (6) Bedro

	yyyy/mm	/dd	Uncon	strained Headwater D	rainage Feat	ure Assessment	Pg. 2 of 2	
Date:	20240	the state of the s	ject#: 536	89-10) Fiel	d Assessment:	Sample #1	Sample # 2 Sample # 3	
		9 4 2 7 3 7	10000000000000000000000000000000000000	POINT FEA	TURE DAT	A		
Groun	arrier Measure dwater Indicat ollection	WP	Wope	Perched Height (mm): Perched Height (mm): Watercress Seepage Present Comment:		eight (mm): eight (mm): Stained	Other:	
WP#	Photo#	Code	Category			Description		
					<u> </u>			
_								
Additio	onal Notes:							
Site Br		Feature Typ Other: Con		re Modifier Flow	Conditions [Feature Vegetation	Riparian Vegetation	
Point I			Ongoing and A	ctive (1) Histo	ric Evidence (2)	Reported but No E	vidence (3)	
Catego	Charles were the		No Evidence (l) Unkr	iown (5)			
A B C D E F G H I J K L M N O F	Seepage area Watercress - e Outlet (tile or ot Inlet (tile or ot Beaver dam - Manmade dam Other barrier to Potential conta Channel harde Culvert - note to Flow transition Flow transition	- measure or estimate total other) - record ner) - record f measure per n - measure p of fish movem umination sou ning - indicat ype, size and point D/S - fl point M/S- flk point D-S/IF- during non-fis	r estimate length surface area occ d flow status as per ched height and juderched height and juderched height and juderched height and juderched flow sewer and by rip-rap, arm d whether or not plow condition challow challow challow challow challow challow challow challow challow ch	or feature flow. Estimate volume feature flow. Estimate volume imping height if jumping height outlet or industrial discharge pour stone, or gabion baskets. erched. If perched record perchages from dry to standing water ges from minimal to substantianges from dry/standing water anges from dry/standing water for the standing water from dry/standing water from dry/s	to be <0.5 l/sec or ipe). hed height and junder, independent of sells surface flow, indicate the contract of	>0.5 l/sec. sping height. egment break spendent of segment bre	eak	

Uncons	trained Headwater D	Orainage Feature Asses	ssment
Date (yyyy/mm/dd): 20240529	Project #: 53689	- ® Recorder/Crew:	Vs + AA
Stream Name:	Stream Code:	Site Code:	H3 Point 2
Site Limits: Upstream WF Downstream WF		Field Assessment:	Sample 1 Unconnected HDF:
	Upstream Dow	unctroom.	Sample 2 Not connected to Sample 3 downstream network
Flow Influence	2 Opstream / L Dow	Spate (2)	Baseflow (3)
Flow Condition		☐ Interstitial Flow (3)	☐ Substantial Flow (5)
Standing Wa		Minimal Flow (4)	
Feature Type Defined Natu		☐ No Defined Feature (4)	Swale (7)
	or Constrained (2)	☐ Tiled Feature (5)	Roadside Ditch (8)
Multi-thread		Wetland (6)	Pond (9)
Feature Vegetation	awn (2) Cropped (3)	☐ Meadow (4) ☐ Scrubland	(5) Wetland(6) Forest (7)
Riparian Vegetation			
	.awn (2)	Meadow (4) ☐ Scrubland ☐ Meadow (4) ☐ Scrubland	
1.5 - 10 m Left Bank □ None (1) □ I	_awn (2)	Meadow (4) Scrubland	
	Lawn (2) Cropped (3)	Meadow (4) Scrubland Meadow (4) Scrubland	
The second secon	Lawn (2) Cropped (3) Lawn (2) Cropped (3)	☐ Meadow (4) ☐ Scrubland ☐ Meadow (4) ☐ Scrubland	A DESCRIPTION OF THE PROPERTY
Channel Gradient (S4.M7) Visual (1)	Clinometer (2)	ser Level (3) Survey Level (4))
Distance (m):	Elevation (cm)	50 -	Gradient (°):
Dominant Substrate (S2.M3)	Pan) Silt Sand (0.06-	-2 mm) Gravel (22-66 mm) Cot	oble (67-249 mm) Boulder (250 mm) Bedrock
Sub-Dominant Substrate (S2.M3)	A D		
Feature Roughness	Minimal (3) 10 - 40	% Moderate (2) 40 - 60% h	High (3)
Width Measurement Can't Measure (1)	Bankfull (2)	Mean Width (3) Estimated	(4) GIS (5) Measure/GIS (6)
Channel Dimensions Feature Width (m):	5.25	Bankfull Depth (mm)	450
Entrenchment Total: >40 m	<40 m Left Bank	m Right Bank	m Total width m
Surface Flow Method Perched Culvert (1			ne (3) Estimated (4)
Wetted Width (m) Wetted Depth (m)		N Volume (L) 3 1 2 3	Distance (m) Time (s) 1 2 3 1 2 3
35 35 30			
Feature Nor	et Erosion (6)	☐ Instream Bank Erosion (7)	Gully (4) Outlet Scour (5) Other (8) Gully (4) Outlet Scour (5) Other (8)
Sediment Deposition Measures (mm) None (1) Minimal: < 5 mm (2)			

1990 th	Toronto I Company de Company		trained Headwater Drainage Feature Assessment Pg. 2 of 2
Date: [SpelSp	OR R RIPE	ma 5368	
		processor recovering	POINT FEATURE DATA
Fish Barrier Measu	rements WPI WPI		Perched Height (mm) Justiping Height (mm)
Groundwater Indi		- market and a second	Perched Height (mm) Jumping Height (mm)
Fish Collection	Montened	* Tremad	Valercress Seepage Bubbling Stained Other
	La	The second secon	CONTRIBUT
WP# Photo #	Code	Catanan	
TOTAL B	Code	Category	Description
	-		
	-		
Shigh	To ph	<u> </u>	Cretland graded
Site Break	₩ pV	e Featu	
Site Break [To ph	e Featu	are Modifier Flow Conditions Feature Vegetation Riparian Vegetation
Site Break [Trigger [Point Data	₩ pV	e Featu	re Modifier
Site Break [Trigger [Point Data	₩ pV	e Featu	ctive (1) Historic Evidence (2) Reported but No Evidence (3)
Site Break [Trigger [Point Data Category	Feature Typ	e Featu	re Modifier
Site Break [Trigger [Point Data Category	Feature Typ	e Featurnments Ongoing and Air No Evidence (4	re Modifier Flow Conditions Feature Vegetation Riparian Vegetation active (1) Historic Evidence (2) Reported but No Evidence (3) Unknown (5)
Site Break [Trigger [Point Data Category POINT DATA KEY	Feature Typ Other: Con	e Featurements Ongoing and Air No Evidence (4	ure Modifier Flow Conditions Feature Vegetation Riparian Vegetation active (1) Historic Evidence (2) Reported but No Evidence (3) 4) Unknown (5)
Site Break Trigger Point Data Category POINT DATA KEY A Spring/upw B Seepage a	Feature Typ Other: Con elling - estimate rea - measure or	e Featurements Ongoing and Air No Evidence (4	ure Modifier Flow Conditions Feature Vegetation Riparian Vegetation active (1) Historic Evidence (2) Reported but No Evidence (3) 4) Unknown (5) 5 l/sec; measure temp of bank where seepage occurs
Site Break Trigger Point Data Category POINT DATA KEY A Spring/upw B Seepage a C Watercress D Outlet (file	Feature Typ Other: Con elling - estimate rea - measure or - estimate total	e Featurements Ongoing and Air No Evidence (4	are Modifier Flow Conditions Feature Vegetation Riparian Vegetation active (1) Historic Evidence (2) Reported but No Evidence (3) Unknown (5) Silvsec; measure temp of bank where seepage occurs upied
Site Break Trigger Point Data Category POINT DATA KEY A Spring/upw B Seepage a C Watercress D Outlet (file of	Feature Typ Other: Con elling - estimate rea - measure or - estimate total or other) - record	e Featurements Ongoing and Air No Evidence (4	are Modifier Flow Conditions Feature Vegetation Riparian Vegetation active (1) Historic Evidence (2) Reported but No Evidence (3) 4) Unknown (5) 5 l/sec; measure temp of bank where seepage occurs
Frigger Point Data Category POINT DATA KEY A Spring/upw B Seepage a C Watercress C Outlet (file or Beaver dan	Feature Typ Other: Con elling - estimate rea - measure or - estimate total or other) - record of - measure pen	e Featurements Ongoing and Air No Evidence (4 <0.5 l/sec or >0.5 r estimate length or surface area occur of flow status as per flow status as per fiched height and jurise area flow status as per fiched height and jurise flow status as per fiched height and jurise flow status as per flow status as	The Modifier Flow Conditions Feature Vegetation Riparian Vegetation active (1) Historic Evidence (2) Reported but No Evidence (3) Unknown (5) Silvsec; measure temp of bank where seepage occurs upied er feature flow. Estimate volume <0.5 l/sec or >0.5 l/sec. Measure temperature. feature flow. Estimate volume to be <0.5 l/sec or >0.5 l/sec. umping height
Site Break Trigger Point Data Category POINT DATA KEY A Spring/upw B Seepage a C Watercress D Outlet (file or Beaver dan G Manmade of	Feature Typ Other: Con elling - estimate rea - measure or - estimate total or other) - record of - measure per am - measure per am - measure per	e Featurements Ongoing and Ai No Evidence (4 <0.5 l/sec or >0.5 r estimate length or surface area occur d flow status as per flow status as per thed height and ju- perched height and ju-	The Modifier Flow Conditions Feature Vegetation Riparian Vegetation active (1) Historic Evidence (2) Reported but No Evidence (3) 4) Unknown (5) 5 l/sec; measure temp of bank where seepage occurs upied er feature flow. Estimate volume <0.5 l/sec or >0.5 l/sec. Measure temperature. feature flow. Estimate volume to be <0.5 l/sec or >0.5 l/sec. umping height
Site Break Trigger Point Data Category POINT DATA KEY A Spring/upw B Seepage a C Watercress D Outlet (file or E Inlet (file or Beaver dan Manmade of Other barrie	Feature Typ Other: Con elling - estimate rea - measure or - estimate total or other) - record if - measure per iam - measure per iam - measure per ir to fish movem	e Featurements Ongoing and Air No Evidence (4 <0.5 l/sec or >0.5 r estimate length or surface area occur of flow status as per flow status as per fiched height and justice the surface area occur of flow status as per flo	The Modifier Flow Conditions Feature Vegetation Riparian Vegetation active (1) Historic Evidence (2) Reported but No Evidence (3) Unknown (5) Silvsec; measure temp of bank where seepage occurs upied er feature flow. Estimate volume <0.5 l/sec or >0.5 l/sec. Measure temperature. feature flow. Estimate volume to be <0.5 l/sec or >0.5 l/sec. umping height d jumping height
Site Break Trigger Point Data Category POINT DATA KEY A Spring/upw B Seepage a C Watercress D Outlet (file or F Beaver dan Manmade of H Other barrie	Feature Typ Other: Con elling - estimate rea - measure or - estimate total or other) - record of - measure per am - measure per am - measure per ream reasure reactions reasure per ream reasure reactions	Ongoing and Ai No Evidence (4 <0.5 l/sec or >0.5 r estimate length or surface area occur d flow status as per flow status as per flow status as per ched height and ju- perched height and junction of the status and the status as per flow sta	The Modifier Flow Conditions Feature Vegetation Riparian Vegetation active (1) Historic Evidence (2) Reported but No Evidence (3) Unknown (5) 5 l/sec; measure temp of bank where seepage occurs upied er feature flow. Estimate volume <0.5 l/sec or >0.5 l/sec. Measure temperature. feature flow. Estimate volume to be <0.5 l/sec or >0.5 l/sec. umping height d jumping height outlet or industrial discharge pipe).
Site Break Trigger Point Data Category POINT DATA KEY A Spring/upw B Seepage a C Watercress D Outlet (file or F Beaver dan G Manmade of H Other barrier Potential co Channel ha	Feature Typ Other: Con elling - estimate rea - measure or - estimate total or other) - record of - measure per am - measure per am - measure per ream - measure per	Ongoing and Ai No Evidence (4 <0.5 l/sec or >0.5 r estimate length or surface area occur d flow status as per flow status as per fiched height and ju- perched height and ju- perched height and tent ince (storm sewer of ted by rip-rap, arm)	The Modifier Flow Conditions Feature Vegetation Riparian Vegetation active (1) Historic Evidence (2) Reported but No Evidence (3) Unknown (5) Silvec; measure temp of bank where seepage occurs upied er feature flow. Estimate volume <0.5 l/sec or >0.5 l/sec. Measure temperature. feature flow. Estimate volume to be <0.5 l/sec or >0.5 l/sec. umping height d jumping height outlet or industrial discharge pipe). hour stone, or gabion baskets.
Site Break Trigger Point Data Category POINT DATA KEY A Spring/upw B Seepage a C Watercress D Outlet (file or F Beaver dan G Manmade of H Other barrie Potential co C Channel ha C Culvert - no	Feature Typ Other: Con elling - estimate rea - measure or - estimate total or other) - record if - measure per am - measure per it of fish movem intamination sour dening - indicat te type, size and	Ongoing and Ai No Evidence (4 <0.5 l/sec or >0.5 r estimate length or surface area occur d flow status as per flow status as per thed height and ju- perched height and junce (storm sewer is ded by rip-rap, arm d whether or not per	Active (1) Historic Evidence (2) Reported but No Evidence (3) Unknown (5) 5 l/sec; measure temp of bank where seepage occurs upied er feature flow. Estimate volume <0.5 l/sec or >0.5 l/sec. Measure temperature. Ifeature flow. Estimate volume to be <0.5 l/sec or >0.5 l/sec. umping height d jumping height outlet or industrial discharge pipe).
Site Break Trigger Point Data Category POINT DATA KEY A Spring/upw B Seepage a C Watercress D Outlet (file or F Beaver dan G Manmade of H Other barrie Potential co C Channel ha C Culvert - no Flow transit M Flow transit	Feature Typ Other: Con elling - estimate rea - measure or - estimate total or other) - record if - measure per iam - measure per iam - measure per it of fish movem intamination sour dening - indicat te type, size and on point D/S - fi on point M/S- file	Ongoing and Ai No Evidence (4 <0.5 l/sec or >0.5 r estimate length or surface area occur d flow status as per flow status as per fiched height and ju- perched height and ju- perched height and perched by rip-rap, arm d whether or not per flow condition chan ow co	The Modifier Flow Conditions Feature Vegetation Riparian Vegetation active (1) Historic Evidence (2) Reported but No Evidence (3) Unknown (5) Silvec; measure temp of bank where seepage occurs upied er feature flow. Estimate volume <0.5 l/sec or >0.5 l/sec. Measure temperature. feature flow Estimate volume to be <0.5 l/sec or >0.5 l/sec. umping height d jumping height outlet or industrial discharge pipe). Hour stone, or gabion baskets. Herched. If perched record perched height and jumping height. In perched record perched height and jumping height height to substantial surface flow, independent of segment break.
Site Break Trigger Point Data Category POINT DATA KEY A Spring/upw B Seepage a C Watercress D Outlet (file or F Beaver dan G Manmade of H Other barrie Potential co C Channel ha C Culvert - no Flow transiti Flow transiti	Feature Typ Other: Con elling - estimate rea - measure or - estimate total or other) - record if - measure per am - measure per to fish movem ntamination sour dening - indicat te type, size and on point D/S - fi on point M/S- file on point D-S/IF-	e Featurements Ongoing and Air No Evidence (4 <0.5 l/sec or >0.5 restimate length or surface area occur of flow status as per fiched height and justice (storm sewer led by rip-rap, armid whether or not per low condition changes flow condition changes	The Modifier Flow Conditions Feature Vegetation Riparian Vegetation active (1) Historic Evidence (2) Reported but No Evidence (3) Unknown (5) Silvsec; measure temp of bank where seepage occurs upied er feature flow. Estimate volume <0.5 l/sec or >0.5 l/sec. Measure temperature. feature flow Estimate volume to be <0.5 l/sec or >0.5 l/sec. umping height d jumping height outlet or industrial discharge pipe). Hour stone, or gabion baskets. Herched. If perched record perched height and jumping height. Industrial discharge water, independent of segment break larges from dry to standing water, independent of segment break langes from dry/standing water to interstitial flow, independent of segment break langes from dry/standing water to interstitial flow, independent of segment break
Site Break Trigger Point Data Category POINT DATA KEY A Spring/upw B Seepage a C Watercress D Outlet (file or F Beaver dan G Manmade of H Other barrie Potential co C Channel ha C Culvert - no Flow transiti Flow transiti Fish observe	Feature Typ Other: Con elling - estimate rea - measure or - estimate total or other) - record of - measure per am - measure per to fish movem ntamination sour dening - indicat te type, size and on point D/S - fl on point M/S- fle on point D-S/IF- ed during non-fise	Ongoing and Ai No Evidence (4 <0.5 l/sec or >0.5 r estimate length or surface area occur d flow status as per flow status as per fiched height and ju- perched height and ju- perched height and perched by rip-rap, arm d whether or not per flow condition chan ow co	The Modifier Flow Conditions Feature Vegetation Riparian Vegetation active (1) Historic Evidence (2) Reported but No Evidence (3) Unknown (5) Silvsec; measure temp of bank where seepage occurs upied er feature flow. Estimate volume <0.5 l/sec or >0.5 l/sec. Measure temperature. feature flow Estimate volume to be <0.5 l/sec or >0.5 l/sec. umping height d jumping height outlet or industrial discharge pipe). Hour stone, or gabion baskets. Herched. If perched record perched height and jumping height. Industrial discharge water, independent of segment break larges from dry to standing water, independent of segment break langes from dry/standing water to interstitial flow, independent of segment break langes from dry/standing water to interstitial flow, independent of segment break
Site Break Trigger Point Data Category POINT DATA KEY A Spring/upw B Seepage a C Watercress D Outlet (tile or F Beaver dan G Manmade of H Other barrie Potential co C Channel ha C Culvert - no Flow transit Flow transit Fish observe Potential nu	Feature Typ Other: Con elling - estimate rea - measure or - estimate total or other) - record if - measure per am - measure per to fish movem ntamination sour dening - indicat te type, size and on point D/S - fi on point M/S- file on point D-S/IF- ed during non-file rient source	e Featurements Ongoing and Air No Evidence (4 <0.5 l/sec or >0.5 restimate length or surface area occur of flow status as per fiched height and justice (storm sewer led by rip-rap, armid whether or not per low condition changes flow condition changes	The Modifier Flow Conditions Feature Vegetation Riparian Vegetation active (1) Historic Evidence (2) Reported but No Evidence (3) Unknown (5) Silvsec; measure temp of bank where seepage occurs upied er feature flow. Estimate volume <0.5 l/sec or >0.5 l/sec. Measure temperature. feature flow Estimate volume to be <0.5 l/sec or >0.5 l/sec. umping height d jumping height outlet or industrial discharge pipe). Hour stone, or gabion baskets. Herched. If perched record perched height and jumping height. Industrial discharge water, independent of segment break larges from dry to standing water, independent of segment break langes from dry/standing water to interstitial flow, independent of segment break langes from dry/standing water to interstitial flow, independent of segment break
Site Break Trigger Point Data Category POINT DATA KEY A Spring/upw B Seepage a C Watercress D Outlet (file or F Beaver dan G Manmade of H Other barrie Potential co C Channel ha C Culvert - no Flow transiti Flow transiti Fish observe	Feature Typ Other: Con elling - estimate rea - measure or - estimate total or other) - record if - measure per am - measure per to fish movem ntamination sour dening - indicat te type, size and on point D/S - fi on point M/S- file on point D-S/IF- ed during non-file rient source	e Featurements Ongoing and Air No Evidence (4 <0.5 l/sec or >0.5 restimate length or surface area occur of flow status as per fiched height and justice (storm sewer led by rip-rap, armid whether or not per low condition changes flow condition changes	The Modifier Flow Conditions Feature Vegetation Riparian Vegetation active (1) Historic Evidence (2) Reported but No Evidence (3) Unknown (5) Silvsec; measure temp of bank where seepage occurs upied er feature flow. Estimate volume <0.5 l/sec or >0.5 l/sec. Measure temperature. feature flow Estimate volume to be <0.5 l/sec or >0.5 l/sec. umping height d jumping height outlet or industrial discharge pipe). Hour stone, or gabion baskets. Herched. If perched record perched height and jumping height. Industrial discharge water, independent of segment break larges from dry to standing water, independent of segment break langes from dry/standing water to interstitial flow, independent of segment break langes from dry/standing water to interstitial flow, independent of segment break

	Unconstraine	d Headwater [Orainage Feature As	ssessment	
Date (yyyy/mm/dd): 2 0	240529 Project	#: 5368	9 - /0) Recorder/Crew:	Vs + BA	
Stream Name:	Stream	Code:	Site Code:	H3 Print3	
	Upstream WP# Downstream WP#		Field Assessme	nt: Sample 1 Unconnected HDF: Sample 2 Not connected to	
Direction of Assessment:	☐ Upstrea	m Doy	vnstream	Sample 3 downstream net	
Flow Influence	☐ Freshet (1)		Spate (2)	Baseflow (3)	WOIK
Flow Condition	Dry (1) Standing Water (2)		Interstitial Flow (3) Minimal Flow (4)	☐ Substantial Flow (5)	
Feature Type	☐ Defined Natural Channel ☐ Channelized or Constra ☐ Multi-thread (3)		No Defined Feature (4) Tiled Feature (5) Wetland (6)	Swale (7) Roadside Ditch (8) Pond (9)	
Feature Vegetation	□ None (1) □ Lawn (2)	☐ Cropped (3)	☐ Meadow (4) ☐ Scrui	7 : 5:14 (5)	
Riparian Vegetation 0 - 1.5 m Left Bank Right Bank	□ None (1) □ Lawn (2) □ None (1) □ Lawn (2)	☐ Cropped (3) ☐ Cropped (3)	Meadow (4) ☐ Scrul ☐ Meadow (4) ☐ Scrul	pland (5) ☐ Wetland (6) ☐ Forest (7)	
1.5 - 10 m Left Bank Right Bank	□ None (1) □ Lawn (2) □ None (1) □ Lawn (2)	☐ Cropped (3) ☐ Cropped (3)		bland (5) Wetland (6) Forest (7)	
10 - 30 m Left Bank Right Bank	□ None (1) □ Lawn (2) □ None (1) □ Lawn (2)	☐ Cropped (3) ☐ Cropped (3)	Meadow (4) ☐ Scru ☐ Meadow (4) ☐ Scru		
Dominant Substrate (S	Clay (Hard Pan) 2.M3)	Silt Sand (0.06		Cobble (67-249 mm) Boulder (250 mm) Bedro	
Sub-Dominant Substra	te (Sz.W3)	И П	Ш		
Feature Roughness Width Measurement	Can't Measure (1)	10 - 40 Bankfull (2)		0% High (3) > 60% Extreme (4) atted (4) GIS (5) Measure/GIS (6)	
Channel Dimensions	Feature Width (m): 3. 6		Bankfull Depth	(mm) 53	
Entrenchment Tot		Left Bank	m Right Bank	m Total widthn	n
Surface Flow Method Wetted Width (m)	Perched Culvert (1) Wetted Depth (mm)	Hydraulic H		y Time (3) Estimated (4) Distance (m) Time (s)	
1.0	1 2 3	1 2 Standing Was	3 1 2 3	1 2 3 1 2	3
Sediment Transport	Adjacent None (1) Sheet Erosion Feature None (1) Sheet Erosion	☐ Rill (2)	Rill and Gully (3) Instream Bank Erosion (* Rill and Gully (3) Instream Bank Erosion (*	Gully (4) Outlet Scour (5)	
Sediment Deposition None (1)	Measures (mm):Minimal: < 5 mm (2)M	oderate: 5-30 mm (3)	Substantial: 31-80 n	nm (4) Extensive: > 80 mm (5)	

ate:	20240	SZ n Proje	ct#: 536	689-161 Field Assessment: Sample #1 Sample #2 Sample #3
			5 - X-1	POINT FEATURE DATA
Ground	rrier Measurer water Indicat	WP#		Perched Height (mm): Jumping Height (mm): Perched Height (mm): Jumping Height (mm): Watercress Seepage Bubbling Stained Other: Present Comment:
WP#	Photo#	Code	Category	y Description
ditio	nal Notes:			
te Bro	eak 🔲	Feature Type		eature Modifier Flow Conditions Feature Vegetation Riparian Vegetation
te Bre	eak 🔲	Feature Type Other: Com		ell mater
Site Bre Frigger Point D Catego	eak 🔲		ments Le	Ind Active (1) Historic Evidence (2) Reported but No Evidence (3)
F F	DATA KEY: Spring/upwelli Seepage area Watercress - Goultet (tile or ot Beaver dam - Manmade dam Other barrier to Potential conta Channel harde Culvert - note to Illow transition	other: Com ing - estimate I - measure or estimate total other) - record fi measure perc n - measure pro ofish moveme amination sour ening - indicate type, size and point D/S - flo point M/S- flo point D-S/IF- during non-fis	Ongoing and No Evidence <0.5 l/sec or >0 estimate length surface area or flow status as power than the complete of the comple	Id Active (1) Historic Evidence (2) Reported but No Evidence (3) De (4) Unknown (5) PO.5 l/sec; measure temp gth of bank where seepage occurs occupied us per feature flow. Estimate volume <0.5 l/sec or >0.5 l/sec. Measure temperature. per feature flow. Estimate volume to be <0.5 l/sec or >0.5 l/sec. Id jumping height t and jumping height wer outlet or industrial discharge pipe). armour stone, or gabion baskets. Into perched. If perched record perched height and jumping height. Changes from dry to standing water, independent of segment break changes from minimal to substantial surface flow, independent of segment break in changes from dry/standing water to interstitial flow, independent of segment break
rigger Point D Catego POINT I	DATA KEY: Spring/upwelli Seepage area Watercress - Goulet (tile or of Beaver dam - Manmade dam Other barrier to Potential conta Channel harde Culvert - note to Tow transition Ilow transition Ilow transition	other: Com ing - estimate I - measure or estimate total other) - record fi measure percon - measure percon - measure pro ofish movement in indicate type, size and point D/S - flo point M/S- flo point D-S/IF- during non-fisint source	Ongoing and No Evidence <0.5 l/sec or >0 estimate length surface area oc flow status as pe hed height and erched by rip-rap, an whether or not ow condition cha flow condition of	Id Active (1) Historic Evidence (2) Reported but No Evidence (3) De (4) Unknown (5) PO.5 l/sec; measure temp gth of bank where seepage occurs occupied us per feature flow. Estimate volume <0.5 l/sec or >0.5 l/sec. Measure temperature. per feature flow. Estimate volume to be <0.5 l/sec or >0.5 l/sec. Id jumping height t and jumping height wer outlet or industrial discharge pipe). armour stone, or gabion baskets. Into perched. If perched record perched height and jumping height. Changes from dry to standing water, independent of segment break changes from minimal to substantial surface flow, independent of segment break in changes from dry/standing water to interstitial flow, independent of segment break

	Unconstrained	Headwater Dra	ainage Feature Asse	essment	
Date (yyyy/mm/dd): 2	240429 Project #		Recorder/Crew:	HS POINT 4	
Site Limits:	Upstream WP# [690	57749	Field Assessment:	□ Sample 1 Unconnected HDF: □ Sample 2 □ Not connected to	
Direction of Assessment				Sample 3 downstream netw	vork
Flow Influence	☐ Freshet (1)		Spate (2)	Baseflow (3)	
Flow Condition	Dry (1) Standing Water (2)		Interstitial Flow (3) Minimal Flow (4)	Substantial Flow (5)	
Feature Type	☐ Defined Natural Channel☐ Channelized or Constrain☐ Multi-thread (3)	ned (2)	- ()	Swale (7) Roadside Ditch (8)	
Feature Vegetation			Meadow (4) Scrublan	☐ Pond (9) d (5) ☐ Wetland(6) ☐ Forest (7)	
Riparian Vegetation 0 - 1.5 m Left Bank Right Bank			Meadow (4) Scrublan Meadow (4) Scrublan		
1.5 - 10 m Left Bank Right Bank	prompt and the second s		Meadow (4) Scrublan Meadow (4) Scrublan		
10 - 30 m Left Bank Right Bank	_/ _		Meadow (4) Scrublan Meadow (4) Scrublan	The state of the s	
Channel Gradient (S4. Distance (m):	M7) Visual (1) Clinome	eter (2) Laser	Level (3) Survey Level (4	4)	
	Clay (Hand Flora)	L			
Dominant Substrate (S		Silt Sand (0.06-2 n	nm) Gravei (22-66 mm) Co	obble (67-249 mm) Boulder (250 mm) Bedr	7
Sub-Dominant Substra	ite (S2.M3)	6 0]
Feature Roughness Width Measurement	Can't Measure (1) Ba		Moderate (2) 40 - 60% Mean Width (3) Estimate		
Channel Dimensions	Feature Width (m): 4.0		Bankfull Depth (mn	340	
Entrenchment To	tal: >40 m <>40 m	Left Bank	m Right Bank	m Total width	m
Surface Flow Method	Perched Culvert (1)	Hydraulic Head	d (2) Distance by T	ime (3) Estimated (4)	
Wetted Width (m)	Wetted Depth (mm) H	lydraulic head (mm)	Volume (L) 1 2 3	Distance (m) Time (s) 1 2 3 1 2	3
1.4		Standing Water			
Sediment Transport	Adjacent	□ Rill (2)	Rill and Gully (3)	Gully (4) Outlet Scour (5)	
TAMBOUT TORONOM	Sheet Erosion ((6)	☐ Instream Bank Erosion (7)	Other (8)	

THE RESERVE OF THE PARTY OF THE	yyyy/mm/d	id	Uncons	strained Headwater Drainage Feature Assessment Pg. 2 of 2
Date:	20240	529 Proje	ect#: 5348	G - IG Field Assessment: Sample # 1 Sample # 2 Sample # 3
				POINT FEATURE DATA
Ground	arrier Measuren Iwater Indicato	WP#		Perched Height (mm): Jumping Height (mm): Jumping Height (mm): Watercress Seepage Bubbling Stained Other: Present Comment:
WP#	Photo#	Code	Category	Description
100				
rigge Point	reak 🔲 er 🔲	Feature Type Other: Cor	pe feath	ature Modifier Flow Conditions Feature Vegetation Riparian Vegetation
ateg	orv		No Evidence	(4)
S. DIVERS	DATA KEY:		METER I	(4) Unknown (5)
S. DIVERS	DATA KEY: Spring/upwell Seepage area Watercress - Outlet (tile or Inlet (tile or Inlet (tile or of Beaver dam - Manmade dan Other barrier Potential cont Channel hard Culvert - note Flow transition Flow transition Flow transition	a - measure c estimate tota other) - record ther) - record measure per m - measure to fish moven tamination so lening - Indica type, size an n point D/S - n point M/S- f d during non-f ent source	e <0.5 l/sec or >0 or estimate lengtial surface area or or diflow status as proched height and perched height and perched height and perched height and perched height and the diflow condition of flow condition of	0.5 l/sec; measure temp th of bank where seepage occurs ccupied s per feature flow. Estimate volume <0.5 l/sec or >0.5 l/sec. Measure temperature. ser feature flow. Estimate volume to be <0.5 l/sec or >0.5 l/sec. d jumping height and jumping height ver outlet or industrial discharge pipe). armour stone, or gabion baskets. of perched. If perched record perched height and jumping height. hanges from dry to standing water, independent of segment break hanges from minimal to substantial surface flow, independent of segment break or changes from dry/standing water to interstitial flow, independent of segment break

	Unconstrained Headwater	Drainage Feature Assessment
Date (yyyy/mm/dd): 20	240529 Project #: 5368 C	Recorder/Crew: Vs + AA
Stream Name:	Stream Code:	Site Code: H3 Paint 5
	Upstream WP# G44636 Downstream WP# 4757749	Field Assessment: Sample 1 Unconnected HDF: Sample 2 Not connected to
Direction of Assessment:	□ Upstream □ Do	ownstream Sample 3 downstream network
Flow Influence	☐ Freshet (1)	Spate (2) Baseflow (3)
Flow Condition	☐ Dry (1) ☐ Standing Water (2)	Interstitial Flow (3) Substantial Flow (5) Minimal Flow (4)
Feature Type	□ Defined Natural Channel (1)□ Channelized or Constrained (2)□ Multi-thread (3)	□ No Defined Feature (4) □ Swale (7) □ Tiled Feature (5) □ Roadside Ditch (8) □ Wetland (6) □ Pond (9)
Feature Vegetation	□ None (1) □ Lawn (2) □ Cropped (3)	Meadow (4) ☐ Scrubland (5) ☐ Wetland(6) ☐ Forest (7)
Riparian Vegetation		
0 - 1.5 m Left Bank Right Bank	□ None (1) □ Lawn (2) □ Cropped (3) □ None (1) □ Lawn (2) □ Cropped (3)	Meadow (4) ☐ Scrubland (5) ☐ Wetland (6) ☐ Forest (7) ☐ Meadow (4) ☐ Scrubland (5) ☐ Wetland (6) ☐ Forest (7)
1.5 - 10 m Left Bank Right Bank	□ None (1) □ Lawn (2) □ Cropped (3) □ None (1) □ Lawn (2) □ Cropped (3)	Meadow (4) ☐ Scrubland (5) ☐ Wetland (6) ☐ Forest (7) ☐ Meadow (4) ☐ Scrubland (5) ☐ Wetland (6) ☐ Forest (7)
10 - 30 m Left Bank Right Bank	□ None (1) □ Lawn (2) □ Cropped (3) □ None (1) □ Lawn (2) □ Cropped (3)	Meadow (4) Scrubland (5) Wetland (6) Forest (7) Meadow (4) Scrubland (5) Wetland (6) Forest (7)
Channel Gradient (S4	.M7) Visual (1) Clinometer (2)	aser Level (3) Survey Level (4) Other (5) LiDAR (6)
Distance (m):	Elevation (cm	
Dominant Substrate (S		16-2 mm) Gravel (22-66 mm) Cobble (67-249 mm) Boulder (250 mm) Bedrock
Gub-Bollilliant Gubsti	ite (02.ins)	
Feature Roughness Width Measurement	< 10% Minimal (1) Can't Measure (1) Bankfull (2)	10% Moderate (2)
Channel Dimensions	Feature Width (m): 3.4	Bankfull Depth (mm) 550
Entrenchment To	tal: >40 m <<40 m Left Bank	m Right Bank m Total width m
Surface Flow Method	Perched Culvert (1) Hydraulic	
Wetted Width (m)	Wetted Depth (mm) Hydraulic head (m	Im) Volume (L) Distance (m) Time (s) 3 1 2 3 1 2 3
1.2	704060 Standing Wa	
Sediment Transport	Adjacent None (1) Rill (2) Sheet Erosion (6) Feature None (1) Rill (2) Sheet Erosion (6)	☐ Rill and Gully (3) ☐ Gully (4) ☐ Outlet Scour (5) ☐ Instream Bank Erosion (7) ☐ Other (8) ☐ Rill and Gully (3) ☐ Gully (4) ☐ Outlet Scour (5) ☐ Instream Bank Erosion (7) ☐ Other (8)
Sediment Deposition None (1)	Measures (mm): Minimal: < 5 mm (2)Moderate: 5-30 mm (3)	3) Substantial: 31-80 mm (4) Extensive: > 80 mm (5)

yy ate: 7 0 5	yy/mm/dd		strained Headwater Drainage Feature Assessment Pg. 2 of 2 Field Assessment: Sample # 1 Sample # 2 Sample # 3
no. [2]012	14101 4 291110	ect #. 356	8,10
ish Barrier Me	asurements: WP#	#	POINT FEATURE DATA Perched Height (mm): Jumping Height (mm):
on barror we	WP:		Perched Height (mm): Jumping Height (mm):
roundwater I	ndicators	None	Watercress Seepage Bubbling Stained Other:
ish Collection	1	Absent	Present Comment:
		N. S. C.	
WP# Phot	o# Code	Category	Description
ditional No	otes:		
teavy	ATV U	se with	in feature
teavy	ATV U	Connexe	ed to the Welland Canal
teavy	ATV U	Connexe	ture Modifier Flow Conditions Feature Vegetation Riparian Vegetation
teavy - dir ite Break rigger	ATV va	connote Fea	ture Modifier Flow Conditions Feature Vegetation Riparian Vegetation
teavy - dir ite Break rigger oint Data	ATV U	nments Ongoing and	Active (1) The Welland Canal Feature Vegetation Riparian Vegetation Downstran extent - Culvert Lo Reported but No Evidence (3) Welland
teavy ite Break rigger roint Data Category	Feature Typ	connote Fea	Active (1) The Welland Canal Feature Vegetation Riparian Vegetation Downstran extent - Culvert Lo Reported but No Evidence (3) Welland
teavy - dir ite Break rigger oint Data	Feature Typ	nments Ongoing and	Active (1) Historic Evidence (2) Reported but No Evidence (3) We lland
ite Break rigger roint Data Category POINT DATA	Feature Typ Other: Cor	De Feamments Ongoing and No Evidence	Active (1) Historic Evidence (2) Reported but No Evidence (3) We lland Unknown (5) 0.5 l/sec; measure temp
ite Break rigger roint Data Category POINT DATA	Feature Typ Other: Cor CEY: //upwelling - estimate //ge area - measure of	De Feamments Ongoing and No Evidence	Active (1) Historic Evidence (2) Reported but No Evidence (3) We lland Unknown (5) 0.5 l/sec; measure temp of bank where seepage occurs
ite Break rigger roint Data Category POINT DATA A Spring B Seepa Waten	Feature Typ Other: Cor KEY: //upwelling - estimate ge area - measure coress - estimate tota (tile or other) - record	De Feamments Ongoing and No Evidence e <0.5 l/sec or >0 or estimate length all surface area oc rd flow status as	Active (1) Historic Evidence (2) Reported but No Evidence (3) We lland Unknown (5) 0.5 l/sec; measure temp of bank where seepage occurs coupied per feature flow. Estimate volume <0.5 l/sec or >0.5 l/sec. Measure temperature.
ite Break rigger roint Data Category POINT DATA A Spring B Seepa Waten	Feature Typ Other: Cor KEY: //upwelling - estimate //ge area - measure of //cress - estimate tota //tile or other) - record	De Feamments Ongoing and No Evidence e <0.5 l/sec or >0 or estimate length all surface area oc rd flow status as flow status as pe	Active (1) Historic Evidence (2) Reported but No Evidence (3) We lland Unknown (5) 0.5 l/sec; measure temp of bank where seepage occurs cupied per feature flow. Estimate volume <0.5 l/sec or >0.5 l/sec. Measure temperature. er feature flow. Estimate volume to be <0.5 l/sec or >0.5 l/sec.
ite Break rigger roint Data Category POINT DATA A Spring B Seepa C Water D Outlet E Inlet (I	Feature Typ Other: Cor KEY: //upwelling - estimate ge area - measure coress - estimate tota (tile or other) - record	De Feamments Ongoing and No Evidence e <0.5 l/sec or >0 or estimate length all surface area oc rd flow status as perched height and	Active (1) Historic Evidence (2) Reported but No Evidence (3) We lland Unknown (5) 0.5 l/sec; measure temp of bank where seepage occurs cupied per feature flow. Estimate volume <0.5 l/sec or >0.5 l/sec. Measure temperature. er feature flow. Estimate volume to be <0.5 l/sec or >0.5 l/sec. jumping height
ite Break rigger roint Data Category POINT DATA A Spring B Seepa C Water O Outlet E Inlet (II E Beave Manm H Other	Feature Typ Feature Typ Other: Cor Ot	De Fea mments Ongoing and No Evidence e <0.5 l/sec or >0 or estimate length all surface area oc rd flow status as perched height and perched height and ment	Active (1) Historic Evidence (2) Reported but No Evidence (3) We lland Unknown (5) 1.5 l/sec; measure temp of bank where seepage occurs cupied per feature flow. Estimate volume <0.5 l/sec or >0.5 l/sec. Measure temperature. er feature flow. Estimate volume to be <0.5 l/sec or >0.5 l/sec. jumping height and jumping height
ite Break rigger roint Data Category POINT DATA A Spring B Seepa C Water O Outlet E Inlet (II E Beave Manm H Other Potent	Feature Typ Feature Typ Other: Cor KEY: //upwelling - estimate //upwelling - record //upwelling - estimate //u	De Fea mments Ongoing and No Evidence e <0.5 l/sec or >0 or estimate length all surface area oc rd flow status as perched height and perched height and ment purce (storm sewer	Active (1) Historic Evidence (2) Reported but No Evidence (3) We lland Unknown (5) 0.5 l/sec; measure temp of bank where seepage occurs cupied per feature flow. Estimate volume <0.5 l/sec or >0.5 l/sec. Measure temperature. er feature flow. Estimate volume to be <0.5 l/sec or >0.5 l/sec. jumping height
ite Break rigger roint Data Category POINT DATA A Spring B Seepa C Water O Outlet E Inlet (I E Beave Manm H Other Potent C Chann C Culver	Feature Typ Feature Typ Other: Cor KEY: //upwelling - estimate /	De Fea mments Ongoing and No Evidence e <0.5 l/sec or >0 or estimate length all surface area oc rd flow status as perched height and perched heig	Active (1) Historic Evidence (2) Reported but No Evidence (3) We lland (4) Unknown (5) 0.5 l/sec; measure temp of bank where seepage occurs cupied per feature flow. Estimate volume < 0.5 l/sec or > 0.5 l/sec. Measure temperature. er feature flow. Estimate volume to be < 0.5 l/sec or > 0.5 l/sec. jumping height and jumping height er outlet or industrial discharge pipe). rmour stone, or gabion baskets. t perched. If perched record perched height and jumping height.
ite Break rigger roint Data Category POINT DATA A Spring B Seepa C Water O Outlet E Inlet (I E Beave Manm H Other Potent C Culver Flow tr	Feature Typ Feature Typ Other: Cor KEY: //upwelling - estimate /	pe Fea mments Ongoing and No Evidence e <0.5 l/sec or >0 or estimate length all surface area oc rd flow status as perched height and perched heigh	Active (1) Historic Evidence (2) Reported but No Evidence (3) We land (4) Unknown (5) 0.5 I/sec; measure temp of bank where seepage occurs cupied per feature flow. Estimate volume <0.5 I/sec or >0.5 I/sec. Measure temperature. er feature flow. Estimate volume to be <0.5 I/sec or >0.5 I/sec. jumping height and jumping height er outlet or industrial discharge pipe). rmour stone, or gabion baskets. It perched. If perched record perched height and jumping height. langes from dry to standing water, independent of segment break
ite Break rigger roint Data Category POINT DATA A Spring B Seepa Water O Outlet E Inlet (It E Beave Manm H Other Potent Chann C Culver Flow tr Flow tr	Feature Typ Feature Typ Other: Cor KEY: //upwelling - estimate //upwelling - estimate //upwelling - estimate //upwelling - record //upwelling - estimate //up	De Fea mments Ongoing and No Evidence e <0.5 l/sec or >0 or estimate length all surface area oc rd flow status as perched height and perched heig	Active (1) Historic Evidence (2) Reported but No Evidence (3) We long Unknown (5) 1.5 l/sec; measure temp of bank where seepage occurs scupied per feature flow. Estimate volume <0.5 l/sec or >0.5 l/sec. Measure temperature. are feature flow. Estimate volume to be <0.5 l/sec or >0.5 l/sec. jumping height and jumping height er outlet or industrial discharge pipe). The proceed of the proceed of the process of the pr
ite Break rigger roint Data Category POINT DATA A Spring B Seepa Water O Outlet E Inlet (I E Beave Manm H Other Potent Chann C Culver Flow tr Flow tr Flow tr Flow tr	Feature Typ Get Y Feature Typ Other: Cor KEY: //upwelling - estimate //upwelling - estimate //upwelling - estimate //upwelling - estimate //upwelling - record //upwelling - estimate //upwelling -	De Fea mments Ongoing and No Evidence e <0.5 l/sec or >0 or estimate length all surface area oc rd flow status as perched height and perched heig	Active (1) Historic Evidence (2) Reported but No Evidence (3) We long Unknown (5) 1.5 l/sec; measure temp of bank where seepage occurs scupied per feature flow. Estimate volume <0.5 l/sec or >0.5 l/sec. Measure temperature. are feature flow. Estimate volume to be <0.5 l/sec or >0.5 l/sec. jumping height and jumping height er outlet or industrial discharge pipe). The proceed of the proceed of the process of the pr
ite Break rigger roint Data Category POINT DATA A Spring B Seepa Water O Outlet E Inlet (It E Beave Manm H Other Potent Chann C Culver Flow tr	Feature Typ Feature Typ Other: Cor KEY: //upwelling - estimate //upwelling - estimate //upwelling - estimate //upwelling - record //upwelling - estimate //up	De Fea mments Ongoing and No Evidence e <0.5 l/sec or >0 or estimate length all surface area oc rd flow status as perched height and perched heig	Active (1) Historic Evidence (2) Reported but No Evidence (3) We long Unknown (5) 1.5 l/sec; measure temp of bank where seepage occurs scupied per feature flow. Estimate volume <0.5 l/sec or >0.5 l/sec. Measure temperature. are feature flow. Estimate volume to be <0.5 l/sec or >0.5 l/sec. jumping height and jumping height er outlet or industrial discharge pipe). The proceed of the proceed of the process of the pr
ite Break rigger roint Data Category POINT DATA A Spring B Seepa Water O Outlet E Inlet (It E Beave Manm H Other Potent Chann C Culver Flow tr	Feature Typ Get Y Feature Typ Other: Cor KEY: //upwelling - estimate //upwelling - estimate //upwelling - estimate //upwelling - estimate //upwelling - record //upwelling - estimate //upwelling -	De Fea mments Ongoing and No Evidence e <0.5 l/sec or >0 or estimate length all surface area oc rd flow status as perched height and perched heig	Active (1) Historic Evidence (2) Reported but No Evidence (3) We long Unknown (5) 1.5 l/sec; measure temp of bank where seepage occurs scupied per feature flow. Estimate volume <0.5 l/sec or >0.5 l/sec. Measure temperature. are feature flow. Estimate volume to be <0.5 l/sec or >0.5 l/sec. jumping height and jumping height er outlet or industrial discharge pipe). The proceed of the proceed of the process of the pr

Visit 2

H1A-S1

Date (yyyy/mm/dd): 2	2 2 4 0 5 2 7 Project #: 5368 9-	-/0 Recorder/Crew: Vs + At	
Site Limits:	Classes Cada		
	Stream Code:	Site Code: HQ SI POINT	
Direction of Assessment	Upstream WP# (_C_15_35_z	Field Assessment: Sample 1 Unconnected HDF:	
	Downstream WP# 475 100 2	Sample 2 □Not connected ownstream □Sample 3 downstream ne	
Flow Influence	☐ Freshet (1)	Spate (2) Baseflow (3)	IWOIK
r low illidelice	Li Treshet (1)	Spate (2) Basellow (5)	
Flow Condition	□ Dry (1)	☐ Interstitial Flow (3) ☐ Substantial Flow (5)	
	Standing Water (2)	Minimal Flow (4)	
Feature Type	Defined Natural Channel (1)	No Defined Feature (4) Swale (7)	
	☐ Channelized or Constrained (2) ☐ Multi-thread (3)	☐ Tiled Feature (5) ☐ Roadside Ditch (8) ☐ Wetland (6) ☐ Pond (9)	
Feature Vegetation	□ None (1) □ Lawn (2) □ Cropped (3)	☐ Wetland (6) ☐ Pond (9) ☐ Meadow (4) ☐ Scrubland (5) ☐ Wetland(6) ☐ Forest (7)	
, catalor ogotation		(1)	
Riparian Vegetation		B6th	
0 - 1.5 m Left Bank	None (1) Lawn (2) Cropped (3)	☐ Meadow (4) ☐ Scrubland (5) ☐ Wetland (6) ☐ Forest (7)	
Right Bank	None (1) Lawn (2) Cropped (3)	Meadow (4) Scrubland (5) Wetland (6) Forest (7)	
1.5 - 10 m Left Bank	None (1) Lawn (2) Cropped (3)	☐ Meadow (4) ☐ Scrubland (5) ☐ Wetland (6) ☐ Forest (7)	
Right Bank	□ None (1) □ Lawn (2) □ Cropped (3)	☐ Meadow (4) ☐ Scrubland (5) ☐ Wetland (6) ☐ Forest (7)	
10 - 30 m Left Bank	None (1) Lawn (2) Cropped (3)	☐ Meadow (4) ☐ Scrubland (5) ☐ Wetland (6) ☐ Forest (7)	
Right Bank	□ None (1) □ Lawn (2) □ Cropped (3)	☐ Meadow (4) ☐ Scrubland (5) ☐ Wetland (6) ☐ Forest (7)	
Channel Gradient (S4.	M7) Visual (1) Clinometer (2) La	aser Level (3) Survey Level (4) Other (5) LiDAR (6)	
Distance (m):	Elevation (cm)	(°):	
	Clay (Hard Pan) Silt / Sand (0.06	06-2 mm) Gravel (22-66 mm) Cobble (67-249 mm) Boulder (250 mm) Bed	drock
Dominant Substrate (S	2.M3)		
Sub-Dominant Substra	te (S2.M3)		
Feature Roughness	< 10% Minimal (1)	10% Moderate (2) 40 - 60% High (3) > 60% Extreme (4)	
	Can't Measure (1) Bankfull (2)	Mean Width (3) Estimated (4) GIS (5) Measure/GIS (6)	
Width Measurement	Can't incastro (1)		
Channel Dimensions	Feature Width (m):	Bankfull Depth (mm)	
Entrenchment Tot	al: >40 m \ <40 m Left Bank	m Right Bank m Total width	m
Surface Flow Method	Perched Culvert (1) Hydraulic H	Head (2) Distance by Time (3) Estimated (4)	
Wetted Width (m)	Wetted Depth (mm) Hydraulic head (mm	m) Volume (L) Distance (m) Time (s)	
	1 2 3 1 2	3 1 2 3 1 2 3 1 2	3
7.2	10 10 20 -		
		and the second of the second o	
	Adjacent □ None (1) □ Rill (2)	☐ Rill and Gully (3) ☐ Gully (4) ☐ Outlet Scour (5)	
Sediment Transport	☐ Sheet Erosion (6)	☐ Instream Bank Erosion (7) ☐ Other (8)	
	Feature ☐ None (1) ☐ Rill (2)	☐ Rill and Gully (3) ☐ Gully (4) ☐ Outlet Scour (5)	
	☐ Sheet Erosion (6)	☐ Instream Bank Erosion (7) ☐ Other (8)	
Sediment Deposition	Measures (mm):		-
Jeannent Deposition	moderate (min).		

	20240	52 9 Proje	ct #: 536	89-101	Field	Assessment:	Sample # 1	Sampl	le#2	Sample :
			A 1884 3	PC	DINT FEAT	TURE DA	TA			
Ground	arrier Measurer dwater Indicat ollection	WP#		Perched Heig Perched Heig Watercress Present			g Height (mm): g Height (mm): Stained	Other:		
WP#	Photo #	Code	Category				Description			
		Windows (1)								
Additio	onal Notes:								10	
Addition		Feature Typ	e	ature Modifier	∏Flow	Conditions	∑/Feature Ve	getation] Ripariar	n Vegetation
Site Br	reak 🔲	Feature Type	nments		10			getation]Ripariar	n Vegetation
Site Br	reak 🔲 er 🔲 Data		ongoing and	d Active (1)	Histo	ric Evidence (2		getation		n Vegetation
Site Br Trigge Point Categ	reak 🔲 er 🔲 Data		nments	d Active (1)	Histo					n Vegetation
Site Br Trigge Point Categ	pata Data ory DATA KEY: Spring/upwel Seepage are: Watercress - Outlet (tile or o Beaver dam Manmade da Other barrier Potential con Channel hard: Culvert - note Flow transition Flow transit	ling - estimate a - measure or estimate total other) - record ther) - record ther	Ongoing and No Evidence <0.5 l/sec or > r estimate leng surface area or deflow status as flow on the flow status as flow stat	d Active (1) e (4) 0.5 l/sec; measure flow the feature flow the flow and jumping height and jumping from dry hanges from dry hanges from min changes from dry	Histo Unkn ure temp e seepage occurs v. Estimate volume Estimate volume ght strial discharge p gabion baskets. rched record perc to standing wate imal to substantia	ric Evidence (2 own (5) e <0.5 l/sec or > to be <0.5 l/sec ipe). hed height and j	P) Reported by Rep	ut No Evidence		n Vegetation

	Unconstrained Headwater	Drainage Feature Asse	essment
Date (yyyy/mm/dd):	2 2 4 0 5 2 9 Project #: 536 S	G-101 Recorder/Crew:	Vs + AA
Stream Name:	Stream Code:	Site Code:	HIA-SI POINTS
Site Limits:	Upstream Downstream WP# Upstream WP# Upstream Downstream	Field Assessment:	Sample 1 Unconnected HDF: Sample 2 Not connected to
Direction of Assessment:	□ Upstream □ Do	ownstream	□Sample 3 downstream network
Flow Influence	☐ Freshet (1)	Spate (2)	Baseflow (3)
Flow Condition	☐ Dry (1) ☐ Standing Water (2)	☐ Interstitial Flow (3) ☐ Minimal Flow (4)	Substantial Flow (5)
Feature Type	☐ Defined Natural Channel (1) ☐ Channelized or Constrained (2) ☐ Multi-thread (3)	☐ No Defined Feature (4) ☐ Tiled Feature (5) ☐ Wetland (6)	Swale (7) Roadside Ditch (8) Pond (9)
Feature Vegetation	□ None (1) □ Lawn (2) □ Cropped (3)	☐ Meadow (4) ☐ Scrubland	(5) Wetland(6) Forest (7)
Riparian Vegetation			
0 - 1.5 m Left Bank Right Bank	□ None (1) □ Lawn (2) □ Cropped (3) □ None (1) □ Lawn (2) □ Cropped (3)	☐ Meadow (4) ☐ Scrubland ☐ Meadow (4) ☐ Scrubland	4
1.5 - 10 m Left Bank Right Bank	□ None (1) □ Lawn (2) □ Cropped (3) □ None (1) □ Lawn (2) □ Cropped (3)	☐ Meadow (4) ☐ Scrubland ☐ Meadow (4) ☐ Scrubland	
10 - 30 m Left Bank Right Bank	□ None (1) □ Lawn (2) □ Cropped (3) □ None (1) □ Lawn (2) □ Cropped (3)	☐ Meadow (4) ☐ Scrubland ☐ Meadow (4) ☐ Scrubland	
Channel Gradient (S4.	.M7)	ser Level (3) Survey Level (4)	Other (5) LiDAR (6)
Distance (m):	Elevation (cm)		Gradient (°):
Dominant Substrate (S	Clay (Hard Pan) Silt Sand (0.06	6-2 mm) Gravel (22-66 mm) Cobi	ble (67-249 mm) Boulder (250 mm) Bedrock
Sub-Dominant Substra	te (S2.M3)		
Feature Roughness Width Measurement	Can't Measure (1) Bankfull (2)	Moderate (2) 40 - 60% Hi Mean Width (3) Estimated (
Channel Dimensions	-eature Width (m):	Bankfull Depth (mm)	
Entrenchment Tota	al; >40 m <40 m Left Bank	m Right Bank	m Total width m
Surface Flow Method	Perched Culvert (1) Hydraulic H	ead (2) Distance by Time	e (3) Estimated (4)
Wetted Width (m)	Wetted Depth (mm) Hydraulic head (mm	n) Volume (L) 3 1 2 3	Distance (m) Time (s) 1 2 3 1 2 3
5.5	30 35 20 Standing Warr		
Sediment Transport	Adjacent None (1) Rill (2) Sheet Erosion (6) Feature None (1) Rill (2) Sheet Erosion (6)	☐ Instream Bank Erosion (7)	Gully (4)
Sediment Deposition None (1)	Measures (mm):	Substantial: 31-80 mm (4)	Extensive: > 80 mm (5)
Manual (1)			

Date:	yyyy/mm		ect#: 536x			d Assessment:	ature Assess Sample # 1	Sample # 2	Pg. 2 of 2
Duto,	140 44 6	D IZI LION	COLF. OSLOX			TURE DAT	Same Williams	Sample # 2	Sample # 3
Eigh D	arrier Measure	ments: WP#	,				Height (mm):		
FISH D	arrier ivieasure	ments. WP#		Perched Height (Perched Height (Height (mm):		
	dwater Indicat	tors	=	atercress	Seepage	Bubbling	Stained	Other:	
Fish Co	ollection		Absent Pr	resent	Comment:				
	I								
WP#	Photo #	Code	Category				Description		
								717.5	
				The same of the same	el Charles				
Site Br	reak 🗌	Feature Typ	e	re Modifier	A SECTION OF THE SECT	Conditions	Feature Veg	getation Ripar	ian Vegetation
Trigge	er 🔲	Other: Con			later				
Point I	Data		Ongoing and Ad			ric Evidence (2)	Reported by	ut No Evidence (3)	
Categ	ory		No Evidence (4)		Unkr	nown (5)			
POINT	DATA KEY:								
	Carinalumum	line sationata	40 E Vana 25 > 0 E	Vacas magaura					
В			<0.5 l/sec or >0.5 r estimate length o						
C			surface area occu						
			d flow status as pe					temperature.	
D E F			flow status as per t		mate volume	to be <0.5 l/sec o	or >0.5 l/sec.		
			ched height and ju perched height and						
G H		to fish moven		Jumping neight					
1	Potential con	tamination so	urce (storm sewer			pipe).			
J	Channel hard	dening - indica	ted by rip-rap, arm	our stone, or gal	oion baskets.				
K			d whether or not p						
L	Flow transitio	n point D/S - 1	flow condition chan low condition chan	ges from dry to	standing water	er, independent of	segment break	aant brook	
M N	Flow transition	n point D-S/IF	- flow condition ch	anges from dry/r	standing wate	r to interstitial flov	w, independent of segr	seament break	
			ish sampling activi		J. J		,	-g.non proun	
O P	Potential nutr	ient source							
0	D 1								
Q	Dredging of d	channel							
ب ج	Offline pond Other	:hannel							

Unconstrained	Headwater Drair	nage Feature Asses	ssment
Date (yyyy/mm/dd): 2 0 2 4 0 5 29 Project #:	5368	Recorder/Crew:	VS + AA
Stream Name: Stream Co	ode:	Site Code:	HIA-SI Point?
Site Limits: Upstream WP# Downstream WP#		Field Assessment:	☐ Sample 1 Unconnected HDF: ☐ Sample 2 ☐ Not connected to
Direction of Assessment: Upstream	☐ Downstrea	am	Sample 3 downstream network
Flow Influence		Spate (2)	Baseflow (3)
Flow Condition		Interstitial Flow (3)	☐ Substantial Flow (5)
Feature Type Defined Natural Channel (Minimal Flow (4) No Defined Feature (4)	Swale (7)
☐ Channelized or Constraine		Tiled Feature (5)	Swale (7) Roadside Ditch (8)
Multi-thread (3)		Wetland (6)	Pond (9)
Feature Vegetation None (1) Lawn (2)	☐ Cropped (3) ☐	Meadow (4) Scrubland	
Riparian Vegetation			
	☐ Cropped (3) ☐	Meadow (4) Scrubland	(5)
D: 11 D 1 D 1		Meadow (4) Scrubland	
1.5 - 10 m Left Bank □ None (1) □ Lawn (2) □	☐ Cropped (3) ☐	Meadow (4) Scrubland	
	☐ Cropped (3) ☐	Meadow (4) Scrubland	the first the second of the control of the second of the s
		Meadow (4) Scrubland Meadow (4) Scrubland	(5) Wetland (6) Forest (7)
Channel Gradient (S4.M7) Visual (1) Clinome			
Distance (m):	Elevation (cm):	Survey Level (4)	☐ Other (5) ☐ LiDAR (6) Gradient (°): ☐
Dominant Substrate (S2.M3)	Silt Sand (0.06-2 mm)		ble (67-249 mm) Boulder (250 mm) Bedrock
Feature Roughness	10 - 40% Mod	derate (2) 40 - 60% H n Width (3) Estimated (
Channel Dimensions Feature Width (m):		Bankfull Depth (mm)	600
Entrenchment Total: >40 m <<40 m	Left Bank	m Right Bank	m Total width m
Surface Flow Method Perched Culvert (1)	Hydraulic Head (2)) Distance by Time	e (3) Estimated (4)
Wetted Width (m) Wetted Depth (mm) Hy	draulic head (mm)	Volume (L)	Distance (m) Time (s)
2 10 0 0	1 2 3 Harding water	1 2 3	1 2 3 1 2 3
Adjacent None (1) Sediment Transport Sheet Erosion (6) Feature None (1) Sheet Erosion (6)	S)	nstream Bank Erosion (7)	Gully (4) Outlet Scour (5) Other (8) Gully (4) Outlet Scour (5) Other (8)
Sediment Deposition Measures (mm):			
None (1) Minimal: < 5 mm (2) Mode	erate: 5-30 mm (3)	Substantial: 31-80 mm (4)	Extensive: > 80 mm (5)

-

	yyyy/mr	n/dd	Unco	onstrained Headwater Drainage Feature Assessment Pg. 2 of 2
ate:			ect #:	Field Assessment: Sample # 1 Sample # 2 Sample # 3
				POINT FEATURE DATA
Fish Ba	arrier Measure	ements: WP#	#	Perched Height (mm): Jumping Height (mm):
		WP#	#	Perched Height (mm): Jumping Height (mm):
	lwater Indica	tors	None Absent	Watercress Seepage Bubbling Stained Other: Present Comment:
			[Absent [Present Comment:
WP#	Photo#	Code	Category	Description
				Description
	1996			
44141	anal Natao			
No		CHY C	onnelle S-Li	
No	t dire	cty co	Syeld!	breaking up feather
No Site B	t dire	dry C	Sycly Fe	
No Site B	t dire	cty co	Sycly Fe	brakes (Flow Conditions Feature Vegetation Riparian Vegetation
Site B Trigge Point Categ	reak Data	Feature Typ	e Fe	eature Modifier Flow Conditions Feature Vegetation Riparian Vegetation d Active (1) Historic Evidence (2) Reported but No Evidence (3)
Site B Trigge Point Categ POINT A B C D E F G H I J K L M N O P	reak reak para Data ory DATA KEY: Spring/upwe Seepage an Watercress Outlet (tile or leaver dam Manmade do Other barriel Potential cor Channel har Culvert - not Flow transitie Flow	Feature Typ Other: Con elling - estimate ea - measure o - estimate total or other) - record - measure per am - measure per am - measure per to fish movem ntamination sou dening - indica e type, size an on point D/S - f on point M/S- fl on point D-S/IF ed during non-fi rient source	e Fe nments Ongoing and No Evidence e <0.5 l/sec or > or estimate leng l surface area of d flow status as piched height and perched by rip-rap, a d whether or no flow condition of	eature Modifier Flow Conditions Feature Vegetation Riparian Vegetation d Active (1) Historic Evidence (2) Reported but No Evidence (3) e (4) Unknown (5) >0.5 l/sec; measure temp gth of bank where seepage occurs occupied s per feature flow. Estimate volume <0.5 l/sec or >0.5 l/sec. Measure temperature. per feature flow. Estimate volume to be <0.5 l/sec or >0.5 l/sec. and jumping height t and jumping height wer outlet or industrial discharge pipe). armour stone, or gabion baskets. ot perched. If perched record perched height and jumping height. changes from dry to standing water, independent of segment break thanges from minimal to substantial surface flow, independent of segment break in changes from dry/standing water to interstitial flow, independent of segment break
Site B Triggg Point Categ POINT A B C D E F G H I J K L M N O O	reak reak para Data ory DATA KEY: Spring/upwe Seepage an Watercress Outlet (tile or leaver dam Manmade do Other barrier Potential cor Channel har Culvert - not Flow transitie Flow tr	Feature Typ Other: Con elling - estimate ea - measure o - estimate total or other) - record - measure per am - measure per am - measure per to fish movem ntamination sou dening - indica e type, size an on point D/S - f on point M/S- fl on point D-S/IF ed during non-fi rient source	e Fe nments Ongoing and No Evidence e <0.5 l/sec or > or estimate length surface area of d flow status as perched height and perched by rip-rap, a d whether or no flow condition of	eature Modifier Flow Conditions Feature Vegetation Riparian Vegetation d Active (1) Historic Evidence (2) Reported but No Evidence (3) e (4) Unknown (5) >0.5 l/sec; measure temp gth of bank where seepage occurs occupied s per feature flow. Estimate volume <0.5 l/sec or >0.5 l/sec. Measure temperature. per feature flow. Estimate volume to be <0.5 l/sec or >0.5 l/sec. and jumping height t and jumping height wer outlet or industrial discharge pipe). armour stone, or gabion baskets. ot perched. If perched record perched height and jumping height. changes from dry to standing water, independent of segment break thanges from minimal to substantial surface flow, independent of segment break in changes from dry/standing water to interstitial flow, independent of segment break

Visit 2

H253

ate (yyyy/mm/dd):	0 8 4 0 5 8 9 Project #: 5368	Recorder/Crew: V 5 + A A
stream Name:	Stream Code:	Site Code: H2S3 Point 1
Site Limits:	Upstream WP# (645320	Field Assessment: Sample 1 Unconnected HDF:
Direction of Assessmen	Downstream WP# 475 6999	Downstream □ Sample 2 □ Not connected to □ Sample 3 □ downstream network
Flow Influence	☐ Freshet (1)	□ Spate (2) □ Baseflow (3)
13		— Spate (2)
Flow Condition	Dry (1)	☐ Interstitial Flow (3) ☐ Substantial Flow (5)
Feature Type	Standing Water (2) Defined Natural Channel (1)	☐ Minimal Flow (4) ☐ No Defined Feature (4) ☐ Swale (7)
	☐ Channelized or Constrained (2)	☐ Tiled Feature (5) ☐ Roadside Ditch (8)
- 27	☐ Multi-thread (3)	☐ Wetland (6) ☐ Pond (9)
Feature Vegetation	□ None (1) □ Lawn (2) □ Cropped (3)	
Riparian Vegetation		phrag
0 - 1.5 m Left Bank	None (1) Lawn (2) Cropped (3)	The property of the part of th
Right Bank	None (1) Lawn (2) Cropped (3)) Meadow (4) Scrubland (5) Wetland (6) Forest (7)
1.5 - 10 m Left Bank	None (1) Lawn (2) Cropped (3)	* (Properties of the Contract
Right Bank	K ☐ None (1) ☐ Lawn (2) ☐ Cropped (3)) Meadow (4) Scrubland (5) Wetland (6) Forest (7)
10 - 30 m Left Bank	□ None (1) □ Lawn (2) □ Cropped (3)	
Right Ban	k None (1) Lawn (2) Cropped (3))
Dominant Substrate Sub-Dominant Subst	(S2.M3)	0.06-2 mm) Gravel (22-66 mm) Cobble (67-249 mm) Boulder (250 mm) Bedrock
Sub-Dominant Subst	(S2.M3)	-40% Moderate (2)
Sub-Dominant Subst	(S2.M3)	
Sub-Dominant Subst	(S2.M3)	-40% Moderate (2)
Sub-Dominant Subst Feature Roughness Width Measurement Channel Dimensions	(S2.M3)	- 40% Moderate (2)
Sub-Dominant Subst Feature Roughness Width Measurement Channel Dimensions	(S2.M3)	-40% Moderate (2)
Sub-Dominant Subst Feature Roughness Width Measurement Channel Dimensions Entrenchment	(S2.M3)	- 40% Moderate (2)
Sub-Dominant Subst Feature Roughness Width Measurement Channel Dimensions Entrenchment Turface Flow Method Wetted Width (m)	(S2.M3)	-40% Moderate (2)
Sub-Dominant Subst Feature Roughness Width Measurement Channel Dimensions Entrenchment	(S2.M3)	-40% Moderate (2)
Sub-Dominant Subst Feature Roughness Width Measurement Channel Dimensions Entrenchment Turface Flow Method Wetted Width (m)	rate (S2.M3)	-40% Moderate (2)
Sub-Dominant Subst Feature Roughness Width Measurement Channel Dimensions Entrenchment Turface Flow Method Wetted Width (m)	rate (S2.M3)	-40% Moderate (2)
Sub-Dominant Subst Feature Roughness Width Measurement Channel Dimensions Entrenchment Surface Flow Method Wetted Width (m)	rate (S2.M3)	
Sub-Dominant Subst Feature Roughness Width Measurement Channel Dimensions Entrenchment Surface Flow Method Wetted Width (m)	Can't Measure (1)	
Sub-Dominant Subst Feature Roughness Width Measurement Channel Dimensions Entrenchment Surface Flow Method Wetted Width (m)	rate (S2.M3)	

	yyyy/mm	n/dd	Uncor	nstrained He	eadwater D	rainage Fe	ature Assessi	ment		Pg. 2 of 2	
ate:	20240		ct#: 530	89-101	Field	Assessment:	Sample # 1	☑ Sa	mple # 2	Samp	le # 3
l l				PO	INT FEA	TURE DA	TA			9	有数数
round	arrier Measure dwater Indical	WP#	NoneAbsent	Perched Height Perched Height Watercress Present	-		Height (mm): Height (mm): Stained	Othe	er:		MI
NP#	Photo#	Code	Category				Description			9	72
											30
											-1
											Array .
ditio	onal Notes:										
			Fea	ature Modifier	∏Flow	Conditions	MFeature Veo	etation	Riparia	n Vegetatir	on .
te Bro	reak 🔲	Feature Type		ature Modifier	√Flow	Conditions	Feature Veg			n Vegetatio	on
te Br	eak 🔲	Feature Type					Hand + Sta	ndina	Water		on
te Breigger	reak	Feature Type	ments	Active (1)	Histo	Wo	Hand + Sta	ndina	Water		on
ite Bro rigger oint D atego	eak	Feature Type Other: Com	ments Ongoing and No Evidence	Active (1) (4)	Histo Unkn	ric Evidence (2)	Hand + Sta	ndina	Water		on .
te Broint Dint I	Poata Data	ling - estimate a - measure or estimate total so other) - record flate measure percom - measure percom - measure percom - measure percom - indicate type, size and a point D/S - floor point D/S - floor point D-S/IF-during non-fisient source	Ongoing and No Evidence <0.5 l/sec or >0 estimate lengtl surface area or flow status as power status as power status as power to be the status as p	Active (1) (4) 0.5 l/sec; measure of bank where socupied per feature flow. Ear feature flow in the properties of the pr	Histo Unkn e temp seepage occurs Estimate volume at rial discharge pi abion baskets. hed record percord o standing wate hal to substantia	ric Evidence (2) own (5) e <0.5 l/sec or >0 to be <0.5 l/sec or pe). hed height and ju r, independent of	Reported bu Reported bu 0.5 l/sec. Measure tor > 0.5 l/sec.	t No Evider	nce (3)		on .
te Broingger	Peak Property Data Pry Data Pry Data Pry Data REY: Spring/upwel Seepage are: Watercress - Outlet (tile or or Inlet (tile or or Inlet (tile or or Inlet) Potential cont Channel hard: Culvert - note Flow transition Flow tran	ling - estimate a - measure or estimate total so other) - record flate measure percom - measure percom - measure percom - measure percom - indicate type, size and a point D/S - floor point D/S - floor point D-S/IF-during non-fisient source	Ongoing and No Evidence <0.5 l/sec or >0 estimate lengtl surface area or flow status as power status as power status as power to be the status as p	Active (1) (4) 0.5 l/sec; measure of bank where socupied per feature flow. Ear feature flow in the properties of the pr	Histo Unkn e temp seepage occurs Estimate volume at rial discharge pi abion baskets. hed record percord o standing wate hal to substantia	ric Evidence (2) own (5) e <0.5 l/sec or >0 to be <0.5 l/sec or pe). hed height and ju r, independent of	Reported but Reported but 0.5 l/sec. Measure to pr > 0.5 l/sec. Imping height. I segment break dependent of segment break	t No Evider	nce (3)		on .

Date (yyyy/mm/dd): 2	02403	Projec	t#: 5368	9-101	Recorder/Crew:	Vs + AA	
Stream Name:			m Code:		Site Code:	11253	Point 2
Site Limits:	Upstream Downstream	7 WP# 5	45025		Field Assessment:	☐ Sample 1 ☐ Sample 2	Unconnected HDF:
Direction of Assessment:		☐ Upstre		wnstream		☐Sample 3	downstream network
Flow Influence	☐ Fresh			☐ Spate	(2)	☑ Ba	aseflow (3)
Flow Condition	Dry (1				tial Flow (3)	□ St	substantial Flow (5)
Feature Type	☐ Standing Water (2) ☐ Defined Natural Channel (1)				ined Feature (4)	□ Sv	wale (7)
· catalo i ypo	Channelized or Constrained (2)				eature (5)		oadside Ditch (8)
	Multi-thread (3)		☐ Wetlan	/		ond (9)	
Feature Vegetation		☐ Lawn (2)	☐ Cropped (3)		w (4) Scrubla		
Riparian Vegetation							
0 - 1.5 m Left Bank	☐ None (1)	☐ Lawn (2)	Cropped (3)	☐ Meado	w (4) Scrubla	nd (5) Wetland	(6)
Right Bank	□ None (1)	☐ Lawn (2)	Cropped (3)		w (4) Scrubla	CONTRACTOR OF THE PERSON OF TH	
1.5 - 10 m Left Bank	□ None (1)	☐ Lawn (2)	Cropped (3)	☐ Meado	w (4) Scrubla	and (5) Wetland	I (6)
Right Bank	□ None (1)	☐ Lawn (2)	Cropped (3)	☐ Meado	w (4) Scrubla	and (5)	(6)
10 - 30 m Left Bank	□ None (1)	☐ Lawn (2)	Cropped (3)		w (4) Scrubla		The party of the p
Right Bank	Mana (4)	1 (0)			(4) - 0 - 11-	-1 (5) 141-11-1	
Channel Gradient (S4.) Distance (m):	□ None (1) M7) □ Visua	☐ Lawn (2) al (1) ☐ Clino	Cropped (3) meter (2)	ser Level (3)	w (4) Scrubla Survey Level		5)
Channel Gradient (S4.	M7) Visua Clay		meter (2) La	ser Level (3)	Survey Level	(4) Other (5	5)
Channel Gradient (S4.	M7) Visua Clay	al (1) Clino	meter (2) La	ser Level (3)	Survey Level	(4) Other (5	5)
Channel Gradient (S4. Distance (m): Dominant Substrate (S	Clay clay clay fite (S2.M3)	al (1) Clino	meter (2) La Elevation (cm) Silt Sand (0.00	ser Level (3)	Survey Level	Gradier Cobble (67-249 mm)	5)
Channel Gradient (S4.) Distance (m): Dominant Substrate (S Sub-Dominant Substra Feature Roughness	Clay clay clay fite (S2.M3)	(Hard Pan)	meter (2) La Elevation (cm) Silt Sand (0.00	ser Level (3) : 30 G-2 mm) Gra	Survey Level	(4) Other (5 Gradier Cobble (67-249 mm)	b) LiDAR (6) Int (°): Boulder (250 mm) Bedrock
Channel Gradient (S4.) Distance (m): Dominant Substrate (S Sub-Dominant Substra Feature Roughness Width Measurement	Clay Clay Can't Meas	(Hard Pan) < 10% Minimal (** sure (1)	Elevation (cm) Silt Sand (0.00	ser Level (3) : 30 G-2 mm) Gra 0% Moderate (Survey Level avel (22-66 mm) C 2)	(4) Other (5 Gradier Cobble (67-249 mm) (6) High (3) Ced (4) GIS (5)	5)
Channel Gradient (S4.) Distance (m): Dominant Substrate (S Sub-Dominant Substra Feature Roughness Width Measurement Channel Dimensions	Clay Clay Can't Meas	(Hard Pan) < 10% Minimal (* sure (1)	Elevation (cm) Silt Sand (0.00	ser Level (3) : 30 G-2 mm) Gra 0% Moderate (Survey Level avel (22-66 mm) C 2)	(4) Other (5 Gradier Cobble (67-249 mm) Whigh (3) GIS (5)	5)
Channel Gradient (S4. Distance (m): Dominant Substrate (S Sub-Dominant Substrat Feature Roughness Width Measurement Channel Dimensions Entrenchment To	Clay 2.M3) Clay Can't Meas Feature Width (m	(Hard Pan) < 10% Minimal (** sure (1) m	Elevation (cm) Silt Sand (0.00	ser Level (3) : 30 Gra 6-2 mm) Gra 0% Moderate (Mean Width	Survey Level avel (22-66 mm) C 2) 40 - 60% a (3) Estimat Bankfull Depth (m	(4) Other (5 Gradier Cobble (67-249 mm) Whigh (3) GIS (5) m) GIS (5)	Boulder (250 mm) Bedrock
Channel Gradient (S4. Distance (m): Dominant Substrate (S Sub-Dominant Substrat Feature Roughness Width Measurement Channel Dimensions Entrenchment To	Clay Clay Can't Meas Feature Width (mate): 40	(Hard Pan) (Hard Pan) (Sure (1)	Bankfull (2) La	ser Level (3) : 30 G-2 mm) Gra 0% Moderate (Mean Width m Head (2)	Survey Level avel (22-66 mm) C 2)	(4) Other (5 Gradier Cobble (67-249 mm) Whigh (3) GIS (5) m) GIS (5)	Boulder (250 mm) Bedrock Boulder (250 mm) B
Channel Gradient (S4.) Distance (m): Dominant Substrate (S Sub-Dominant Substrate Feature Roughness Width Measurement Channel Dimensions Entrenchment To Surface Flow Method	Clay Clay Can't Meas Feature Width (m	(Hard Pan) (Hard Pan) (Sure (1)	Bankfull (2) La Left Bank Left Bank La La La La La La La La La L	ser Level (3) : 30 G-2 mm) Gra 0% Moderate (Mean Width m Head (2)	Survey Level avel (22-66 mm) C 2)	(4) Other (5 Gradier Cobble (67-249 mm) (6 High (3) GIS (5) (7 m) GIS (5) (8 Time (3)	Boulder (250 mm) Bedrock Boulder (250 mm) B
Channel Gradient (S4.) Distance (m): Dominant Substrate (S Sub-Dominant Substra Feature Roughness Width Measurement Channel Dimensions Entrenchment To Surface Flow Method	Clay Clay Can't Meas Feature Width (matal: >40 Wetted De	(Hard Pan) (Hard Pan) (Sure (1)	Bankfull (2) La Left Bank Hydraulic Hydraulic head (m	ser Level (3) : 30 Gra 6-2 mm) Gra 0% Moderate (Mean Width m m Head (2)	Survey Level avel (22-66 mm) C 2) 40 - 60% a (3) Estimat Bankfull Depth (m Right Bank Distance by olume (L)	(4) Other (5 Gradier Cobble (67-249 mm) Whigh (3) GIS (5) m) GIS (5) Time (3) Distance (m)	Boulder (250 mm) Bedrock Boulder (250 mm) Bedrock Measure/GIS (6) Betal width m Estimated (4) Time (s)
Channel Gradient (S4.) Distance (m): Dominant Substrate (S Sub-Dominant Substrate Feature Roughness Width Measurement Channel Dimensions Entrenchment To Surface Flow Method Wetted Width (m)	Clay Clay Can't Meas Feature Width (m tal: >40 Wetted De 1 2	(Hard Pan) (Hard Pan) (Sure (1)	Bankfull (2) La Left Bank Hydraulic Hydraulic head (m	ser Level (3) : 30 Gra 6-2 mm) Gra 0% Moderate (Mean Width m m Head (2)	Survey Level avel (22-66 mm) C 2)	(4) Other (5 Gradier Cobble (67-249 mm) % High (3) GIS (5) m) GIS (5) Time (3) Distance (m 1 2	Boulder (250 mm) Bedrock Boulder (250 mm) Bedrock Measure/GIS (6) Betal width m Estimated (4) Time (s)
Channel Gradient (S4.) Distance (m): Dominant Substrate (S Sub-Dominant Substra Feature Roughness Width Measurement Channel Dimensions Entrenchment To Surface Flow Method	Clay Clay Clay Can't Meas Feature Width (matal: >40 Perched C Wetted De 1 2 Adjacent	(Hard Pan) (Hard Pan) (Hard Pan) (Sure (1)	Bankfull (2) Left Bank Hydraulic Hydraulic head (m 1 2 Rill (2)	ser Level (3) : 30 S-2 mm) Gra 0% Moderate (Mean Width m m Head (2) m) V 3 1 Rill and	Survey Level avel (22-66 mm) C 2)	(4) Other (5 Gradier Cobble (67-249 mm) % High (3)	Dutlet Scour (5) LiDAR (6)
Channel Gradient (S4.) Distance (m): Dominant Substrate (S Sub-Dominant Substrate Feature Roughness Width Measurement Channel Dimensions Entrenchment To Surface Flow Method Wetted Width (m)	Clay Clay Can't Meas Feature Width (m Perched C Wetted De 1 2 Adjacent Feature	(Hard Pan) (Hard Pan) (* 10% Minimal (* sure (1)	Bankfull (2) Left Bank Hydraulic Hydraulic head (m 1 2 Rill (2)	ser Level (3) : 30 G-2 mm) Gra 0% Moderate (Mean Width m Head (2) m) V 3 1 Instrear Rill and	Survey Level avel (22-66 mm) C 2)	(4) Other (5 Gradier Cobble (67-249 mm) % High (3) GIS (5) m) GIS (5) m) Total Time (3) Distance (m 1 2 Gully (4) GIS (5)	Boulder (250 mm) Bedrock Boulder (250 mm) Bedr

Date:	20240	729 Proje	ect #: SEG S	- 6	Field Assessment:	Sample # 1	Sample # 2	Sample #
					ATURE DA	ATA		
Fish Ba	arrier Measurer	ments: WP#		Perched Height (mm):		ng Height (mm):		
		WP#		Perched Height (mm):		ng Height (mm):		
Ground	lwater Indicat	ore 🖂	None	Vatercress Seepa	ge Bubblir	ng Stained	Other:	
	ollection			resent Comment		igotamou		
		V	About	TOSON COMMENT				
141711	Charles and							
WP#	Photo#	Code	Category			Description		
			100					
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Additio	onal Notes:							
Addition		Feature Typ	e	ıre Modifier 🔲 F	low Conditions	☐ Feature Veg	etation Ripari	an Vegetation
Site Bı Trigge	reak 🗌		e Feat	ure Modifier F	low Conditions	Feature Veg	etation Ripari	an Vegetation
	reak 🗌		Ongoing and	DGIN2 Ctive (1)	istoric Evidence (etation Ripari	an Vegetation
Site Bı Trigge	reak 🔲 er 🗹 Data		nments DS	DGIN2 Ctive (1)				an Vegetation
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Site Bi Trigge Point Catego	reak Pr Data Ory DATA KEY:	Other: Con	Ongoing and A	Cotive (1) H	istoric Evidence (an Vegetation
Site Br Trigge Point Catego POINT	reak To ata ory DATA KEY: Spring/upwell	Other: Con	Ongoing and A No Evidence (ctive (1) H	istoric Evidence (Inknown (5)			an Vegetation
Site Br Trigge Point I Catego POINT A B	reak Data Data ory DATA KEY: Spring/upwell Seepage area	Other: Con	Ongoing and A No Evidence (<0.5 l/sec or >0.4 r estimate length	ctive (1) H	istoric Evidence (Inknown (5)			an Vegetation
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Site Bi Trigge Point I Catego POINT A B C	reak Data Data ory DATA KEY: Spring/upwell Seepage area Watercress - Outlet (tile or ot	Other: Con ing - estimate a - measure or estimate total other) - record her) - record f	Ongoing and A No Evidence (<0.5 l/sec or >0. r estimate length surface area occ d flow status as pe	ctive (1) H if I/sec; measure temp of bank where seepage occupied er feature flow. Estimate volu feature flow. Estimate volu	istoric Evidence (inknown (5)	(2) Reported bu	ut No Evidence (3)	an Vegetation
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Site Bi Trigge Point I Catego POINT A B C D E F	reak Data Data ory DATA KEY: Spring/upwell Seepage area Watercress - Outlet (tile or ot Beaver dam - Manmade dar	Other: Con ing - estimate a - measure or estimate total other) - record if measure per m - measure per m - measure p	Ongoing and A No Evidence (<0.5 l/sec or >0. r estimate length surface area occ d flow status as pe ched height and joerched height are	ctive (1) H if //sec; measure temp of bank where seepage occupied er feature flow. Estimate volumping height	istoric Evidence (inknown (5)	(2) Reported bu	ut No Evidence (3)	an Vegetation
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Site Bi Trigge Point I Catego POINT A B C D E F G H I	reak Data ory DATA KEY: Spring/upwell Seepage area Watercress - Outlet (tile or ot Beaver dam - Manmade dar Other barrier Potential cont Channel hard	other: Con ing - estimate a - measure or estimate total other) - record i measure per m - measure per to fish movem amination sou	Ongoing and A No Evidence (<0.5 l/sec or >0. r estimate length surface area occ d flow status as pe ched height and i perched height ar ient urce (storm sewe ted by rip-rap, an	ctive (1) H if //sec; measure temp of bank where seepage occupied er feature flow. Estimate volumping height d jumping height outlet or industrial dischargeour stone, or gabion bask	istoric Evidence (Inknown (5)) curs clume <0.5 l/sec or time to be <0.5 l/se	(2) Reported but >0.5 l/sec. Measure to cor >0.5 l/sec.	ut No Evidence (3)	an Vegetation
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Site Bi Trigge Point I Catego POINT A B C D E F G H I J K L	reak Data ory DATA KEY: Spring/upwell Seepage area Watercress - Outlet (tile or ot Beaver dam - Manmade dar Other barrier Potential cont Channel hard Culvert - note Flow transitior Flow transitior	ing - estimate a - measure or estimate total other) - record measure per m - measure per to fish movem amination sou ening - indicat type, size and n point D/S - fi n point M/S- fi	Ongoing and A No Evidence (<0.5 l/sec or >0. r estimate length surface area occ d flow status as pe ched height and i perched height are incre (storm sewe ted by rip-rap, and d whether or not low condition cha ow condition cha ow condition cha	ctive (1) H if I/sec; measure temp of bank where seepage occupied er feature flow. Estimate volumping height d jumping height outlet or industrial dischargeour stone, or gabion baskererched. If perched record	istoric Evidence (Inknown (5)) curs clume <0.5 l/sec or time to be <0.5 l/se ge pipe). ets. perched height and water, independent antial surface flow, antial surface flow.	(2) Reported but >0.5 l/sec. Measure to cor >0.5 l/sec. d jumping height. to f segment break, independent of segment.	at No Evidence (3)	an Vegetation
Site Bi Trigge Point I Catego POINT A B C D E F G H I J K L M	reak Data ory Data ory DATA KEY: Spring/upwell Seepage area Watercress - Outlet (tile or ot Beaver dam - Manmade dar Other barrier Potential cont Channel hard Culvert - note Flow transitior	ing - estimate a - measure or estimate total other) - record her) - record measure per m - measure per to fish movem amination sou ening - indicat type, size and n point D/S - fi n point M/S- fl n point D-S/IF I during non-fi	Ongoing and A No Evidence (<0.5 l/sec or >0. r estimate length surface area occ d flow status as pe ched height and i perched height are incre (storm sewe ted by rip-rap, and d whether or not low condition cha ow condition cha ow condition cha	ctive (1) H il/sec; measure temp of bank where seepage occupied er feature flow. Estimate volumping height d jumping height outlet or industrial discharge occupied outlet or industrial discharge occupied industrial discharge occupied outlet or industrial discharge outl	istoric Evidence (Inknown (5)) curs clume <0.5 l/sec or time to be <0.5 l/se ge pipe). ets. perched height and water, independent antial surface flow, antial surface flow.	(2) Reported but >0.5 l/sec. Measure to cor >0.5 l/sec. d jumping height. to f segment break, independent of segment.	at No Evidence (3)	an Vegetation
Site Bi Trigge Point I Catego POINT A B C D E F G H I J K L M N O P	reak Data ory DATA KEY: Spring/upwell Seepage area Watercress - Outlet (tile or of Beaver dam - Manmade dar Other barrier of Potential cont Channel hard Culvert - note Flow transition	ing - estimate a - measure or estimate total other) - record if measure per m - measure per m - measure pr to fish movem amination sou ening - indicat type, size and n point D/S - fi n point M/S- fl n point D-S/IF I during non-fi ent source	Ongoing and A No Evidence (<0.5 l/sec or >0. r estimate length surface area occ d flow status as pe ched height and perched height are lent urce (storm sewe ted by rip-rap, and d whether or not low condition cha ow condition cha - flow condition cha	ctive (1) H il/sec; measure temp of bank where seepage occupied er feature flow. Estimate volumping height d jumping height outlet or industrial discharge occupied outlet or industrial discharge occupied industrial discharge occupied outlet or industrial discharge outl	istoric Evidence (Inknown (5)) curs clume <0.5 l/sec or time to be <0.5 l/se ge pipe). ets. perched height and water, independent antial surface flow, antial surface flow.	(2) Reported but >0.5 l/sec. Measure to cor >0.5 l/sec. d jumping height. to f segment break, independent of segment.	at No Evidence (3)	an Vegetation
Site Bi Trigge Point I Catego POINT A B C D E F G H I J K L M N O P	reak Data ory Data ory DATA KEY: Spring/upwell Seepage area Watercress - Outlet (tile or ot Beaver dam - Manmade dar Other barrier Potential cont Channel hard Culvert - note Flow transitior	ing - estimate a - measure or estimate total other) - record if measure per m - measure per m - measure pr to fish movem amination sou ening - indicat type, size and n point D/S - fi n point M/S- fl n point D-S/IF I during non-fi ent source	Ongoing and A No Evidence (<0.5 l/sec or >0. r estimate length surface area occ d flow status as pe ched height and perched height are lent urce (storm sewe ted by rip-rap, and d whether or not low condition cha ow condition cha - flow condition cha	ctive (1) H il/sec; measure temp of bank where seepage occupied er feature flow. Estimate volumping height d jumping height outlet or industrial discharge occupied outlet or industrial discharge occupied industrial discharge occupied outlet or industrial discharge outl	istoric Evidence (Inknown (5)) curs clume <0.5 l/sec or time to be <0.5 l/se ge pipe). ets. perched height and water, independent antial surface flow, antial surface flow.	(2) Reported but >0.5 l/sec. Measure to cor >0.5 l/sec. d jumping height. to f segment break, independent of segment.	at No Evidence (3)	an Vegetation

Visit 2

H231

	Unconstrained	Headwater Drai	nage Feature Asse	ssment	
Date (yyyy/mm/dd):	024052 Q Project#:	53689-1	() Recorder/Crew:	VALAA	
Stream Name:	Stream C	ode:	Site Code:	H251 801	ntl
Site Limits:		6504	Field Assessment:	☐ Sample 1 ☐ Sample 2	Unconnected HDF:
Direction of Assessment Flow Influence	Upstream Freshet (1)	50111000		☐Sample 3	downstream ne
riow illidelice	Li Fleshet (1)		Spate (2)	□ Baset	low (3)
Flow Condition	Dry (1) Standing Water (2)		Interstitial Flow (3) Minimal Flow (4)	☐ Subst	antial Flow (5)
Feature Type	☐ Defined Natural Channel (☐ Channelized or Constrained☐ Multi-thread (3)	(1)	No Defined Feature (4) Tiled Feature (5)		side Ditch (8)
Feature Vegetation			Wetland (6) Meadow (4) Scrubland	Pond (5) Wetland(6)	
Riparian Vegetation			, , serialiti	- (-) == (10 dana(0)	i diest (/)
0 - 1.5 m Left Bank Right Bank	Total Control of the	☐ Cropped (3) ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	Meadow (4) Scrubland Meadow (4) Scrubland	(5) Wetland (6)	☐ Forest (7) ☐ Forest (7)
1.5 - 10 m Left Bank Right Bank			Meadow (4) Scrubland Meadow (4) Scrubland		☐ Forest (7)
10 - 30 m Left Bank Right Bank		☐ Cropped (3) ☐	Meadow (4) Scrubland	i (5) Wetland (6)	☐ Forest (7)
Channel Gradient (S4.			Meadow (4) Scrubland		☐ Forest (7)
Distance (m):		ter (2) Laser Le	Survey Level (4)	Other (5) Gradient (°)	LiDAR (6)
Dominant Substrate (S	2 142)	Silt Sand (0.06-2 mm	n) Gravel (22-66 mm) Col	bble (67-249 mm) Bou	ulder (250 mm) Bed
Sub-Dominant Substra					
Feature Roughness Width Measurement	<pre> < 10% Minimal (1)</pre>	10 - 40% Mo	derate (2) 40 - 60% an Width (3) Estimated		0% Extreme (4) Measure/GIS (6)
Channel Dimensions	Feature Width (m): 2		Bankfull Depth (mm)	400	
Entrenchment To	otal: >40 m < <40 m	Left Bank	m Right Bank —	m Total w	ridth
Surface Flow Method	Perched Culvert (1)	Hydraulic Head (2) Distance by Tir	ne (3)	Estimated (4)
Wetted Width (m)	Wetted Depth (mm) Hy	ydraulic head (mm)	Volume (L) 1 2 3	Distance (m)	Time (s)
1.0	30 20 10	0 00 No Flow			
	Adjacent None (1)	□ Rill (2) □	Rill and Gully (3)	Gully (4) Out	let Scour (5)
Sediment Transport	Sheet Erosion (6		Instream Bank Erosion (7) Rill and Gully (3)	Gully (4)	er (8) let Scour (5)
	☐ Sheet Erosion (6	6)	Instream Bank Erosion (7)	□ Oth	The second second

	yyyy/mm/d	d	Uncon	strained Headwater Drainage Feature Assessment Pg. 2 of 2
Date:	2024d	S29 Proje	_	Field Assessment: Sample #1 Sample #2 Sample
		100		POINT FEATURE DATA
Ground	rrier Measurem water Indicato Ilection	WP#		Perched Height (mm): Jumping Height (mm): Perched Height (mm): Sumping Height (mm): Sumping Height (mm): Perched Height (mm): Stained
WP#	Photo#	Code	Category	Description
dditio	nal Notes:			
ite Bro	-	eature Type		ture Modifier Flow Conditions Feature Vegetation Riparian Vegetation
rigger Point D		Other: Com	Ongoing and	
Catego			No Evidence	
	DATA KEY:		8 (100)	
B C	Seepage area Watercress - e Outlet (tile or oth	- measure or stimate total ther) - record er) - record fi measure pero	estimate length surface area oc I flow status as low status as pe thed height and	per feature flow. Estimate volume <0.5 l/sec or >0.5 l/sec. Measure temperature. r feature flow. Estimate volume to be <0.5 l/sec or >0.5 l/sec.

Date (yyyy/m	nm/dd): 2	0240	5 29 Projec	st#: 5368	9-10 R	Recorder/Crew:	Vs -	+ AA	
Stream Nam	ie:		Stream	m Code:	S	ite Code:	H251	Point	2
Site Limits:		Upstream Downstream		756496	F F	ield Assessment:	☐ Sample 1 ☐ Sample 2		nnected HDF:
Direction of A	Assessment:		☐ Upstre	The same of the sa	ownstream		☐Sample 3		ownstream ne
Flow Influer	nce	☐ Fres	het (1)		☐ Spate (2))	卤	Baseflow (3	
Flow Condit	tion	☐ Dry (☐ Stan	(1) ding Water (2)		☐ Interstitia ☐ Minimal I	al Flow (3)		Substantial	Flow (5)
Feature Typ	Эе		ned Natural Chanr	nel (1)		ed Feature (4)		C	
			nnelized or Constr		☐ Tiled Fea			Swale (7)	
			i-thread (3)	(=)	☐ Wetland			Roadside Di	tch (8)
Feature Veg	getation	None (1)	☐ Lawn (2)	Cropped (3)	Debate and the second s	(4) Scrublan		Pond (9)	Forest (7)
Riparian Ve	egetation					,	(-) — (1030)	(0)	Torcst (1)
0 - 1.5 m		□ None (1)	☐ Lawn (2)	☐ Cropped (3)	☐ Meadow	(4) Scrublan	d (5) Motton	nd (6)	7 Farrat (7)
	Right Bank	□ None (1)	☐ Lawn (2)	☐ Cropped (3)	☐ Meadow	(4) Scrublar	nd (5) Wetlar		☐ Forest (7) ☐ Forest (7)
1.5 - 10 m	Left Bank	□ None (1)	☐ Lawn (2)	☐ Cropped (3)	☐ Meadow	(4) Scrublan	id (5) Wetlar	nd (6) F	☐ Forest (7)
	Right Bank	□ None (1)	☐ Lawn (2)	Cropped (3)		(4) Scrublan		The second second	Forest (7)
10 - 30 m	Left Bank	□ None (1)	☐ /Lawn (2)	Cropped (3)	☐ Meadow	(4) Scrublan	d (5) Wetlar	nd (6)	☐ Forest (7)
	Diela Deel	□ None (1)	☐ Lawn (2)						
Channel Co	Right Bank Gradient (S4 m):	.M7) Visi	ual (1) Clind	Elevation (cm): 20	Survey Level (4	4) Other Gradi	(5) [ient (°): [Forest (7)
Distance (r	Gradient (S4 m):	.M7) Visi	()	ometer (2)	aser Level (3)		4) Other Gradi	(5) [ient (°): [LiDAR (6)
Distance (r	Gradient (S4	.M7) Visi	ual (1) Clind	Elevation (cm	aser Level (3)	Survey Level (4	4) Other Gradi	(5) [ient (°): [LiDAR (6)
Distance (r	Gradient (S4 m): Substrate (Sinant Substrate (Si	.M7) Visi Cla S2.M3)	ual (1) Clind Or (Hard Pan) Or (10% Minimal (Elevation (cm	aser Level (3)	Survey Level (4	Gradi	(5) [ient (°): [LiDAR (6)
Distance (r Dominant Sub-Domin	Gradient (S4 m): Substrate (Sinant Substrate (Si	.M7) Visi Cla S2.M3) ate (S2.M3)	ual (1) Clind In (Hard Pan) Compared to 10% Minimal (1) Compared to 10%	Elevation (cm	aser Level (3)): 2() [16-2 mm) Grav 10% Moderate (2) 10% Mean Width (Survey Level (4	4)	(5) [LiDAR (6)
Distance (r Dominant Sub-Domin Feature Ro Width Mea	Substrate (Substrate (Class Class Class Class Can't Mea	ual (1) Clind In (Hard Pan) Compared to 10% Minimal (1) Compared to 10%	Elevation (cm	aser Level (3)): 2() [16-2 mm) Grav 10% Moderate (2) 10% Mean Width (Survey Level (4 el (22-66 mm) Co	Gradi	(5) [LiDAR (6)
Distance (r Dominant Sub-Domin Feature Ro Width Mea	Substrate (Substrate (Class2.M3) Class2.M3) ate (S2.M3) Can't Mea	ual (1) Clind In y (Hard Pan) C 10% Minimal (asure (1) m): 2	Elevation (cm Silt Sand (0.0	aser Level (3)): 2() [16-2 mm) Grav 10% Moderate (2) Mean Width (el (22-66 mm) Co	High (3) GIS ((5) [ient (°): [int	LiDAR (6)
Distance (r Dominant Sub-Domin Feature Ro Width Mea	Substrate (Substrate (Class Class Class Class Can't Mea	ual (1) Clind Or (Hard Pan) Or (10% Minimal (asure (1)) Or (40 m)	Elevation (cm Silt Sand (0.0	aser Level (3)): 2 () [16-2 mm) Grav 10% Moderate (2) Mean Width (E Head (2)	Survey Level (4 el (22-66 mm) Co 40 - 60% 3) Estimate Bankfull Depth (mm	High (3) GIS ((5) [ient (°): [- i) Boulder (2	LiDAR (6) 250 mm) Bedr ctreme (4) sure/GIS (6)
Distance (r Dominant Sub-Domin Feature Ro Width Mea Channel Di Entrenchm Surface Flo Wetted	Gradient (S4 m): Substrate (Sanant Substrate (Sanat Substrate (Sanant Substrate (Sanant Substrate (Sanant Substrate	Class2.M3) Class2.M3) ate (S2.M3) Can't Mea Feature Width (otal: >4(Wetted D	ual (1) Clind In y (Hard Pan) In < 10% Minimal (In assure (1) In < 40 m Culvert (1) Depth (mm)	Elevation (cm Silt Sand (0.0 Silt Sa	aser Level (3)): 2 () [16-2 mm) Grav 10% Moderate (2) 1 Mean Width (1 E 1 Head (2) Vol	Survey Level (4 el (22-66 mm) Co 40 - 60% 3) Estimate Bankfull Depth (mm	High (3) GIS (1) GIS (2) Mine (3) Distance (6)	(5) [iient (°): [LiDAR (6) 250 mm) Bedr ctreme (4) sure/GIS (6)
Distance (r Dominant Sub-Domin Feature Ro Width Mea	Substrate (Substrate (Class2.M3) Class2.M3) ate (S2.M3) Can't Mea Feature Width (otal: >4(Wetted D	ual (1) Clind In y (Hard Pan) In < 10% Minimal (assure (1) In O m	Elevation (cm Silt Sand (0.0 Silt Sa	aser Level (3)): 2	Survey Level (4 el (22-66 mm) Co 40 - 60% 3) Estimate Bankfull Depth (mn Right Bank Distance by Ti ume (L) 2 3 Gully (3) Bank Erosion (7)	High (3) GIS (4) Distance (7) Gully (4) GIS (1) GIS (1	(5) [iient (°): [LiDAR (6) 250 mm) Bedr ctreme (4) ctreme (4) Time (s) 1 2 7 2 11 6

-	E E E A A A	DIFIGURA	ect#: Por	Field Assessment: Sample #1 Sample #2	A STATE OF THE STATE OF THE STATE OF
No.				POINT FEATURE DATA	
Fish B	arrier Measure	ments: WP#		Perched Height (mm): Jumping Height (mm):	
		WP#	1	Perched Height (mm): Jumping Height (mm):	
Ground	dwater Indica	ors 🗀	None	Natercress Seepage Bubbling Stained Other.	
	ollection			Present Comment:	
				- Control Cont	
WP#	Photo #	Code	Category	Description	
19.00					
-					
dditio	nal Notes:		,		
		Feature Type	□ Feat	ure Modifier ☐ Flow Conditions ☑ Feature Vegetation ☐ Rips	arian Vegetation
Site Bre	eak 🗆	Feature Type		ure Modifier ☐ Flow Conditions ☐ Feature Vegetation ☐ Rips	arian Vegetation
Site Bre	eak 🗆		ments No	Vea	arian Vegetation
Site Bre Frigger Point D	eak 🗆		ments 0	ctive (1) Historic Evidence (2) Reported but No Evidence (3)	arian Vegetation
Site Bre Frigger Point D Catego	eak 🔲 r 🗹 Data Dry		ments No	ctive (1) Historic Evidence (2) Reported but No Evidence (3)	arian Vegetation
Site Bre Frigger Point D Catego	eak 🗆		ments 0	ctive (1) Historic Evidence (2) Reported but No Evidence (3)	arian Vegetation
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rigger Point D Catego	eak	Other: Com	Ongoing and A No Evidence (- <0.5 l/sec or >0. estimate length	ctive (1) Historic Evidence (2) Reported but No Evidence (3) Unknown (5) 5 l/sec; measure temp of bank where seepage occurs	arian Vegetation
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rigger Point D Catego POINT (eak Data Data Dry DATA KEY: Spring/upwelli Seepage area Watercress - Outlet (tile or o	Other: Com	Ongoing and A No Evidence (ctive (1) Historic Evidence (2) Reported but No Evidence (3) Unknown (5) 5 l/sec; measure temp of bank where seepage occurs upied er feature flow. Estimate volume <0.5 l/sec or >0.5 l/sec. Measure temperature.	arian Vegetation
rigger Point D Catego	eak Data Data Data DATA KEY: Spring/upwelli Seepage area Watercress - Outlet (tile or ot	other: Com ng - estimate - measure or estimate total sother) - record fi	Ongoing and A No Evidence (- <0.5 l/sec or >0. estimate length surface area occ flow status as per ow status as per	ctive (1) Historic Evidence (2) Reported but No Evidence (3) Unknown (5) 5 l/sec; measure temp of bank where seepage occurs upied er feature flow. Estimate volume <0.5 l/sec or >0.5 l/sec. Measure temperature. feature flow. Estimate volume to be <0.5 l/sec or >0.5 l/sec.	arian Vegetation
ite Breirigger	eak Data Data Data DATA KEY: Spring/upwelli Seepage area Watercress - Outlet (tile or otl Beaver dam -	other: Com ng - estimate - measure or estimate total solther) - record ner) - record fi measure perc	Ongoing and A No Evidence (- <0.5 l/sec or >0. estimate length surface area occ flow status as per hed height and j	ctive (1) Historic Evidence (2) Reported but No Evidence (3) Unknown (5) 5 l/sec; measure temp of bank where seepage occurs upied or feature flow. Estimate volume <0.5 l/sec or >0.5 l/sec. Measure temperature. feature flow. Estimate volume to be <0.5 l/sec or >0.5 l/sec. umping height	arian Vegetation
ite Breirigger	eak Data Ony DATA KEY: Spring/upwelli Seepage area Watercress - Outlet (tile or otl Beaver dam - Manmade dam	other: Com ng - estimate - measure or estimate total souther) - record ner) - record fi measure perc n - measure perc	Ongoing and A No Evidence (- <0.5 l/sec or >0. estimate length surface area occ flow status as pe hed height and j erched height and	ctive (1) Historic Evidence (2) Reported but No Evidence (3) Unknown (5) 5 l/sec; measure temp of bank where seepage occurs upied er feature flow. Estimate volume <0.5 l/sec or >0.5 l/sec. Measure temperature. feature flow. Estimate volume to be <0.5 l/sec or >0.5 l/sec.	arian Vegetation
Frigger Point D Catego	eak Data Data DATA KEY: Spring/upwelli Seepage area Watercress - Outlet (tile or ot Inlet (tile or ot) Beaver dam - Manmade dan Other barrier t	other: Com ng - estimate - measure or estimate total solther) - record her) - record fi measure perc n - measure per of fish movement	Ongoing and A No Evidence (- <0.5 l/sec or >0. estimate length surface area occ flow status as per hed height and j erched height are ent	ctive (1) Historic Evidence (2) Reported but No Evidence (3) Unknown (5) 5 l/sec; measure temp of bank where seepage occurs upied or feature flow. Estimate volume <0.5 l/sec or >0.5 l/sec. Measure temperature. feature flow. Estimate volume to be <0.5 l/sec or >0.5 l/sec. umping height d jumping height	arian Vegetation
rigger Point D Catego POINT I	eak Data Data DATA KEY: Spring/upwelli Seepage area Watercress - Outlet (tile or ot Beaver dam - Manmade dan Other barrier t Potential conta	other: Com ong - estimate - measure or estimate total solution - record oner) - record fi measure perconn - measure per	Ongoing and A No Evidence (- <0.5 l/sec or >0. estimate length surface area occ flow status as per hed height and j erched height are ent rec (storm sewer and by rip-rap, arr	ctive (1) Historic Evidence (2) Reported but No Evidence (3) Unknown (5) 5 l/sec; measure temp of bank where seepage occurs upied or feature flow. Estimate volume <0.5 l/sec or >0.5 l/sec. Measure temperature. feature flow. Estimate volume to be <0.5 l/sec or >0.5 l/sec. umping height d jumping height outlet or industrial discharge pipe). hour stone, or gabion baskets.	arian Vegetation
Site Bre Frigger Point D Catego POINT I	eak Data Data DATA KEY: Spring/upwelli Seepage area Watercress - Outlet (tile or ot Inlet (tile or ot) Beaver dam - Manmade dan Other barrier t Potential conta Channel harde Culvert - note	other: Com ong - estimate - measure or estimate total solution - record fi measure percondument - reasure percond	Ongoing and A No Evidence (- <0.5 l/sec or >0. estimate length surface area occ flow status as per hed height and j erched height are ent rec (storm sewer ad by rip-rap, arr whether or not	ctive (1) Historic Evidence (2) Reported but No Evidence (3) Unknown (5) 5 l/sec; measure temp of bank where seepage occurs upied er feature flow. Estimate volume <0.5 l/sec or >0.5 l/sec. Measure temperature. feature flow. Estimate volume to be <0.5 l/sec or >0.5 l/sec. umping height d jumping height outlet or industrial discharge pipe). hour stone, or gabion baskets. erched. If perched record perched height and jumping height.	arian Vegetation
Site Bre Frigger Point D Catego POINT I	eak Data Data DATA KEY: Spring/upwelli Seepage area Watercress - Outlet (tile or ot Inlet (tile or ot) Beaver dam - Manmade dan Other barrier t Potential conta Channel harde Culvert - note Flow transition	other: Com ng - estimate - measure or estimate total souther) - record ner) - record fi measure perconances in - measure perconances in indicate estype, size and point D/S - file	Ongoing and A No Evidence (<0.5 l/sec or >0. estimate length surface area occ flow status as per hed height and j erched height are ent rec (storm sewer ad by rip-rap, arr whether or not pow condition cha	ctive (1) Historic Evidence (2) Reported but No Evidence (3) Unknown (5) 5 l/sec; measure temp of bank where seepage occurs upied er feature flow. Estimate volume <0.5 l/sec or >0.5 l/sec. Measure temperature. feature flow. Estimate volume to be <0.5 l/sec or >0.5 l/sec. umping height d jumping height outlet or industrial discharge pipe). hour stone, or gabion baskets. herched. If perched record perched height and jumping height. higher from dry to standing water, independent of segment break	arian Vegetation
Frigger Point D Catego	eak Data Data DATA KEY: Spring/upwelli Seepage area Watercress - Outlet (tile or ot Beaver dam - Manmade dan Other barrier t Potential conta Channel harde Culvert - note Flow transitior Flow transitior	other: Com ng - estimate - measure or estimate total: other) - record ner) - record measure perc n - measure perc n - measure pinc emination sour eming - indicate type, size and point D/S - file point M/S- file	Ongoing and A No Evidence (<0.5 l/sec or >0. estimate length surface area occ flow status as per hed height and j erched height are ent rec (storm sewer ad by rip-rap, arr whether or not pow condition cha	ctive (1) Historic Evidence (2) Reported but No Evidence (3) Unknown (5) 5 l/sec; measure temp of bank where seepage occurs upied er feature flow. Estimate volume <0.5 l/sec or >0.5 l/sec. Measure temperature. feature flow. Estimate volume to be <0.5 l/sec or >0.5 l/sec. umping height d jumping height outlet or industrial discharge pipe). hour stone, or gabion baskets. herched. If perched record perched height and jumping height. higher from dry to standing water, independent of segment break larges from minimal to substantial surface flow, independent of segment break	arian Vegetation
Frigger Point D Catego	eak Data Seepage area Watercress - Goutlet (tile or of linet (tile or of linet) Beaver dam - Manmade dam Other barrier t Potential conta Channel harde Culvert - note Flow transitior Flow transitior Flow transitior Flow transitior	other: Com ong - estimate - measure or estimate total: other) - record ner) - record fi measure perc n - measure perc n indicate type, size and point D/S - fle point M/S- fle point D-S/IF-	Ongoing and A No Evidence (<0.5 l/sec or >0. estimate length surface area occ flow status as per hed height and j erched height are ent rec (storm sewer ad by rip-rap, arr whether or not j ow condition cha we condition cha flow condition cha flow condition cha	ctive (1) Historic Evidence (2) Reported but No Evidence (3) Unknown (5) 6 I/sec; measure temp of bank where seepage occurs upied er feature flow. Estimate volume <0.5 I/sec or >0.5 I/sec. Measure temperature, feature flow. Estimate volume to be <0.5 I/sec or >0.5 I/sec. umping height d jumping height outlet or industrial discharge pipe), nour stone, or gabion baskets, herched. If perched record perched height and jumping height, highes from dry to standing water, independent of segment break highes from dry/standing water to interstitial flow, independent of segment break highes from dry/standing water to interstitial flow, independent of segment break	arian Vegetation
Site Bre Frigger Point D Catego POINT I	eak Data Seepage area Watercress - Goutlet (tile or of late or of l	other: Com ong - estimate - measure or estimate total: other) - record fi measure percon - measure pro ofish movemer amination sour ening - indicate type, size and point D/S - fi point M/S- fi point D-S/IF- during non-fis	Ongoing and A No Evidence (<0.5 l/sec or >0. estimate length surface area occ flow status as per hed height and j erched height are ent rec (storm sewer ad by rip-rap, arr whether or not pow condition cha	ctive (1) Historic Evidence (2) Reported but No Evidence (3) Unknown (5) 6 I/sec; measure temp of bank where seepage occurs upied er feature flow. Estimate volume <0.5 I/sec or >0.5 I/sec. Measure temperature, feature flow. Estimate volume to be <0.5 I/sec or >0.5 I/sec. umping height d jumping height outlet or industrial discharge pipe), nour stone, or gabion baskets, herched. If perched record perched height and jumping height, highes from dry to standing water, independent of segment break highes from dry/standing water to interstitial flow, independent of segment break highes from dry/standing water to interstitial flow, independent of segment break	arian Vegetation
Site Bre Frigger Point D Catego POINT I	eak Total Data Seepage area Watercress - Goutlet (tile or of late o	other: Com ong - estimate - measure or estimate total: other) - record fi measure percon - measure pro ofish moveme amination sour ening - indicate type, size and point D/S - fi point M/S- fi point D-S/IF- during non-fise ent source	Ongoing and A No Evidence (<0.5 l/sec or >0. estimate length surface area occ flow status as per hed height and j erched height are ent rec (storm sewer ad by rip-rap, arr whether or not j ow condition cha we condition cha flow condition cha flow condition cha	ctive (1) Historic Evidence (2) Reported but No Evidence (3) Unknown (5) 6 I/sec; measure temp of bank where seepage occurs upied er feature flow. Estimate volume <0.5 I/sec or >0.5 I/sec. Measure temperature, feature flow. Estimate volume to be <0.5 I/sec or >0.5 I/sec. umping height d jumping height outlet or industrial discharge pipe), nour stone, or gabion baskets, herched. If perched record perched height and jumping height, highes from dry to standing water, independent of segment break highes from dry/standing water to interstitial flow, independent of segment break highes from dry/standing water to interstitial flow, independent of segment break	arian Vegetation
Site Bre Frigger Point D Catego POINT I	eak Data Seepage area Watercress - Goutlet (tile or of late or of l	other: Com ong - estimate - measure or estimate total: other) - record fi measure percon - measure pro ofish moveme amination sour ening - indicate type, size and point D/S - fi point M/S- fi point D-S/IF- during non-fise ent source	Ongoing and A No Evidence (<0.5 l/sec or >0. estimate length surface area occ flow status as per hed height and j erched height are ent rec (storm sewer ad by rip-rap, arr whether or not j ow condition cha we condition cha flow condition cha flow condition cha	ctive (1) Historic Evidence (2) Reported but No Evidence (3) Unknown (5) 6 I/sec; measure temp of bank where seepage occurs upied er feature flow. Estimate volume <0.5 I/sec or >0.5 I/sec. Measure temperature, feature flow. Estimate volume to be <0.5 I/sec or >0.5 I/sec. umping height d jumping height outlet or industrial discharge pipe), nour stone, or gabion baskets, herched. If perched record perched height and jumping height, highes from dry to standing water, independent of segment break highes from dry/standing water to interstitial flow, independent of segment break highes from dry/standing water to interstitial flow, independent of segment break	arian Vegetation

	Unconstrained	Headwater D	Orainage Feature Asse	ssment
ate (yyyy/mm/dd): 20	240529 Project#	53689	Recorder/Crew:	VS +AA
tream Name:	Stream C	Code:	Site Code:	H251 POINTS
1		14422	Field Assessment:	Sample 1 Unconnected HDF: Sample 2 Not connected to
prection of Assessment:	☐ Upstream		nstream	Sample 3 downstream network
low Influence	☐ Freshet (1)		Spate (2)	Baseflow (3)
low Condition	Dry (1) Standing Water (2)		☐ Interstitial Flow (3) ☐ Minimal Flow (4)	☐ Substantial Flow (5)
eature Type	□ Defined Natural Channel		☐ No Defined Feature (4)	Swale (7)
	☐ Channelized or Constrain	ned (2)	☐ Tiled Feature (5)	Roadside Ditch (8)
	Multi-thread (3)		Wetland (6)	Pond (9)
Feature Vegetation	□ None (1) □ Lawn (2) [Cropped (3)	☐ Meadow (4) ☐ Scrubland	d (5) Wetland(6) Forest (7)
Riparian Vegetation				
0 - 1.5 m Left Bank	The second of th	Cropped (3)	☐ Meadow (4) ☐ Scrubland	d (5)
Right Bank	□ None (1) □ Lawn (2)	Cropped (3)	☐ Meadow (4) ☐ Scrubland	d (5) Wetland (6) Forest (7)
1.5 - 10 m Left Bank Right Bank		☐ Cropped (3) ☐ Cropped (3)	☐ Meadow (4) ☐ Scrubland ☐ Meadow (4) ☐ Scrubland	
10 - 30 m Left Bank		☐ Cropped (3)	☐ Meadow (4) ☐ Scrublan	
Right Bank	The state of the s	Cropped (3)	☐ Meadow (4) ☐ Scrubland	The second secon
Channel Gradient (S4.)	M7) Visual (1) Clinom	eter (2) Las	ser Level (3) Survey Level (4	Other (5) LiDAR (6)
Distance (m):		Elevation (cm)	:[0]	Gradient (°):
Dominant Substrate (S	Clay (Hard Pan) 2.M3)	Silt Sand (0.06	i-2 mm) Gravel (22-66 mm) Co	bble (67-249 mm) Boulder (250 mm) Bedrock
Sub-Dominant Substra	te (S2.M3)			
Feature Roughness	< 10% Minimal (1)		0% Moderate (2) 40 - 60%	
Width Measurement	Can't Measure (1)	ankfull (2)	Mean Width (3) Estimate	d (4) GIS (5) Measure/GIS (6)
Channel Dimensions	Feature Width (m): 5 20	5	Bankfull Depth (mm	590
Entrenchment To	tal: >40 m <	Left Bank	m Right Bank .	m Total width m
Surface Flow Method	Perched Culvert (1)	Hydraulic I	Head (2) Distance by Ti	me (3) Estimated (4)
Wetted Width (m)		Hydraulic head (m		Distance (m) Time (s)
4,2	1 2 3	1 2	3 1 2 3	1 2 3 1 2
	Adjacent None (1)	Standing Rill (2)		Gully (4)
Sediment Transport	☐ Sheet Erosion		☐ Instream Bank Erosion (7)	Other (8)
	Feature None (1)	☐ Rill (2)		Gully (4) Outlet Scour (5) Other (8)
Sediment Deposition	Measures (mm):			

		4	Uncons	strained Headwater Drainage Feature Assessment Pg. 2 of 2
Date:	yyyy/mm/c			Coloring Field Assessment: Sample # 1 Sample # 2 Sample # 3
		1111		POINT FEATURE DATA
Ground	arrier Measuren dwater Indicate	WP#	None	Perched Height (mm): Jumping Height (mm): Perched Height (mm): Stained Other: Present Comment:
WP#	Photo #	Code	Category	Description
Site Bro	eak 🔲 F	eature Typ		ture Modifier Flow Conditions Feature Vegetation Riparian Vegetation
Trigger		Other: Con		Fland
Point D Catego			Ongoing and A No Evidence (
	DATA KEY:		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
всошьснійк	Seepage area Watercress - e Outlet (tile or o Inlet (tile or oth Beaver dam - I Manmade dam Other barrier te Potential conta Channel harde Culvert - note Flow transition Flow transition Flow transition	- measure or stimate total ther) - record er) - record if measure per in - measure por institution souning - indical type, size an point D/S - if point M/S- fl point D-S/IF during non-first source	restimate length surface area occ d flow status as per ched height and jourched height are perched height are tent surce (storm sewented by rip-rap, and d whether or not flow condition challow condition challow condition challow	per feature flow. Estimate volume <0.5 l/sec or >0.5 l/sec. Measure temperature, or feature flow. Estimate volume to be <0.5 l/sec or >0.5 l/sec. jumping height er outlet or industrial discharge pipe). mour stone, or gabion baskets. perched. If perched record perched height and jumping height. anges from dry to standing water, independent of segment break anges from minimal to substantial surface flow, independent of segment break changes from dry/standing water to interstitial flow, independent of segment break

Date (yyyy/mm/dd): 2	02405	Z 9 Projec	t#: 53689	1-101	Record	er/Crew:	VJ +	AA	
Stream Name:		Stream	m Code:		Site Co	de:	1-1251	Poin	+ 4
Site Limits:	Upstream Downstream	WP# 65	14368	E	Field A	ssessment:	☐ Sample ☐ Sample		nconnected HDF:
Direction of Assessment		Upstre:	am \rightarrow \square D	ownstrea	ım		Sample	3	downstream ne
Flow Influence	☐ Freshe	et (1)			Spate (2)		b	Baseflor	w (3)
Flow Condition	☐ Dry (1)	ng Water (2)			Interstitial Flow Minimal Flow (l Substan	ntial Flow (5)
Feature Type		d Natural Chann	nel (1)		No Defined Fe			Swale (7	7)
		elized or Constr			Tiled Feature (100			le Ditch (8)
	☐ Multi-t				Wetland (6)	-,			
Feature Vegetation		☐ Lawn (2)	☐ Cropped (3)		Meadow (4)	Scrubland		1 0114 10	
Riparian Vegetation									
0 - 1.5 m Left Bank	□ None (1)	☐ Lawn (2)	Cropped (3)		Meadow (4)	Scrublane	d (5) □ We	etland (6)	☐ Forest (7)
Right Bank		☐ Lawn (2)	☐ Cropped (3)		Meadow (4)				Forest (7)
45 40 1 00						/		1	
1.5 - 10 m Left Bank	□ None (1)	☐ Lawn (2)	☐ Cropped (3)		Meadow (4)				Forest (7)
Right Bank	□ None (1)	☐ Lawn (2)	☐ Cropped (3)		Meadow (4)	Scrublan	d (5) We	etland (6)	☐ Forest (7)
10 - 30 m Left Bank	□ None (1)	☐ Lawn (2)	Cropped (3)		Meadow (4)	Scrublan	d (5) \(\square\)	etland (6)	☐ Forest (7)
Andrew Control of the									
Right Bank	- /	☐ Lawn (2)	☐ Cropped (3)		Meadow (4)				Forest (7)
Right Bank Channel Gradient (S4		☐ Lawn (2)	☐ Cropped (3)		Meadow (4)		d (5) 🗆 We	etland (6)	☐ Forest (7)
Channel Gradient (S4		☐ Lawn (2)	Cropped (3)	aser Lev	Meadow (4)	Scrublan	d (5) 🗆 We		AND THE PERSON NAMED IN COLUMN TO A SECOND
		☐ Lawn (2)	☐ Cropped (3)	aser Lev	Meadow (4)	Scrublan	d (5) We	etland (6)	☐ Forest (7)
Channel Gradient (S4	.M7) Visual	Lawn (2)	Cropped (3) cometer (2) L Elevation (cm	aser Lev	Meadow (4) [Scrublan	d (5) We	etland (6) ther (5) Gradient (°):	☐ Forest (7) ☐ LiDAR (6)
Channel Gradient (S4 Distance (m):	.M7) Visual	☐ Lawn (2)	Cropped (3) cometer (2) L Elevation (cn	aser Lev	Meadow (4) [Scrublan	d (5) We	etland (6) ther (5) Gradient (°):	☐ Forest (7)
Channel Gradient (S4	.M7) Visual	Lawn (2)	Cropped (3) cometer (2) L Elevation (cm	aser Lev	Meadow (4) [Scrublan	d (5) We	etland (6) ther (5) Gradient (°):	☐ Forest (7) ☐ LiDAR (6)
Channel Gradient (S4 Distance (m):	.M7) Visua Clay (S2.M3)	Lawn (2)	Cropped (3) cometer (2) L Elevation (cn	aser Lev	Meadow (4) [Scrublan	d (5) We	etland (6) ther (5) Gradient (°):	☐ Forest (7) ☐ LiDAR (6)
Channel Gradient (S4 Distance (m): Dominant Substrate (S3 Sub-Dominant Substr	Clay (S2.M3)	Lawn (2)	Cropped (3) Commeter (2) Elevation (cn	aser Lev 06-2 mm)	Meadow (4) [el (3) Si O Gravel (22	Scrublan urvey Level (4	d (5) We Ot Ot G bble (67-249	etland (6) ther (5) Gradient (°): mm) Bould	☐ Forest (7) ☐ LiDAR (6) ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐
Channel Gradient (S4 Distance (m): Dominant Substrate (S4 Sub-Dominant Substrate (S4)	Clay (S2.M3)	Lawn (2) I (1) Clind (Hard Pan) C 10% Minimal (Cropped (3) cometer (2) L Elevation (cn Silt Sand (0.1) (1) 10 -	aser Lev 06-2 mm) 40% Moo	Meadow (4) [el (3)	Scrubian urvey Level (4	d (5)	etland (6) ther (5) fradient (°): mm) Bould	☐ Forest (7) ☐ LiDAR (6) ☐ LiDAR (6) ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐
Channel Gradient (S4 Distance (m): Dominant Substrate (S4 Sub-Dominant Substrate (S4)	Clay (S2.M3)	Lawn (2) I (1) Clind (Hard Pan) C 10% Minimal (Cropped (3) Commeter (2) Elevation (cn	aser Lev 06-2 mm) 40% Moo	Meadow (4) [el (3) Si O Gravel (22	Scrublan urvey Level (4	d (5)	etland (6) ther (5) fradient (°): mm) Bould	☐ Forest (7) ☐ LiDAR (6) ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐
Channel Gradient (S4 Distance (m): Dominant Substrate (S4 Sub-Dominant Substrate (S4 Feature Roughness Width Measurement	Clay (S2.M3)	Lawn (2) I (1) Clino (Hard Pan) < 10% Minimal (ure (1) U	Cropped (3) cometer (2) L Elevation (cn Silt Sand (0.1) (1) 10 -	aser Lev 06-2 mm) 40% Moo	Meadow (4) I el (3) Si	Scrubian urvey Level (4	d (5)	etland (6) ther (5) fradient (°): mm) Bould	☐ Forest (7) ☐ LiDAR (6) ☐ LiDAR (6) ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐
Channel Gradient (S4 Distance (m): Dominant Substrate (S4 Sub-Dominant Substrate (S4 Feature Roughness Width Measurement Channel Dimensions	Clay (S2.M3) ate (S2.M3) Can't Measu	Lawn (2) (1) Clino Cli	Cropped (3) Cometer (2) L Elevation (cn Silt Sand (0.1) D D D D D D D D D D D D D	aser Lev 06-2 mm) 40% Moo	Meadow (4) I el (3) Si	Scrublan urvey Level (4 2-66 mm) Cc 40 - 60% Estimate ull Depth (mm	d (5)	etland (6) ther (5) fradient (°): mm) Bould	Forest (7) LiDAR (6) der (250 mm) Bec % Extreme (4) Measure/GIS (6)
Channel Gradient (S4 Distance (m): Dominant Substrate (S4 Sub-Dominant Substr Feature Roughness Width Measurement Channel Dimensions Entrenchment Total	Clay (S2.M3) ate (S2.M3) Can't Measure Feature Width (m) otal: >40 m	Lawn (2) (1) Clind Cli	Cropped (3) Cometer (2) L Elevation (cn Silt Sand (0.0) (1) L Bankfull (2)	aser Lev n): 50 06-2 mm) 1 1 40% Moca	Meadow (4) I el (3) S O Gravel (22 I derate (2) I I I I I I I I I I I I I I I I I I I	Scrublan urvey Level (4 -66 mm) Cc 40 - 60% Estimate ull Depth (mm Bank Distance by Ti	d (5)	ther (5) Gradient (°): mm) Bould > 60 Sis (5) 1	Forest (7) LiDAR (6) der (250 mm) Bec % Extreme (4) Measure/GIS (6)
Channel Gradient (S4 Distance (m): Dominant Substrate (S4 Sub-Dominant Substrate (S4 Feature Roughness Width Measurement Channel Dimensions	Clay of S2.M3) ate (S2.M3) Can't Measure Feature Width (m) otal: >40 r	Lawn (2) I (1) Clind (Hard Pan) C 10% Minimal (ure (1) C 2 5 m	Cropped (3) Cometer (2) L Elevation (cn Silt Sand (0.1) D D D D D L D Left Bank L D Left Bank	aser Lev n): 50 06-2 mm) 1 40% Moc	Meadow (4) I el (3) S O Gravel (22 derate (2) I I I I I I I I I I I I I I I I I I I	Scrublan urvey Level (4 -66 mm) Cc 40 - 60% Estimate ull Depth (mm Bank Distance by Ti	d (5)	etland (6) ther (5) fradient (°): mm) Bould > 60 SIS (5)	Forest (7) LiDAR (6) der (250 mm) Bec % Extreme (4) Measure/GIS (6)
Channel Gradient (S4 Distance (m): Dominant Substrate (S4 Sub-Dominant Substr Feature Roughness Width Measurement Channel Dimensions Entrenchment Total	Clay of S2.M3) ate (S2.M3) Can't Measure Width (m) otal:	Lawn (2) I (1) Clind (Hard Pan) C 10% Minimal (ure (1) V 3 A 40 m Ilvert (1) Oth (mm) 3	Cropped (3) Cometer (2)	aser Lev n): 50 06-2 mm) 40% Moo Mea	Meadow (4) I el (3) Si) Gravel (22 derate (2) I in Width (3) Bankf m Right Volume	Scrublan urvey Level (4 2-66 mm) Cc 40 - 60% Estimate ull Depth (mm Bank Distance by Ti (L)	d (5)	ther (5) fradient (°): mm) Bould > 60 Total wice (m)	Forest (7) LiDAR (6) der (250 mm) Bec % Extreme (4) Measure/GIS (6) dth Estimated (4) Time (s)
Channel Gradient (S4 Distance (m): Dominant Substrate (S4 Sub-Dominant Substr Feature Roughness Width Measurement Channel Dimensions Entrenchment To Surface Flow Method Wetted Width (m)	Clay (S2.M3) ate (S2.M3) Can't Measure Width (m) Can't Measure Width (m) Can't Measure Width (m) Can't Measure Width (m)	Lawn (2) (1) Clind Cli	Cropped (3) Cometer (2) L Elevation (cn Silt Sand (0.1) Left Bank Hydraulic Hydraulic head (r 1 2	aser Lev n): 50 06-2 mm) 1 40% Moc Mea	Meadow (4) I el (3) SI el (3) SI O	Scrublan urvey Level (4 -66 mm) Cc 40 - 60% Estimate ull Depth (mm Bank Distance by Ti (L) 3	d (5) We	retland (6) ther (5) fradient (°): mm) Bould > 600 Total wice ce (m) 2	Forest (7) LiDAR (6) der (250 mm) Bec Extreme (4) Measure/GIS (6) Time (s) 1 2
Channel Gradient (S4 Distance (m): Dominant Substrate (S4 Sub-Dominant Substr Feature Roughness Width Measurement Channel Dimensions Entrenchment Surface Flow Method Wetted Width (m)	Clay (S2.M3) ate (S2.M3) Can't Measure Width (m) Catal: >40 r Perched Cu Wetted Dep 1 2 Adjacent	Lawn (2) (1) Clino Clino Clino Clino Clino Cli	Cropped (3) Cometer (2)	aser Lev n): 50 06-2 mm) 1 40% Moo Mea Head (2 mm) 3	Meadow (4) I el (3) Si	Scrublan urvey Level (4 2-66 mm) Cc 40 - 60% Estimate ull Depth (mm Bank Distance by Ti (L) 3	Other Other	ther (5) fradient (°): mm) Bould Sis (5) 1 Total wice ce (m) 2 3 Outle	Forest (7) LiDAR (6) der (250 mm) Bed % Extreme (4) Measure/GIS (6) the Time (s) 1 2 1 2 1 3
Channel Gradient (S4 Distance (m): Dominant Substrate (S4 Sub-Dominant Substr Feature Roughness Width Measurement Channel Dimensions Entrenchment To Surface Flow Method Wetted Width (m)	Clay (S2.M3) ate (S2.M3) Can't Measure Width (m) Catle >40 r Perched Cu Wetted Dep 1 2 Adjacent	Lawn (2) I (1) Clino (Hard Pan) (Hard Pan) (Vare (1) Vare (1) Vare (1) (None (1) Sheet Erosio	Cropped (3) Cometer (2)	aser Lev n): 50 06-2 mm) 1 40% Moo Mea Head (2 mm) 3	Meadow (4) I el (3) SI	Scrublan urvey Level (4 2-66 mm) Co 3 Estimate ull Depth (mm Bank	d (5)	ther (5) fradient (°): mm) Bould Sis (5) Total wice ce (m) 2 3 Outle Othe	Forest (7) LiDAR (6) der (250 mm) Bed % Extreme (4) Measure/GIS (6) th
Channel Gradient (S4 Distance (m): Dominant Substrate (S4 Sub-Dominant Substr Feature Roughness Width Measurement Channel Dimensions Entrenchment Surface Flow Method Wetted Width (m)	Clay (S2.M3) ate (S2.M3) Can't Measure Width (m) Can't Measure Width (m) Perched Cu Wetted Deg 1 2 Adjacent Feature	Lawn (2) I (1) Clind (Hard Pan) (Hard Pan) (Uure (1) V (Hard Pan) None (1) Sheet Erosic None (1)	Cropped (3) ometer (2)	aser Lev aser Lev 06-2 mm) 40% Moo Mea Head (2 mm) 3	Meadow (4) I el (3) SI	Scrublan urvey Level (4	d (5) We	ce (m) 2 3 Outle Outle	Forest (7) LiDAR (6) der (250 mm) Bec Estimated (4) Time (s) 1 2 1 2 1 Scour (5) r (8) et Scour (5)
Channel Gradient (S4 Distance (m): Dominant Substrate (S4 Sub-Dominant Substr Feature Roughness Width Measurement Channel Dimensions Entrenchment Surface Flow Method Wetted Width (m)	Clay (S2.M3) ate (S2.M3) Can't Measure Width (m) Can't Measure Width (m) Perched Cu Wetted Deg 1 2 Adjacent Feature	Lawn (2) I (1) Clino (Hard Pan) (Hard Pan) (Vare (1) Vare (1) Vare (1) (None (1) Sheet Erosio	Cropped (3) ometer (2)	aser Lev aser Lev 06-2 mm) 40% Moo Mea Head (2 mm) 3	Meadow (4) I el (3) SI	Scrublan urvey Level (4	d (5)	ther (5) fradient (°): mm) Bould Sis (5) Total wice ce (m) 2 3 Outle Othe	Forest (7) LiDAR (6) der (250 mm) Bec Estimated (4) Time (s) 1 2 1 2 1 Scour (5) r (8) et Scour (5)
Channel Gradient (S4 Distance (m): Dominant Substrate (S4 Sub-Dominant Substr Feature Roughness Width Measurement Channel Dimensions Entrenchment Surface Flow Method Wetted Width (m)	Clay (S2.M3) ate (S2.M3) Can't Measure Width (m) Can't Measure Width (m) Perched Cu Wetted Deg 1 2 Adjacent Feature	Lawn (2) I (1) Clind (Hard Pan) (Hard P	Cropped (3) ometer (2)	aser Lev aser Lev 06-2 mm) 40% Moo Mea Head (2 mm) 3	Meadow (4) I el (3) SI	Scrublan urvey Level (4	d (5)	ce (m) 2 3 Outle Outle	Forest (7) LiDAR (6) der (250 mm) Bec Estimated (4) Time (s) 1 2 1 2 1 Scour (5) r (8) et Scour (5)

	yyyy/mm/dd	Uncon	strained Headwater Drainage Feature Assessment Pg. 2 of 2
Date; 2	The same and the s	Project #: Poo	Coloure Field Assessment: Sample # 1 Sample # 2 Sample # 3
			POINT FEATURE DATA
Fish Barrier I Groundwater Fish Collecti	r Indicators		Perched Height (mm): Jumping Height (mm): Umping Height (mm): Seepage Bubbling Stained Other: Present Comment:
WP# Pho	oto# Code	e Category	Description
	-		
Site Break	Feature 1		ure Modifier Flow Conditions Feature Vegetation Riparian Vegetation
Trigger Point Data	U Other: C	Ongoing and A	(A) Developed the Fidence (A)
			ctive (1) Historic Evidence (2) Reported but No Evidence (3)
Category POINT DATA	VEV.	No Evidence (4	

Port Colborne HDFA

Visit 2

1-252

	Unconstrained Headwater	Drainage Feature Assessment
Date (yyyy/mm/dd): 2	12 40 5 37 Project#: 5368	9 10 Recorder/Crew: V5 + AA
Stream Name:	Stream Code:	Site Code: H252 Pain + 1
Site Limits:	Upstream Downstream WP# U04/4859 WP#	Field Assessment: Sample 1 Unconnected HDF: Sample 2 Not connected to
Direction of Assessment:	□ Upstream □ D	ownstream Sample 3 downstream network
Flow Influence	☐ Freshet (1)	☐ Spate (2) ☐ Baseflow (3)
Flow Condition	☐ Dry (1)☐ Standing Water (2)	☐ Interstitial Flow (3) ☐ Substantial Flow (5) ☐ Minimal Flow (4)
Feature Type	☐ Defined Natural Channel (1) ☐ Channelized or Constrained (2) ☐ Multi-thread (3)	No Defined Feature (4) Tiled Feature (5) Wetland (6) Swale (7) Roadside Ditch (8) Pond (9)
Feature Vegetation	□ None (1) □ Lawn (2) □ Cropped (3)	☐ Meadow (4) ☐ Scrubland (5) ☐ Wetland(6) ☐ Forest (7)
Riparian Vegetation 0 - 1.5 m Left Bank	D Nego (4) D Levy (9) D Orace d (9)	Monday (4) M Serubland (5) Molland (6) D Form (7)
Right Bank	□ None (1) □ Lawn (2) □ Cropped (3) □ None (1) □ Lawn (2) □ Cropped (3)	☐ Meadow (4) ☑ Scrubland (5) ☐ Wetland (6) ☐ Forest (7) ☐ Meadow (4) ☐ Scrubland (5) ☐ Wetland (6) ☐ Forest (7)
1.5 - 10 m Left Bank Right Bank	□ None (1) □ Lawn (2) □ Cropped (3) □ None (1) □ Lawn (2) □ Cropped (3)	☐ Meadow (4) ☐ Scrubland (5) ☐ Wetland (6) ☐ Forest (7) ☐ Meadow (4) ☐ Scrubland (5) ☐ Wetland (6) ☐ Forest (7)
10 - 30 m Left Bank Right Bank	□ None (1) □ Lawn (2) □ Cropped (3) □ None (1) □ Lawn (2) □ Cropped (3)	☐ Meadow (4) ☐ Scrubland (5) ☐ Wetland (6) ☐ Forest (7) ☐ Meadow (4) ☐ Scrubland (5) ☐ Wetland (6) ☐ Forest (7)
Channel Gradient (S4	.M7) Visual (1) Clinometer (2)	aser Level (3) Survey Level (4) Other (5) LiDAR (6)
Distance (m): Dominant Substrate (Sub-Dominant Substr	S2.M3)	Gradient (°):
Feature Roughness	Can't Measure (1) Bankfull (2)	40% Moderate (2)
Channel Dimensions		Bankfull Depth (mm)
	otal: >40 m <<40 m Left Bank	m Right Bank m Total width m
Surface Flow Method	Perched Culvert (1) Hydraulic	Head (2) Distance by Time (3) Estimated (4)
Wetted Width (m)	Wetted Depth (mm) Hydraulic head (m	mm) Volume (L) Distance (m) Time (s) 3 1 2 3 1 2 3 1 2 3
5	30 6545 Standing 1	WG+e(
Cadimont Tanana	Adjacent ☐ None (1) ☐ Rill (2)	Rill and Gully (3) Gully (4) Outlet Scour (5)
Sediment Transport	Feature Sheet Erosion (6) Sheet Erosion (6) Sheet Erosion (6)	☐ Instream Bank Erosion (7) ☐ Other (8) ☐ Rill and Gully (3) ☐ Gully (4) ☐ Outlet Scour (5) ☐ Instream Bank Erosion (7) ☐ Other (8)
Sediment Deposition	Measures (mm): Minimal: < 5 mm (2) Moderate: 5-30 mm ((3) Substantial: 31-80 mm (4) Extensive: > 80 mm (5)
None (1)	Militaria, 50 min (2)	

	yyyy/mm/	dd	Uncon	strained Headwater Drainage Feature Assessment Pg. 2 of 2
Date:	2b 2 40		ect#: 530	
			1000	POINT FEATURE DATA
Ground	rrier Measurer water Indicat	WP	None	Perched Height (mm): Jumping Height (mm): Sumping Height (mm): Perched Height (mm): Stained Other: Present Comment:
WP#	Photo#	Code	Category	Description
			. 4	
Site Bro		Feature Typ	e Fea	ture Modifier Flow Conditions Feature Vegetation Riparian Vegetation
oint D	ata		Ongoing and A	Active (1) Historic Evidence (2) Reported but No Evidence (3)
S S S S S S S S S S S S S S S S S S S	seepage area Vatercress - e Outlet (tile or o alet (tile or oth eaver dam - n lanmade dam ther barrier to otential contar	- measure or stimate total ther) - record er) - record fl neasure perc - measure pi fish movementation sour ing - indicate	estimate length surface area occ flow status as pe ow status as per hed height and j erched height are ent ree (storm sewer ad by rip-rap, arr whether or not p	per feature flow. Estimate volume <0.5 l/sec or >0.5 l/sec. Measure temperature. r feature flow. Estimate volume to be <0.5 l/sec or >0.5 l/sec.

Unconstraine	ed Headwater [Orainage Feature Asse	ssment
Date (yyyy/mm/dd): 20540529 Projec	et#: 5368	9-10\ Recorder/Crew:	VS+AA
Stream Name: Stream	m Code:	Site Code:	H252 Point2
Site Limits: Upstream WP# Downstream WP#		Field Assessment:	☐ Sample 1 Unconnected HDF: ☐ Sample 2 ☐ Not connected to
Direction of Assessment: Upstre	am Dov	vnstream	Sample 3 downstream network
Flow Influence		Spate (2)	Baseflow (3)
Flow Condition Dry (1) Standing Water (2)		☐ Interstitial Flow (3) ☐ Minimal Flow (4)	☐ Substantial Flow (5)
Feature Type		No Defined Feature (4) Tiled Feature (5) Wetland (6)	Swale (7) Roadside Ditch (8) Pond (9)
Feature Vegetation None (1) Lawn (2)	Cropped (3)	☐ Meadow (4) ☐ Scrubland	
Riparian Vegetation 0 - 1.5 m Left Bank None (1) Lawn (2)	Lar	1	
0 - 1.5 m Left Bank ☐ None (1) ☐ Lawn (2) Right Bank ☐ None (1) ☐ Lawn (2)	☐ Cropped (3) ☐ Cropped (3)	Meadow (4) Scrubland Meadow (4) Scrubland	
1.5 - 10 m Left Bank ☐ None (1) ☐ Lawn (2) Right Bank ☐ None (1) ☐ Lawn (2)	☐ Cropped (3) ☐ Cropped (3)	☐ Meadow (4) ☐ Scrublan ☐ Meadow (4) ☐ Scrublan	
10 - 30 m Left Bank None (1) Lawn (2) Right Bank None (1) Lawn (2)	☐ Cropped (3) ☐ Cropped (3)	Meadow (4) ☐ Scrublan ☐ Meadow (4) ☐ Scrublan	d (5) Wetland (6) Forest (7)
Channel Gradient (S4.M7) Visual (1) Clin		ser Level (3) Survey Level (4	
Distance (m):	Elevation (cm)		Gradient (°):
Dominant Substrate (S2.M3)	Silt Sand (0.06	-2 mm) Gravel (22-66 mm) Co	bble (67-249 mm) Boulder (250 mm) Bedrock
Sub-Dominant Substrate (S2.M3)			
Feature Roughness	1)	% Moderate (2) 40 - 60% Mean Width (3) Estimated	
Channel Dimensions Feature Width (m):		Bankfull Depth (mm	
Entrenchment Total; >40 m	Left Bank	m Right Bank	m Total width m
Surface Flow Method Perched Culvert (1)	Hydraulic H	ead (2) Distance by Tir	me (3) Estimated (4)
Wetted Width (m) Wetted Depth (mm) 1 2 3	Hydraulic head (mm	Volume (L) 3 1 2 3	Distance (m) Time (s) 1 2 3 1 2 3
3 20 10 10	Standing v	va +e/	
Adjacent	□ Rill (2) in (6) □ Rill (2)	☐ Rill and Gully (3) ☐ ☐ Instream Bank Erosion (7)	I Gully (4) Utlet Scour (5) Uther (8) Utlet Scour (5) Uther (8) Uther (8)
Sediment Deposition Measures (mm):	Andersto E 20 mm (2)	Cubatantini 24 22	
Mone (1) Minimal: < 5 mm (2)	Moderate: 5-30 mm (3)	Substantial: 31-80 mm (4) Extensive: > 80 mm (5)

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				Field Assessment: Sample # 1 Sample # 2 Sample # 3
Tale D				POINT FEATURE DATA
iround	rrier Measurer water Indicat	WP#	None	Perched Height (mm): Jumping Height (mm): Perched Height (mm): Jumping Height (mm): Watercress Seepage Bubbling Stained Other: Present Comment:
WP#	Photo #	Code	Category	Description
-				
-				
+				
T	nal Notes:	Înto	a me	eston ara
ite Bro	eak 🗹	Feature Type	e 🗆 Fea	ature Modifier Flow Conditions Feature Vegetation Riparian Vegetation
ite Bre	eak 🗹	Feature Type	Fea	Active (1) Historic Evidence (2) Reported but No Evidence (3)
ite Bre	eak 🗹	Feature Type	Fea	Active (1) Historic Evidence (2) Reported but No Evidence (3)

Recorder/Crew: Site Code: Field Assessment: Sample 1 Sample 2 Not connected to downstream net advantage in the (2) Baseflow (3) Institial Flow (3) Substantial Flow (5) Simal Flow (4) Defined Feature (4) Serubland (6) Serubland (6) Serubland (5) Serubland (6) Serubland (5) Serubland (6) Serubland (5) Serubland (6) Serubland (6) Serubland (7) Serubland (8) Serubland (9) Serubla
Field Assessment: Sample 1 Unconnected HDF: Sample 2 Not connected to downstream nets Ite (2) Baseflow (3) Institial Flow (3) Substantial Flow (5) Institial Flow (4) Substantial Flow (5) Institial Flow (4) Swale (7) Institial Flow (5) Roadside Ditch (8) Institial Flow (4) Scrubland (5) Wetland (6) Forest (7) Institial Flow (4) Forest (7) Institial Flow (5) Swale (7) Institial Flow (5) Forest (7) Institial Flow (5) Forest (7) Institial Flow (5) Forest (7) Institial Flow (6) Forest (7) Institial Flow (7) Institial Flow (8) Institute Flow (9) Institute Fl
Sample 3 downstream netrate (2) Baseflow (3)
rstitial Flow (3)
Swale (7) Swale (7) Gradient (9) Scrubland (5) Wetland (6) Forest (7) Gradient (9) Gradien
Defined Feature (4)
adow (4) Scrubland (5) Wetland (6) Forest (7) adow (4) Gradient (°): Gradient (°):
adow (4) Scrubland (5) Wetland (6) Forest (7) adow (4) Gradient (°): Gradient (°):
adow (4) Scrubland (5) Wetland (6) Forest (7) adow (4) Gradient (°): Gradient (°):
adow (4) Scrubland (5) Wetland (6) Forest (7) adow (4) Scrubland (5) Wetland (6) Forest (7) adow (4) Scrubland (5) Wetland (6) Forest (7) By Survey Level (4) Other (5) LiDAR (6) Gradient (°):
adow (4) Scrubland (5) Wetland (6) Forest (7) adow (4) Scrubland (5) Wetland (6) Forest (7) Survey Level (4) Other (5) LiDAR (6) Gradient (°):
3) Survey Level (4) Other (5) LiDAR (6) Gradient (°):
Gradient (°):
te (2)
Bankfull Depth (mm)
Right Bank m Total width m
Distance by Time (3) Estimated (4)
Volume (L) Distance (m) Time (s) 2 3 1 2 3 1 2
and Gully (3)
n

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ite:	924052	9 Projec	t#: 230			d Assessment:		Samp	ple # 2 Sample # 3
	AN ALL AND SELECT	Ø 1000		P	OINT FEA	TURE DA	TA		
	er Measurement ater Indicators ection	WP#	Jone Labsent	Perched Hei Perched Hei Watercress Present			Height (mm): Height (mm): Stained	Other:	
NP# I	Photo#	Code	Category				Description		
									-
								- 1	
ldition	nal Notes:						s [©]		
	ry Hird		/						Virginia ora
Vev	y thic	ature Type	Fe	₩ Ø €		Conditions	Feature Ve	getation [Riparian Vegetation
Vev	eak Fee		Fe	ature Modifier	Flow	Conditions Oric Evidence (2	Feature Ve	getation [Riparian Vegetation
Vey Site Bre Frigger Point Da	eak Fee	ature Type	ments Fe	eature Modifier	Flow	Conditions	Feature Ve	getation [Riparian Vegetation
Vey Site Bre Prigger Point Dategor Categor Cat	DATA KEY: Spring/upwelling Seepage area - n Watercress - esti Outlet (tile or other Beaver dam - me Manmade dam - Other barrier to fi Potential contami Channel hardenir Culvert - note typ Flow transition po Flow transitio	- estimate neasure or mate total er) - record fl asure perc measure per mation soung - indicative, size and oint D/S - flicint M/S- flc oint D-S/IF-ring non-fis source	ments Ongoing and No Evidence <0.5 l/sec or > estimate leng surface area of flow status as ow status as ow status as ow status as ow the delight an erched height an erched height an erched by rip-rap, whether or no ow condition of flow condition of flow condition of	ature Modifier d Active (1) e (4) 0.5 l/sec; meas th of bank where excupied s per feature flow d jumping heigh and jumping he ever outlet or index armour stone, co to perched. If per changes from de hanges from me	Histe Unk Sure temp re seepage occurs w. Estimate volume the light dustrial discharge or gabion baskets erched record per ry to standing wat inimal to substant	Conditions pric Evidence (2 nown (5) ne <0.5 l/sec or > to be <0.5 l/sec pipe). ched height and ger, independent of all surface flow, is a surface flow, is a surface flow, in the conditions are surface flow, is a surface flow, in the conditions are surface flow.	Feature Ve Reported b 0.5 l/sec. Measure or >0.5 l/sec.	getation	Riparian Vegetation ace (3)
Vey iite Bre rigger Point Da categor POINT D	DATA KEY: Spring/upwelling Seepage area - n Watercress - esti Outlet (tile or other Beaver dam - me Manmade dam - Other barrier to fi Potential contami Channel hardenir Culvert - note typ Flow transition po Flow transitio	- estimate neasure or mate total er) - record fl asure perc measure per mation soung - indicative, size and oint D/S - flicint M/S- flc oint D-S/IF-ring non-fis source	ments Ongoing and No Evidence <0.5 l/sec or > estimate leng surface area of flow status as ow status as ow status as ow status as ow the delight an erched height an erched height an erched by rip-rap, whether or no ow condition of flow condition of flow condition of	ature Modifier d Active (1) e (4) 0.5 l/sec; meas th of bank where excupied s per feature flow d jumping heigh and jumping he ever outlet or index armour stone, co to perched. If per changes from de hanges from me	Histe Unk Sure temp re seepage occurs w. Estimate volume the light dustrial discharge or gabion baskets erched record per ry to standing wat inimal to substant	Conditions pric Evidence (2 nown (5) ne <0.5 l/sec or > to be <0.5 l/sec pipe). ched height and ger, independent of all surface flow, is a surface flow, is a surface flow, in the conditions are surface flow, is a surface flow, in the conditions are surface flow.	Reported by Report	getation	Riparian Vegetation ace (3)

Unconstrained Headwater Drainage Feature Assessment Date (yyyy/mm/dd): AA Project #: Recorder/Crew: Stream Name: Point 52 Stream Code: Site Code: Site Limits: Upstream WP# Unconnected HDF: Field Assessment: ☐ Sample 1 Downstream WP# Sample 2 ☐ Not connected to Direction of Assessment: ☐ Upstream < □ Downstream Sample 3 downstream network Flow Influence ☐ Freshet (1) Spate (2) V Baseflow (3) Flow Condition ☐ Dry (1) Interstitial Flow (3) Substantial Flow (5) Standing Water (2) Minimal Flow (4) Defined Natural Channel (1) Feature Type No Defined Feature (4) Swale (7) ☐ Channelized or Constrained (2) ☐ Tiled Feature (5) Roadside Ditch (8) ☐ Wetland (6) Pond (9) Feature Vegetation None (1) ☐ Lawn (2) Cropped (3) ☐ Meadow (4) ☐ Scrubland (5) ☐ Wetland(6) ☐ Forest (7) Riparian Vegetation 0 - 1.5 m Left Bank ☐ Lawn (2) Cropped (3) ☐ Meadow (4) ☐ Scrubland (5) ☐ Wetland (6) ☐ Forest (7) ☐ None (1) ☐ Meadow (4) ☐ Scrubland (5) ☐ Wetland (6) Right Bank ☐ None (1) ☐ Lawn (2) ☐ Cropped (3) ☐ Forest (7) ☐ Meadow (4) ☐ Scrubland (5) ☐ Wetland (6) 1.5 - 10 m Left Bank ☐ None (1) ☐ Lawn (2) ☐ Cropped (3) * Forest (7) Right Bank None (1) ☐ Lawn (2) ☐ Cropped (3) Meadow (4) Scrubland (5) Wetland (6) ☐ Forest (7) 10 - 30 m Left Bank ☐ None (1) ☐ Lawn (2) Cropped (3) ☐ Meadow (4) ☐ Scrubland (5) ☐ Wetland (6) Forest (7) Right Bank ☐ None (1) ☐ Lawn (2) Cropped (3) ☐ Meadow (4) ☐ Scrubland (5) ☐ Wetland (6) Forest (7) Channel Gradient (S4.M7) Visual (1) Clinometer (2) Laser Level (3) Survey Level (4) Other (5) LiDAR (6) Elevation (cm) Gradient (°): Distance (m): Clay (Hard Pan) Gravel (22-66 mm) Cobble (67-249 mm) Boulder (250 mm) Bedrock Sand (0.06-2 mm) Dominant Substrate (S2.M3) Sub-Dominant Substrate (S2.M3) 10 - 40% Moderate (2) < 10% Minimal (1) 40 - 60% High (3) ___ > 60% Extreme (4) Feature Roughness Can't Measure (1) Bankfull (2) Mean Width (3) Estimated (4) GIS (5) Measure/GIS (6) Width Measurement Channel Dimensions Feature Width (m): Bankfull Depth (mm) Entrenchment >40 m <<40 m Right Bank Left Bank m Total width m Perched Culvert (1) Hydraulic Head (2) Distance by Time (3) Estimated (4) Surface Flow Method Wetted Depth (mm) Hydraulic head (mm) Volume (L) Distance (m) Wetted Width (m) Time (s) ☐ Rill (2) None (1) Rill and Gully (3) Adjacent ☐ Gully (4) Outlet Scour (5) Sediment Transport ☐ Sheet Erosion (6) ☐ Instream Bank Erosion (7) ☐ Other (8) None (1) ☐ Rill (2) Rill and Gully (3) ☐ Gully (4) Feature Outlet Scour (5) ☐ Sheet Erosion (6) ☐ Instream Bank Erosion (7) Other (8) Measures (mm): Sediment Deposition Minimal: < 5 mm (2) Moderate: 5-30 mm (3) Substantial: 31-80 mm (4) Extensive: > 80 mm (5) None (1)

	yyyy/mm/	dd	Uncon	strained Hea	dwater Dra	inage Fea	ture Assessn	nent	Pg. 2 of 2
Date:	1902 WO			89-181		ssessment:	Sample # 1	Sample # 2	Sample #
	MEISTON	2142			NT FEAT	IRE DAT	Δ		
Fish F	Barrier Measurer	nents: WP	#	Perched Height			Height (mm):		
	on medeurer	WP		Perched Height	-		Height (mm):		
	dwater Indicat	ors	NoneAbsent	Watercress Present	Seepage Comment:	Bubbling	Stained	Other:	
WP#	Photo#	Code	Category				Description		
			No. of the last						
18 30			1,500						
1 42									
								Table 1 Table 1	
			*						
Site R	reak 🗆	Feature Typ	e	ture Modifier	☐ Flow C	onditions	Feature Veg	etation Ripa	rian Vegetation
Site B	/	Feature Typ		ture Modifier	Flow C	onditions	Feature Veg	petation Ripa	rian Vegetation
Trigge	er 🗹	Feature Typ Other: Con	nments DS	Point					rian Vegetation
Trigge Point	er 🔽 Data		ongoing and	Point Active (1)		Evidence (2)		petation Ripa	rian Vegetation
Trigge Point Categ POINT	Data ory DATA KEY: Spring/upwelli	Other: Con	Ongoing and No Evidence	Point-Active (1) (4)	Historio Unkno temp	Evidence (2)			rian Vegetation
Trigge Point Categ POINT A B C	Data ory DATA KEY: Spring/upwelli Seepage area Watercress - Outlet (tile or	other: Con	Ongoing and No Evidence e <0.5 l/sec or >0 r estimate length surface area oc d flow status as	Active (1) (4) .5 l/sec; measure of bank where secupied per feature flow. E	Historic Unknoon temp sepage occurs stimate volume	Evidence (2) wn (5)	Reported bu	ut No Evidence (3)	rian Vegetation
Trigge Point Categ POINT A B C	Data ory DATA KEY: Spring/upwelli Seepage area Watercress - Outlet (tile or ot	other: Con ng - estimate - measure o estimate total other) - record	Ongoing and No Evidence e <0.5 l/sec or >0 r estimate length surface area oc d flow status as flow status as pe	Active (1) (4) .5 l/sec; measure of bank where secupied per feature flow. Eser feature flow. Eser feature flow. Eser feature flow.	Historic Unknoon temp sepage occurs stimate volume	Evidence (2) wn (5)	Reported bu	ut No Evidence (3)	rian Vegetation
Trigge Point Categ POINT A B C D E	Data ory DATA KEY: Spring/upwelli Seepage area Watercress - Outlet (tile or ot Beaver dam -	ng - estimate - measure o estimate total other) - record measure per	Ongoing and No Evidence e <0.5 l/sec or >0 r estimate length surface area oc d flow status as flow status as pe ched height and	Active (1) (4) .5 l/sec; measure of bank where secupied per feature flow. Est jumping height	Historic Unkno temp pepage occurs stimate volume timate volume to	Evidence (2) wn (5)	Reported bu	ut No Evidence (3)	rian Vegetation
Trigge Point Categ POINT A B C	Data ory DATA KEY: Spring/upwelli Seepage area Watercress - Outlet (tile or ot Beaver dam - Manmade dar Other barrier t	ng - estimate - measure o estimate total other) - record measure per n - measure po fish moven	Ongoing and No Evidence e <0.5 l/sec or >0 r estimate length surface area oc d flow status as flow status as pe ched height and perched height and perched height and	Active (1) (4) .5 l/sec; measure of bank where secupied per feature flow. Es jumping height and jumping height	Historic Unkno temp sepage occurs stimate volume timate volume to	c Evidence (2) vn (5) <0.5 l/sec or >6 be <0.5 l/sec of	Reported bu	ut No Evidence (3)	rian Vegetation
Point Categ POINT A B C D E F G	Data ory DATA KEY: Spring/upwelli Seepage area Watercress - Outlet (tile or ot Beaver dam - Manmade dar Other barrier t Potential conta	ng - estimate - measure o estimate total other) - record measure per n - measure per ofish moven	Ongoing and No Evidence e <0.5 l/sec or >0 r estimate length surface area oc d flow status as flow status as pe ched height and perched height a ment urce (storm sewe	Active (1) (4) .5 l/sec; measure of bank where secupied per feature flow. Ear jumping height and jumping height er outlet or industrer	Historic Unkno temp pepage occurs istimate volume timate volume to	c Evidence (2) vn (5) <0.5 l/sec or >6 be <0.5 l/sec of	Reported bu	ut No Evidence (3)	rian Vegetation
Point Categ POINT A B C D E F G	Data ory DATA KEY: Spring/upwelli Seepage area Watercress - Outlet (tile or ot Beaver dam - Manmade dar Other barrier t Potential conta Channel harde Culvert - note	ng - estimate - measure o estimate total other) - record measure per n - measure per n - measure per n in measure per emination solutions of the periodical	Ongoing and No Evidence e <0.5 l/sec or >0 r estimate length surface area oc d flow status as flow status as pe ched height and perched height a nent urce (storm sewe ted by rip-rap, a d whether or not	Active (1) (4) .5 l/sec; measure of bank where secupied per feature flow. Es jumping height and jumping height er outlet or industr mour stone, or ga perched. If perch	Historic Unkno temp pepage occurs istimate volume timate volume to lial discharge pip bion baskets. ed record perch	c Evidence (2) vn (5) <0.5 l/sec or > be <0.5 l/sec or > be <0.5 l/sec or > control or	Reported but 0.5 l/sec. Measure or >0.5 l/sec.	ut No Evidence (3)	rian Vegetation
Trigge Point Categ POINT A B C D E F G H I J K L	Data ory DATA KEY: Spring/upwelli Seepage area Watercress - Outlet (tile or ot Beaver dam - Manmade dar Other barrier t Potential conta Channel harde Culvert - note Flow transition	ng - estimate - measure o estimate total other) - record measure per n - measure per ofish movem emination soi ening - indica	Ongoing and No Evidence e <0.5 l/sec or >0 r estimate length surface area oc d flow status as pe ched height and perched height a ment urce (storm sewe ted by rip-rap, a d whether or not flow condition ch	Active (1) (4) .5 l/sec; measure of bank where secupied per feature flow. Est jumping height and jumping height routlet or industration or graperched. If perchanges from dry to	Historic Unkno temp epage occurs istimate volume timate volume to ial discharge pip bion baskets. ed record perch- standing water,	c Evidence (2) vn (5) <0.5 l/sec or > be <0.5 l/sec or > led height and juickle independent or one indepen	Reported but 0.5 l/sec. Measure or >0.5 l/sec.	ut No Evidence (3)	rian Vegetation
Trigge Point Categ POINT A B C D E F G H I J K L M	Data ory DATA KEY: Spring/upwelli Seepage area Watercress - Outlet (tile or of Inlet (tile or of Beaver dam - Manmade dar Other barrier t Potential conta Channel harde Culvert - note Flow transition Flow transition	ng - estimate - measure o estimate total other) - record measure per n - measure p o fish moven amination soi ening - indica type, size an i point D/S - f	Ongoing and No Evidence e < 0.5 l/sec or >0 r estimate length surface area oc d flow status as pe ched height and perched by rip-rap, ar d whether or not flow condition challenges	Active (1) (4) .5 l/sec; measure of bank where secupied per feature flow. Es jumping height and jumping height er outlet or industr mour stone, or ga perched. If perch anges from dry to anges from minim	Historic Unkno temp pepage occurs istimate volume timate volume to tial discharge pip bion baskets. ed record perch- standing water, al to substantial	c Evidence (2) vn (5) <0.5 l/sec or >	Reported but 0.5 l/sec. Measure or >0.5 l/sec.	ut No Evidence (3) temperature.	rian Vegetation
Trigge Point Categ POINT A B C D E F G H I J K L M N O	Data ory DATA KEY: Spring/upwelli Seepage area Watercress - Outlet (tile or ot Beaver dam - Manmade dar Other barrier t Potential conta Channel harde Culvert - note Flow transition Flow transition Flow transition Fish observed	ng - estimate - measure o estimate total other) - record measure per n - measure po ofish moven amination solening - indica type, size an point D/S - f point M/S- fl point D-S/IF during non-fi	Ongoing and No Evidence e < 0.5 l/sec or >0 r estimate length surface area oc d flow status as pe ched height and perched by rip-rap, ar d whether or not flow condition challenges	Active (1) (4) .5 l/sec; measure of bank where secupied per feature flow. Es jumping height and jumping height er outlet or industr mour stone, or ga perched. If perch anges from dry to anges from minim changes from dry	Historic Unkno temp pepage occurs istimate volume timate volume to tial discharge pip bion baskets. ed record perch- standing water, al to substantial	c Evidence (2) vn (5) <0.5 l/sec or > 6 be <0.5 l/sec of sec o	Reported but 0.5 l/sec. Measure or >0.5 l/sec.	ut No Evidence (3) temperature.	rian Vegetation
Point Categ POINT A B C D E F G H I J K L M N O P	Data ory DATA KEY: Spring/upwelli Seepage area Watercress - Outlet (tile or ot Beaver dam - Manmade dar Other barrier t Potential conta Channel harde Culvert - note Flow transition Flow transition Flow transition Fish observed Potential nutrie	ng - estimate - measure o estimate total other) - record measure per n - measure p o fish moven amination solening - indica type, size an point D/S - f point M/S- fl point D-S/IF during non-fient source	Ongoing and No Evidence e <0.5 l/sec or >0 r estimate length surface area oc d flow status as pe ched height and perched height and perched height and perched height and perched by rip-rap, an d whether or not flow condition che flow condition che flow condition che flow condition che	Active (1) (4) .5 l/sec; measure of bank where secupied per feature flow. Es jumping height and jumping height er outlet or industr mour stone, or ga perched. If perch anges from dry to anges from minim changes from dry	Historic Unkno temp pepage occurs istimate volume timate volume to tial discharge pip bion baskets. ed record perch- standing water, al to substantial	c Evidence (2) vn (5) <0.5 l/sec or > 6 be <0.5 l/sec of sec o	Reported but 0.5 l/sec. Measure or >0.5 l/sec.	ut No Evidence (3) temperature.	rian Vegetation
Trigge Point Categ POINT A B C D E F G H I J K L M N O	Data ory DATA KEY: Spring/upwelli Seepage area Watercress - Outlet (tile or ot Beaver dam - Manmade dar Other barrier t Potential conta Channel harde Culvert - note Flow transition Flow transition Flow transition Fish observed	ng - estimate - measure o estimate total other) - record measure per n - measure p o fish moven amination solening - indica type, size an point D/S - f point M/S- fl point D-S/IF during non-fient source	Ongoing and No Evidence e <0.5 l/sec or >0 r estimate length surface area oc d flow status as pe ched height and perched height and perched height and perched height and perched by rip-rap, an d whether or not flow condition che flow condition che flow condition che flow condition che	Active (1) (4) .5 l/sec; measure of bank where secupied per feature flow. Es jumping height and jumping height er outlet or industr mour stone, or ga perched. If perch anges from dry to anges from minim changes from dry	Historic Unkno temp pepage occurs istimate volume timate volume to tial discharge pip bion baskets. ed record perch- standing water, al to substantial	c Evidence (2) vn (5) <0.5 l/sec or > 6 be <0.5 l/sec of sec o	Reported but 0.5 l/sec. Measure or >0.5 l/sec.	ut No Evidence (3) temperature.	rian Vegetation

GENERAL SITE INFORMATION FIELD SHEET



-				NHIC List]MNR	EO's none		not provid	ded to co	ollector	
WEA	THE	R CONDITIONS		TO SERVICE STATE S	School St	E WALLE	e 6	WIND SCA	LE	DEPT.	Bullet 1
Temp		Wind:	12km/	Cloud Cover (%)	Precipi	tation	0	Calm			
00		Disastinus			Today:		1	Smoke Drif	ts		
23	C	Direction:	SW	95	Yester	lay: Yes	2	Wind Felt o	n Face		
DATA	F	ocus	an Jei			Enfillment of the	3	Leaves in c			
		Birds 1 2 Mig		ELC's		Dripline/Tree Surve	ey 4	Wind raises		d paper	
]	Mammals		Floral VS_A_		Aquatic - Physical	5	Small trees	-		
]	Amphibians 1_2_3_		Wetland		Aquatic - Biologica		Large brand			
]	Reptiles		Butternut (BHA)		Faunal Habitat	7	Lots of resi			king into
		Inverterbrates		other SAR		Other - see notes	8	Limbs brea			
		ES (with GPS co-ord	inates w	here applicable)	ASSES			Mapped		ow-up R	
		de Structures:				None observed		UTM	Yes	No	Who
Yes M	12	D	Table a office	n.					CHAIR!	100 E 65	ETTERNOON !
H		Barns/Footings/Wells Rock Piles	/otner(iis	it)					-		
H		Garbage									
Natu		Vegetation:				None observed			-		
TIN	Ö	Fallen Logs outside w	roods (#	c)		_ mone occorred				_	
H	V	Brush Piles	10003 (#	3)							
M	V	Snags (raptor perch)									
	J	Tree Cavities (nesting	1)								
		Sentinel Trees	2.4								
	7	Butternut Identified									
	7	Mast Trees (6E)		Berry Shrubs (6E)							
Wildl	ife	Features:				None observed					
	V	Waterfowl nesting (la									
	V	Exposed Banks (nest	ing swall	ows)							
Щ	Stick Nests										
Щļ	V	Animal Burrows (>10	cm)								
Щ	V	Heronry									
Щ		Crayfish mounds									
		Sand/gravel on site	haib								
H	Y	Marsh/open country/s Winter Deer yards	inrub						-		
	-	Corridor from pond to	woods /	ampihian mayamant\					 		
H	-	Bat corridor (shoreline					-				
	V	Bat hibernacula (cave							i -		
Agua	tic	Features:	20, 1111100	, ordinada, otto.)							
$\dot{\Box}$		Perm. pond in woodla	and \square	emergents/submerger	nts/logs	temp.					
	=	Perm. pond in open		emergents/submerger		temp.					
lĦi		Water in woodland	☐ pools		ry						
V		Waterways flo	wing	dry pools							
	Ē	natural stream									
		swale				None observed					
		open drain	П								
		Seeps/Springs									
Incid	ent	al Observations/Note	s:								
- 1.1-		30. 07.	V- 1 :						-		
	1	A3+ AHA VI	Sit								
									-	-	-
	_										
	_						_		 		
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Graphic		Attached or Name.\ENV\Biological Services\Templates\MFERER _ Veneral Fillers Rest		Date:_	
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		(#)		
	140			

	Unconstrained Headwater	Drainage Feature Asse	ssment	
Date (yyyy/mm/dd): 2	02408 < 8 Project #: 536K	Recorder/Crew:	AT + DM	
Stream Name:	Stream Code: H2S	Site Code:	Beach 1	
Site Limits:	Upstream WP# (04488)	Field Assessment:	☐ Sample 1 Unconnected HDF:	
	Downstream WP# 4756499		☐Sample 2 ☐Not connected to	
Direction of Assessment:	☐ Upstream ☐ ☐ Do	wnstream	☐Sample 3 downstream network	
Flow Influence	Freshet (1)	Spate (2)	Baseflow (3)	
Flow Condition	Dry (1) Standing Water (2)	☐ Interstitial Flow (3) ☐ Minimal Flow (4)	☐ Substantial Flow (5)	
Feature Type	Defined Natural Channel (1)	☐ No Defined Feature (4)	Swale (7)	
100000000000000000000000000000000000000	☐ Channelized or Constrained (2)	☐ Tiled Feature (5)	☐ Roadside Ditch (8)	
	☐ Multi-thread (3)	☐ Wetland (6)	Pond (9)	_
Feature Vegetation	□ None (1) □ Lawn (2) □ Cropped (3)	☐ Meadow (4) ☐ Scrubland	(5) Wetland(6) Forest (7)	
Riparian Vegetation		, Bo	ith observed (Wetland M	is t
0 - 1.5 m Left Bank	☐ None (1) ☐ Lawn (2) ☐ Cropped (3)	☐ Meadow (4) ☑ Scrubland		Promine
Right Bank	□ None (1) □ Lawn (2) □ Cropped (3)	☐ Meadow (4) ☐ Scrubland	(5) Wetland (6) Forest (7)	1
1.5 - 10 m Left Bank	☐ None (1) ☐ Lawn (2) ☐ Cropped (3)	☐ Meadow (4) ☐ Scrubland	(5) Wetland (6) Forest (7)	
Right Bank	□ None (1) □ Lawn (2) □ Cropped (3)	Meadow (4) ☐ Scrubland		
10 - 30 m Left Bank	□ None (1) □ Lawn (2) □ Cropped (3)	☐ Meadow (4) ☐ Scrubland		
Right Bank	None (1) \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	☐ Meadow (4) ☐ Scrubland		
Channel Gradient (S4.	VI7) Uisual (1) Clinometer (2) La	ser Level (3) Survey Level (4)	Other (5) LiDAR (6)	
Distance (m):	Elevation (cm)		Gradient (°):	
Dominant Substrate (S.	Clay (Hard Pan) Silt Sand (0.06	6-2 mm) Gravel (22-66 mm) Col	oble (67-249 mm) Boulder (250 mm) Bedrock	
Sub-Dominant Substra	te (S2.M3)			
Feature Roughness	< 10% Minimal (1) 18-40	0% Moderate (2)	High (3)	
Width Measurement	Can't Measure (1) Bankfull (2)	Mean Width (3) Estimated	(4) GIS (5) Measure/GIS (6)	1
Channel Dimensions	Feature Width (m): 3.0	Bankfull Depth (mm)	640	
Entrenchment To	tal: 240 m = <40 m Left Bank Not entrenche	m Right Bank	m Total width m	
Surface Flow Method	Perched Culvert (1) Hydraulic I	Head (2) Distance by Tin	ne (3) Estimated (4) M Dr	Y
Wetted Width (m)	Wetted Depth (mm) Hydraulic head (m	m) Volume (L)	Distance (m) Time (s)	, [
Dry	1 2 3 1 2	3 1 2 3	1 2 3 1 2 3	e Fe
1	Adjacent None (1) Rill (2)	☐ Rill and Gully (3) ☐	Gully (4)	
Sediment Transport	☐ Sheet Erosion (6)	☐ Instream Bank Erosion (7)	Other (8)	
l .	Feature None (1) Rill (2)		Gully (4)	
	Sheet Erosion (6)	Instream Bank Erosion (7)	Other (8)	
Sediment Deposition	Measures (mm):			
None (1)	Minimal: < 5 mm (2) Moderate: 5-30 mm (3	3) Substantial: 31-80 mm (4	Extensive: > 80 mm (5)	

To H	yyyy/mm	/dd	Uncon	strained Headwate	r Drainage Fe	ature Assessm	nent	Pg. 2 of 2
Date:	20240	1 1 1 1 1		689-101	Field Assessment:	Sample # 1	Sample # 2	Sample # 3
471		(A) (A)		POINT F	EATURE DA	TA		
Ground	rrier Measurer water Indicat	WP#	None	Perched Height (mm): Perched Height (mm): Watercress Seep Present Commen	Jumping age Bubbling	Height (mm): Height (mm): Stained	Other:	
WP#	Photo#	Code	Category			Description		
	onal Notes:		plat					
Site Bro		Feature Type Other: Com		ure Modifier F	low Conditions	Feature Vege	tation Ripar	ian Vegetation
Point D Catego			Ongoing and A No Evidence (, ,	istoric Evidence (2) nknown (5)	Reported but	No Evidence (3)	
A B C D E F G H I J K L M N O P Q	Seepage area Watercress - e Outlet (tile or of Inlet (tile or oth Beaver dam - Manmade dam Other barrier to Potential conta Channel harde Culvert - note Flow transition Flow transition	- measure or estimate total softer) - record finer) - record fineasure perconducer in a measure perconducer in a measure perconducer in a measure perconducer in measure perconducer in me	estimate length surface area occ flow status as per whed height and jerched height arent roe (storm sewered by rip-rap, arrol whether or not jow condition chapts surface in the sew condition chapts surface in the sew condition chapts surface in the sew condition chapts in the sew c	er feature flow. Estimate volumping height d jumping height outlet or industrial discharation stone, or gabion bask perched. If perched recordinges from dry to standing in the substanding stones from dry/standing volumes from dry/standing volumes.	lume <0.5 l/sec or >0 me to be <0.5 l/sec or ge pipe). ets. perched height and ju vater, independent of antial surface flow, in	or >0.5 l/sec. umping height. I segment break udependent of segme	ent break	

	Unconstrained H	eadwater Drain	nage Feature Asses	ssment	
Date (yyyy/mm/dd): 2) 2 4 0 8 2 8 Project #:	53689-1		VI + DN	
Stream Name:	Stream Code	11001	Site Code:	Reach 2	
2		721	Field Assessment:		connected HDF:
one inne		6495/		/	Not connected to
Direction of Assessment:	☐ Upstream <	Downstrea	im	Sample 3	downstream network
Flow Influence	☐ Freshet (1)		Spate (2)	☐ Baseflow	(3)
Flam Can dition	Dry (1)		L. t (27-1 Fl /0)	☐ Substant	ial Flow (5)
Flow Condition	Standing Water (2)		Interstitial Flow (3) Minimal Flow (4)	U Substant	iai i iow (5)
Feature Type	Defined Natural Channel (1)		No Defined Feature (4)	Swale (7)	
,	☐ Channelized or Constrained (Tiled Feature (5)		Ditch (8)
	☐ Multi-thread (3)		Wetland (6)	☐ Pond (9)	
Feature Vegetation	None (1) ☐ Lawn (2) ☐ (Cropped (3)	Meadow (4) Scrubland	(5) Wetland(6)	Forest (7)
Riparian Vegetation					
0 - 1.5 m Left Bank	□ None (1) □ Lawn (2) □ (Cropped (3)	Meadow (4) Scrubland	(5)	☐ Forest (7)
Right Bank	□ None (1) □ Lawn (2) □ (Cropped (3)	Meadow (4) Scrubland	I (5) U Wetland (6)	☐ Forest (7)
1.5 - 10 m Left Bank	□ None (1) □ Lawn (2) □ (Cropped (3)	Meadow (4) Scrubland	(5)	☐ Forest (7)
Right Bank	□ None (1) □ Lawn (2) □ (Cropped (3)	Meadow (4) Scrubland	(5) Wetland (6)	Forest (7)
10 - 30 m Left Bank	□ None (1) □ Lawn (2) □ (Cropped (3)	Meadow (4) Scrubland	(5) Wetland (6)	☐ Forest (7)
Right Bank			Meadow (4) Scrubland		☐ Forest (7)
Channel Gradient (S4.N	17) Visual (1) Clinometer (2	2) Laser Leve	el (3) Survey Level (4)	Other (5)	LiDAR (6)
Distance (m):		Elevation (cm) :		Gradient (°):	
Dominant Substrate (S2	Clay (Hard Pan) Silt	Sand (0,06-2 mm)	Gravel (22-66 mm) Cot	oble (67-249 mm) Boulde	er (250 mm) Bedrock
Sub-Dominant Substrat	e (S2.M3)				
Feature Roughness	< 10% Minimal (1)	10 - 40% Mod	erate (2) 40 - 60% H	10	Extreme (4)
Width Measurement	Can't Measure (1) Bankful	II (2) Mea	n Width (3) Estimated	(4) GIS (5) M	easure/GIS (6)
Channel Dimensions	Feature Width (m): 3,36		Bankfull Depth (mm)	880	
Entrenchment Tot	al:	ft Bank 3,2	m Right Bank // .	m Total width	
Surface Flow Method	Perched Culvert (1)	Hydraulic Head (2)	Distance by Tim	ne (3)	stimated (4)
Wetted Width (m)	Wetted Depth (mm) Hydra	aulic head (mm)	Volume (L)	Distance (m)	Time (s)
Dry		2 3	1 2 3	1 2 3	1 2 3
Sediment Transport	Sheet Erosion (6) Feature None (1)	□ Iı	nstream Bank Erosion (7)	Gully (4) Outlet S Other (8 Gully (4) Outlet S	8) Scour (5)
	Sheet Erosion (6)		nstream Bank Erosion (7)	Other (8)
Sediment Deposition	Measures (mm):				
None (1)	Minimal: < 5 mm (2)	te: 5-30 mm (3)	Substantial: 31-80 mm (4	Extensive: > 80	0 mm (5)

	yyyy/mm/	/dd	Uncon	strained Headwa	ater Drainage	Feature Assess	ment	Pg. 2 of 2
Date:	20340		ect #: 53	689-101	Field Assessme	ent: Sample # 1	Sample # 2	Sample # 3
		EDARS			FEATURE I			
Ground	arrier Measurer Iwater Indicate	WP#	None	Perched Height (mm): Perched Height (mm): Watercress Se Present Comm	Jun epage Bub	nping Height (mm): nping Height (mm): bblingStained	Other:	
WP#	Photo#	Code	Category			Description		
		,						
								¥1
Additi	onal Notes:							
Fe	la Lace	Ù	try.					
Site Br Trigger		Feature Type Other: Com		ure Modifier	Flow Conditions	Feature Veç	getation Ripa	rian Vegetation
Point D	Data		Ongoing and A		Historic Evidend Unknown (5)	ce (2) Reported by	ut No Evidence (3)	
A B C D E F G H I J K L M N	Seepage area Watercress - e Outlet (tile or of Inlet (tile or oth Beaver dam - Manmade dam Other barrier to Potential conta Channel harde Culvert - note Flow transition Flow transition Flow transition	- measure or estimate total so other) - record finer) - record finered are measure percordistance of fish movement amination sour ening - indicate type, size and a point D/S - fice point M/S- fice point D-S/IF-	estimate length of surface area occursors flow status as per wheelight and justice from the surface (storm sewered by rip-rap, amil whether or not pow condition challed surface).	er feature flow. Estimate of feature flow. Estimate of feature flow. Estimate of the feature flow. It is a substitution of the feature flow. If perched recogninges from dry to standing from from flow. Estimate flow.	e volume <0.5 l/sec volume to be <0.5 l/sec harge pipe). haskets. ord perched height and g water, independents bstantial surface flo	/sec or >0.5 l/sec. and jumping height. ent of segment break ow, independent of segr	nent break	

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Unconstrained Headwater Drainage Feature Assessment	
Date (yyyy/mm/dd): 20 24 0 6 2 8 Project #: 530 89 - 101 Recorder/Crew: V5 + DN	
Stream Name: Stream Code: H 261 Site Code: Recch 3	
Site Limits: Upstream WP# 444 Field Assessment: □ Sample 1 Unconnected HDF:	
Dewnstream 7 WP# 47564 KG Sample 2 DNot connected to	.0
Direction of Assessment:	
Flow Influence	
Flow Condition Dry (1) Interstitial Flow (3) Substantial Flow (5)	
Standing Water (2) Minimal Flow (4) Feature Type Defined Natural Channel (1) No Defined Feature (4) Swale (7)	
Feature Type ☐ Defined Natural Channel (1) ☐ No Defined Feature (4) ☐ Swale (7) ☐ Channelized or Constrained (2) ☐ Filed Feature (5) ☐ Roadside Ditch (8)	
Multi-thread (3) Wetland (6) Pond (9)	
Feature Vegetation None (1) Lawn (2) Cropped (3) Meadow (4) Scrubland (5) Wetland(6) Forest (7)	
reactive vegetation Involve (1) Involve (2) Involve (3) Involve (4) Involve (4) Involve (5) Involve (6) Involve (7) Involv	
Riparian Vegetation	
0 - 1.5 m Left Bank None (1) Lawn (2) Cropped (3) Meadow (4) Scrubland (5) Wetland (6) Forest (7)	
Right Bank None (1) Lawn (2) Cropped (3) Meadow (4) Scrubland (5) Wetland (6) Forest (7)	
1.5 - 10 m Left Bank None (1) Lawn (2) Cropped (3) Meadow (4) Scrubland (5) Wetland (6) Forest (7)	DES
Right Bank None (1) Lawn (2) Cropped (3) Meadow (4) Scrubland (5) Wetland (6) Forest (7)	
	eren .
10 - 30 m Left Bank None (1) Lawn (2) Cropped (3) Meadow (4) Scrubland (5) Wetland (6) Forest (7)	200
Right Bank None (1) Lawn (2) Cropped (3) Meadow (4) Scrubland (5) Wetland (6) Forest (7)	
Channel Gradient (S4.M7)	
Distance (m): Elevation (cm): Gradient (°):	
Clay (Hard Pan) Silt Sand (0.06-2 mm) Gravel (22-66 mm) Cobble (67-249 mm) Boulder (250 mm) Bec Dominant Substrate (S2.M3)	Irock
Feature Roughness	
Width Measurement Can't Measure (1) Bankfull (2) Mean Width (3) Estimated (4) GIS (5) Measure/GIS (6)	
Channel Dimensions Feature Width (m): Pry Bankfull Depth (mm)	
	m
Surface Flow Method Perched Culvert (1) Hydraulic Head (2) Distance by Time (3) Estimated (4)	
Wetted Width (m) Wetted Depth (mm) Hydraulic head (mm) Volume (L) Distance (m) Time (s)	
<u>1 2 3 1 2 3</u>	3
Adjacent None (1) Rill (2) Rill and Gully (3) Gully (4) Outlet Scour (5)	
Sheet Erosion (6) Instream Bank Erosion (7)	
Feature None (1) Rill (2) Rill and Gully (3) Gully (4) Outlet Scour (5)	
☐ Sheet Erosion (6) ☐ Instream Bank Erosion (7) ☐ Other (8)	
Sediment Deposition Measures (mm):	
None (1) Minimal: < 5 mm (2) Moderate: 5-30 mm (3) Substantial: 31-80 mm (4) Extensive: > 80 mm (5)	

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	yyyy/mm	n/dd	Uncon	strained Headw	vater Dra	inage Fe	ature Assessr	nent	Pg. 2 of 2
Date:	20240		ect #: 530	089-101	Field As	ssessment:	Sample # 1	Sample # 2	Sample # 3
				POINT	Γ FEAT	JRE DA	TA		
Ground	arrier Measure dwater Indicat	WP#	None 🔲				g Height (mm): g Height (mm): Stained	Other:	
WP#	Photo #	Code	Category				Description		
						(2)			
_									
Site Br		Feature Type	IN N.	ture Modifier [Flow Co	nditions	Feature Veg	etation Ripari	an Vegetation
Frigger Point D			Ongoing and A	7 41	Historic	 Evidence (2)) Reported bu	t No Evidence (3)	
Catego	ry		No Evidence (4		Unknow				
B C D E F G H J V M N	Seepage area Watercress - e Outlet (tile or ot lnlet (tile or ot Beaver dam - Manmade dar Other barrier t Potential cont Channel harde Culvert - note Flow transitior Flow transitior	a - measure or estimate total so other) - record ther) - record flow measure per to fish movement amination sour ening - indicate type, size and in point D/S - flow point D-S/IF-	estimate length of surface area occide flow status as perched height and juderched height and enterched by rip-rap, are discondition characteristics of the surface of the	er feature flow. Estimate feature flow. Estimate umping height ad jumping height or outlet or industrial dismour stone, or gabion perched. If perched register from dry to standinges from minimal to shanges from dry/standinges	ge occurs ate volume <(e volume to b scharge pipe) baskets. cord perched ding water, in substantial su	e <0.5 l/sec of the control of the c	or >0.5 l/sec. umping height. f segment break idependent of segm	ent break	

Downstream	Extent

	Unconst	rained Hea	adwater Dra	nage Feature A	Assessment	
Date (yyyy/mm/dd): 2	0240828	Project #:	53689-	Recorder/Crev	v: Vs T	DN
Stream Name:	VI = 11 (30) 40	Stream Code:	H2S1	Site Code:	Reach	
Site Limits:	Upstream \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		1	Field Assessm		Unconnected HDF:
	Downstream WP#		483,		☐Sample 2	
Direction of Assessment:		Upstream <	— ☑ Downstre	eam	Sample 3	downstream network
Flow Influence	☐ Freshet (1)			Spate (2)	□ □	Baseflow (3)
Flow Condition	Dry (1) Standing Water	(2)		Interstitial Flow (3) Minimal Flow (4)		Substantial Flow (5)
Feature Type	□ Defined Natural			No Defined Feature (4) 🔲	Swale (7)
	☐ Channelized or	Constrained (2)		Tiled Feature (5)		Roadside Ditch (8)
	Multi-thread (3)			Wetland (6)		Pond (9)
Feature Vegetation	△None (1) ☐ Law	n (2) 🔲 Cro	opped (3)	Meadow (4) Scr	ubland (5) 🔲 Wetla	and(6)
Riparian Vegetation				/		
0 - 1.5 m Left Bank	□ None (1) □ Law	m (2)	opped (3)	Meadow (4) Scr	ubland (5) Wetla	and (6)
Right Bank	□ None (1) □ Law	n (2) 🔲 Cro	opped (3)	Meadow (4) ☑ Scr	rubland (5) 🔲 Wetla	and (6)
1.5 - 10 m Left Bank	□ None (1) □ Law	n (2) 🔲 Cro	opped (3)	Meadow (4) Scr	rubland (5) U Wetla	and (6)
Right Bank	□ None (1) □ Law	n (2) 🔲 Cro	opped (3)	Meadow (4) Scr	rubland (5)	and (6)
10 - 30 m Left Bank Right Bank			opped (3)	Meadow (4) Scr Meadow (4) Scr		
Channel Gradient (S4.		Clinometer (2)	Laser Le			
Distance (m):		Ele	evation (cm):			dient (°):
Dominant Substrate (Si	Clay (Hard Pan)) Silt	Sand (0.06-2 mm) Gravel (22-66 mm)) Cobble (67-249 mr	n) Boulder (250 mm) Bedrock
Sub-Dominant Substra						
Feature Roughness	< 10% Min	nimal (1)	10 - 40% Mo	derate (2)	60% High (3)	> 60% Extreme (4)
Width Measurement	Can't Measure (1)	Bankfull (2	2)	an Width (3) Esti	mated (4) GIS	(5) Measure/GIS (6)
Channel Dimensions	Feature Width (m):			Bankfull Depth	n (mm)	v
Entrenchment _{To}	tal: 🗆 >40 m 📮 <	<40 m Left B	lank	m Right Bank	m	Total width m
Surface Flow Method	Perched Culvert (1)	entrend	ռու)]Hydraulic Head (:	2) Distance	by Time (3)	Estimated (4)
Wetted Width (m)	Wetted Depth (mm)	Hydraul	ic head (mm)	Volume (L)	Distance	
Dry			2 3	1 2 3	1 2	3 1 2 3
Sediment Transport	Feature None	Erosion (6)	Rill (2)	Rill and Gully (3) Instream Bank Erosion Rill and Gully (3)	(7) [Gully (4) [☐ Outlet Scour (5) ☐ Other (8) ☐ Outlet Scour (5)
		Erosion (6)	ب 	Instream Bank Erosion	(1)	Other (8)
Sediment Deposition	Measures (mm):					
√ None (1) □]Minimal: < 5 mm (2)	Moderate:	5-30 mm (3)	Substantial: 31-80	mm (4) Exte	nsive: > 80 mm (5)

12 05 /

200	ST NITE A			그리고 마다 가지 않는데 하는데 하는데 하나 다른 사람들이 모르게 되는 것이 많아들고싶었다. 그 그래?
A .				strained Headwater Drainage Feature Assessment Pg. 2 of 2
Date:	2012/19	8 4 8 Proj	ject #: 53	Field Assessment: Sample # 1 Sample # 2 Sample # 3
	RINE VAL	178		POINT FEATURE DATA
Fish Ba	WP# Perched Height (mm): Jumping Height (mm): Stained Other: Shoundwater Indicators Absent Present Comment: WP# Photo # Code Category Description Additional Notes:			
		WP	#	Perched Height (mm): Jumping Height (mm):
Ground	dwater Indicat	ors		
Fish Co	roundwater Indicators None Watercress Seepage Bubbling Stained Other.			
-				
WP#	Photo #	Code	Category	Description
-				
-				
-				
-				
-				
0				
Additi	ional Notes	:		
_		· t	1	
tec	ithre	_1.5	dy	
			1	j.
Site B	reak 🔲	Feature Typ	oe	ure Modifier Flow Conditions Feature Vegetation Riparian Vegetation
Trigge	r 🗆	Other: Cor	nments	
-				Active (1) Historic Evidence (2) Reported but No Evidence (3)
Catego	ory		No Evidence (4) Unknown (5)
POINT	DATA KEY:	A NEW TOWN	20 1 3 STA	
Jo on			0.511	
C	Watercress -	estimate total	surface area occ	upied
D				
E				
Date: Project #: Sample # 2 Sample # 3 Sample # 3 Sample # 2 Sample # 3 Sample # 3 Sample # 4 Sampl				
Date: Sample # 2 Sample # 2 Sample # 2 Sample # 2 Sample # 3				
L V	Flow transition	n point D/S - 1	flow condition cha	inges from dry to standing water, independent of segment break
M N				nges from minimal to substantial surface flow, independent of segment break hanges from dry/standing water to interstitial flow, independent of segment break
0			ish sampling activ	
P	Potential nutri	ent source		
Q R	Offline pond	nannel		
S	Other			

Unconstrained	Headwater Drainage Feature Assessment
Date (yyyy/mm/dd): 20290829 Project #:	53689-101 Recorder/Crew: VS + DN
Stream Name: Stream Co	ode: H2S2 Site Code: Reach
Site Limits: Upstream WP# COLIC	Field Assessment: Sample 1 Unconnected HDF: Sample 2 Not connected to
Direction of Assessment:	
Flow Influence	☐ Spate (2) ☐ Baseflow (3)
Flow Condition Dry (1) Standing Water (2)	Interstitial Flow (3) Substantial Flow (5)
Feature Type	
☐ Channelized or Constraine	d (2)
☐ Multi-thread (3)	☐ Wetland (6) ☐ Pond (9)
Feature Vegetation	Cropped (3)
Riparian Vegetation	1,
	Cropped (3) Meadow (4) Scrubland (5) Wetland (6) Forest (7)
Right Bank None (1) Lawn (2)	Cropped (3) Meadow (4) Scrubland (5) Wetland (6) Forest (7)
1.5 - 10 m Left Bank □ None (1) □ Lawn (2) □	Cropped (3) Meadow (4) Scrubland (5) Wetland (6) Forest (7)
Right Bank INone (1) Lawn (2)	Cropped (3)
	Cropped (3) Meadow (4) Scrubland (5) Wetland (6) Forest (7) Cropped (3) Meadow (4) Scrubland (5) Wetland (6) Forest (7)
Channel Gradient (S4.M7)	er (2) Laser Level (3) Survey Level (4) Other (5) LiDAR (6)
Distance (m):	Elevation (cm): Gradient (°):
Clay (Hard Pan) Si Dominant Substrate (S2.M3)	Sand (0.06-2 mm) Gravel (22-66 mm) Cobble (67-249 mm) Boulder (250 mm) Bedrock
Sub-Dominant Substrate (S2.M3)	
Feature Roughness	10 - 40% Moderate (2) 40 - 60% High (3) > 60% Extreme (4)
Width Measurement Can't Measure (1) Banl	kfull (2) Mean Width (3) Estimated (4) GIS (5) Measure/GIS (6)
Channel Dimensions Feature Width (m):	Bankfull Depth (mm)
	Left Bank m Right Bank m Total width m
Surface Flow Method Perched Culvert (1)	Hydraulic Head (2) Distance by Time (3) Estimated (4)
Wetted Width (m) Wetted Depth (mm) Hy	draulic head (mm) Volume (L) Distance (m) Time (s)
1 2 3	1 2 3 1 2 3 1 2 3
Adjacent 🗘 None (1)	☐ Rill (2) ☐ Rill and Gully (3) ☐ Gully (4) ☐ Outlet Scour (5)
Sediment Transport	
Feature ☐ None (1) ☐ Sheet Erosion (6	☐ Rill (2) ☐ Rill and Gully (3) ☐ Gully (4) ☐ Outlet Scour (5) ☐ Instream Bank Erosion (7) ☐ Other (8)
Sediment Deposition Measures (mm):	
	erate: 5-30 mm (3)
	· · · · · · · · · · · · · · · · · · ·

	yyyy/mm.	v/dd	Uncon	strained Hea	idwater D	rainage Fe	ature Assessr	nent	Pg. 2 of 2
Date:	20240	828 Proje	ect #: 536	89-101	Field	Assessment:	Sample # 1	Sample # 2	Sample # 3
le e		= 1,48)				TURE DA	TA		ERRICH CONTRACTOR
Ground	arrier Measure dwater Indicat ollection	WP#	# None	Perched Height (i Perched Height (i Watercress [Present (g Height (mm): g Height (mm): Stained	Other:	
WP#	Photo #	Code	Category				Description		
En Site Br		Feature Type	- X	ure Modifier	□ Flow (Conditions	Feature Vega	etation Rin:	arian Vegetation
Trigger		Other: Com		die Modillei		JOHUIGOTIS	Logi cattire vog	etationixipe	allan vegeranon
Point D	Data		Ongoing and A No Evidence (4	, ,		ic Evidence (2) own (5)) Reported bu	it No Evidence (3)	
A B C D E F G H I J K L M N	Seepage area Watercress - e Outlet (tile or ot Inlet (tile or ot Beaver dam - Manmade dam Other barrier to Potential conta Channel harde Culvert - note Flow transition Flow transition	a - measure or estimate total so other) - record fine measure percent of the movement of the measure percent of the movement of th	estimate length of surface area occid flow status as per ched height and juderched height and ent area (storm sewer and whether or not plow condition charollow charol	er feature flow. Esting the flow. Esting	epage occurs Itimate volume mate volume to I discharge pip ion baskets. d record perchetanding water	o be <0.5 l/sec one). The decident and just independent of a surface flow, in	umping height.	nent break	

Unconstrained Headwater	Drainage Feature Assessment
Date (yyyy/mm/dd): 202 9 0 2 8 Project #: 5368	9 - U Recorder/Crew: VC + PN
Stream Name: Stream Code: H25	2 Site Code: Reach 2
Site Limits: Upstream WP# 044 867 Downstream WP# 1154 99	Field Assessment: Sample 1 Unconnected HDF: Sample 2 Not connected to
Direction of Assessment:	wnstream
Flow Influence	Spate (2) Baseflow (3)
Flow Condition Dry (1) Standing Water (2)	☐ Interstitial Flow (3) ☐ Substantial Flow (5) ☐ Minimal Flow (4)
Feature Type Defined Natural Channel (1) Channelized or Constrained (2) Multi-thread (3)	No Defined Feature (4) Tiled Feature (5) Wetland (6) Swale (7) Roadside Ditch (8) Pond (9)
Feature Vegetation None (1) Lawn (2) Cropped (3)	☐ Meadow (4) ☐ Scrubland (5) ☐ Wetland(6) ☐ Forest (7)
Riparian Vegetation	
0 - 1.5 m Left Bank None (1) Lawn (2) Cropped (3) Right Bank None (1) Lawn (2) Cropped (3)	Meadow (4) ☐ Scrubland (5) ☐ Wetland (6) ☐ Forest (7) ☐ Meadow (4) ☐ Scrubland (5) ☐ Wetland (6) ☐ Forest (7)
1.5 - 10 m Left Bank None (1) Lawn (2) Cropped (3) Right Bank None (1) Lawn (2) Cropped (3)	☐ Meadow (4) ☐ Scrubland (5) ☐ Wetland (6) ☐ Forest (7) ☐ Meadow (4) ☐ Scrubland (5) ☐ Wetland (6) ☐ Forest (7)
10 - 30 m Left Bank	Meadow (4) Scrubland (5) Wetland (6) □ Forest (7) □ Meadow (4) □ Scrubland (5) □ Wetland (6) □ Forest (7)
Channel Gradient (S4.M7)	er Level (3) Survey Level (4) Other (5) LiDAR (6)
Distance (m): Elevation (cm)	Gradient (°):
Clay (Hard Pan) Silt Sand (0.06-	-2 mm) Gravel (22-66 mm) Cobble (67-249 mm) Boulder (250 mm) Bedrock
Sub-Dominant Substrate (S2.M3)	
Feature Roughness	% Moderate (2)
Width Measurement Can't Measure (1) Bankfull (2)	Mean Width (3) Estimated (4) GIS (5) Measure/GIS (6)
Channel Dimensions Feature Width (m):	Bankfull Depth (mm)
Entrenchment Total: >40 m	m Right Bank m Total width m
Surface Flow Method Perched Culvert (1) Hydraulic H	lead (2) Distance by Time (3) Estimated (4)
Wetted Width (m) Wetted Depth (mm) Hydraulic head (mn	•
1 2 3 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1	3 1 2 3 1 2 3
Adjacent None (1) Rill (2) Sediment Transport Sheet Erosion (6) Feature None (1) Rill (2) Sheet Erosion (6)	☐ Rill and Gully (3) ☐ Gully (4) ☐ Outlet Scour (5) ☐ Instream Bank Erosion (7) ☐ Other (8) ☐ Rill and Gully (3) ☐ Gully (4) ☐ Outlet Scour (5) ☐ Instream Bank Erosion (7) ☐ Other (8)
Sediment Deposition Measures (mm):	Substantial: 31-80 mm (4)

J. R.	yyyy/mr	/dd	Uncon	strained Heady	water Dr	ainage Fea	ature Assessr	nent	Pg. 2 of 2
Date:	20240		ect #: 53(89-10	Field	Assessment:	Sample # 1	Sample # 2	Sample # 3
			dry k	POIN	T FEAT	URE DA	TA	No P. HAPPER	
Ground	arrier Measure Iwater Indica Illection	WP#	None				Height (mm): Height (mm): Stained	Other:	
WP#	Photo #	Code	Category				Description		
1	onal Notes	is dry					×		
Site Br Trigge	INTERNATION IN	Feature Type Other: Com		ure Modifier	Flow C	onditions	Feature Veg	etation Ripari	an Vegetation
Point D	ata	Ouler. Com	Ongoing and A No Evidence (4		Histori Unkno	Evidence (2) wn (5)) Reported bu	nt No Evidence (3)	
A B C D E F G H I J K L M N O	Seepage area Watercress - Outlet (tile or Inlet (tile or ot Beaver dam - Manmade dar Other barrier Potential cont Channel hard Culvert - note Flow transition Flow transition Flow transition	a - measure or estimate total so other) - record file measure per confish movement amination sour ening - indicate type, size and a point D/S - floor point D/S-floor point D-S/IF-I during non-fis	estimate length of surface area occursions status as per own status as per the dheight and justice (storm sewered by rip-rap, arm whether or not pow condition challow condition challows.	er feature flow. Estimat feature flow. Estimat umping height d jumping height coutlet or industrial di nour stone, or gabion perched. If perched re nges from dry to stan nges from minimal to hanges from dry/stand	ge occurs ate volume e volume to scharge pip baskets. ecord perche ding water, substantial	be <0.5 l/sec of the control of the	or >0.5 l/sec. umping height. f segment break idependent of segm	nent break	Separation of the separation o

	Unconstrained Head	water Drainage Feature Asse	ssment
Date (yyyy/mm/dd):	24082 Project #:	Recorder/Crew:	V.s + DN
Stream Name:	Stream Code:	2 S7 Site Code:	Reach 3
Site Limits:	Upstream (- WP# /644 88	Field Assessment:	☐ Sample 1 Unconnected HDF:
	Downstream WP# LI756	586	Sample 2 Not connected to
Direction of Assessment:	☐ Upstream	Downstream	Sample 3 downstream network
Flow Influence	Freshet (1)	Spate (2)	Baseflow (3)
Flow Condition	☐ Dry (1)	☐ Interstitial Flow (3)	☐ Substantial Flow (5)
	Standing Water (2)	Minimal Flow (4)	(0)
Feature Type	☐ Defined Natural Channel (1)	No Defined Feature (4)	Swale (7)
	Channelized or Constrained (2)	☐ Tiled Feature (5)	Roadside Ditch (8)
Footure Vegetation	Multi-thread (3)	Wetland (6) Mendew (4)	Pond (9)
Feature Vegetation	□ None (1) □ Lawn (2) □ Cropp	ed (3)	(5) Wetland(6) Forest (7)
Riparian Vegetation			
0 - 1.5 m Left Bank		ped (3) Meadow (4) Scrubland	
Right Bank	□ None (1) □ Lawn (2) □ Cropp	ed (3)	(5) Wetland (6) Forest (7)
1.5 - 10 m Left Bank	None (1) Lawn (2) Cropp		
Right Bank	None (1) Lawn (2) Cropp	ed (3)	(5) Wetland (6) Forest (7)
10 - 30 m Left Bank	□ None (1) □ Lawn (2) □ Cropp	ed (3)	(5) Wetland (6) Forest (7)
Right Bank	☑None (1) ☐ Lawn (2) ☐ Cropp	ed (3)	(5) Wetland (6) Forest (7)
Channel Gradient (S4.M	77) Uisual (1) Clinometer (2)	Laser Level (3) Survey Level (4)	Other (5) LiDAR (6)
Distance (m):	Eleva	tion (cm):	Gradient (°):
Dominant Substrate (S2		and (0.06-2 mm) Gravel (22-66 mm) Cot	oble (67-249 mm) Boulder (250 mm) Bedrock
Sub-Dominant Substrat	USF might		
Feature Roughness		10 - 40% Moderate (2) 40 - 60% H	
Width Measurement	Can't Measure (1) Bankfull (2)	Mean Width (3) Estimated	(4) GIS (5) Measure/GIS (6)
Channel Dimensions	Feature Width (m):	Bankfull Depth (mm)	-
Entrenchment Tol	Not ontriviped		m Total width m
Surface Flow Method	Perched Culvert (1)	ydraulic Head (2) Distance by Tim	ne (3) Estimated (4)
Wetted Width (m)	Wetted Depth (mm) Hydraulic I	nead (mm) Volume (L)	Distance (m) Time (s)
Dry	1 2 3 1	2 3 1 2 3	1 2 3 1 2 3
	Adjacent None (1)	II (2)	Gully (4)
Sediment Transport	Speet Erosion (6)	☐ Instream Bank Erosion (7)	Other (8)
	Feature None (1) Ri	•	Gully (4) Outlet Scour (5)
	☐ Sheet Erosion (6)	☐ Instream Bank Erosion (7)	Other (8)
Sediment Deposition	Measures (mm):		
	Minimal: < 5 mm (2) Moderate: 5-3	30 mm (3) Substantial: 31-80 mm (4) Extensive: > 80 mm (5)
I			

	yyyy/mm	/dd	Uncons	strained Headwater Drainage Feature Assessment Pg. 2 of 2
Date:	20240	Proje	ect#: 536	Field Assessment: Sample # 1 Sample # 2 Sample # 3
Ground	arrier Measure dwater Indicat	WP#	None U	Perched Height (mm):Jumping Height (mm):
WP#	Photo#	Code	Category	Description
	onal Notes	: Ú	M	
Site Br Trigge	r 🗆	Feature Type Other: Com	ments	ure Modifier Flow Conditions Feature Vegetation Riparian Vegetation
Point I			Ongoing and A No Evidence (4	
POINT ABCDEFGHIJKLMNOPQRS	Seepage area Watercress - Outlet (tile or Inlet (tile or ot Beaver dam - Manmade dan Other barrier Potential cont Channel hard Culvert - note Flow transition Flow transition	a - measure or estimate total other) - record finesure per on - measure profish movem amination sou ening - indicatitype, size and point D/S - fin point M/S- file or point D-S/IF-I during non-fisent source	estimate length of surface area occidifiow status as per shed height and juerched height and juerched height and ent roce (storm sewered by rip-rap, arm distribution chairs with condition chairs surfaced by condition chairs surfaced by condition chairs surfaced by condition chairs surfaced area occidents.	er feature flow. Estimate volume <0.5 l/sec or >0.5 l/sec. Measure temperature. feature flow. Estimate volume to be <0.5 l/sec or >0.5 l/sec. umping height d jumping height outlet or industrial discharge pipe). nour stone, or gabion baskets. perched. If perched record perched height and jumping height. nges from dry to standing water, independent of segment break nges from minimal to substantial surface flow, independent of segment break hanges from dry/standing water to interstitial flow, independent of segment break

Downstream Extent

Unconstrained Headwater	Drainage Feature Assessment
Date (yyyy/mm/dd): 20290828 Project #: 5368	39-10) Recorder/Crew: VO + DN
Stream Name: Stream Code: HZ 50	
Site Limits: Upstream WP# 6-4885	Field Assessment: Sample 1 Unconnected HDF:
Downstream WP# 4756500	□ Sample 2 □ Not connected to
<u> </u>	winstream Sample 3 downstream network
Flow Influence	☐ Spate (2) ☐ Baseflow (3)
Flow Condition Dry (1) Standing Water (2)	☐ Interstitial Flow (3) ☐ Substantial Flow (5) ☐ Minimal Flow (4)
Feature Type Defined Natural Channel (1)	□ No Defined Feature (4) □ Swale (7)
Channelized or Constrained (2)	Tiled Feature (5) Roadside Ditch (8)
Multi-thread (3)	Wetland (6)□ Pond (9)□ Meadow (4)□ Scrubland (5)□ Wetland(6)□ Forest (7)
Feature Vegetation (1) Lawn (2) Cropped (3)	☐ Meadow (4) ☐ Scrubland (5) ☐ Wetland(6) ☐ Forest (7)
Riparian Vegetation	
0 - 1.5 m Left Bank None (1) Lawn (2) Cropped (3)	Meadow (4) Scrubland (5) Wetland (6) Forest (7)
Right Bank None (1) Lawn (2) Cropped (3)	Meadow (4) Scrubland (5) Wetland (6) Forest (7)
1.5 - 10 m Left Bank None (1) Lawn (2) Cropped (3)	Meadow (4) Scrubland (5) Wetland (6) Forest (7)
Right Bank Wone (1) Lawn (2) Cropped (3)	☐ Meadow (4) ☐ Scrubland (5) ☐ Wetland (6) ☐ Forest (7)
10 - 30 m Left Bank ☐ None (1) ☐ Lawn (2) ☐ Cropped (3) Right Bank ☐ None (1) ☐ Lawn (2) ☐ Cropped (3)	Meadow (4) ☐ Scrubland (5) ☐ Wetland (6) ☐ Forest (7) ☐ Meadow (4) ☐ Scrubland (5) ☐ Wetland (6) ☐ Forest (7)
Channel Gradient (S4.M7) Visual (1) Clinometer (2) La:	ser Level (3) Survey Level (4) Other (5) LiDAR (6)
Distance (m): Elevation (cm)	Gradient (°):
Clay (Hard Pan) Silt Sand (0.06 Dominant Substrate (S2.M3)	6-2 mm) Gravel (22-66 mm) Cobble (67-249 mm) Boulder (250 mm) Bedrock
Sub-Dominant Substrate (S2.M3)	
Feature Roughness	0% Moderate (2) 40 - 60% High (3)
Width Measurement Can't Measure (1) Bankfull (2)	Mean Width (3) Estimated (4) GIS (5) Measure/GIS (6)
Channel Dimensions Feature Width (m): 238	Bankfull Depth (mm)
Entrenchment Total: >40 m	m Right Bank m Total width m
Surface Flow Method Perched Culvert (1) Hydraulic H	Head (2) Distance by Time (3) Estimated (4)
Wetted Width (m) Wetted Depth (mm) Hydraulic head (mr	
Dry 1 2 3 1 2	3 1 2 3 1 2 3
Adjacent None (1) Rill (2)	☐ Rill and Gully (3) ☐ Gully (4) ☐ Outlet Scour (5)
Sediment Transport	☐ Instream Bank Erosion (7) ☐ Other (8)
Feature None (1) Rill (2)	☐ Rill and Gully (3) ☐ Gully (4) ☐ Outlet Scour (5)
☐ Sheet Erosion (6)	☐ Instream Bank Erosion (7) ☐ Other (8)
Sediment Deposition Measures (mm):	
None (1)	3) Substantial: 31-80 mm (4) Extensive: > 80 mm (5)

88	yyyy/mm/	/dd	Uncons	strained Headwater Drainage Feature Assessment	Pg. 2 of 2
Date:	00240		ect #: 536		Sample # 3
Mr.		al QCF		POINT FEATURE DATA	Section 1
Ground	arrier Measurer	WP#	None U	Perched Height (mm): Jumping Height (mm): Jumping Height (mm): Jumping Height (mm): Jumping Height (mm): Other: Present Comment:	
WP#	Photo#	Code	Category	Description	
L	onal Notes:	-	- Ord		
ite Bro		Feature Type Other: Com		ure Modifier Flow Conditions Feature Vegetation Riparial	n Vegetation
oint D	Data		Ongoing and A No Evidence (4		
A	Seepage area Watercress - e Outlet (tile or of Inlet (tile or oth Beaver dam - I Manmade dam Other barrier to Potential conta Channel harde Culvert - note Flow transition Flow transition Flow transition	- measure or estimate total so other) - record flow measure perclaim - measure perclaim mea	estimate length of surface area occur flow status as per own status as per thed height and justification in the surface of the	er feature flow. Estimate volume <0.5 l/sec or >0.5 l/sec. Measure temperature. feature flow. Estimate volume to be <0.5 l/sec or >0.5 l/sec. umping height d jumping height outlet or industrial discharge pipe). nour stone, or gabion baskets. perched. If perched record perched height and jumping height. nges from dry to standing water, independent of segment break nges from minimal to substantial surface flow, independent of segment break hanges from dry/standing water to interstitial flow, independent of segment break	

Appendix C

Significant Wildlife Habitat Screening



Seasonal Concentration of Animals

ELC Communities:

• Subject Lands: Mineral Cultural Meadow (CUM1), Mineral Cultural Thicket (CUT1), Mineral Cultural Woodland (CUW1), Mineral Meadow Marsh (MAM2), Swamp Thicket (SWT), and Cultural Woodland/Deciduous Swamp (CUW/SWD)

Wildlife Habitat	ELC Codes	Additional Habitat Criteria	Candidate SWH	SWH Defining Criteria	SWH Dete	ermination
Wilding Habitat	Triggers	Additional Habitat Officeria	Galluluate SVVII	SWIT Defining Criteria	Subject Lands	Adjacent Lands
Waterfowl Stopover and Staging Areas C (Terrestrial)	CUM1 and CUT1	Large fields with abundant sheet water in spring may be available within the CUM1 habitat.	Yes	 Studies carried out and verified presence of an annual concentration of any listed species, evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects". Any mixed species aggregations of 100 or more individuals required. The flooded field ecosite habitat plus a 100-300m radius, dependent on local site conditions and adjacent land use is the significant wildlife habitat. Annual use of habitat is documented from information sources or field studies (annual use can be based on studies or determined by past surveys with species numbers and dates). Headwater drainage features were prominent within the Subject Lands and, along with elevation changes throughout the property, prevented the accumulation of standing water within the Subject Lands. Adjacent lands contain open areas that were not investigated in detail and may provide Waterfowl Stopover and Staging Areas (Terrestrial) SWH. 	None	Remains Candidate
Waterfowl Stopover and Staging Areas (Aquatic)	SWD	No watercourses large enough to support aquatic staging area are present within the Site.	No	N/A	None	None
Shorebird Migratory Stopover Area	MAM2	No beach areas, bars, seasonally flooded, muddy and un-vegetated shoreline habitat available within the Study Area.	No	N/A	None	None
Raptor Wintering Area	SWD	 No forest ELC codes present, so no combination of forest and fields >20 ha present. No large rivers or lakes near forest communities to support Bald Eagle SWH. 	No	N/A	None	None
Bat Hibernacula	-	No suitable features present.	No	N/A	None	None
Bat Maternity Colonies	SWD	Suitable habitat may be present within the Cultural Woodland / Deciduous Swamp.	Yes	 Maternity Colonies with confirmed use by; >10 Big Brown Bats >5 Adult Female Silver-haired Bats The area of the habitat includes the entire woodland or a forest stand ELC Ecosite or an Ecoelement containing the maternity colonies. Evaluation methods for maternity colonies should be conducted following methods outlined in the "Bats and Bat Habitats: Guidelines for Wind Power Projects" The Cultural Woodland / Deciduous Swamp was evaluated during the field investigations and lacked suitable maternity roosting trees. Adjacent lands contain woodland that were not investigated in detail and may contain bat maternity colonies. 	None	Remains Candidate
Turtle Wintering S Areas	SWT, SWD, and MAM2	No suitable over-wintering sites (permanent water bodies, large wetlands, bogs, fens, etc.) with adequate depth for overwintering within the Study Area.	No	N/A	None	None

Seasonal Concentration of Animals

Wildlife Habitat	ELC Codes	Additional Habitat Criteria	Candidate SWH	SWII Defining Criteria	SWH Det	ermination
Wildlife Habitat	Triggers	Additional Habitat Criteria	Candidate SWH	SWH Defining Criteria	Subject Lands	Adjacent Lands
Reptile Hibernaculum	All other than really wet	No features indicative of hibernation sites (bedrock fissures, rock piles, burrows) present within the Site.	No	N/A	None	None
Colonially-Nesting Bird Breeding Habitat (Bank/Cliff)	CUM1 and CUT1	No exposed soil banks, cliff faces, sandy hills, borrow pits, steep slopes, or other suitable habitat present.	No	N/A	None	None
Colonially-Nesting Bird Breeding Habitat (Trees/Shrubs)	SWD	 No heron nesting sites/colonies present based on LIO mapping (wildlife values area map). No suitable wetland present within the Study Area. 	No	N/A	None	None
Colonially-Nesting Bird Breeding Habitat (Ground)	CUT1 & CUM1	 No islands or peninsulas are present within the Study Area. No nesting sites for Ring-billed Gull or Herring Gull identified in the area by LIO wildlife values area mapping. The Study Area is outside of the habitat range for Brewer's Blackbird. 	No	N/A	None	None
Migratory Butterfly Stopover Areas	CUM1 and CUT1	Study Area is >5 km from Lake Ontario and Lake Erie. Criteria not met.	No	N/A	None	None
Land Bird Migratory Stopover Areas	SWD	Study Area is >5 km from Lake Ontario and Lake Erie. Criteria not met.	No	N/A	None	None
Deer Winter Congregation Areas	SWD	 No woodlots >100 ha in size. No White-tailed Deer wintering areas identified in the area by LIO wildlife values area mapping. 	No	N/A	None	None

Rare Vegetation Communities

Wildlife Habitat	ELC Codes Triggers	Additional Habitat Criteria	Candidate SWH	SWH Defining Criteria	SWH Determination	
Wilding Habitat	ELC Codes Triggers	Additional Habitat Criteria	Candidate SWH	SWIT Defining Criteria	Subject Lands	Adjacent Lands
Cliffs and Talus Slopes	-	Not present.	No	N/A	None	None
Sand Barren	-	Not present.	No	N/A	None	None
Alvar	-	Not present.	No	N/A	None	None
Old Growth Forest	SWD	Not present.	No	N/A	None	None
Savannah	-	Not present.	No	N/A	None	None
Tallgrass Prairie	-	Not present.	No	N/A	None	None
Other Rare Vegetation	-	Not present.	No	N/A	None	None

Specialized Habitats of Wildlife considered SWH

Wildlife Habitat	ELC Codes Triggers	Additional Habitat Criteria	Candidate SWH	SWH Defining Criteria	SWH Det	ermination
Wilding Habitat	LLC Codes Triggers	Additional Habitat Officia	Candidate 5WII	SWIT Defining Citteria	Subject Lands	Adjacent Lands
Waterfowl Nesting Area	SWT, MAM2, and SWD	Wetland habitat may be large enough to support waterfowl nesting area.	Yes	 Presence of 3 or more nesting pairs for listed species excluding Mallards, or; Presence of 10 or more nesting pairs for listed species including Mallards. Any active nesting site of an American Black Duck is considered significant. Nesting studies should be completed during the spring breeding season (April-June). Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects". A field study confirming waterfowl nesting habitat will determine the boundary of the waterfowl nesting habitat for the SWH, this may be greater or less than 120 m from the wetland and will provide enough habitat for waterfowl to successfully nest. None of the indicator waterfowl species listed were observed during breeding bird surveys; therefore, Waterfowl Nesting Area SWH is not considered present within the Subject Lands. No wetlands were identified within the adjacent lands through desktop review. 	None	None
Bald Eagle and Osprey Nesting, Foraging, Perching	SWD	No Osprey feeding or resting areas identified on LIO wildlife values mapping.	Yes	 One or more active Osprey or Bald Eagle nests in an area. Some species have more than one nest in a given area and priority is given to the primary nest with alternate nests included within the area of the SWH. For an Osprey, the active nest and a 300 m radius around the nest or the contiguous woodland stand is the SWH, maintaining undisturbed shorelines with large trees within this area is important. For a Bald Eagle the active nest and a 400-800 m radius around the nest is the SWH. Area of the habitat from 400-800m is dependent on site lines from the nest to the development and inclusion of perching and foraging habitat. To be significant a site must be used annually. When found inactive, the site must be known to be inactive for >3 years or suspected of not being used for >5 years before being considered not significant. Observational studies to determine nest site use, perching sites and foraging areas need to be done from early March to mid-August. Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects". No Bald Eagle or Osprey were observed during breeding bird surveys; therefore, the SWD community is not considered to be used for Bald Eagle or Osprey nesting, foraging, or perching. Adjacent lands were not investigated in detail and may provide suitable nesting, foraging, and/or perching for Bald Eagle and Osprey 	None	Remains Candidate
Woodland Raptor Nesting Habitat	CUW/SWD	No natural or conifer plantation woodlands/forest stands >30ha with >4ha of interior habitat within the Site.	No	N/A	None	None
Turtle Nesting Areas	-	No areas with exposed mineral soils were observed adjacent to wetland.	No	N/A	None	None

Specialized Habitats of Wildlife considered SWH

Wildlife Habitat	ELC Codos Triggoro	Additional Habitat Criteria	Candidate SWH	SWH Defining Criteria	SWH Det	ermination
Wildlife Habitat	ELC Codes Triggers	Additional Habitat Criteria	Candidate SWH	SWH Defining Criteria	Subject Lands	Adjacent Lands
Springs and Seeps	-	No seeps or springs observed within the Site.	No	N/A	None	None
Amphibian Breeding Habitat (Woodland)	CUW/SWD	Breeding habitat may be available within Cultural Woodland / Deciduous Swamp.	Yes	 Presence of breeding population of 1 or more of the listed newt/salamander species or 2 or more of the listed frog species with at least 20 individuals (adults or eggs masses) or 2 or more of the listed frog species with Call Level Code 3. A combination of observational study and call count surveys will be required during the spring (March-June) when amphibians are concentrated around suitable breeding habitat within or near the woodland/wetlands. The habitat is the wetland area plus a 230m radius of woodland area. If a wetland area is adjacent to a woodland, a travel corridor connecting the wetland to the woodland is to be included in the habitat. Studies did not identify any newt/salamander species or the minimum call counts required for SWH. No wetlands were identified within the adjacent lands through desktop review. 	None	None
Amphibian Breeding Habitat (Wetlands)	SWT and MAM2	Wetlands located >120m from woodland ecosites are present within the Subject Lands.	Yes	 Studies confirm: Presence of breeding population of 1 or more of the listed newt/salamander species or 2 or more of the listed frog/toad species with at least 20 individuals (adults or eggs masses) or 2 or more of the listed frog/toad species with Call Level Codes of 3. or; Wetland with confirmed breeding Bullfrogs are significant. The ELC ecosite wetland area and the shoreline are the SWH. A combination of observational study and call count surveys will be required during the spring (March-June) when amphibians are concentrated around suitable breeding habitat within or near the wetlands. Studies did not identify any newt/salamander species or the minimum call counts required for SWH. No wetlands were identified within the adjacent lands through desktop review. 	None	None
Woodland Area- Sensitive Bird Breeding Habitat	CUW/SWD	No large mature (>60yrs old) forest stands or woodlots >30 ha are present within or adjacent to the Site.	No	N/A	None	None

Habitats of Species of Conservation Concern Considered SWH

Wildlife Habitat	ELC Codes	Candidate Habitat Criteria	Candidate SWH	SWH Defining Criteria	SWH De	etermination
Wilding Habitat	Triggers	Candidate Habitat Criteria	Candidate SWIT	SWIT Defining Criteria	Subject Lands	Adjacent Lands
Marsh Breeding Bird Habitat	MAM2, SWT, and CUM1	Suitable wetland habitat may be present for Marsh Breeding Birds.	Yes	 Studies confirm: Presence of 5 or more nesting pairs of Sedge Wren or Marsh Wren or breeding by any combination of 4 or more of the listed species. Note: any wetland with breeding of 1 or more Black Terns, Trumpeter Swan, Green Heron or Yellow Rail is SWH. Area of the ELC ecosite is the SWH. Breeding surveys should be done in May/June when these species are actively nesting in wetland habitats. Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects". No Sedge Wren, Marsh Wren, Black Tern, Trumpeter Swan, Green Heron, or Yellow Rail were observed during breeding bird surveys. 	None	None
Open Country Bird Breeding Habitat	CUM1	Community 3 (CUM1/Open Ground) is >30 ha.	Yes	 Field studies confirm: Presence of nesting or breeding of 2 or more of the listed species. A field with 1 or more breeding Short-eared Owls is to be considered SWH. The area of SWH is the contiguous ELC ecosite field areas. Conduct field investigations of the most likely areas in spring and early summer when birds are singing and defending their territories. Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects". Presence of nesting or breeding for two or more of the listed species was not identified within Community 3. 	None	None
Shrub/Early Successional Bird Breeding Habitat	CUT1, CUW1, and CUW/SWD	A large field succeeding to shrub and thicket habitats >10 ha in size is present (CUT1).	Yes	 Field Studies confirm: Presence of nesting or breeding of 1 of the indicator species and at least 2 of the common species. A habitat with breeding Yellow-breasted Chat or Golden-winged Warbler is to be considered SWH. The area of the SWH is the contiguous ELC Ecosite field/thicket area. Conduct field investigations of the most likely areas in spring and early summer when birds are singing and defending their territories Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects". Two indicator species (Brown Thrasher and Clay-colored Sparrow) and two common species (Field Sparrow and Willow Flycatcher) were observed within Community 6 during breeding bird surveys; however, presence of nesting or breeding was not confirmed for any of these four species. 	None	None
Terrestrial Crayfish	MAM2, SWT, and SWD	 Suitable habitat is present within the Subject Lands. No chimneys or individuals observed within the Subject Lands. 	Yes	 Studies Confirm: Presence of 1 or more individuals of species listed or their chimneys (burrows) in suitable meadow marsh, swamp or moist terrestrial sites. Area of ELC ecosite or an eco-element area of meadow marsh or swamp within the larger ecosite area is the SWH. Surveys should be done April to August in temporary or permanent water. Note the presence of burrows or chimneys are often the only indicator of presence, observance or collection of individuals is very difficult. No chimneys or individuals were observed within the Subject Lands throughout field investigations (including HDFA's and Aquatic Habitat Assessment). 	None	Remains Candidate

Habitats of Species of Conservation Concern Considered SWH

Wildlife Habitat	ELC Codes		0	OMIL D. Cutt. or Outland	SWH De	etermination
Wildlife Habitat	Triggers	Candidate Habitat Criteria	Candidate SWH	SWH Defining Criteria	Subject Lands	Adjacent Lands
Special Concern and Rare Wildlife Species	-	NHIC identified several Special Concern or rare species as potentially present within the Study Area. These include Swamp Rose-mallow, Barn Swallow, Eastern Wood-Pewee, Grasshopper Sparrow, Wood Thrush, Mapleleaf Mussel, Snapping Turtle, and Monarch.	Yes	 Assessment/inventory of the site for the identified special concern or rare species needs to be completed during the time of year when the species is present or easily identifiable. The area of the habitat to the finest ELC scale that protects the habitat form and function is the SWH, this must be delineated through detailed field studies. The habitat needs be easily mapped and cover an important life stage component for a species e.g. specific nesting habitat or foraging habitat. Grasshopper Sparrow was observed within Community 1 during targeted surveys. Community 1 is 27.51 ha in total. Grasshopper Sparrow prefers large grassland habitats but may nest in habitats as small as 10 ha. No other Special Concern or rare wildlife species were observed within the Subject Lands during MTE's field investigations. Suitable habitat may exist within the adjacent lands for Eastern Wood-Pewee, Grasshopper Sparrow, Wood Thrush, Mapleleaf Mussel, Snapping Turtle, and Monarch. 	Confirmed Community 1: Grasshopper Sparrow	Remains Candidate for: Eastern Wood-Pewee Grasshopper Sparrow Wood Thrush Mapleleaf Mussel Snapping Turtle Monarch

SWH Exceptions

Wildlife Habitat	ELC Codes Triggers*	Additional Habitat Criteria	Candidate SWH	SWH Defining Criteria	SWH Determination	
					Subject Lands	Adjacent Lands
Amphibian Movement Corridors	-	- Movement corridors are determined when there is confirmed amphibian breeding habitat in wetlands which is yet to be determined.	No	N/A	None	None

Wildlife Habitat	Ecosites	Habitat Criteria and Information	Candidate SWH	SWH Defining Criteria	SWH Determination	
					Subject Lands	Adjacent Lands
Bat Migratory Stopover Area	No triggers	The site is not near Long Point.	No	N/A	None	None

Appendix D

Eastern Meadowlark and Bobolink Management Plan





5088 Highway 140 Manufacturing Facility

Bobolink and Eastern Meadowlark Management Plan

Project Location:

5088 Highway 140 Port Colborne, ON (Lots 16, 17, 18 and 19, Concession 5)

Prepared for:

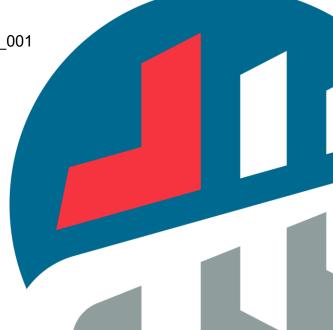
Asahi Kasei Plastics North America Inc. 810 E Van Riper Road Fowlerville, MI 48836 United States

Prepared by:

MTE Consultants Inc. 123 St. George Street London, ON N6A 3A1

March 7, 2025

MTE File No.: 61120 001





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1.2	Project Activity	2
1.3	Eligibility for Exemption	2
2.0	Mitigation	3
3.0	Conclusion	

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Project Location Vegetation Communities Bobolink and Eastern Meadowlark Habitat

Appendices

Monitoring Form Appendix A

1.0 INTRODUCTION

MTE Consultants Inc. (MTE) has been retained by Asahi Kasei Plastics North America, Inc. to complete a Bobolink and Eastern Meadowlark Management Plan in support of proposed industrial development on the property located at 5088 Highway 140 in Port Colborne, Ontario (herein referred to as the Subject Lands; **Figure 1**). The proposed building envelope includes an approximately 150-acre parcel located in the northeastern portion of the property as well as an approximately 20-acre parcel located immediately west (i.e., a portion of Lots 16, 17, 18, 19, Concession 5).

Field investigations undertaken by MTE in 2024 confirmed breeding habitat for Eastern Meadowlark (*Sturnella magna*) and Bobolink (*Dolichonyx oryzivorus*) within targeted grassland habitats on the Subject Lands. Suitable habitat polygons were determined based on the suitability of underlying Ecological Land Classification (ELC) ecosites identified through 2024 field investigations (**Figure 2**).

As per *Ontario Regulation* (*O. Reg.*) 830/21, impacts to Bobolink and Eastern Meadowlark (listed as Threatened in Ontario) habitat must be registered using the Ministry of Environment, Conservation and Parks (MECP) online Notice of Activity (NOA) Form under the *Endangered Species Act, 2007 (ESA*; Consolidated 2021) before any work commences that will damage, destroy or modify breeding habitat used by these species. Where an activity is eligible for a conditional exemption under the *ESA* (2007), it may be addressed through a payment into the Species at Risk Conservation Fund to support protection and recovery activities for eligible species, in lieu of other requirements that would provide a benefit to these species. The amount payable to the Species at Risk Conservation Fund is calculated based on the proposed area of impact and shall be accompanied by a Bobolink and Eastern Meadowlark Management Plan, wherein measures to minimize or avoid adverse effects to these species shall be defined.

1.1 Purpose

In accordance with Section 23.6 of *O. Reg. 242/08* of the *ESA* (2007), suitable habitat for Bobolink and Eastern Meadowlark on the Subject Lands has been addressed through the NOA registration process. The NOA contains information pertaining to proposed impacts to Eastern Meadowlark and Bobolink habitat on the Subject Lands, including:

- A statement identifying and describing the activity that will be undertaken;
- A description of how the activity will impact Eastern Meadowlark and Bobolink habitat, including the area of suitable habitat damaged or destroyed;
- Mitigation measures required to minimize the adverse effects of the activity on Eastern Meadowlark or Bobolink and their habitat; and
- The proposed start and end dates for the activity.

Confirmation of Registration and a Species Conservation Charge Selection Confirmation (M-102-9569882814) was received on February 12, 2025. Per the Species Conservation Charge Selection Confirmation, payment to the Species at Risk Conservation Fund must be made through the Species Conservation Action Agency on or before the earlier of:

- a) the day before the day the person first engages in a charge-related activity exempted under the regulation that would otherwise be prohibited under section 9 or 10 of the Act; or
- b) the day that is 30 days after the day the notice is submitted.

Confirmation of payment provided on February 27, 2025, has been received by the proponent.

As part of the NOA and registration of activities under *O. Reg. 242/08*, a Bobolink and Eastern Meadowlark Management Plan is required to identify measures to minimize or avoid adverse effects to protected species. The Management Plan shall be prepared pursuant to the requirements defined within Section 16 of *O. Reg. 830/21* prior to the commencement of any activity that would damage or destroy the habitat of Bobolink or Eastern Meadowlark. The Management Plan must be retained for five years following development and must be provided to MECP within 14 days, if requested.

1.2 Project Activity

Proposed development of the 150-acre parcel located on the northeastern portion of the Subject Lands includes an approximately 185,806 m² manufacturing facility, associated parking areas (i.e., minimum of 1,525 parking spaces), three Stormwater Management Facility (SWMF) ponds and a tank yard containing a wastewater treatment plant, water softening building, fire pump house, above ground cooling towers, hydro substations building, gas boiler building, and other ancillary buildings that will be used for outdoor storage and processing. Development on the 20-acre parcel to the west shall consist of a high voltage electric substation, a SWMF pond, and berms along the development boundary with a noise abatement barrier installed atop of the berm.

Earthworks associated with proposed development activities are anticipated to commence on March 15, 2025, and be completed no later than April 30, 2025. Grading is required to level undulating topography throughout the site created as a result of historic fill deposits.

A total of 3.906 ha of suitable Eastern Meadowlark and Bobolink habitat (**Figure 3**) located within Ecoregion 7E will be removed to facilitate proposed grading activities and construction.

1.3 Eligibility for Exemption

Per the exemptions defined under Subsection 13(1) of *O. Reg. 830/21* of the *ESA* (2007) with regards to Bobolink and Eastern Meadowlark:

Clause 9 (1) (a) and subsection 10 (1) of the Act do not apply to a person who, while carrying out an activity described in subsection (3), kills, harms, harasses, captures or takes a bobolink or an eastern meadowlark, or damages or destroys its habitat, if the size of the area of habitat of bobolinks or eastern meadowlarks that is damaged or destroyed by the activity is equal to or less than 30 hectares and,

- (a) the person satisfies all of the conditions set out in section 14; or
- (b) the person,
 - (i) pays a species conservation charge to the Species at Risk Conservation Trust in accordance with paragraph 5 of subsection 20.3 (1) of the Act and Ontario Regulation 829/21 (Species Conservation Charges) made under the Act, and
 - (ii) satisfies the conditions in paragraphs 1 to 4 of section 14. O. Reg. 830/21, s. 37 (5).

Per the Site Plan (January 2025), the proposed area of impact includes 3.906 ha of Bobolink and Eastern Meadowlark habitat. As proposed habitat removals on the Subject Lands are less than 30 ha in area, the project is eligible for exemption under Subsection 13(1) of *O. Reg.* 830/21 and shall fulfil the conditions defined under Subsection 13(1)(b).

In order to satisfy conditions defined within Section 14 of *O. Reg. 830/21*, prior to the commencement of the activity, mitigation measures outlined under Section 15 must be implemented to minimize adverse effects and a Management Plan must be prepared in accordance with Section 16.

This document will serve as the Bobolink and Eastern Meadowlark Management Plan and has been prepared in accordance with Section 16 of *O. Reg. 830/21*. Upon commencement of the activity, daily monitoring will be conducted in accordance with the Monitoring Form provided in **Appendix A**. The Monitoring Form will provide an overview of the mitigation strategies implemented to minimize adverse effects on Eastern Meadowlark and Bobolink, including any species encounters. The Management Plan and Monitoring Forms are to be retained for a minimum of five years from the date of habitat removal and must be available for submission to MECP within 14 days of a documentation request.

2.0 MITIGATION

In accordance with Subsection 14 (2) of *O. Reg. 830/21*, the following mitigation measures must be implemented to minimize the adverse effects of the activity on the Bobolink, Eastern Meadowlark, and their associated habitat:

- No grading or earthworks shall occur between May 1 and July 31 in any area that is likely to damage or destroy the habitat of Eastern Meadowlark and Bobolink;
- Prior to the initiation of works on site, a qualified biologist shall provide training to the
 contractor(s) for the identification of Eastern Meadowlark and Bobolink. In addition, the
 biologist will review proper handling procedures and/or steps to take if an individual is
 observed during construction works. A Species at Risk identification factsheet will be
 provided to individuals on-site as part of this training;
- No wildlife, including Protected Species, should be handled, harassed, or moved unless they are in immediate danger. If an animal enters the work site, work at that location should stop and the animal permitted to leave without being harassed;
- Prior to the initiation of works on site, robust sediment and erosion control fencing will be installed around the limits of earthworks to protect adjacent suitable Eastern Meadowlark and Bobolink habitat. The fence will act as a barrier to keep construction equipment and soil away from vegetation to remain and prevent erosion and sedimentation of the adjacent habitat. Sediment and erosion control fencing will be installed according to the to the Guidelines for Erosion and Sediment Control for Urban Construction Sites (OMNR 1987) and the applicable standards established by the Ontario Provincial Standard Specification/Ontario Provincial Standard Drawings (OPSS/OPSD) documents:
- Sediment and erosion control fencing must be inspected by a qualified biologist prior to proposed earthworks to ensure it was installed correctly and as per this plan;
- Sediment and erosion control fencing should be inspected daily by the Contractor (or a
 representative thereof) throughout construction, including prior to and after significant
 rain events, to ensure that the fencing is being maintained and functioning properly. Any
 issues that are identified must be resolved as quickly as possible, ideally the same day;
- Sediment and erosion control fencing should not be removed until adequate revegetation and site stabilization in areas of temporary disturbance has occurred. All areas of temporary disturbance should be re-seeded as soon as possible to maximize erosion protection and to minimize the propagation of populations of invasive species, which may spread to adjacent features. Additional plantings and/or growing seasons may be required for vegetation to establish; however, two growing seasons are typically sufficient to stabilize most sites;

- Equipment should be cleaned prior to arrival on site to protect adjacent Eastern
 Meadowlark and Bobolink habitat. All components should be inspected and cleaned
 including tires, undercarriage, and any part of the equipment that may transport invasive
 seeds to the site;
- To prevent accidental impacts to adjacent Eastern Meadowlark and Bobolink habitat, site access to the Subject Lands during the proposed earthwork activities should be limited to access points outside of the suitable habitat area with all equipment movement restricted to the limit of proposed earthworks activities; and
- In addition, all equipment left/stored over-night, if any, should be kept within the limit of proposed earthworks activities and outside of Eastern Meadowlark and Bobolink habitat.

3.0 CONCLUSION

It is the responsibility of Asahi Kasei Plastics North America, Inc. to ensure that the activity does not contravene the *ESA* (2007) and to fulfill all conditions of the conditional exemption, including adhering to the recommendations provided within this Management Plan. Updates to the Management Plan may be required if there is a change, error or omission in the administrative information provided within the NOA and to include a description of the mitigation measures undertaken through implementation of the Management Plan.

All of which is respectfully submitted,

MTE Consultants Inc.

Digitally signed by Megan Rochon DN: cn=Megan Rochon, c=CA, o=MTE Consultants Inc., email=meganrochon 1@gmail.com Date: 2025 03 13 10:20:50 -04'00'

Megan Rochon Ecologist 905-340-0196 mrochon@mte85.com Heather Kime, B.Sc. (Hons) 13-Mar-25

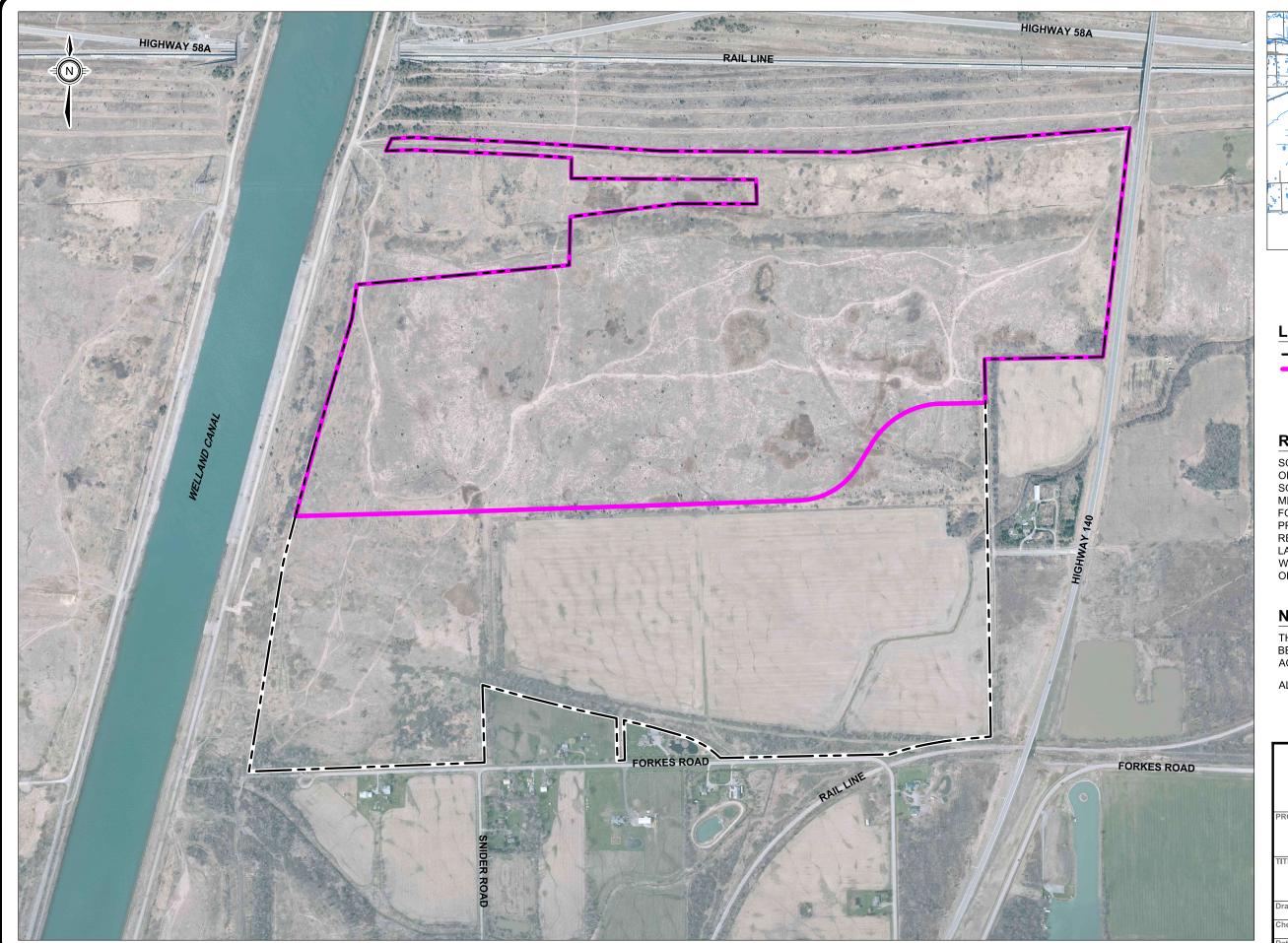
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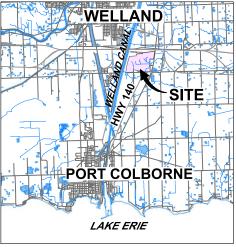
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Figures







KEY PLAN (nts)

LEGEND

--- SUBJECT LANDS BUILDING ENVELOPE

REFERENCES

SOUTHWESTERN ONTARIO ORTHOPHOTOGRAPHY PROJECT (2020), SOURCE: DATA PROVIDED BY ONTARIO MINISTRY OF NATURAL RESOURCES AND FORESTRY, © COPYRIGHT: 2024 KING'S PRINTER OF ONTARIO, ALL RIGHTS RESERVED; AND LAND INFORMATION ONTARIO, ROAD AND WATER NETWORK © KING'S PRINTER FOR ONTARIO, 2024 (key plan).

NOTES

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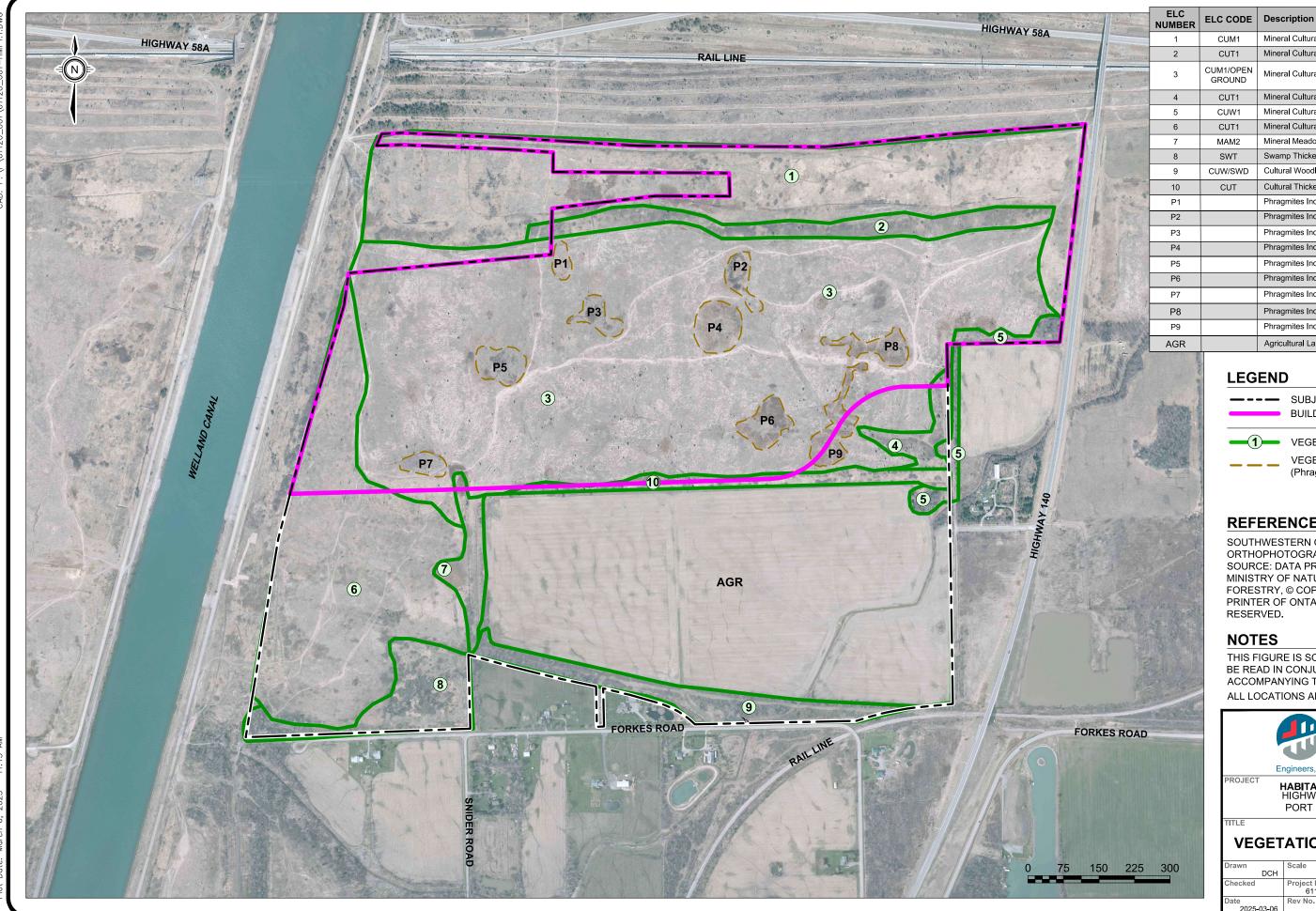




HABITAT MANAGEMENT PLAN HIGHWAY 140 LAND HOLDING PORT COLBORNE, ONTARIO

PROJECT LOCATION

Drawn	Scale	Fi
DCH	1:7,500	
Checked	Project No. 61120_001	
Date	Rev No.	l
2025-03-06	0	



LEGEND

——— SUBJECT LANDS

BUILDING ENVELOPE

Mineral Cultural Meadow (27.51ha)

Mineral Cultural Meadow (67.08ha)

Mineral Cultural Thicket (4.21ha)

Mineral Cultural Thicket (1.48ha)

Mineral Cultural Woodland (1.72ha)

Mineral Cultural Thicket (20.62ha)

Mineral Meadow Marsh (1.78ha)

Cultural Woodland/ Deciduous Swamp (4.03ha)

Swamp Thicket (4.32ha)

Cultural Thicket (2.36ha)

Phragmites Inclusions (0.25ha)

Phragmites Inclusions (0.49ha)

Phragmites Inclusions (0.49ha)

Phragmites Inclusions (0.92ha) Phragmites Inclusions(0.69ha)

Phragmites Inclusions (0.76ha)

Phragmites Inclusions (0.38ha) Phragmites Inclusions (0.66ha)

Phragmites Inclusions (0.93ha)

Agricultural Land (40.49ha)



 VEGETATION COMMUNITY VEGETATION COMMUNITY

(Phragmites Inclusions)

REFERENCES

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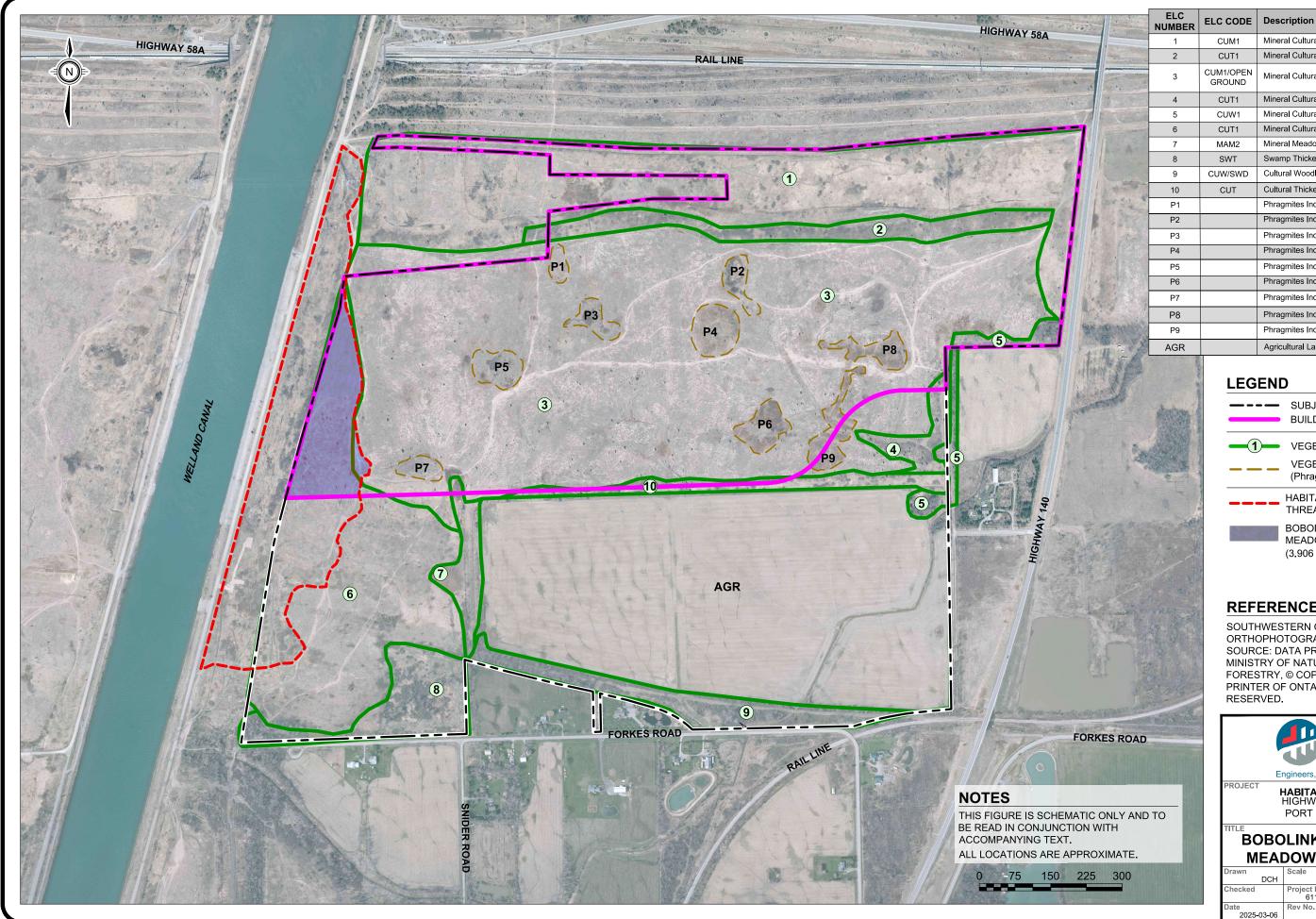
ALL LOCATIONS ARE APPROXIMATE.



HABITAT MANAGEMENT PLAN HIGHWAY 140 LAND HOLDING PORT COLBORNE, ONTARIO

VEGETATION COMMUNITIES

Drawn	Scale	Fi
DCH	1:7,500	
Checked	Project No. 61120_001	
Date 2025-03-06	Rev No.	
	DCH Checked	DCH



LEGEND

——— SUBJECT LANDS BUILDING ENVELOPE

Mineral Cultural Meadow (27.51ha)

Mineral Cultural Meadow (67.08ha)

Mineral Cultural Woodland (1.72ha)

Mineral Cultural Thicket (20.62ha)

Mineral Meadow Marsh (1.78ha)

Cultural Woodland/ Deciduous Swamp (4.03ha)

Swamp Thicket (4.32ha)

Cultural Thicket (2.36ha)

Phragmites Inclusions (0.25ha)

Phragmites Inclusions (0.49ha) Phragmites Inclusions (0.49ha)

Phragmites Inclusions (0.92ha) Phragmites Inclusions (0.69ha)

Phragmites Inclusions (0.76ha) Phragmites Inclusions (0.38ha)

Phragmites Inclusions (0.66ha) Phragmites Inclusions (0.93ha)

Agricultural Land (40.49ha)

Mineral Cultural Thicket (4.21ha)

Mineral Cultural Thicket (1.48ha)

VEGETATION COMMUNITY VEGETATION COMMUNITY

(Phragmites Inclusions)

HABITAT OF ENDANGERED OR THREATENED SPECIES



BOBOLINK AND EASTERN MEADOWLARK HABITAT (3.906 HA)

REFERENCES

SOUTHWESTERN ONTARIO ORTHOPHOTOGRAPHY PROJECT (2020), SOURCE: DATA PROVIDED BY ONTARIO MINISTRY OF NATURAL RESOURCES AND FORESTRY, © COPYRIGHT: 2024 KING'S PRINTER OF ONTARIO, ALL RIGHTS RESERVED.



HABITAT MANAGEMENT PLAN HIGHWAY 140 LAND HOLDING PORT COLBORNE, ONTARIO

BOBOLINK AND EASTERN MEADOWLARK HABITAT

	Drawn	Scale	F
	DCH	1:7,500	
	Checked	Project No. 61120_001	
_	Date	Rev No.	
	2025-03-06	0	

Appendix A

Monitoring Form



Eastern Meadowlark and Bobolink Monitoring Form – General Information

Date	Time	Weather	Temp (°C)	Fence Check	Additional Mitigation Reg'd	SAR On-Site	Additional Mitigation Completed
				Y / N	Y / N	Y / N	
				Y / N	Y / N	Y / N	
				Y / N	Y / N	Y / N	
				Y / N	Y / N	Y / N	
				Y / N	Y / N	Y / N	
				Y / N	Y / N	Y / N	
				Y / N	Y / N	Y / N	
				Y / N	Y / N	Y / N	
				Y / N	Y / N	Y / N	
				Y / N	Y / N	Y / N	
				Y / N	Y / N	Y / N	
				Y / N	Y / N	Y / N	
				Y / N	Y / N	Y / N	
				Y / N	Y / N	Y / N	
				Y / N	Y / N	Y / N	
				Y / N	Y / N	Y / N	
				Y / N	Y / N	Y / N	
				Y / N	Y / N	Y / N	
				Y / N	Y / N	Y / N	
				Y / N	Y / N	Y / N	
				Y / N	Y / N	Y / N	
				Y / N	Y / N	Y / N	
				Y / N	Y / N	Y / N	
				Y / N	Y / N	Y / N	