



Devil's Punchbowl Conservation Area Master Plan

Draft - February 2023



Hamilton
Conservation
Authority

A Healthy Watershed for Everyone



Prepared by: Hamilton Region Conservation Authority (HCA).

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1.0 APPROVAL STATEMENT

We are pleased to approve the Devil's Punchbowl Conservation Area Master Plan as the official policy document for the Hamilton Region Conservation Authority (HCA).

This plan supports HCA's current Strategic Plan and reflects our Vision of a healthy watershed for everyone and Mission to lead in the conservation of our watershed and connect people to nature.

Moving forward over the next ten years this plan will provide guidance for management of the conservation area in support of these goals.

Lisa Burnside
Chief Administrative Officer
Hamilton Conservation Authority

Date

To be named
Chair, Board of Directors
Hamilton Conservation Authority

Date

2.0 PREFACE

The *Devil's Punchbowl Conservation Area Master Plan* is the guiding policy document for the development and management of this conservation area which is owned and administered by the Hamilton Region Conservation Authority (HCA). The recommendations in this Master Plan are intended to help provide direction and guidance for sustainable management and operation of Devil's Punchbowl Conservation Area (DPCA) over the next ten years.

This Master Plan was developed by HCA staff utilizing in-house expertise and resources, with a public consultation process to receive input from stakeholders and the public as follows:

Phase 1 Background

Background review was initiated January 2022 with the HCA executive team review of the work plan, engagement of staff, collection of mapping information, and gathering information through staff and stakeholder meetings. This phase was completed by September 2022 and presentation of an information report to the HCA Conservation Advisory Board in April 2022.

Phase 2 Inventory

Inventory includes the collection and assembly of natural areas field surveys and mapping information, ecological reports, trail and vehicle counter data, and visitor surveys. Natural areas reviews began in 2021 by HCA staff. An unexpected change to the project happened in July 2022 when HCA acquired the new land parcel with the punchbowl market buildings. Scope and project schedules were adjusted at that time to include this acquisition in the field inventory and public surveys.

An on-line public engagement site was launched on HCA's website in May 2022. Two visitor surveys for DPCA were conducted on-line through the HCA website. Flyers were also posted and distributed on site giving visitors QR codes and weblinks to take them to the surveys on their mobile devices. The survey period ran from May 18 to September 9th, 2022 with 132 surveys submitted. Two public information booths were operated by staff in the conservation area on July 16th and August 6th, 2022 to share information on the plan, respond to questions, and sign up people interested in receiving the draft plan for review and comment. Visitors to the public engagement site during this phase were also able to register to receive and comment on the draft Master plan in Phase 4.

Phase 3 Concepts

Concepts in this plan were completed in-house by HCA staff and refined with the information in the public surveys and input from stakeholders. Staff professional expertise and experience, plus lessons learned from operating the DPCA for decades helped inform this plan. Four facilitated workshop sessions were held with staff covering: site concept and vision planning; financial sustainability; day use and marketing; and capital project priorities and plans. All information gathered in this phase was presented internally to HCA staff for review and comment, and then compiled in the draft plan circulated in Phase 4.

Phase 4 Summary

Finalizing the draft Master Plan includes reviews of the compiled draft plan by staff, stakeholders, and board advisory members, and circulation to the public who registered in Phase 2. The final draft document includes all stakeholder and public comments. After receiving final comments, the plan is to be presented to the HCA Conservation Advisory Board, and then to the HCA Board of Directors for endorsement and approval.



3.0 EXECUTIVE SUMMARY

3.1 Introduction

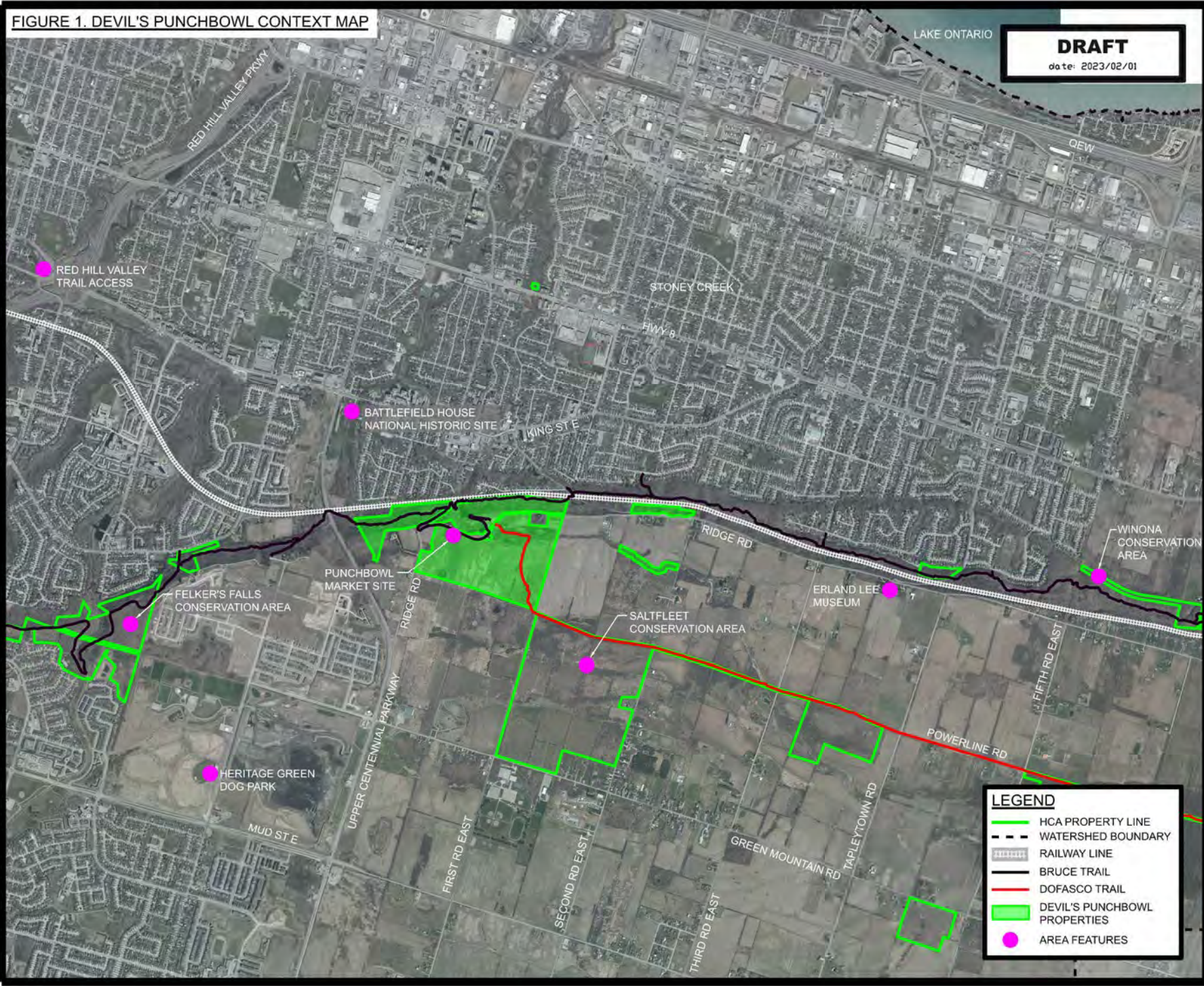
Devil's Punchbowl Conservation Area (DPCA) is a 44 ha (109 acre) day-use area located along the Stoney Creek Escarpment in the City of Hamilton. The property was acquired by Hamilton Region Conservation Authority (HCA) in 1969 for its significant location on the escarpment. In July 2022 HCA acquired an additional 20.3 ha (50 acre) property on Ridge Road with the Punchbowl market buildings and associated farm lands. This acquisition will provide additional space for visitors to enjoy nature, as well as for the construction of wetlands to help prevent flooding and erosion in lower Stoney Creek. The DPCA lands are shown on *Figure 1. Context Map*.

The conservation area contains a waterfall that plunges over the escarpment, and offers visitor parking and trail access to lookout areas with spectacular views of Stoney Creek, Hamilton Harbour, and the Punchbowl gorge. From the parking lot visitors may also access the Bruce Trail and Dofasco 2000 Trail which connects to Saltfleet Conservation Area.

In 1980 The Devil's Punchbowl Master Plan was approved by the HCA Board of Directors. Since then, this day-use area has become very popular, and high visitation is now straining the parking capacity and site facilities. This ten-year Master Plan updates and replaces the 1980 plan. This plan consolidates all studies of DPCA since 1980, supplies current mapping and site analysis, and provides guidance for HCA's visitor management, natural area conservation, and operation of the newly expanded conservation area.



FIGURE 1. DEVIL'S PUNCHBOWL CONTEXT MAP



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date: 2023/02/01



DATE: 2023/02/01

DEVIL'S PUNCHBOWL CONTEXT MAP
DEVIL'S PUNCHBOWL C.A. MASTER PLAN

LEGEND

- HCA PROPERTY LINE
- WATERSHED BOUNDARY
- RAILWAY LINE
- BRUCE TRAIL
- DOFASCO TRAIL
- DEVIL'S PUNCHBOWL PROPERTIES
- AREA FEATURES



3.2 Goals

This Master Plan outlines the long-term goals for conservation and land management at DPCA, and is intended to be a living document that will be updated completely in ten years' time.

These goals set out by HCA in the 1980 Master Plan, will be carried forward in this plan:

- To maintain the water management function of the property
- To preserve and enhance all-natural features both living and non-living within the conservation area.
- To provide passive recreational opportunities in a manner that will enhance the appreciation of all features within the conservation area, without compromising same.
- To develop a visitor services program which will generate an understanding of the property with particular attention to geological features.
- To establish an appropriate use for the existing buildings located on the property.

Through consultation and analysis of current operations, this plan also supports the following long-term goals as outlined in HCA's current strategic plan:

Vision

- A healthy watershed for everyone.

Mission

- To lead in the conservation of our watershed and connect people to nature.

Commitment and Corporate Values

- Provide excellent customer service and a solution-oriented approach.
- Be accountable, transparent, and responsible in the use of resources.
- Embrace new technologies to help develop new ways of doing business and foster innovation.
- Promote teamwork internally and externally to achieve common goals, support existing relationships and build new partnerships.
- Maintain trust, act with integrity, and treat others with respect.
- Value knowledge to continually learn and improve, in an effort to achieve best solutions.

Organizational Excellence

- Ensure corporate and financial viability and the HCA's relevance in the community.
- Identify opportunities to engage the community, adjacent landowners and Indigenous Peoples.

Water Management

- Protect the watershed for people, property, flora and fauna, and natural resources through flood and erosion control, water quality programs, low flow augmentation

and adaptation strategies to adapt to changing climatic conditions.

Natural Heritage Conservation

- Conservation, restoration and enhancement of watershed natural areas and ecology.
- Continue on-going ecological restoration projects and monitoring programs.
- Identify invasive species strategies and natural heritage plans in the Master plan.

Conservation Area Experience

- Provide high quality, diverse conservation areas that promote outdoor recreation, health, and well-being and strengthen public awareness of the importance of being in or near our conservation areas.
- Update and develop Master and management plans, and implement priorities to further enhance conservation areas for current and future generations.

Education and Environmental Awareness

- Provide outdoor learning experiences for students, teachers and the community, increasing knowledge and awareness of the value of our environment and heritage.



3.3 Objectives

The goals and objectives in the previous Master Plan have been assessed, and through consultation and analysis of current operations, the HCA supports the following long-term objectives for the Devil's Punchbowl:

- Maintain the existing natural environment of the gorge and along the scarp face and brow with management of vegetation, wildlife, and visitors.
- Maintain the hydraulic capacities of the watercourse at the Punchbowl.
- Provide for water ponding / retention on the conservation area lands.
- Provide for enhanced safe access, parking and visitor amenities with the market property.

3.4 Site Concept

DPCA contains physical features, flora and fauna of significance and these lands were acquired by HCA to preserve these features while providing public opportunities for appropriate passive recreation and environmental education.

This day-use conservation area has become very popular, with high visitation straining the parking capacity and site facilities. In response to visitation here and at other areas in HCA's watershed, in 2019 HCA staff prepared an *HCA Visitor Management and Vehicle Parking Review* with the following recommendations for DPCA approved by HCA's Board of Directors:

"Recommendation #1: HCA staff implement immediate parking enhancement opportunities at...Devil's Punchbowl...to optimize number of parking spaces, traffic flow and signage;

And

Recommendation #3: HCA staff undertake steps to establish an interim parking lot and trail connection to the Dofasco Trail for the Devil's Punchbowl at the Saltfleet Conservation Area;"

Three key strategies were also presented for DPCA in this report:

- That improvements to the parking lot *"could optimize traffic flow, number of parking spaces and visitor experience."*
- That there are opportunities *"for additional parking to be created within the adjacent lands that comprise part of the Saltfleet Conservation Area...Signage and promotional materials would be needed to inform the public of this option."*
- *And "In the longer term, as additional lands are acquired, there is potential for a gateway to service the Devil's Punchbowl area."*

These further recommendations are identified in the Site Concepts for this plan:

.1 Above the Escarpment:

- Optimize the existing parking lot at the Punchbowl.
- With the market property provide enhanced visitor services, HCA staff work areas, and safe trail crossings of Ridge Road.

- Improve the existing trail system and associated signage.
- Provide for new wetland development south of Ridge Road.
- Accommodate the new market lands in this plan.

.2 Below the Escarpment:

- Improve the existing trail system in partnership with the Bruce Trail Conservancy.
- Market and provide educational information on protecting the sensitive natural areas.
- Manage waterfall visitation in the gorge to protect the natural areas.

3.5 Policy and By-Law Framework

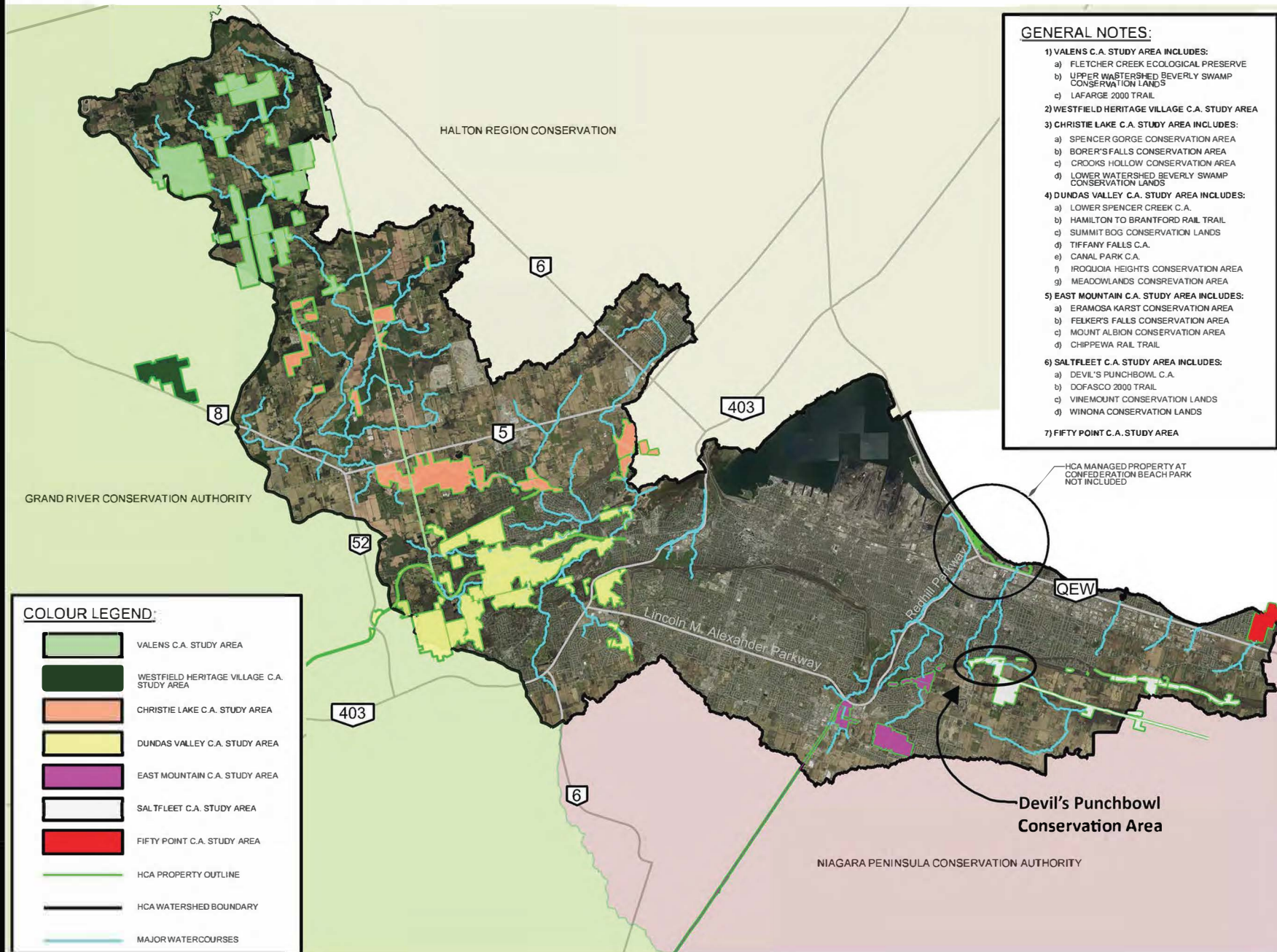
Conservation areas owned and operated by the HCA are diverse in nature and spread across the HCA watershed. DPCA is near the south-eastern boundary of HCA's watershed. See *Figure 2. 10 Year Master Plan Study Area* for more information.

HCA has approached this Master Plan with the mind-set that all conservation areas in the HCA portfolio requiring Master or Management Plan updates will follow a consistent methodology. A 10 Year Masterplan Update Strategy was approved by HCA's Board of Directors in 2019 and updated in 2022, for properties that HCA owns and manages. As per this strategy document, guidelines were set out for the completion of HCA Master Plans (including Management Plans and Study Areas). This strategy noted that HCA lands that lie within the boundary of the Niagara Escarpment Plan will need Master Plan approval from the Niagara Escarpment Commission (NEC) for HCA to formally ratify them. Consequently, HCA strategically decided to develop all HCA Master Plans within the guidelines of the Niagara Escarpment Parks and Open Spaces System (NEPOSS), which is a requirement of the NEC for any public agency NEPOSS park Master Plans. The NEPOSS policy framework ensures HCA follows a consistent methodology for all plans, and the plans are developed to an appropriate level of detail with sufficient public consultation for all proposed land improvements and uses.

HCA recognizes that certain public infrastructure such as utility corridors, trails, or transportation links may be required to cross conservation area lands. HCA policy for planning review and regulation of these features adheres to the *Conservation Authorities Act, R.S.O.1990, C.27*. See Section 7.1 for more information.

The DPCA Master Plan adheres to policies of the Hamilton Conservation Authority, City of Hamilton, and provincial policy. HCA will consult with outside agencies, and obtain the required approvals and permits when implementing projects flowing from this Master Plan.

FIGURE 2. HCA 10-YEAR MASTER PLAN STUDY AREA



COLOUR LEGEND:

- VALENS C.A. STUDY AREA
- WESTFIELD HERITAGE VILLAGE C.A. STUDY AREA
- CHRISTIE LAKE C.A. STUDY AREA
- DUNDAS VALLEY C.A. STUDY AREA
- EAST MOUNTAIN C.A. STUDY AREA
- SALT FLEET C.A. STUDY AREA
- FIFTY POINT C.A. STUDY AREA
- HCA PROPERTY OUTLINE
- HCA WATERSHED BOUNDARY
- MAJOR WATERCOURSES

- GENERAL NOTES:**
- 1) VALENS C.A. STUDY AREA INCLUDES:
 - a) FLETCHER CREEK ECOLOGICAL PRESERVE
 - b) UPPER WATERSHED BEVERLY SWAMP CONSERVATION LANDS
 - c) LAFARGE 2000 TRAIL
 - 2) WESTFIELD HERITAGE VILLAGE C.A. STUDY AREA
 - 3) CHRISTIE LAKE C.A. STUDY AREA INCLUDES:
 - a) SPENCER GORGE CONSERVATION AREA
 - b) BORER'S FALLS CONSERVATION AREA
 - c) CROOKS HOLLOW CONSERVATION AREA
 - d) LOWER WATERSHED BEVERLY SWAMP CONSERVATION LANDS
 - 4) DUNDAS VALLEY C.A. STUDY AREA INCLUDES:
 - a) LOWER SPENCER CREEK C.A.
 - b) HAMILTON TO BRANTFORD RAIL TRAIL
 - c) SUMMIT BOG CONSERVATION LANDS
 - d) TIFFANY FALLS C.A.
 - e) CANAL PARK C.A.
 - f) IROQUOIA HEIGHTS CONSERVATION AREA
 - g) MEADOWLANDS CONSERVATION AREA
 - 5) EAST MOUNTAIN C.A. STUDY AREA INCLUDES:
 - a) ERAMOSKA KARST CONSERVATION AREA
 - b) FELKER'S FALLS CONSERVATION AREA
 - c) MOUNT ALBION CONSERVATION AREA
 - d) CHIPPEWA RAIL TRAIL
 - 6) SALT FLEET C.A. STUDY AREA INCLUDES:
 - a) DEVIL'S PUNCHBOWL C.A.
 - b) DOFASCO 2000 TRAIL
 - c) VINEMOUNT CONSERVATION LANDS
 - d) WINONA CONSERVATION LANDS
 - 7) FIFTY POINT C.A. STUDY AREA



DATE: 2023/01/27

MASTER PLAN STUDY AREA MAP



3.6 Master Plan Zones

DPCA is located within the jurisdiction of the Niagara Escarpment Commission and Greenbelt Area, see *Figure 3. Policy Areas*. The policies of the Niagara Escarpment Plan and guidelines of the Niagara Escarpment Parks and Open Space System (NEPOSS) 2021 planning manual have been observed in the preparation of this Master Plan.

This Master Plan follows the current NEPOSS planning manual and identifies six land use zones for DPCA. These zones are intended to help guide future planning, development, and management of the conservation area. The zone boundaries are shown in more detail in *Appendix 1 – Map 2. Conservation Area Zones*.

Zones are intended to fulfill a variety of functions in the conservation area, including the following as outlined in the current NEPOSS manual:

- Identification and recognition of the features and attributes (values).
- Protection of key natural heritage and cultural heritage resources.
- Confirmation of the appropriate locations for activities (i.e. directing activities with higher impacts to the least sensitive areas and low impact activities to areas that are more sensitive, if appropriate).
- Delineation of areas based on their requirements for management (e.g. management plan objectives).
- Standardization to support management objectives and actions, based on values (e.g. Nature Reserve Zones supports protection of sensitive natural heritage features and cultural heritage resources).
- Balancing of public use with the preservation of the natural environment.

The six land use zones identified for DPCA are:

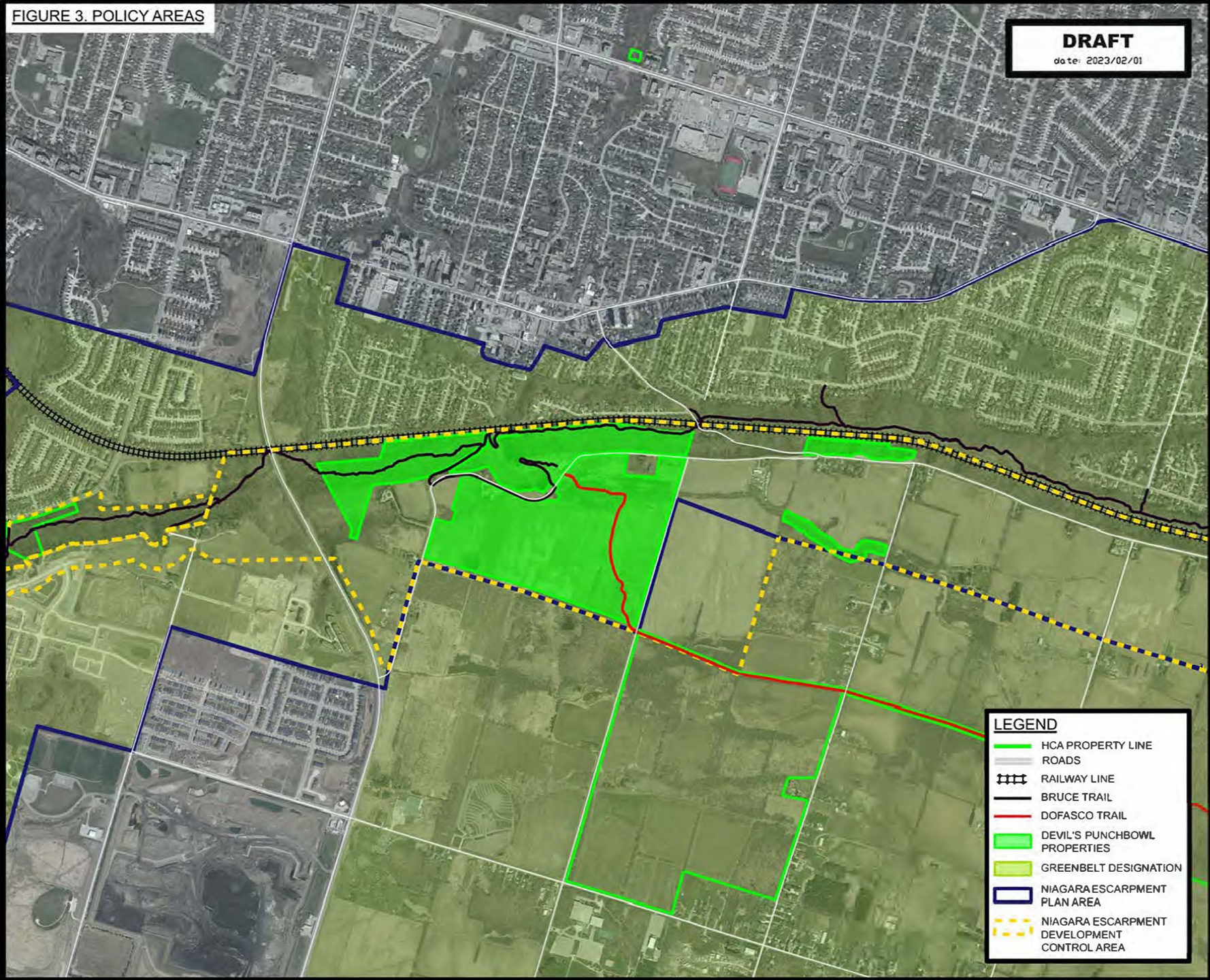
- Nature Reserve Zone
- Access Zone
- Development Zone
- Natural Environment Zone
- Cultural Heritage Zone
- Resource Management Zone



FIGURE 3. POLICY AREAS

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LEGEND

- HCA PROPERTY LINE
- ROADS
- RAILWAY LINE
- BRUCE TRAIL
- DOFASCO TRAIL
- DEVIL'S PUNCHBOWL PROPERTIES
- GREENBELT DESIGNATION
- NIAGARA ESCARPMENT PLAN AREA
- NIAGARA ESCARPMENT DEVELOPMENT CONTROL AREA

POLICY AREAS
DEVIL'S PUNCHBOWL C.A. MASTER PLAN

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The following sections briefly describe each zone. The tables in each section provide a zone description, management direction, and permitted uses, including types of development in each zone. All resource, recreational, and facility development uses are subject to Canadian legislation and policies governing public lands and conservation areas, as well as the resource management policies identified in Section 7.

Appendix 5 contains the natural inventory species lists from background research and field work completed for the preparation of the Master Plan. In this Master Plan, “species at risk” means species listed by the MECP or Government of Canada as threatened, endangered, extirpated or extinct in Ontario including:

- Species designated as endangered, threatened, or special concern by the Species at Risk Act (federal) via the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) and listed in Section 5.14.
- Species designated as endangered threatened, or special concern by the Endangered Species Act (provincial) via the Committee on the Status of Species at Risk in Ontario (COSSARO).



Nature Reserve Zone

Nature reserve zones include significant earth and life science features which require management distinct from that in adjacent zones, as well as a protective buffer with an absolute minimum of development. DPCA's nature reserve zones contain the Punchbowl gorge, waterfalls and water courses, and environmentally sensitive scarp.

Table 1. Nature Reserve Zone

| Zone | Description | Management Direction | Permitted Uses (subject to management planning) |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Nature Reserve (wetland) | <p>Includes the most sensitive natural heritage features and areas that require careful management to ensure long-term protection.</p> <p>Intended to protect in perpetuity features and values of selected life and earth science areas such as:</p> <ul style="list-style-type: none"> ➤ Habitat of endangered, threatened, and rare species or species of special concern. ➤ Significant Wildlife and fish habitat. ➤ Hydrological systems (e.g. streams, wetlands, ponds) ➤ Significant Woodlands ➤ Areas of Natural and Scientific Interest (ANSI) ➤ Significant landforms or escarpment features | <p>These areas are predominantly natural and should contain naturally functioning ecosystems.</p> <p>This zone is intended to protect and where possible enhance the natural heritage and hydrological systems within the zone.</p> | <p>Sustainable recreational activities that are supported by a detailed environmental review and that are identified as compatible with the natural heritage features and areas of the park or open space.</p> <p>Examples include:</p> <ul style="list-style-type: none"> ➤ Trails ➤ Necessary wayfinding signs ➤ Temporary scientific research ➤ Conservation practices (e.g. tree maintenance, erosion control) ➤ Minimal interpretive facilities (where justified) |

Natural Environment Zone

Natural environment zones include natural, cultural, and aesthetic landscapes in which minimum development is permitted to support low-intensity recreational activities. DPCA’s natural zones are primarily the wooded area below the escarpment brow.

Table 2. Natural Environment Zone

| Zone | Description | Management Direction | Permitted Uses (subject to management planning) |
|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Natural | Includes scenic landscapes in which minimum development is permitted to support recreational activities that have minimal impacts on the Escarpment environment. | <p>This zone may function as a buffer between Nature Reserve Zones and Development Zones, Cultural Heritage, or Access Zones.</p> <p>Management guidance should maintain and enhance the scenic resources and open landscape character of the environment.</p> | <p>Sustainable recreational activities that have minimal impact on the environment may be permitted.</p> <p>Examples include:</p> <ul style="list-style-type: none"> ➤ Trails ➤ Wayfinding signs ➤ Scientific research and supporting facilities ➤ Background campsites ➤ Conservation practices ➤ Interpretive facilities <p>Infrastructure required for safety or accessibility may be permitted where there is no feasible alternative.</p> |

Access Zone

Access zones serve as staging areas to support adjacent zones. DPCA’s access zones are the parking lots, trailheads, and trail staging areas.

Table 3. Access Zone

| Zone | Description | Management Direction | Permitted Uses (subject to management planning) |
|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Access | Serve as staging areas (e.g. trailheads, parking lots) where minimal facilities support the use of Nature Reserve Zones and relatively undeveloped Natural Environment and Cultural Heritage Zones. | Access zones are intended to support the use of and access to adjacent zones. | <p>Infrastructure may be permitted to support the Nature Reserve, Natural Environment, and Cultural Heritage Zone.</p> <p>Examples include:</p> <ul style="list-style-type: none"> ➤ Roads ➤ Wayfinding signs ➤ Interpretive signs ➤ Trailheads ➤ Parking lots ➤ Visitor amenities ➤ Toilets, waste receptacles |

Cultural Heritage Zone

Cultural heritage zones are intended to protect significant built heritage resources, archaeological resources, and cultural heritage resources. DPCA’s cultural heritage zone includes the Cross and associated structures and landscaping.

Table 4. Cultural Heritage Zone

| Zone | Description | Management Direction | Permitted Uses (subject to management planning) |
|-------------------|----------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Cultural Heritage | This zone includes cultural heritage resources that require management to ensure long-term conservation. | Management guidance will ensure long-term conservation, enhancement and potentially restoration of cultural heritage resources. | <p>Development will ensure long-term conservation of cultural heritage resources.</p> <p>Examples include:</p> <ul style="list-style-type: none"> ➤ Education and visitor buildings ➤ Trails ➤ Interpretive signs or supporting infrastructure ➤ Historical restorations, reconstructions, or re-enactments. |

Development Zone

Development zones provide visitor access, orientation, and operational facilities in the conservation area.

DPCA's development zones includes all park roads and parking areas, day use recreational areas, buildings, and work areas for conservation area operations.

Table 5. Development Zone

| Zone | Description | Management Direction | Permitted Uses (subject to management planning) |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Development | <p>Development Zones provide the main visitor access to the conservation area, and facilities and services to support nature appreciation and recreational activities.</p> <p>This zone may include areas designed to provide facilities and supporting infrastructure for recreational purposes.</p> | <p>Management guidance should note that recreational uses and development may be accessory or secondary to the protection of natural heritage features and to the conservation of cultural heritage resources, depending on classification.</p> <p>Retail and visitor facilities should be appropriately scaled for the site.</p> <p>Facility development must be undertaken in a way that will minimize the impact on the Escarpment environment.</p> | <p>Examples of permitted uses that provide access, orientation and operational facilities to support nature appreciation and recreational activities include:</p> <ul style="list-style-type: none"> ➤ Educational and visitor buildings ➤ Recreational infrastructure ➤ Commercial/retail service facilities ➤ Special purpose buildings ➤ Research buildings ➤ Maintenance buildings ➤ Parking lots ➤ Road networks |

Resource Management Zone

Resource management zones provide for sustainable resource management of agricultural lands, previously disturbed sites, forest products, and land that has a long-term resource agreement such as a managed forest.

DPCA's resource management zones include the agricultural lands (fallow fields, orchard, vineyards) south of Ridge Road.

Table 6. Resource Management Zone

| Zone | Description | Management Direction | Permitted Uses (subject to management planning) |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Resource Management | <p>Provides for sustainable resource management of forests, fisheries, watersheds, wildlife, or flood control.</p> <p>Previously disturbed sites (e.g. old farm fields, abandoned quarries) where active measures are being taken to re-establish natural vegetation.</p> <p>May include land that has traditionally been managed under long-term resource agreements (e.g., forest management agreements or agricultural leases)</p> | <p>Management guidance should support:</p> <ul style="list-style-type: none"> ➤ Experimenting with alternative resource management practices. ➤ Understanding ecosystem structures and functions. ➤ Activating effective conservation and stewardship practices. | <p>These areas may be used to demonstrate ecologically sustainable resource management practices.</p> <p>Examples may include:</p> <ul style="list-style-type: none"> ➤ Research monitoring plots ➤ Forest management ➤ Fisheries management ➤ Wildlife management ➤ Watershed management ➤ Flood control <p>Recreation uses in this zone are subject to HCA policies and management planning.</p> |

3.7 Development Priorities

The capital development priorities and estimates of development costs for DPCA over the next ten years are listed in *Appendix 2* and shown in *Appendix 1 – Map 4*.

All development projects are to be reviewed annually for the life of this Master Plan, and the capital development priority list updated as necessary. Capital projects should not be started until a long-term strategy with timelines and costs for each project are clearly defined and sufficient resources are available to complete them. See Section 8.2 for further information.

Significant capital development for DPCA over the next ten years falls within these categories:

.1 Replace Significant Park Features

These significant park features require ongoing repairs for public safety, are nearing or past the end of their life cycle, and are proposed to be replaced or expanded upon:

- Optimize the existing visitor parking lot to improve traffic flow and function.
- Conduct structural reviews and risk assessment of all park features (buildings, lookout platforms, retaining walls etc.) with report recommendations for long-term care and maintenance.
- Evaluate future use of the HCA operations building (former rental house) with the wetland project.
- Repurpose the market buildings for visitor and operational use.
- Design and construction of a new wetland area, noted as SC-5 on the market property, to function with the Saltfleet wetland complex.
- Accommodate the Dofasco 2000 Trail connection to Saltfleet Conservation Area with the wetland project.

.2 Add New Park Features

These capital projects are proposed to serve a greater number of visitors, generate revenue, and improve customer service. Some of these projects may be delayed while HCA assumes operation of the former market buildings on Ridge Road:

- With the SC-5 wetland complex provide passive recreational trails and interpretive features.
- For the lands south of Ridge Road, provide a new main entrance, gated parking areas, new washroom facilities, and associated trail-head visitor amenities.
- For visitor management and natural area protection in the Punchbowl gorge, at a minimum provide waterfall interpretive signage at the Bruce Trail and install boundary signage marking areas off-limits to the public.

.3 Enhance Existing Park Features

These capital projects are proposed to enhance existing park features and improve customer service:

- Work with the Bruce Trail Conservancy to improve the trail system and restore degraded natural areas.
- Install perimeter fencing and guards for public safety and to protect natural areas.
- Enhance the existing watercourse flowing through the conservation area.
- Naturalize the cultivated farm lands.
- Provide more educational information for the visitor online and on site.



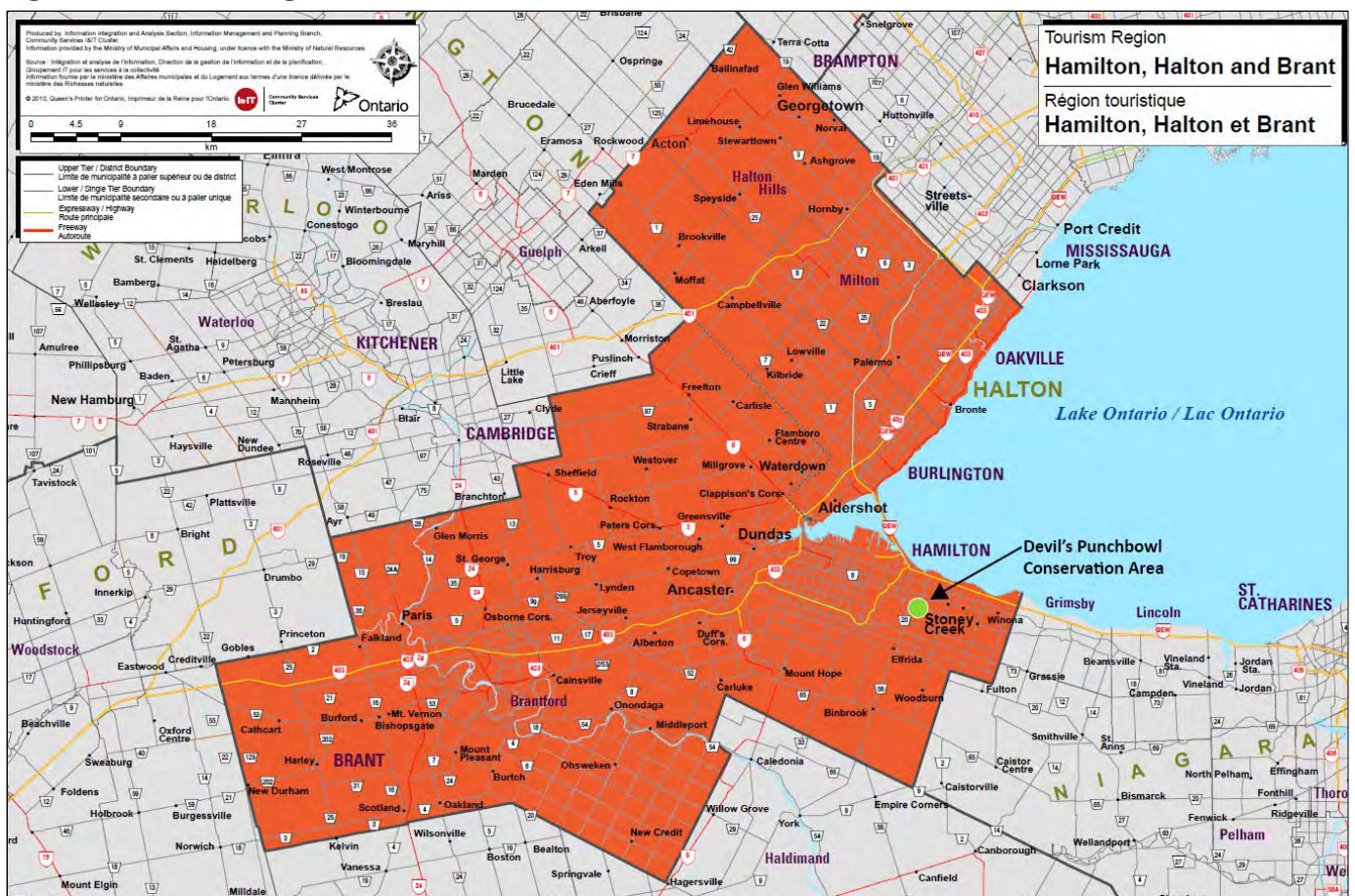
4.0 BACKGROUND

4.1 Study Area

Devil's Punchbowl Conservation Area (DPCA) is located in the south-eastern area of HCA's watershed in Stoney Creek, City of Hamilton. Other HCA lands nearby include the Dofasco 2000 Trail, Saltfleet, Vinemount and Winona Conservation Areas. The DPCA property encompasses 44 ha (109 acres) of land in the former Township of Saltfleet, with a newly acquired 20.3 ha (50 acre) punchbowl market building property on Ridge Road. Ridge Road bisects the conservation area in an east-west direction. The property on the east and south of Ridge Road is tableland and includes the Dofasco 2000 Trail. The north side of Ridge Road is the main draw for the visitor with Escarpment views, Punchbowl waterfalls, and trail access to the lookout areas. The Bruce Trail, as well as the Canadian Pacific Railway freight line mark the northern boundary below the escarpment bordering on the creek.

DPCA is a popular day-use area and tourist attraction within easy driving distance from the Greater Toronto and Hamilton area as well as Niagara Region. *Figure 4* shows the tourism market area considered by this Master plan.

Figure 4. Tourism Region



Source: Ontario Ministry of Tourism, Culture and Sport.

During the preparation of this plan, two visitor surveys for DPCA were distributed online and two public information tables were held in the park during the public commenting period. The public surveys ran from May 18 to September 9, 2022. See Marketing Section 6.4 for the survey analysis, and *Appendix 4* for the visitor data.

Development proposed for DPCA will require review by the Hamilton Conservation Authority, the City of Hamilton, and the Niagara Escarpment Commission. Draft copies of this document were circulated to these agencies, and their comments addressed in the finalized Master plan.

Figure 1 in Section 3.1 shows the study area for this plan. This Master plan update is part of a ten-year strategy for reviewing HCA lands across the watershed as shown in *Figure 2*. In Section 3.5. HCA staff are following this strategy to systematically glean valuable scientific data and site information from targeted study areas and using this information in the preparation of Master and management plans.

4.2 Property History

.1 Background

HCA initially acquired two small parcels of land in 1969 and in the succeeding years purchased an additional 21.2ha of lands surrounding the Stoney Creek flood plain above the escarpment to create DPCA. The suitable location and special geologic features of the property provided for limited recreational use such as picnicking, viewing, and hiking. HCA began developing modest facilities on the property to accommodate these uses.



Orchards in production on the properties fell under the management of a local farmer who leased land from HCA. A major fruit tree replacement program was initiated in 1978 at the expense of the lessee. Many of the lands surrounding DPCA above the escarpment were in agricultural production. As well, a small fruit stand operated on Ridge Road in the immediate vicinity of the conservation area. The only farmland remaining in production today is south of Ridge Road with the Punchbowl market buildings.

The conservation area officially opened in October 1971. Facilities at that time included pit privy toilets and a parking lot accommodating a maximum of 20 cars. Picnic tables and an interpretive plaque of the geologic history had been placed on site, but were subjected to vandalism. The main lookout area was developed with a stone wall around the scarp crest for safety precautions and a split rail fence extending along Ridge Road.

A campground was considered; however, HCA could not justify removing the orchards and vineyards for this use, especially when there was an adequate supply of campsites in the Hamilton vicinity.

.2 Rental Homes

Two homes were located on Lot 23, Concession 4 approximately 300m apart. One was a unique frame home while the other was a newer brick residence. Both homes were used for residential purposes and were leased from HCA on an annual basis in the early years of operation. The frame house was demolished for the parking lot construction, and the brick home has recently been repurposed by HCA for the Hamilton Mountain superintendent's office and base of operations.

.3 The Cross

When HCA acquired the property in 1969, the cross was a feature already in place as installed by the Stoney Creek community. The cross we see on site today originally was a smaller wooden cross installed on the scarp in 1960. That cross was replaced in 1966 by a larger metal structure, and the lights refurbished in 1968 and 1991. The platform and interpretive signage was installed in 1992. Between 2013 and 2015 the structure and electrical system was refurbished and new LED lighting installed.



A memorial plaque was mounted on the cross from the Goemans family, recognizing Tony Goemans support of this refurbishment project.

The cross has an interesting cultural history. In the early 1960's the local community organized with the goal of seeing an illuminated cross on the escarpment by Christmas of 1966. A "Cross Committee" was formed, through which purchases and financial arrangements were to be directed. Marie Kott, a well-known public figure in Stoney Creek helped initiate the community fundraising for the project, with the Toronto Dominion Bank receiving donations. The committee was successful in their financial outreach and also received the support of local industries and businesses, the councils of the Town of Stoney Creek and Saltfleet Township, service clubs, churches, and Stoney Creek Hydro.

Bill Sinclair, a linesman with Stoney Creek Hydro also helped champion and guide the project with the Cross Committee. With a group of Stoney Creek Hydro linesmen, 600 feet of buried cable were installed from the powerline to supply power to the cross. Stoney Creek Hydro supported the illumination of the cross during certain holiday seasons.

The Cross Committee learned that a hydro tower on Birch Avenue, Hamilton, owned by Ontario Hydro, was available for repurposing. The tower, which was more than 50 feet tall, was obtained and the Foran Crane Company gave time and materials to erect the tower on site. The tower was

anchored to a concrete base prepared by Delta Ready Mix Concrete Co. and formed the structural base for the stainless-steel cross.

As well as Marie Kott mentioned earlier, Stanley Kott and Charles Kott of Wentworth Industries, a local steel fabricating company on Lake Avenue, were responsible for building the cross. They supplied the stainless steel and assembled the labourers for the project. As their company was in the heart of Stoney Creek, they were keen to be involved with the project and were inspired by Marie to donate the steel. A local hardware store donated the lights.

.4 Site Improvements

Since 1980 HCA has initiated modest capital improvements on site for visitor management. A small overflow parking area was added to the parking lot. In 2018 automated parking gates and barriers were installed. The Bruce Trail organization maintains the Bruce Trail running through the property under a partnership agreement with HCA. The City of Hamilton is responsible for capital improvements on the adjacent city lands, including road improvements along Ridge Road; local public access below the escarpment near the railroad tracks; and infrastructure maintenance of services traversing the site. The post and rail perimeter fencing at the scarp brow was replaced in 2021 with decorative metal picket fencing, consistent with fencing HCA has installed at other escarpment properties for visitor management. Safety rail fencing along the escarpment brow and at the lookout platform has been replaced at various times over its lifespan related to emergency rescue operations. Ongoing maintenance and replacement of safety items such as guardrails and barriers is part of the annual operation at DPCA.

.5 Market Land Acquisition

On June 3, 2022, HCA announced the acquisition of an additional 20.3 ha (50 acres) of land south of Ridge Road, including the associated market buildings. See maps in *Appendix 1*. The land transferred to HCA ownership on July 16, 2022. The market bakery operation continued to operate under a tenant agreement with HCA until December 23, 2022, at which time it closed. The terms of the lease agreement and the building maintenance and operation are currently under review. This land acquisition creates new space for the creation of wetlands, creek restoration, and will provide additional space for visitor access, parking, and enjoyment of the Punchbowl area and the new Saltfleet Conservation Area.



4.3 Planning and Development Controls

DPCA is located in the City of Hamilton (Stoney Creek) Wards 5, 9 and 10.

See *Figure 5. City of Hamilton Zoning Map*, and *Figure 3. Policy Areas* in Section 3.6 for the location of the planning areas described below.

The properties are under the City of Hamilton's Urban and Rural Official Plans (OP, City of Hamilton 2018) and Stoney Creek Zoning By-law. The lands in Ward 9 are classified as P4 Open Space, and A1 Agricultural. The lands in Ward 10 and Ward 5 are classified as OS-3 Open Space for the Niagara Escarpment Slope.

The City zoning regulations prescribe permitted uses, setbacks for buildings and parking areas, and the wetland areas as mapped by the Hamilton Conservation Authority. The City of Hamilton planning department has been consulted and their comments addressed in the preparation of this Master Plan.

In the Greenbelt Plan, Niagara Escarpment Plan (NEP), and City of Hamilton Official Plans several planning designations are identified for the property including:

- The entire conservation area is in the Greenbelt Protected Countryside.
- The entire conservation area is in the Niagara Escarpment Plan, Area of Development Control.
- Portions of the conservation area are in the NEP Escarpment Natural Area, Escarpment Protection Area, and Niagara Escarpment Parks and Open Space System.
- The Niagara Escarpment Slope is part of the City Natural Heritage System – Core Areas and Key Natural Heritage Features – Environmentally Significant Area and Significant Woodlands (Urban OP, Schedule B)
- Provincial Policy Statement (PPS) under the Planning Act which have implications for Significant Woodland, Fish habitat, Significant Wildlife Habitat, habitat for Species at Risk.
- Ontario Endangered Species Act which has implications for endangered and threatened species and their habitat observed on the properties.
- Canada Migratory Birds Convention Act which protects numerous bird species and their breeding season generally extending between late March to August. Timing of construction activities and especially vegetation clearing must take this act into account.
- Ontario Heritage Act governing lands which contain archaeological resources or areas of archaeological potential
- Canadian Fisheries Act for any work completed in the vicinity of Battlefield Creek.
- Ontario Fish and Wildlife Act
- Conservation Authorities Act, R.S.O. 1990
- Rural Hamilton Official Plan
- City of Hamilton Rural Private Tree By-Law
- Ministry of Environment, Conservation and Parks Environmental Protection Act

Representatives from the Niagara Escarpment Commission and Ministry of Natural Resources and Forestry have been consulted in the preparation of this Master Plan.

With these planning and development controls in the area, there are very few active development applications near the conservation area of concern.

A review of demographic trends reveal over the lifespan of this Master plan population growth is estimated to add 68 thousand more residents within 15 minutes travel to the conservation area. (2022 City of Hamilton Recreation Master Plan). See Section 8 for more information.

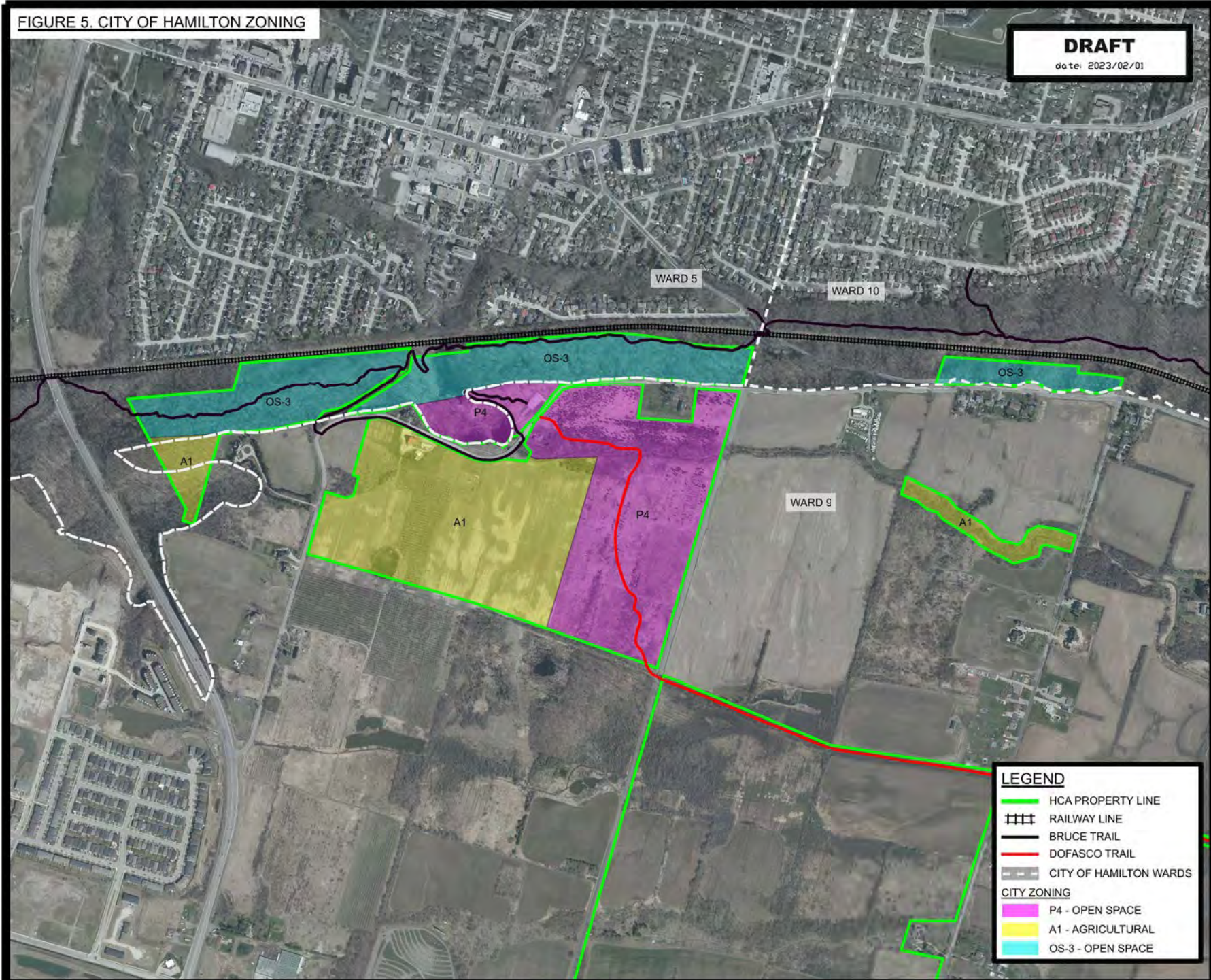
4.4 Buildings

See Sections 4.6 and 4.7 for site historic information and maps in *Appendix 1* for building locations. A cursory exterior review of the buildings was conducted by HCA staff during the summer of 2022. Observations from this review that helped inform the site concepts are noted on the maps.

It is recommended that detailed inspections of all the buildings located on the south side of Ridge Road are conducted now that HCA has assumed operation of the market facilities. It is also recommended that HCA prepare a capital asset management plan for each building supplementary to this Master Plan. The buildings included on the market property are the main market building, the storage building, and the greenhouse. For more information on HCA's plans for these buildings, see Section 6.2.



FIGURE 5. CITY OF HAMILTON ZONING



**CITY OF HAMILTON ZONING
DEVIL'S PUNCHBOWL C.A. MASTER PLAN**

DATE: 2023/02/01



4.5 Physical Features

DPCA contains a beautiful wooded glen, traversed by a small creek, situated on the Niagara Escarpment. The glen resembles a large bowl with a 40m waterfall descending the edge of the scarp. The geologic history dates back at least 450 million years when the materials which formed the Niagara Escarpment were originally deposited in a large inland sea. The area is a fine example of the geologic strata present in this major landmark of Southern Ontario. See Section 5.1 for more information on these physical features.

The combined watercourses of Stoney and Battlefield Creeks represent a major flood plain area. The Stoney Creek drainage area shows that an ancient floodway previously passed the edge of the Escarpment. It is thought that perhaps at one time all run-off went down the Battlefield Creek. Both creeks have sections with relatively steep slopes and high flow velocities. The waterfall is fed by run-off from upstream farmland, and the Stoney Creek watercourse at this location normally runs dry during the summer months.

Soils on top of the scarp are moderately fertile and support orchards containing grape, pear, plum and cherry trees as well as crop lands. Immediately below the scarp is located the highly urbanized area of the Town of Stoney Creek.



4.6 Cultural Heritage

HCA recognizes that these conservation area lands were inhabited and governed by First Nations prior to European contact. Respect for the cultural heritage of Indigenous Peoples is supported in this Master Plan and HCA's Strategic Plan. See Section 7.4 Cultural Heritage Management.

This Master plan sets out a cultural heritage zone surrounding the cross, and associated structure and landscaping, with the intent to maintain the heritage value of this feature for the community. The features within this zone, while not designated historic, shall be maintained as necessary for public viewing and safety. Further detailed evaluation of the structure is recommended, and to develop a specific HCA management plan for the continued care and operation of this feature within DPCA.

4.7 Heritage Designation and Historic Buildings

The Ontario Heritage Act enables municipalities to protect and manage Ontario's cultural heritage resources. Part IV of the Act provides for municipal designation of individual properties as having cultural heritage value. Properties are designated by a municipal by-law, with reasons for designation or a description of heritage attributes which must be retained to conserve the cultural heritage value. Heritage property designation serves to: recognize the importance of a property to the community; identify and protect the property's cultural heritage value; encourage good stewardship and conservation; and promote knowledge and understanding about the property and the development of the community.



There are no heritage designations for the conservation area buildings or land.

The City of Hamilton Cultural Heritage Resources Inventory notes the following properties near the conservation area of heritage designation, historic value, or heritage interest.

.1 Spera House, 228 Ridge Road

The following information is excerpted from the historic designation for the Spera House:

“The Spera family has long been associated with the Saltfleet and Stoney Creek area. The land upon which the Spera House now stands may have been the site of the original Adam Green log house where Billy the Scout, hero of the Battle of Stoney Creek, was born....The 1859 map shows Henry Spera, son of Henry and Barbara, as land owner. William, and perhaps John Spera, built the house that now stands on site, circa 1874. The infant Arthur Harris Spera was brought to the house at that time when he was only three days old. He later planted the orchard, known as Montmorency Farm, because it produced Montmorency cherries. It was at the time the largest cherry farm in the area producing 75 to 100 tons of cherries annually as well as plums, grapes and pears...The two-storey Gothic Revival “Ontario Farmhouse” in the vernacular is clad with horizontal wood siding. The gable over the main entrance partially encloses a window with a circular head. This shape is unusual.”

The following buildings near DPCA are also recognized by the City of Hamilton for heritage designation, historic value, or heritage interest:

- ◆ 30 Ridge Road, Billy Green House, circa 1820, designated
- ◆ 174 Ridge Road circa 1880
- ◆ 136 Ridge Road circa 1890
- ◆ 552 Ridge Road, Erland Lee (Museum) Home, circa 1801, designated
- ◆ 77 King Street West, Battlefield House, Park and Museum, circa 1796, designated

4.8 Natural Areas

Devil's Punchbowl natural areas include Environmentally Significant and Sensitive Areas (ESA's), Areas of Natural and Scientific Interest (ANSI), Significant Woodlands, Escarpment, and Significant Earth Science Features and ecological function. DPCA contains physical features, flora and fauna of significance along with former agricultural lands, meadows, waterfalls and watercourses, and recreational trails above and below the Escarpment. The escarpment forest is a rich system with a diversity of ground flora and shrubs. A wide variety of bird species use this area for breeding and migration. The talus and cliff communities are provincially rare and occur throughout this Conservation Area.

All future development from this Master Plan is to follow the Master Plan Zone guidelines outlined in Section 3.6 and the natural areas recommendations noted in Section 5.15.



5.0 NATURAL AREAS INVENTORY

5.1 Physiography and Topography

The Devil's Punchbowl is the product of water erosion, dating from at least 16,000 years ago. It exhibits one of the largest and most complete vertical natural exposures of Silurian stratigraphy along the Escarpment. Vast quantities of water released by melting glaciers, formed huge streams that etched the landscape. Stoney Creek, plunging over the escarpment, has eroded the soft un-resistant rocks near the base of the scarp causing undercutting of the gorge.

The bedrock and soils at Devil's Punchbowl are as follows:

.1 Main Plunge Pool Exposure

| | |
|------------------------|--------------------------------------------------------------------------------|
| Lockport Formation: | Goat Island Member – Ancaster chert beds; Gasport Member – crinoidal dolomite. |
| Decew Formation: | Conchoidally weathered dolomites |
| Rochester Formation: | Dolomitic shale |
| Irondequoit Formation: | Crinoidal dolomitic limestone |
| Reynales Formation: | Dolomite with thin shale partings |
| Thorold Formation: | Greenish sandstone and shale |
| Grimsby Formation: | Red shale and sandstone |
| Cabot Head Formation: | Grey shale (most southeasterly exposure) |

.2 Lower Cataract Exposure

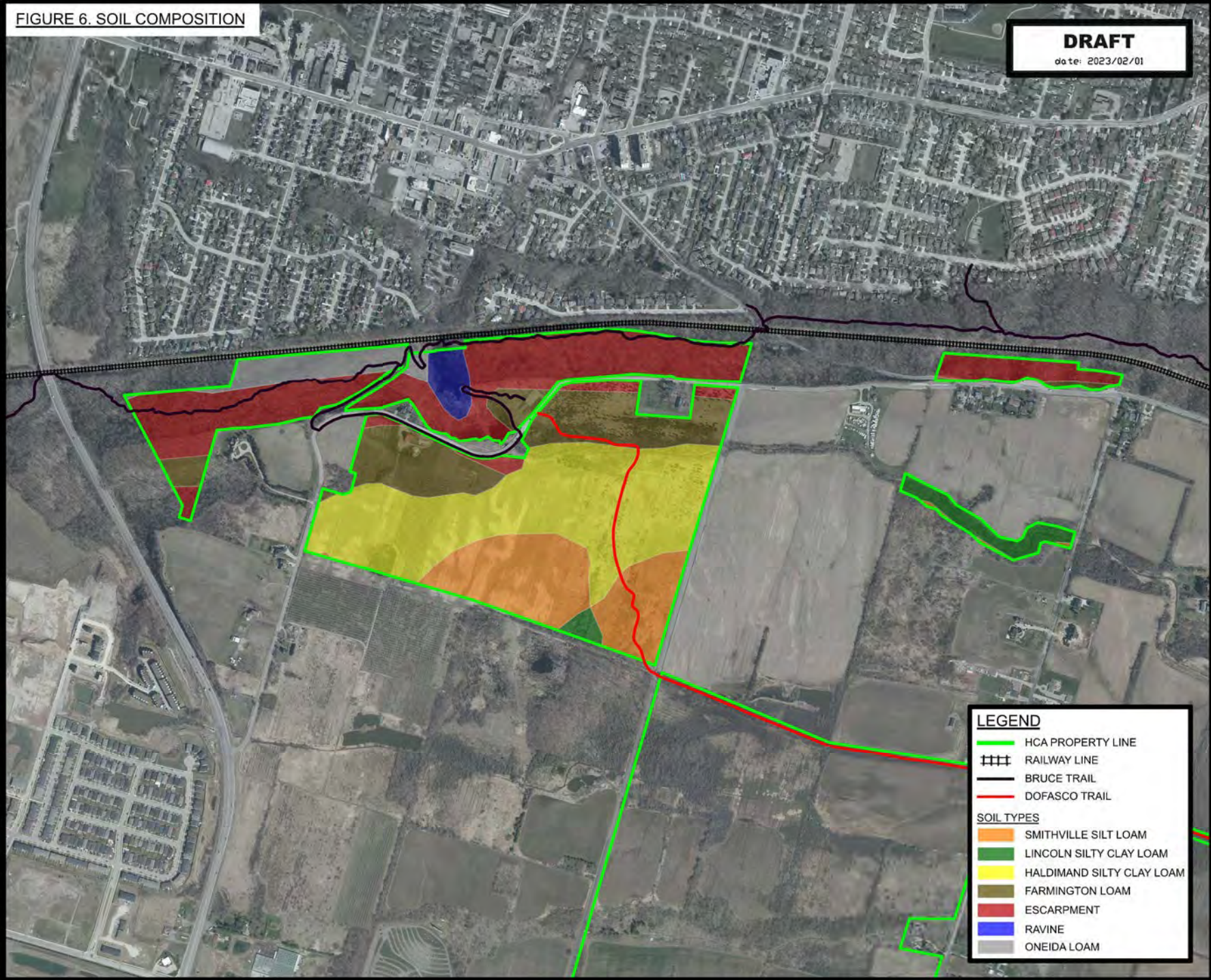
| | |
|-----------------------|-----------------------------------------------|
| Manitoulin Formation: | Shaley dolomite (most southeasterly exposure) |
| Whirlpool Formation: | Cross-bedded sandstone |
| Queenston Formation: | Red shale |



FIGURE 6. SOIL COMPOSITION

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date: 2023/02/01



LEGEND

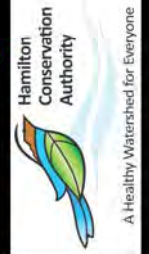
- HCA PROPERTY LINE
- RAILWAY LINE
- BRUCE TRAIL
- DOFASCO TRAIL

SOIL TYPES

- SMITHVILLE SILT LOAM
- LINCOLN SILTY CLAY LOAM
- HALDIMAND SILTY CLAY LOAM
- FARMINGTON LOAM
- ESCARPMENT
- RAVINE
- ONEIDA LOAM

SOIL COMPOSITION
DEVIL'S PUNCHBOWL C.A. MASTER PLAN

DATE: 2023/02/01



5.2 Soil Composition

See *Figure 6. Soil Composition Map*.

.1 Haldimand Series

Included are the imperfectly drained, grayish clay soils. The grayish-brown parent materials are relatively impermeable to water and very sticky when wet. The surface soils consist of up to 30cm of brown silt loam overlying the heavier material. These soils are most suited to the production of hay, pasture and spring grains. However, on occasion, the land may be suitable for more productive forms of agriculture such as orchard production.

.2 Smithville Series

Moderately well-drained, grayish clay till soils overlain by lacustrine silt loam characterize the Smithville series. The depth of silt loam over the clay materials ranges from 30cm to 50cm. These soils are the most productive for growing fruit trees. The gently sloping topography and silt loam surface allow excess water to drain away. Drainage may be temporarily impeded in level areas, resulting in periodic damage to certain crops.

.3 Stoney Creek Series

Topsoil consisting of brown to dark silty clay with organics is evident throughout the creek. The thickness of this stratum generally ranges between 15cm to 300cm. A thin stratum of brown till measuring approximately 1.5m in depth underlies the topsoil. Gravel and cobbles are occasionally present in the topsoil.

The very steep slope of the Niagara Escarpment provides sufficient relief for stream erosion to expose all of the above formations. This site contains the most southerly natural exposures of the Manitoulin and Cabot Head formations. The latter is the northern equivalent of the Power Glen sandstones and shales which continue east and south of Stoney Creek.

Most of the geological units exposed at Devil's Punchbowl are typical of those units occurring throughout the Niagara Peninsula.

.4 Escarpment Face Soils

The soils of the Escarpment face are generally non-arable and have been poorly mapped. However, three broad patterns generally occur and are summarized as follows:

- A very stony boulder scree soil with a slight finer matrix on the talus slopes.
- A rolling loamy soil with scattered boulders along the middle and lower slopes.
- A rather shallow, poorly drained fine soil derived from the shales along the bedrock.

.5 Tableland Soils

Soils above the Escarpment have been mapped by the Ontario Department of Agriculture (1965) and consist of the following in addition to the series mentioned previously:

- Farmington Series: The Farmington series includes well-drained, shallow soils with a depth

of soil over bedrock that does not exceed 30cm. Most of these soils occur on level or very gently sloping areas where the topography is controlled by the underlying flat bedded dolomite bedrock. These soils usually do not promote extensive agriculture due to numerous stones and bedrock outcroppings as well as summer moisture deficiency

5.3 Hydrology and Surface Drainage

Drainage patterns in the study area have been heavily altered by the agricultural land use but still hold true to the landscape. This study area is divided between two different subwatersheds of the Stoney Creek watershed. The moraine is split into two lobes which effects the drainage pattern. All the watercourses are intermittent or ephemeral and have limited substrate sorting. See *Figure 7. Subwatersheds* for more information.

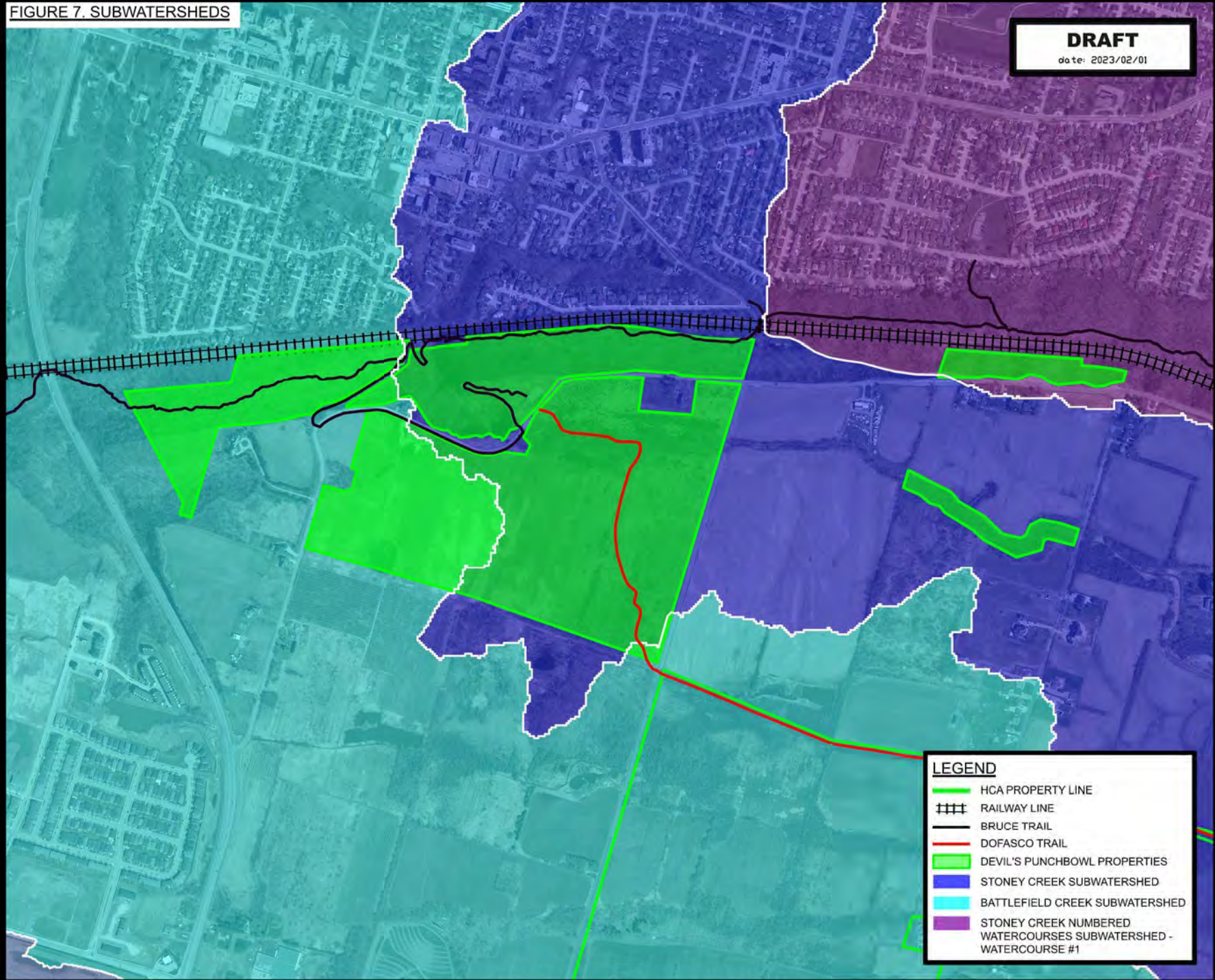
The Battlefield Creek headwaters come from the north western edge of the southern moraine lobe and generally flow in a north west direction toward the centennial road cut in the escarpment. The majority of the flows bypass the Devil's Punchbowl CA to the south but there is a small portion of the western portion of the CA property that drains west towards Battlefield Creek at Centennial Road before the combined Battlefield creek flows over the Niagara Escarpment. Battlefield Creek joins Stoney Creek below the escarpment about 4.5km downstream before Stoney Creek flows directly into Lake Ontario after about another 1.5km.

This section is subject to updates pending further evaluation of the SC-5 wetland study area and market lands

.1 Stoney Creek

Stoney Creek has two main source branches the first begins south of the Battlefield Creek headwaters along the southern side of the southern moraine lobe. It flows east and then turns north entering the gap between the lobes in the area of Green Mountain Rd. From there, it confluences with the flows coming west out of the Provincially significant Vinemont Swamp branch just upstream of Tapleytown Road. From here Stoney Creek flows northwest through the lobe gap picking up a small amount of flow from the northern lobe before entering this conservation area through 1st Road East. It continues east until falling over the Niagara Escarpment at the Devil's Punchbowl. Stoney Creek below the escarpment flows north for about 4.5km before being joined with Battlefield Creek. Stoney Creek flows directly into Lake Ontario after about another 1.5km.

FIGURE 7. SUBWATERSHEDS



DRAFT
date: 2023/02/01



SUBWATERSHEDS
DEVIL'S PUNCHBOWL C.A. MASTER PLAN
DATE: 2023/02/01

- LEGEND**
- HCA PROPERTY LINE
 - RAILWAY LINE
 - BRUCE TRAIL
 - DOFASCO TRAIL
 - DEVIL'S PUNCHBOWL PROPERTIES
 - STONEY CREEK SUBWATERSHED
 - BATTLEFIELD CREEK SUBWATERSHED
 - STONEY CREEK NUMBERED WATERCOURSES SUBWATERSHED - WATERCOURSE #1



5.4 Biophysical Inventory Methodology

Biophysical inventories completed by HCA staff at Devil’s Punchbowl Conservation Area were mainly restricted to Ecological Land Classification and breeding bird surveys in 2021 and 2022. Ecological Land Classification was completed across the entire property and is shown in *Appendix 1 – Map 1*. Species lists are included in *Appendix 5*.

Table 7. Summary of Ecological Field Studies

| Survey Type | Dates | |
|--------------------------------------|-------------------------------------------------------------|-----------------------------------------------------|
| | Year | Day(s) |
| Floral Inventory | 2020, 2021 | Concurrent with ELC surveys |
| Breeding Bird Surveys | 2021, 2022 | June 7 2021, June 17 2022 |
| Ecological Land Classification (ELC) | 2021, 2022 | May 6 and Sept 10 2021, June 17 and August 29 2022. |
| Incidental Wildlife | Recorded when encountered during all visits – 2021 and 2022 | |
| Aquatic Surveys | Summers 2000, 2006, 2009, 2012, 2018, 2021 | |

5.5 Ecological Land Classification

The Ecological Land Classification (ELC) system for Ontario was used to describe the vegetation communities at DPCA. Staff conducted multi-season inventories of the property in 2021-2022. Details on the canopy, sub canopy, shrub and ground layers of each vegetation community were recorded. Vegetation community boundaries were determined using air photo analysis and further refined in the field.

5.6 Flora/Botanical Inventory

Botanical inventories were conducted as a part of the Ecological Land Classification surveys of the property. Specific floristic inventories occurred in the fall of 2022 to further identify asters and goldenrod species as they bloom late in the season. An additional survey in the spring of 2021 was conducted for spring ephemerals (early spring flowers). Species in this group die back by mid-summer and therefore are missed when spring surveys are not conducted. Species nomenclature is based on the Natural Heritage Information Centre (NHIC) Plant Species list (updated yearly). Species and community ranks are determined provincially by the Ministry of Natural Resources and Forestry Natural Heritage Information Centre Database (Srank) and locally via the Hamilton Natural Areas Inventory (Schwetz 2014).

5.7 Fauna Inventory

No specific surveys were conducted for wildlife on the property. All wildlife encounters were incidental while conducting other aspects of field work. These surveys involved general coverage

recording all species observations and signs (e.g. tracks/trails, scat, and burrows, dens, browse and vocalizations). Background data including older survey material was used to develop a list of butterflies, mammals and dragonflies that have been recorded by naturalists at Devil's Punchbowl Conservation Area over the last 10 years. A summary of the findings is in *Appendix 5*. Frog call surveys were not conducted on this property due to the lack of suitable habitat.

5.8 Breeding Bird Surveys

Breeding bird surveys were conducted on June 7 2021 and June 17 2022. Surveys followed the Ontario Breeding Bird Atlas (Cadman 2010) methodology.

5.9 Ecological Land Classification Results

Field surveys were conducted on May 6 and September 10, 2021, June 17, August 29 2022. The subject property was delineated into 10 vegetation communities. Community classifications are on *Map 1. Ecological Land Classification* in *Appendix 1*.

5.10 Flora/Botanical Inventory Results

Over the course of multiple survey dates including ELC surveys, staff identified 177 species of plants. Of these, 123 are considered native plant species (69%) while 54 are non-native species (31%) and there were an additional 21 species identified to genus only. The Hamilton NAI (HCA 2014) indicates that there are 1496 species of plants in the Hamilton-Wentworth jurisdiction. Plant species at Devil's Punchbowl Conservation Area represent 12% of that regional flora.

Table 8. Floristic Summary & Assessment

| FLORISTIC SUMMARY & ASSESSMENT | | |
|---------------------------------------------------------------------|---------------------------------|--------------|
| <i>Species Diversity</i> | | |
| | Total Species: | 198 |
| | Total ID to species level | 177 |
| | Native Species: | 123 |
| | Exotic Species | 54 |
| | Species ID'd to sp. only | 21 |
| | Percentage native species | 69% |
| | Percentage non-native species | 31% |
| | Total Taxa in Region (NAI 2014) | 1496 |
| | % Regional Taxa Recorded | 11.8% |
| <i>Co-efficient of Conservatism and Floral Quality Index</i> | | |
| <i>Co-efficient of Conservatism (CC) (average)</i> | | 4.22 |
| CC 0 to 3 | <i>lowest sensitivity</i> | 40 |
| CC 4 to 6 | <i>moderate sensitivity</i> | 73 |
| CC 7 to 8 | <i>high sensitivity</i> | 13 |
| CC 9 to 10 | <i>highest sensitivity</i> | 0 |
| <i>Floral Quality Index (FQI)</i> | | 46.83 |

The Floristic Quality Index (FQI) and the Native Mean Coefficient of Conservatism (CC) have been calculated for the entire property. The CC is a measure of the species specificity of habitat requirements, with a coefficient of 0 indicating a plant tolerant of a wide range of conditions and 10 indicating a plant that has the most specific habitat requirements. FQI is a measure of vegetation quality and is based on both the habitat fidelity of each species and species richness. The FQI for Devil's Punchbowl Conservation Area is 46.83 and the mean CC value is 4.22. These are considered moderate to high for FQI and mean CC. This is likely reflective of the rural nature of this conservation area. See Table 8.

5.11 Fauna Inventory Results

.1 Breeding Birds

Breeding bird surveys were conducted at Devil's Punchbowl Conservation Area in the spring of 2021 and 2022.

These surveys identify 31 species of birds likely breeding within the Conservation Area. Background data was also collected from the following sources, iNaturalist, Natural Areas Inventory, and eBird. Surveys

in 2012 for the NAI identified an additional 48 bird species while eBird and iNaturalist identified an additional 45 species. These were mainly composed of spring and fall migratory species and hawks and owls. These combined data sources have identified 124 species in the area. Of these 11 are provincial or federal species at risk, 21 are locally rare and 35 are locally uncommon.

.2 Butterflies and Dragonflies

Surveys completed for the Natural Areas Inventory (2012) identified 29 species of Lepidoptera, as well as 10 species of Odonata. An additional 2 species of Lepidoptera were recorded in the area by incidental observation and iNaturalist observations. The Monarch is provincially at risk while three others are locally uncommon (Compton Tortoiseshell, Silvery Blue and Common Sootywing) and one locally rare butterfly species (White Admiral) were recorded.

.3 Mammals

All incidental wildlife encounters were recorded while conducting other aspects of field work. Mammal sightings were also recorded during historical surveys conducted for the Natural Areas Inventory. These surveys involved general coverage recording all species observations and signs (e.g. tracks/trails, scat, burrows, dens, browse, and vocalizations). Thirteen mammal species have been recorded for this area by staff and during the Natural Areas Inventory. iNaturalist sightings identified one additional mammal species, the muskrat. All mammal species recorded are common to the area.

.4 Herpetofauna

The only species of herpetofauna seen by staff in this area was the Northern Leopard Frog. iNaturalist observations in this area identified three other species; the American Toad, Eastern



American Kestrel

Gartersnake, and Eastern Red-backed Salamander. No rare species were encountered.

5.12 Aquatic Inventory

.1 Stoney Creek

HCA has a long-term Aquatic monitoring station located in Stoney Creek in the Conservation area. Records date back to the 2000. Stoney Creek in this area is intermittent in nature and the soils are shallow. The portion directly upstream of the waterfall flows directly on bedrock. The harsh conditions in this reach of Stoney Creek are further represented by the fish species captured. Most sampling years the creek is dry so no fish are present, and when they are captured, only two species have been found. They are tolerant to intermediately tolerant species and indicate



Brook Stickleback

a coolwater thermal regime. The portion below the escarpment is an even more harsh environment. From a safe ingress/egress perspective, HCA ecologists have avoided sampling in this reach. The rail line culvert at the northern end of the property would potentially create a barrier to fish movement up into this reach. Sampling may be required if there is proposed development in the bowl of the conservation area.

Table 9. Fish Species Captured in this Area of Stoney Creek

| Common Name | Scientific Name |
|-------------------|--------------------------|
| Brook Stickleback | <i>Culaea inconstans</i> |
| Central Mudminnow | <i>Umbra lima</i> |

.2 Tributary of Battlefield Creek

Access not available during 2022 for full assessment. The Sites will be assessed in spring/summer 2023 to include in the future amended plan.

.3 Pond in southwest corner

Access not available during 2022 for full assessment. The Sites will be assessed in spring/summer 2023 to include in the future amended plan.

5.13 Significant Ecological Features

.1 Significant woodlands

All of the properties within the Devil's Punchbowl Conservation Area are considered by the City of Hamilton to be significant woodland, excluding the Punchbowl Market property. Significant

woodlands for the City of Hamilton mean an area which is ecologically important in terms of features (species composition, age of trees and stand history) and function (contributes to the broader landscape because of its location, size or the amount of forest cover in the planning area) (City of Hamilton, 2019).

.2 Environmentally Sensitive Area

The Devil's Punchbowl Escarpment Environmentally Significant Area (ESA) includes the entire Conservation Area, excluding the Punchbowl Market property. The ESA was designated because it meets many of the 2003 ESA criteria including:

1. Significant Earth Science Feature
 - a. the area encompasses regionally significant landforms
2. Significant Ecological Function
 - a. the area contains significant species
 - b. the area contains rare biotic communities
 - c. the riparian area serves as a link between natural areas along the Niagara Escarpment
 - d. the area is representative of the natural features of the Niagara Peninsula section of the Niagara Escarpment

ESA area protected within the rural official plan for the City of Hamilton. No new development or site alterations are permitted within or adjacent to ESA's unless it can be shown, through an Environmental Impact Statement (EIS), that there will be no negative impacts on the ecological features or functions of the ESA.

.3 Area of Natural and Scientific Interest (ANSI)

The entire Conservation Area, excluding the Punchbowl Market property, is part of the provincially significant Devil's Punchbowl Earth Science ANSI and Niagara Escarpment Section Life Science ANSI.

5.14 Biophysical Inventory – Analysis

.1 Species at Risk and Locally Rare Species

1 Significant Flora

Butternut, federally and provincially endangered, was the only plant species considered provincially rare that was found in this Conservation Area. There were only a few still surviving the Butternut canker. Of the plant species recorded on the subject lands through the 2020 and 2021 field surveys, two plant species were found to be locally rare and two to be locally uncommon by the City of Hamilton. Riverbank Wild Rye and Canada Rye locally rare. Thin-leaved sedge is locally uncommon in the area. All of these species are considered provincially secure (G5/S5 or G4/S4).

.2 Significant Fauna

The following eight species recorded at Devil's Punchbowl Conservation Area, listed in Table

3 are considered species at risk either federally (SARA) or provincially (ESA). These species were recorded within DPCA through different data sources all observed during the breeding season except Olive-sided flycatcher which was noted on migration.

Table 10. Federal and Provincial Species at Risk (END and THR)

| Common name | Scientific name | SARA status (Schedule 1) | ESA status | Documented |
|------------------------|------------------------------|--------------------------|------------|------------|
| Barn Swallow | <i>Hirundo rustica</i> | THR | THR | NAI |
| Bobolink | <i>Dolichonyx oryzivorus</i> | THR | THR | NAI |
| Eastern Meadowlark | <i>Sturnella magna</i> | THR | THR | NAI |
| Olive-sided Flycatcher | <i>Contopus cooperi</i> | THR | SC | eBird |
| Wood Thrush | <i>Hylocichla mustelina</i> | THR | SC | NAI |
| Bank swallow | <i>Riparia riparia</i> | THR | THR | NAI |
| Chimney swift | <i>Chaetura pelagica</i> | THR | THR | NAI |
| Monarch | <i>Danaus plexippus</i> | END | SC | 2022 |

The Barn Swallow has been reassessed recently (2020) by the federal Committee on the Status of Endangered Wildlife in Canada (COSEWIC) to Special Concern. Its status has not been changed on Schedule 1 of SARA as of the writing of this Master Plan so they will be treated as SAR in this document. Adult Monarchs have been observed throughout the fields and open portions of the forested habitats of this conservation area. This species is considered a species of “Special Concern” on the Species at risk in Ontario (SARO) list. This means that the species lives in the wild in Ontario but may become threatened or endangered due to a combination of threats and biological characteristics. In 2016 COSEWIC recommended that this species be up listed to endangered on Schedule 1 of the federal SAR listing. This has not occurred. Many of these species at risk noted above are from background documents and their exact location within the conservation area is not known. It is likely that the Chimney Swift, Barn and Bank Swallows were seen flying over this conservation area. The Olive-sided Flycatcher is a migratory species. While the Eastern Meadowlark and Bobolink may have been recorded in the large fields south of Ridge Road. Although not surveyed for it is likely that species at risk bats use this conservation area for parts of their life cycle.



Monarch Butterfly

Threatened and endangered species habitat is protected under the Endangered Species Act (provincially) and the Species at Risk Act (federally). Permits maybe required for development within the habitat for threatened and endangered species.

There were also a large number of locally rare (24) and uncommon (39) species recorded during field surveys and found in the background research (*Table. 10*). These include birds, plants and butterflies and are mostly concentrated within the forested sections of the Niagara Escapement.

Table 11. Locally Rare and Uncommon Species

| Common Name | Scientific name | City of Hamilton Status |
|------------------------------|-------------------------------------------|-------------------------|
| Yellow-rumped Warbler | <u><i>Setophaga coronata</i></u> | rare |
| Carolina Wren | <u><i>Thryothorus ludovicianus</i></u> | rare |
| Ring-necked Pheasant | <u><i>Phasianus colchicus</i></u> | rare |
| Yellow-billed Cuckoo | <u><i>Coccyzus americanus</i></u> | rare |
| Blackburnian Warbler | <u><i>Setophaga fusca</i></u> | rare |
| Black-throated Green Warbler | <u><i>Setophaga virens</i></u> | rare |
| Blue-headed Vireo | <u><i>Vireo solitarius</i></u> | rare |
| Broad-winged Hawk | <u><i>Buteo platypterus</i></u> | rare |
| Common Raven | <u><i>Corvus corax</i></u> | rare |
| Golden-crowned Kinglet | <u><i>Regulus satrapa</i></u> | rare |
| Long-eared Owl | <u><i>Asio otus</i></u> | rare |
| Magnolia Warbler | <u><i>Setophaga magnolia</i></u> | rare |
| Osprey | <u><i>Pandion haliaetus</i></u> | rare |
| Clay-colored Sparrow | <u><i>Spizella pallida</i></u> | rare |
| Hooded Warbler | <u><i>Setophaga citrina</i></u> | rare |
| Merlin | <u><i>Falco columbarius</i></u> | rare |
| Northern Harrier | <u><i>Circus hudsonius</i></u> | rare |
| Red-shouldered Hawk | <u><i>Buteo lineatus</i></u> | rare |
| Sharp-shinned Hawk | <u><i>Accipiter striatus</i></u> | rare |
| Bald Eagle | <u><i>Haliaeetus leucocephalus</i></u> | rare |
| Peregrine Falcon | <u><i>Falco peregrinus</i></u> | rare |
| White Admiral | <u><i>Limenitis arthemis arthemis</i></u> | rare |
| Red-bellied Woodpecker | <u><i>Melanerpes carolinus</i></u> | Uncommon |
| Alder Flycatcher | <u><i>Empidonax alorum</i></u> | Uncommon |
| Turkey Vulture | <u><i>Cathartes aura</i></u> | Uncommon |
| Chestnut-sided Warbler | <u><i>Setophaga pensylvanica</i></u> | Uncommon |
| American Kestrel | <u><i>Falco sparverius</i></u> | Uncommon |
| Blue-gray Gnatcatcher | <u><i>Poliophtila caerulea</i></u> | Uncommon |
| Herring Gull | <u><i>Larus argentatus</i></u> | Uncommon |
| Orchard Oriole | <u><i>Icterus spurius</i></u> | Uncommon |
| American Redstart | <u><i>Setophaga ruticilla</i></u> | Uncommon |
| Hairy Woodpecker | <u><i>Dryobates villosus</i></u> | Uncommon |
| Least Flycatcher | <u><i>Empidonax minimus</i></u> | Uncommon |
| Purple Martin | <u><i>Progne subis</i></u> | Uncommon |
| Scarlet Tanager | <u><i>Piranga olivacea</i></u> | Uncommon |
| Winter Wren | <u><i>Troglodytes hiemalis</i></u> | Uncommon |
| White-throated Sparrow | <u><i>Zonotrichia albicollis</i></u> | Uncommon |
| Black-and-white Warbler | <u><i>Mniotilta varia</i></u> | Uncommon |

| Common Name | Scientific name | City of Hamilton Status |
|---------------------------|-----------------------------------------|--------------------------------|
| Black-billed Cuckoo | <u><i>Coccyzus erythrophthalmus</i></u> | Uncommon |
| Brown Creeper | <u><i>Certhia americana</i></u> | Uncommon |
| Eastern Phoebe | <u><i>Sayornis phoebe</i></u> | Uncommon |
| Great Blue Heron | <u><i>Ardea herodias</i></u> | Uncommon |
| Nashville Warbler | <u><i>Oreothlypis ruficapilla</i></u> | Uncommon |
| Red-breasted Nuthatch | <u><i>Sitta canadensis</i></u> | Uncommon |
| Wood Duck | <u><i>Aix sponsa</i></u> | Uncommon |
| Vesper Sparrow | <u><i>Pooecetes gramineus</i></u> | Uncommon |
| Mourning Warbler | <u><i>Geothlypis philadelphia</i></u> | Uncommon |
| Ruby-throated Hummingbird | <u><i>Archilochus colubris</i></u> | Uncommon |
| Northern Mockingbird | <u><i>Mimus polyglottos</i></u> | Uncommon |
| Red-tailed Hawk | <u><i>Buteo jamaicensis</i></u> | Uncommon |
| Eastern Bluebird | <u><i>Sialia sialis</i></u> | Uncommon |
| Cooper's Hawk | <u><i>Accipiter cooperii</i></u> | Uncommon |
| Wood Thrush | <u><i>Hylocichla mustelina</i></u> | Uncommon |
| Eastern Meadowlark | <u><i>Sturnella magna</i></u> | Uncommon |
| Bank Swallow | <u><i>Riparia riparia</i></u> | Uncommon |
| Chimney Swift | <u><i>Chaetura pelagica</i></u> | Uncommon |
| Bobolink | <u><i>Dolichonyx oryzivorus</i></u> | Uncommon |
| Compton Tortoiseshell | <u><i>Nymphalis l-album</i></u> | Uncommon |
| Common Sootywing | <u><i>Pholisora catullus</i></u> | Uncommon |
| Silvery Blue | <u><i>Glaucopsyche lygdamus</i></u> | Uncommon |
| Thin-leaved Sedge | <u><i>Carex cephaloidea</i></u> | Rare |
| Canada Wildrye | <u><i>Elymus canadensis</i></u> | Rare |
| Eastern Riverbank Wildrye | <u><i>Elymus riparius</i></u> | Uncommon |

.2 Significant Wildlife Habitat

The Significant Wildlife Habitat Technical manual (Ontario 2000) along with the Ecoregional criteria tables for Ecoregion 7E (OMNR 2015) were used to determine and define significant wildlife habitat (SWH) on the DPCA property. Significant wildlife habitat includes broad categories of habitats for flora and fauna. SWH has been identified under the provincial policy statement for Ontario. No new development is allowed within identified portions of significant wildlife habitat unless there will be no negative impact to the form and function of this habitat type. The broad categories for significant wildlife habitat include seasonal concentration areas of animals, rare vegetation communities or specialized habitat for wildlife, habitats for species of conservation concern and animal movement corridors.

Seasonal concentration areas of animals are areas where wildlife species occur annually in aggregations (groups) at certain times of the year (Ontario 2015). This can include single species concentrations or aggregations of multiple species.

.1 Land Bird Migratory Stopover Areas

These are areas with woodlots or forests within 5km of either Lake Ontario or Lake Erie that migratory birds, especially song birds, use as rest stops before or after crossing the great lakes during migration. Land bird migration should be studied in woodlots 2-5 Ha in size where

woodlots are rare in this area of shoreline (Ontario 2015). Studies are needed to confirm the use of the habitat by > 200 birds/day and with > 35 species with at least 10 bird species recorded on at least five different survey dates (Ontario 2015). Devil's Punchbowl Conservation Area is within 5km of Lake Ontario. Staff did not undertake migratory land bird studies on these properties. It is assumed due to the position on the landscape, both the proximity to Lake Ontario and being some of the remaining forest stands that this area would function as migratory bird habitat. Migration occurs in the spring from April – May and then again from late July – October.

.2 Bat Hibernation and Maternity Colonies

Although not surveyed, suitable habitat exists in this conservation area for both bat hibernation caves and maternity colonies. There are cliffs and talus within this conservation area that may support bat hibernation. There are also a number of snag trees within the forested communities that may support bat maternity colonies.

.3 Reptile Hibernaculum

This is a difficult type of significant wildlife habitat due to the cryptic nature of snakes. Fire Fighters that practice rope rescues along the cliff face at Devil's Punchbowl Conservation Area reportedly regularly encounter snakes. It is assumed from this correspondence that there are hibernacula in the cliff face. The steep terrain prevented staff from confirming these reports.

.3 Rare Vegetation Communities

Rare Vegetation Communities include areas that contain a provincially rare vegetation community, as defined by the NHIC and/or areas that contain a vegetation community that is rare within the planning area.

.1 Cliff and Talus Slopes

Cliff and talus slopes occur throughout this Conservation Area. Cliffs are any vertical or near vertical rock that is greater than 3m in height. While talus slopes are rock rubble at the base of the cliff. They are rare in the province and support sensitive vegetation communities.

.4 Specialized Habitats of Wildlife

This is a community or diversity-based category as many wildlife require large areas of suitable habitat for successful breeding. The largest and least fragmented habitats within the planning area will support the most significant wildlife populations.

.1 Seeps and Springs

These are areas where groundwater comes to the surface and are often found within forested areas. The criteria include the presence of two or more seeps or springs. There are many springs along the talus slope within Devil's Punchbowl Conservation Area. These areas are often used as water sources for wildlife in the winter when other water sources are frozen.

.5 Habitat for species of Conservation Concern

Habitat for species of conservation concern includes wildlife that are listed provincially as special concern or are rare and declining. *Table 11*. provides a list of the 5 species located within the Devil's Punchbowl Conservation Area. This list includes migratory species such as the Rusty

Blackbird and species seen flying over the Conservation Area such as Bald Eagle and Peregrine Falcon. Eastern Wood Pewee was noted in several locations within the forested section of the Niagara Escarpment while the Monarch was seen in canopy gaps and small forest openings.

Table 12. Species of Conservation Concern

| Common name | Scientific name | SARA status (Schedule 1) | ESA status | Documented |
|--------------------|---------------------------------|--------------------------|------------|------------|
| Eastern Wood-Pewee | <i>Contopus virens</i> | SC | SC | 2022 |
| Bald Eagle | <i>Haliaeetus leucocephalus</i> | NAR | SC | eBird |
| Rusty Blackbird | <i>Euphagus carolinus</i> | SC | SC | ebird |
| Peregrine Falcon | <i>Falco peregrinus</i> | NAR | SC | eBird |
| Monarch | <i>Danaus plexippus</i> | END | SC | 2022 |

.6 Invasive Species at Devil's Punchbowl Conservation Area

The species detailed below are a threat to the biodiversity and conservation values at Devil's Punchbowl Conservation Area. Trails throughout the conservation area are movement pathways for a number of invasive species. The following section details the invasive species that occur at Devil's Punchbowl Conservation Area. Recommendations for prioritization for each species are detailed here, and prioritization for the property is presented in Section 5.15.

.1 Common buckthorn

Common buckthorn is a small tree or shrub that was introduced to Ontario from Eurasia. It was widely planted in farm hedgerows and fencerows as a wind break. It can survive in a wide range of conditions making it very good at invading a variety of habitats (Anderson, 2012a). Birds and small mammals feed on the berries of this plant, which has caused it to spread in the conservation area. Moderate numbers of common buckthorn are growing in the Upper Punchbowl field as well as the border of Ridge Road between First Road and Second Road East. While the spread of this species is currently limited, an effort will need to be undertaken to prevent future dominance of this species within the area. The focus should begin where buckthorns are sparse to eradicate the population and then on all fruiting female trees in denser locations. These fruiting females can be treated with herbicides and the remaining smaller stems removed through volunteer events and work days. The larger tree-like shrubs may require the cut-stump method of removal.

.2 Phragmites

This species of common reed from Eurasia is a perennial grass. It is not clear how it was transported to North America. It is an aggressive plant that spreads quickly and out competes other native species in wetland habitats (Nichols, 2020). It forms large mono cultures that decrease plant biodiversity and create poor habitat for wildlife. It is a top priority species to be controlled at HCA. There is a patch of phragmites currently growing on the West side of First Road East in the Upper Punchbowl. An effective control strategy would likely include pesticide application in dry the period for this community (September/ October) (Nichols, 2020).

.3 Spotted knapweed

Knapweeds were introduced to North America over 100 years ago in contaminated agricultural seed and soil in discarded ballast water. It spreads easily by seed (Sherman and Powell, 2017). This species reduces habitat for other meadow species as it becomes dominant. At present, there are 5 small patches of spotted knapweed in the Upper Punchbowl.

This species forms a tap root and can be controlled with cultivation to a depth of 18 cm or hand removal. Persistent hand removal (pulling or digging) can control this species if the upper 7.5 cm of the crown portion of the plant are removed before it produces seeds (Sherman and Powell, 2017). A targeted mowing in early August could prevent seed production and keep the knapweed from spreading further. Removal along the upper Punchbowl trail would be a priority to keep the species from spreading to other areas along the Dofasco 2000 Trail. Finally, knapweed can be shaded out, tree planting in some areas where this plant is starting to dominate could help reduce its presence.

.4 Garlic mustard

This species was introduced in the 1800's from Europe as an edible herb for early pioneers in the spring. It is a biennial plant that produces seed in its second year (Anderson, 2012b). It can grow in a variety of conditions making it a very good invader in a variety of habitats. It easily outcompetes other native ground cover and can change the soil environments to favour its growth over others. Garlic mustard can be found growing in patches within the Upper and Lower Punchbowl. The majority of the garlic mustard growing in the Lower Punchbowl is on the lower end of the slope between the Bruce Trail and the railway. In the Upper Punchbowl, it can be found at the northern end of the property. Removal of this species is fairly straight forward with hand picking between April and June, before the plant goes to seed. With a dedicated effort over 5 years removal of this species can be achieved. This is a high priority because it is easy to remove and there is limited extent of this species in the Conservation Area.

.5 Cut – leaved Teasel

A perennial plant that occurs in a variety of habitats including meadows, waste areas and roadsides. Teasel has high seed production and can spread and take over areas. In its first year it is a large rosette and by its second year can grow up to 2m high, shading out other meadow species (MDA, n.d.). It can be found in the upper punchbowl field in low numbers. Annual cutting of these plants can occur in the spring to damage the taproot since its full removal can be difficult (MDA, n.d.). Alternatively, the plant responds well to annual herbicide treatment during the main growing season. Eradication can be achieved in 3-5 years when the seed bank is depleted.

.6 European Privet

European privet is a highly invasive ornamental shrub or small tree that is native to Europe, western Asia and northern Africa. It was introduced in the early 1800s, and has since colonized a range of different habitats due to its tolerance for a variety of soil types and environmental conditions (CABI, 2021). Plants may produce 10,000 fruits per tree, which are then spread by wildlife to seed in different areas. European privet also reproduces vegetatively by its roots, so care must be taken not to spread root fragments during control efforts (CABI, 2021). Small shrubs in newly established populations can be pulled or dug up and properly disposed of. Larger populations require foliar sprays of herbicide mixed with a surfactant between August and December. Larger trees which are difficult to foliar spray can receive a basal spray (Miller, 2003). A small amount of European privet is growing in the Lower Punchbowl. Prioritize treatment of privet alongside that of Common Buckthorn.

.7 Greater Celandine

Greater celandine was introduced to North America from Europe in the 1600s as a medicinal plant (Tree Canada, n.d.). It can grow in dense stands shading out any native diversity, and

spreads readily by seed with the help of ants (Invasive Plant Atlas, n.d). There is currently greater celandine growing along much of the trails in the Lower Punchbowl. A toxic sap is released when any part of the plant is crushed that could be irritating to the skin and eyes. Therefore, if manual removal is chosen care should be taken by staff to wear the appropriate personal protective equipment. It is likely plants will readily grow again from root fragments using manual removal, however this method could be used to limit the spread. In order to fully eradicate the species, it is likely the application of a systemic herbicide will be required to attack the roots of the plant (late fall or early spring) (Tree Canada, n.d.).

.8 Honeysuckle sp.

There are four main species of invasive honeysuckle in Ontario which can be difficult to identify due to their tendency towards hybridization, and the lack of identifying characteristics (flowers and fruits) throughout much of the field season (Tassie and Sherman, 2014). These plants have been brought to North America for three centuries from Europe and Asia as an ornamental. Invasive honeysuckles can rapidly reproduce, grow quickly, and outcompete beneficial vegetation including our native honeysuckles. Their fruits are attractive to birds and mammals, which aid their spread. Within Devil's Punchbowl Conservation Area there is a small population of the invasive honeysuckle, *Lonicera tatarica*, in the Upper Punchbowl field. There is also a small number of unidentified honeysuckles in the Lower Punchbowl. While species identification is easiest in the spring during bloom, hand pulling and weed wrenching smaller shrubs should be conducted in the fall as not to disturb the growth of any nearby spring ephemerals. Cutting and girdling larger shrubs should always be paired with the application of herbicide to newly exposed woody material to prevent excessive suckering come next season. For large areas, a foliar spray of chemical herbicide can be applied between August and October. It is likely control multiple years (Tassie and Sherman, 2014). Identification of the unknown honeysuckles should occur first in the spring to ensure only invasive honeysuckles are treated.

.9 Multiflora Rose

Multiflora rose is a large perennial shrub that was introduced to North America in the late 1700s for horticultural purposes, and was widely promoted in the 20th century for a variety of uses (Warne, 2018). This plant grows quickly, can self pollinate, produce up to 500,000 seeds a year or more, and forms dense thorny thickets rapidly crowding out native biodiversity. Seeds are widely spread through animal's consumption of the plant's fruits, and can be viable in the seed bank for up to 20 years (Warne, 2018). There are a few seedlings located in the Lower Punchbowl along the Bruce Trail, as well as a small population of larger shrubs in the Upper Punchbowl field. Hand pulling is an effective control method for seedlings, however larger shrubs will aggressively re-sprout if cut without removing the roots. Therefore, a weed wrench and/or shovels should be used to fully remove the plant. This is a labour-intensive solution, and should prioritize small populations and sensitive areas. Alternatively, glyphosate-based chemical herbicide can be applied in late summer or early fall. A follow up-treatment may be required the following year, with ongoing monitoring to eliminate new seedlings (Warne, 2018).

.10 Periwinkle

Common periwinkle is a small herbaceous ground cover that was introduced to North America in the 1700s as an ornamental due to its attractive purple flowers (Center for Invasive Species and Ecosystem Health, 2010). However, it has spread throughout forests creating thick mats that prevent tree seedlings and other native plants from growing. Small populations can be

hand-pulled, whereas larger patches may require a foliar spray of chemical herbicide. These control measures will likely have to be repeated for multiple years to fully eradicate it. There is a couple small population of periwinkle growing in the lower punchbowl by the rail line.

.11 Oriental Bittersweet

Oriental bittersweet is a fast-growing vine native to East Asia that is popular in floral arrangements. It will wrap around native trees and shrubs until it overcrowds them and outcompetes them for light resources. Additionally, it is displacing native American bittersweet through its high competitiveness (NRCS, n.d.). Oriental bittersweet can be distinguished from native bittersweet through the positioning of the fruits it produces. However, these fruits are only present in the fall, which makes identification difficult for much of the season. There is currently a small amount of bittersweet growing in the unofficial trails of the lower Devil's Punchbowl Conservation Area which needs to be identified before continuing with treatment.

If the unknown bittersweet is identified as the invasive variety, there are several options for control. Vines can be cut so the upper portion of the plant dies while the lower portion must be pulled from the ground. Vines can also receive a foliar spray of herbicide in October or November when the native host plants are dormant but oriental bittersweet still has living leaves. Alternatively vines can be treated with herbicide using the cut stump method or basal bark method year-round (NRCS,n.d.).

.12 Common Burdock

Common burdock is a biennial plant that is native to Europe which presents as a large rosette in its first year, and grows multiple bur-like seed heads in its second year (USDA Forest Service, n.d.). The harmful effects of common burdock mainly pertain to agricultural settings, however due to its invasive nature it should be removed from the conservation area to promote native diversity. Common burdock is growing along several sections of the trail in the Lower Punchbowl. Manual removal of this species is difficult due to the plant's large taproot that will sprout again if not fully removed. Therefore, the best management practice for common burdock at this site would be the application of chemical herbicide to rosettes before they go to seed in July (Van Vleet, 2013).

.13 Black Locust

Black locust is a fast-growing species of tree native to the southeastern United States made popular to plant due to its adaptability and durability for woodworking (Warne, 2016). Black locust can readily invade dry areas with poor nutrient availability, giving it a competitive advantage over many species. It does best in full sun, and can be extremely problematic in early successional communities where it can quickly dominate the ecosystem before other plants have had a chance to establish. The large number of seeds produced by this tree are hearty, staying viable in the seed bank for decades. A well-established seed bank and the immense suckering makes the control of this tree so difficult. This species occurs intermittently in the lower Punchbowl. Chemical herbicide application is the recommended treatment for black locust. Any cutting without systemic herbicide application will result in prolific suckering. Smaller trees can be foliar or basal sprayed in late summer. Larger trees will require the cut stump, hack and squirt, or injection application methods. Any portions of the roots that remain viable after treatment will sucker, therefore treatment and monitoring will have to be completed for several years (Warne, 2016).

.14 Dame's Rocket

This Eurasian biennial wildflower was introduced to North America in the 1600s and has since invaded many moist woodlands and open spaces (Johnson, 2010). The plant spreads through abundant seed production during its three month long blooming period. A small amount of dame's rocket can be found growing in the Upper Punchbowl. Dame's rocket can be pulled relatively easily from moist soil before the seeds mature in the spring. Alternatively, chemical herbicide can be applied in the late fall to rosettes over the course of a few years until the seed bank is depreciated (Johnson, 2010).

.15 Reed Canary Grass

The reed canary grass that has become invasive in Ontario is thought to be a Eurasian cultivar brought to Ontario as forage for cattle (Anderson 2012c). It displaces native wetland plants and can decrease biodiversity. This plant can grow in a range of habitats and spreads quickly in wetlands. It spreads by both seeds and rhizomes. Several patches of reed canary grass can be found throughout the Upper Punchbowl. This species can be shaded out through the addition of trees and shrubs to invaded areas. Mulch can also be used to suppress the growth of reed canary grass. Alternatively, a chemical herbicide can be applied in the early growing season (Anderson, 20212c).

5.15 Natural Areas Recommendations

The natural habitat features at DPCA have been evaluated for restoration opportunities and invasive species removals. Restoration in certain areas can assist with buffering the natural habitats from the impacts of moderate to high levels of visitor use.

Biodiversity conservation targets are a limited number of species or ecological communities that ecologists select to represent the biodiversity of a protected area, and that therefore serve as the focus for conservation investment. Thus, conservation targets are simply those ecosystems, communities, or species upon which we focus planning and management efforts. Because we use only a handful of targets to plan for biodiversity conservation, selecting the appropriate suite of targets is crucial to successful conservation planning and adaptive management. A coarse filter/fine filter approach was used when analyzing and describing conservation targets for Devil's Punchbowl Conservation Area. Focusing on the health of the talus and forest communities provides an appropriate umbrella to encompass a number of biodiversity targets at this conservation area. There are few impacts too the Sugar Maple forests, talus and cliffs. A very low level of invasive species was found and a diversity of species were recorded. The table land areas near Ridge Road are impacted by recreational use, current and past farming practices. This target and issues were used to as an umbrella to provide restoration and enhancement opportunities in the next section.

1.Restoration/enhancement opportunities in the Nature Reserve, Natural and Resource Management zones

The existing natural habitat features at Devil's Punchbowl Conservation Area have been evaluated for restoration opportunities. Restoration in certain parts of this property can assist with enhancing biodiversity and habitat resiliency for the forest and talus along the Niagara Escarpment. Priorities for natural areas restoration are as follows.

.1 Enhance biodiversity and long-term forest resiliency

The talus and forested slopes along the Niagara Escarpment are dominated by Sugar

Maple. There is a very low diversity of other tree species within these forested areas. Butternut and White Ash used to form a canopy along with the Sugar Maple. These two species have been lost to invasive forest pests. In order to ensure that these forests remain resilient and stable in the long term it is recommended that a variety of trees be planted. Recommendations would include diseases resistant Butternut, Shagbark and Bitternut Hickory, Basswood and Black Walnut.

.2 Removing Old Vineyard Wires and Posts

The large cultural meadow south of ridge road and to the west of first road has many wires and posts remaining from an old vineyard that existed on the property.

.3 Invasive Species Should Be Controlled

There are low levels of a number of invasive species located within Devil's Punchbowl Conservation Area. As these populations are low this would be a great opportunity to control these species before large populations establish.

An overall invasive species prioritization plan should be developed supplementary to this Master Plan.



6.0 OVERALL SITE CONCEPT

This Master Plan for DPCA balances the need to conserve the natural environment with the need to accommodate day use visitors. The property will continue to be divided between the protected natural areas of the Escarpment, and active recreational areas on the tableland south of the Escarpment.

This section outlines the key concepts for this Master Plan that have come out of public and stakeholder consultation, staff workshops, meetings, detailed design sessions and inventory results. See *Appendix 1* for more information.

6.1 Natural Areas Development

The priority of this plan is to conserve and protect the sensitive and environmentally significant natural areas of the Escarpment. Accordingly, nature reserve and natural area zones have been identified in this plan with management guidelines as outlined in Section 3.6. The ecological mapping and species documented within this plan are also provided as a baseline inventory to help guide future land management decisions and project planning. See Section 5.15 for more information on the natural area recommendations.

Development in the natural areas will be strictly limited by HCA, and may also be subject to review by the City of Hamilton and the Niagara Escarpment Commission. HCA's development focus in the natural areas will be enhancing biodiversity and long-term forest resiliency; management of the existing trail system; hazard tree removals; invasive species management; restoration of degraded areas; and closure of unauthorized trails. Site monitoring, annual maintenance and restoration programs, and ongoing visitor education will be necessary to support this goal.

DPCA's largest natural areas are found below the Escarpment in the Punchbowl gorge. More information on development items for the gorge can be found in Section 8.2.

6.2 Conservation Area Development

Within this compact conservation area, the main development priority will be to construct a new wetland complex south of Ridge Road and improve the site watercourses. This will supplement HCA's Saltfleet wetland complex to help reduce flooding and erosion in lower Stoney Creek.

The secondary development priority will be to support visitation while protecting the natural areas. The market property south of Ridge Road will be the development focus to provide a visitor hub including a new main entrance, more parking, trailhead amenities, and trail connections to the Punchbowl, Bruce Trail, Dofasco Trail, and Saltfleet Conservation Area. The existing buildings on the market property will be repurposed for HCA use. For both existing building locations and proposed uses, see the maps in *Appendix 1*.

- The existing market building will provide visitor amenities such as, but not limited to, washrooms, wayfinding, and conservation area information, as well as facilities for HCA staff.
- The existing storage building will become a staff workshop, and the surrounding area behind the market building will be fenced off for HCA staff use only.
- The existing greenhouse will require further review to determine how it could best suit the needs of HCA.

All buildings require further review by HCA. The existing parking area on the north side of Ridge Road is to be improved in addition to this development of the market lands.

6.3 Day Use Activity Areas

DPCA's day use activity areas include the new visitor hub at the existing market buildings (visitor main entrance, parking, trail-head amenities), recreational trail system and scenic lookout stations. Picnic areas are to be located only near the parking areas. New constructed wetlands will provide opportunity for nature appreciation, passive recreation and education. Wetland lookout stations, rest areas, and interpretive information is to be provided with the wetland recreational trails.



The former agricultural lands will be a priority for natural restoration. Cultivated and manicured areas will be reduced, and the naturalized areas that evolve will be managed for invasive species and supplemented with plantings by HCA staff and volunteers. Tree planting will be a priority to supplement trees in the conservation area lost to disease and age, as well as provide shade in the visitor picnic areas. Restoration of the former agricultural fields is to be co-ordinated with the implementation of the natural areas recommendations noted in Section 5.15.

6.4 Marketing

There are marketing and communications activities for DPCA provided by HCA including promotion through print, the HCA website, and on various social media platforms.

During public engagement for this plan, two visitor surveys were conducted to gather information on the current conservation area and the newly acquired market lands. From May 18 to September 9th 2022 132 surveys were submitted by the public. These surveys will be reviewed by HCA staff when preparing marketing materials for DPCA during the lifespan of this plan.

Key marketing items from the surveys and staff workshops to be addressed in the lifespan of this Master Plan include the following:

- This is a popular community landmark that attracts repeat visitors to the lookout, waterfall and Bruce Trail. Continue marketing the value of the HCA membership pass for repeat visits to this site and nearby conservation areas such as Saltfleet and Dofasco Trail.
- The site attracts new tourists and sightseers from outside the community who are unfamiliar with the trail system and the escarpment. Better wayfinding signage, rest areas, and visitor amenities are appreciated by these visitors, as well as guided and self-guided educational tours.
- The most popular recreational activities are hiking the trails, and cycling the Dofasco Trail and area roadways. Safe trails and improved trail connections are desired by these visitors.
- Provide information on the importance of preserving nature and protecting it from damage. Look for opportunities to work with community partners on initiatives to reduce littering, vandalism, and staying on the trails.

See Section 8.4 for related information in the business model.



7.0 CONSERVATION AREA MANAGEMENT

7.1 Land and Water Management

Land management planning will be accomplished through adherence to the guidelines of the management zones noted in this plan, and through additional resource management plans developed by HCA as necessary. The overall intent will be to ensure protection and conservation of the significant natural areas noted as Nature Reserve (Wetland) and Natural Zones on the Conservation Area Zone Map appended.

The ecological mapping and species data documented within this plan are provided as a baseline inventory to help guide future land management decisions and project planning. Where active management is required for a particular species, it will be accomplished through an HCA approved resource management strategy considering the guidelines outlined in this plan, and in accordance with policies of all governing agencies.

.1 Public Infrastructure – Utilities, Trails and Transportation

Public infrastructure such as utility corridors (watermains, storm and sanitary sewers, natural gas or oil pipelines, hydro and communication corridors), trails (footpaths, boardwalks) and transportation links may cross conservation area lands.

These uses may also have associated rights-of-way, land use agreements, licenses of occupation, permits etc. that are to be considered in the management of the ecological preserve and when implementing items from this management plan.

When new public infrastructure projects are proposed within conservation area owned lands, such uses will be subject, but not limited to, the following criteria:

- The need for the project, area of construction disturbance, and potential site disruption such as soil erosion, flooding, and vegetation loss.
- To maintain or where possible improve or restore key ecological linkages, habitat, and wildlife movement corridors.
- The potential public benefits of the project for research, education, or recreation.

HCA may require detailed environmental assessments, studies, and resource management plans in order to support such land uses.

7.2 Vegetation Management

Where active management is required for a particular plant or animal species, it will be accomplished through an acceptable HCA resource management strategy considering the guidelines outlined in this Master Plan, and in accordance with policies of all governing agencies. Forests will be managed in accordance with the MNR approved HCA Managed Forest Plan 2018 - 2037. Forest plantations and treed areas will also be managed to remove hazard trees and fallen

logs in areas of public use such as recreational trails and picnic areas. Forest management is to be carried out with generally accepted sustainable forestry practices.

Invasive species are in the conservation area and HCA places a high priority on invasive species management to maintain biodiversity and conservation values. See Section 5.14.6 for more information on invasive species vegetation management.

Additional non-native plant species will not be deliberately introduced into the conservation area. Introduction of any new plant species by HCA will consider the biodiversity of this site, historical data of species present in the area, research, and additional relevant species inventories and contiguous surroundings within an approved restoration and stewardship strategy. In this plan “non-native” means species not native to Ontario as well as species native to Ontario but not to Hamilton. If established non-native plant species threaten natural heritage values, a program for their eradication will be developed subject to specific guidelines noted in the natural heritage inventory of this plan.

Vegetation may be mowed only:

- Along the conservation area boundary, where mowing would assist in clearer boundary identification.
- In the development zone of this Master Plan to support public usage of the open space, and only to the extent necessary.
- As required along roadways and recreational trails for safety.
- To assist in the control of invasive species, trees and brush may be cut and pruned only.
- To enable resource management or facility development specifically authorized by this Master Plan or an HCA approved resource management or other implementation plan.
- To ensure public safety.
- In service easements i.e., Utility corridors, subject to specific service agreements.

Trees may not be cut for the sole purpose of providing firewood. Trees and brush cut in nature reserve and natural zones outside of the forest plantations will be left to deteriorate naturally as close as possible to where they have been felled, or if that is not feasible, may be used for firewood or wood chips in the conservation area.

Native insects and diseases affecting vegetation will be allowed to progress naturally, except where they threaten significant natural heritage values in nature reserve and natural zones, or significant aesthetic and infrastructure values in development zones. Non-native insects and diseases will be controlled where feasible. Where controls are undertaken, it will be directed as narrowly as possible to the specific insect or disease so as to have minimal effects on the surrounding environment. Biological controls will be used whenever possible.

Fires in the day use area are not permitted.

Chemical fertilizers, herbicides, pesticides and suppressants will not be used for any vegetation management purpose except:

- Insect and disease control under the conditions set out in this section of the Master Plan.
- Eradication of non-native species where it has been demonstrated other methods are not feasible.
- Control of poison ivy in development zones.

7.3 Fish and Wildlife Management

Where applicable on the Conservation Area property, fisheries management will seek to maintain and enhance native, self-sustaining fish populations. Where applicable, waters in nature reserve zones may be closed to angling temporarily or permanently for fisheries or wildlife research or management purposes.

The fish species present are not game species, and their numbers are small so no commercial or recreational fishery/harvest should occur on these CA lands. Further assessment of the aquatic areas is recommended as noted in Section 5.12.

For Terrestrial Flora and Fauna there is no harvest allowed within DPCA to protect the populations with an exception for Research (see Section 7.7).

For wildlife/human conflict HCA has developed the Hamilton Conservation Authority Wildlife Conflict Management Strategy. This strategy outlines the process and methods staff are to follow when dealing with any animal related issues within all conservation areas. This document was produced by the Hamilton Conservation Authority Wildlife Management Committee (WMC). The WMC was a special HCA committee that was established in May 2014 based on HCA staff recommendation and at the direction of the HCA Board of Directors. The purpose of the WMC was to develop best management protocols and practices for the management of wildlife on HCA lands.

Additional non-native animal species will not be deliberately introduced to the conservation area. If already established non-native species threaten the conservation area values, a program for their eradication may be developed if feasible and practical. Missing native species may be reintroduced, and existing populations replenished if feasible and acceptable to HCA.

7.4 Cultural Heritage Management

The Cultural Heritage Zone set out in this plan is shown in *Appendix 1 - Map 2. Conservation Area Zones*. Incompatible resource uses and recreational activities will be restricted or prohibited where necessary to protect cultural heritage resources in this zone. The structures in this zone will be reviewed for public safety, more detailed studies are to be conducted by HCA as necessary to determine appropriate maintenance, repair or restoration programs for this area.

Capital projects recommended for this zone will require approval by the HCA Board of Directors, and may require approval from the City of Hamilton and the Niagara Escarpment Commission.

Archaeological studies have not been completed for this conservation area. Archaeological studies will be required for all proposed development such as the constructed wetlands. It is recommended that at a minimum a Stage 2 archaeological investigation be conducted on the property south of Ridge Road for all areas to be developed.

Management strategies for any archaeological sites found in the future may range from allowing the sites to remain without interference, to research, excavation, and rehabilitation. Archaeological and historical artifacts may only be removed, and heritage landscapes altered, as part of an HCA approved cultural heritage research or management plan. Protection and management will be undertaken in consultation with all governing agencies and First Nations.

7.5 Conservation Area Operations

The Punchbowl market building operation will be reviewed in more detail supplementary to this plan. HCA will review the operation plan for these lands annually and update as required. HCA will provide staff with information and resources as required to operate the conservation area on a day to day basis. This will include specific direction for the management and operation of all facilities and activities and address such topics as budgets, staffing, maintenance, enforcement and emergency services.

Self-serve facilities may be developed, and individual volunteers and partner organizations may be involved in programs as approved by the HCA, within the conservation area.

The HCA has the right to suspend operations of any facilities or services due to funding limitations, but in so doing will ensure that heritage values are not impaired and customer service standards are affected as little as possible.

New business practices may be introduced into the conservation area operations in accordance with HCA policy such as:

- Improving operating efficiency and controlling costs.
- Contracting out some operating functions.
- Improving customer service standards.

7.6 Education

Education in the conservation area is intended to develop visitors' awareness and appreciation of Ontario's natural and cultural heritage, fostering a commitment to protect that heritage for all generations. Education opportunities are meant to be educational and recreational, formal and informal, and accessible to all. Information, education, and outdoor recreation are the three main components of education in the conservation area. The level of service provided at DPCA will be

determined by its significance and visitation. A priority will be placed on providing natural areas education in support of the goals and objectives outlined in this plan.

7.7 Research

DPCA, like all of HCA's properties, provide in essence an opportunity for living laboratories. HCA Ecologists monitor the health of lands using established protocols and can, when needed, develop special research programs to answer resource related questions.

Outside Research by qualified individuals that contributes to the knowledge of natural and cultural history and to environmental and recreational management will be encouraged by HCA staff.

All research projects will require authorization from HCA and authorization is obtained by contacting the staff ecologists who administer the process and issue research authorizations.

7.8 Recreation

The conservation area is open from sunrise to sunset, year-round. Entry to DPCA will be controlled year-round and HCA will enforce the collection of entrance fees from visitors. Day use parking spaces are provided on a first come, first serve basis and visitors may be restricted from entering the conservation area when the parking areas are full.

See *Appendix 4* for highlights of key items from the day-use visitor surveys for DPCA and the market lands.

The following recreational activities will not be permitted in the conservation area:

- All-terrain vehicle use
- Bicycles on the Bruce Trail
- Motor bikes on trails
- Snowmobiling
- Personal unmanned aerial vehicle (UAV / Drone)
- Personal watercraft (fishing boats, canoes, kayaks, SUPS) in the watercourses and wetlands

The following recreational activities are permitted in the conservation area:

- Hiking
- Dog Walking
- Picnicking
- Nature Appreciation
- Geocaching
- Winter Activities: Snowshoeing, Cross Country Skiing

A long-term goal of this Master Plan is to provide visitors with appropriate, high quality, sustainable recreational experiences. Recreational opportunities are to be provided that are appropriate to the conservation area and Master Plan zones outlined in Section 3.6.

7.9 Partnerships

HCA values the community support from area residents and landowners, businesses, service clubs, interested First Nations, volunteers, and volunteer organizations that currently or could contribute in a variety of ways at DPCA. HCA will continue to nurture existing support and will seek out new opportunities for partnerships. Current support provided by the Hamilton Conservation Foundation and the Bruce Trail Conservancy is encouraged and welcomed.

A tenant agreement for the operation of the continued operation of the market buildings was in place as of the writing of this plan. The tenant agreement will be evaluated further to the adoption of this plan.

HCA also values community relationships and help from volunteers to manage natural areas and the species that utilize and inhabit them. HCA Stewardship Action Plans, public consultation, and stewardship work are examples of this and are to be encouraged for the life of this Master Plan.

Volunteers are governed by volunteer policies set by HCA for recruitment, orientation, training, supervision, health and safety instruction, evaluation and recognition. Volunteer programs shall be considered in all business decisions made by HCA in the operation of this conservation area.

7.10 Paid Staff

A supplemental operation plan is recommended to be developed for DPCA by HCA staff once this Master Plan is adopted.



DPCA, similar to staffing at other conservation areas, includes full time permanent employees and part time casual employees to undertake its operations.

In addition, staff from other departments at HCA are involved in varying capacities with the management and operation of DPCA. Staff may also be involved in supervising the activities of outside consultants, partners, or contractors retained by HCA.



8.0 FINANCIAL

8.1 Attendance and Revenue Forecasts

Visitor attendance, visitor surveys and operating revenue and expenses for DPCA are listed in *Appendices 4 and 5*.

Visitation to DPCA during the COVID-Pandemic increased significantly from 2020 to 2022. Visitation is anticipated to remain strong for the life of this plan, as population growth and development transform the community. Expanded parking and visitor facilities on the market lands are intended to support this anticipated growth away from the escarpment brow.

DPCA's financial success is expected to rely heavily on day-use admissions by visitors seeking to see the punchbowl waterfalls and lookouts, with opportunity to increase revenue by offering amenities to those arriving to the site by the Bruce Trail and Dofasco Trail. The market property also has space for increased revenue generation through special events and programs. Enhancing existing features in the day use area, and providing new amenities such as more parking and washrooms, will also help to attract and retain repeat visitors.

8.2 Capital Projects

The capital development priorities list in *Appendix 2* provides preliminary estimates for the development envisioned in the Master Plan. As noted in Section 3.7, the following capital development priorities are proposed for the next ten years at DPCA:

.1 Replace Significant Park Features

These features require ongoing repairs for public safety, are nearing or past the end of their life cycle, and are proposed to be replaced or expanded upon.

The current parking lot at the Punchbowl is to be improved upon, while options for more parking are reviewed for the market land south of Ridge Road.

The existing trails leading from the parking lot to the Cross, and the trail along the edge of the Punchbowl, should be upgraded to be in line with HCA trail standards.

Structural features such as the lookout platforms, Cross and associated supports, retaining walls, guard rails etc. are to be reviewed annually by HCA for public safety. Within the first five years of this Master Plan it is recommended



that an engineering review of these items be conducted with report recommendations provided to HCA for care and maintenance.

Adjacent City lands on the tableland, and Ridge Road itself are close to the Escarpment brow and may be subject to erosion. HCA has observed that construction maintenance of City property around the culvert is required. HCA will work with the City to investigate other items that could pose a hazard, and provide City access to attend to maintenance projects on their lands.

The former rental house (brick residence) on Ridge Road has been repurposed for HCA's Hamilton Mountain business unit, consistent with HCA's strategy to repurpose existing buildings for operations before considering adding new buildings to a conservation area. Future use and potential demolition of this building is to be evaluated with the watercourse restoration and wetland projects proposed in this plan.

The Punchbowl market buildings were operated under a tenancy agreement with HCA during the writing of this plan. Repurposing of these buildings for HCA operational use, and for visitor use (i.e. washrooms) is proposed to be planned for during a transition period of tenant vacancy.

The Dofasco Trail, including the pedestrian bridge over the watercourse on the DPCA lands south of Ridge Road may need to be moved or replaced to accommodate the new wetlands proposed in this plan. The long-term goal is to provide recreational trail access for visitors from DPCA to the Dofasco Trail and Saltfleet Conservation Area. This goal is to be accommodated in the design study for the new wetlands. The area for the new SC-5 wetland is shown on the appended maps. This plan may be amended pending receipt of more detailed information on the approved wetland design for DPCA.

.2 Add New Park Features

These capital projects are proposed to serve the community, generate revenue, and improve customer service:

The market lands south of Ridge Road are targeted as a priority area for new wetland development in connection with the new Saltfleet wetland complex. Similar to Saltfleet, it is anticipated that the wetlands will have berms to retain water and for trail connections through the site. Further detailed study and approvals are required to facilitate this project. HCA has begun the wetland design process, but details will not be available by the completion of this Master Plan. It is recommended that the wetland study area shown in this plan be amended once the detailed wetland design project is approved.

The market lands south of Ridge Road are also targeted as a priority area for new capital development to improve customer service and drive revenue. New capital investment to improve traffic flow into the conservation area, more parking, visitor amenities, site security, and pedestrian and cyclist access are targeted for this area. Capital projects are recommended to be phased in with the wetland project, and as HCA undertakes reviews and takes on operation of the market buildings. See Section 6.2 for more information on the proposed repurposing of the existing market facilities.

There are a number of unauthorized trails in the gorge below the Escarpment brow, with associated degradation of the natural environment. During the preparation of this plan, HCA installed trail counters in the area to assess the number of visitors in the gorge viewing the waterfall. See *Appendix 4* for the trail counts. Based on these counts and observed damage to the natural areas, it is recommended that HCA further study this area, consult with the Bruce Trail Conservancy, City of Hamilton, and other agencies who have experienced similar issues at natural attractions. This approach is recommended to develop comprehensive solutions for site improvements and management best practices, further to this plan. At a minimum for visitor management and natural area protection in the punchbowl gorge, it is recommended that waterfall interpretive signage be provided at the Bruce Trail and boundary signage installed to clearly identify natural areas off-limits to the public. As shown on the Site Concept map in *Appendix 1*, the formalization of an existing unauthorized trail and creation of a waterfall lookout station could also be considered after further review of the area with Bruce Trail representatives. No structures are proposed for the lookout station. A lookout station may consist of any of the following; firm trail surfacing, fencing, barriers, interpretive signage, or directional and safety signage.

.3 Enhance Existing Park Features

Rounding out the capital improvements for this Master Plan is the enhancement of existing park features to improve the natural areas and customer service.

Existing HCA trails, lookout areas, and platforms are to be improved for public safety and to restore adjacent degraded areas. Perimeter fencing and guards will be installed as required to protect natural areas, budgeting for this item is accounted for the life of this plan.

The existing watercourse flowing through the site is to be restored with the wetland project.

The Resource Management Zone in this plan sets out the former cultivated lands including the farm lands with the market buildings. A large portion of this zone is under study for the SC-5 wetland.

Lastly, more educational information is to be provided to the visitor to enhance their experience of the lookouts, recreational trails, new wetlands, and the Escarpment. HCA will build on their experience with interpretive signs, digital story telling applications, website and social media, partnerships, and educational programs to support this initiative.

Capital projects should not be started until a long-term strategy with timelines and costs for each project are clearly stated and sufficient resources are available to complete them. As well, the additional operational costs for each item should be factored into the capital strategy.

8.3 Funding Sources

HCA's operation of DPCA is entirely self-funded. User and membership fees generated by the properties in the East Mountain business unit are anticipated to be the primary funding source for operations. Revenue anticipated to be generated through gate admissions (gate and pre-sold tickets), vehicle passes, and miscellaneous items is outlined in *Appendix 3*.

Financial statements are audited every year and are available to the public once approved by the HCA Board of Directors.

Permitted special events and programs may provide a source of additional revenue. These potential revenue sources may require outside agency approval and permits to proceed, and are to be weighed against the disruption to the daily activities and revenue generation in the conservation area.

Financing for special projects and annual capital development will continue to be provided through grants, sponsorship, corporate donations, and private donations. The Hamilton Conservation Foundation also provides funding for specific projects. There is good potential for increasing donor funding, donor recognition is also a key element that needs to be nurtured and sustained.

8.4 Business Model

The amount of car parking that could be provided on the market lands south of Ridge Road will have a strong bearing on future revenue generation. Supplemental detailed site analysis and operations planning for the market lands is recommended for DPCA once this Master Plan is adopted.

HCA receives a levy from the City of Hamilton and also the Township of Puslinch that forms part of the operating budget. The remainder of the budget is funded through user fees, membership fees, grants and donations. These dollars directly contribute to conservation work throughout HCA's watershed and preserve heritage sites on HCA lands. Financial statements are audited annually and available to the public once approved by HCA's Board of Directors.

User and membership fees pay for items such as trail maintenance, emergency services and procedures to help ensure public safety, property taxes, insurance, and all the items required to keep the conservation area open to the public.

Day use parking fees and membership fees are anticipated to be the primary funding source for the operation of DPCA. Increasing revenue will require HCA to refine their marketing, business and development strategies to:

- Continue to attract day use visitors and provide quality recreational facilities and services so they will be encouraged to return.
- Continue to market the HCA membership pass card for repeat visitors, and provide swipe card access to capture revenue from larger numbers of pedestrians and cyclists entering the conservation area.
- Diligently sustain the natural resource value of the conservation area by limiting activities to the zones prescribed in this Master Plan.
- Manage the lands for biodiversity through tree planting and invasive species management.
- Continue to invest in visitor facilities to keep pace with recreational trends and improve operational efficiency.

- Continue to promote DPCA as a hub for visitors seeking to use the recreational trails in the area: Bruce Trail, Dofasco Trail, City of Hamilton Recreational Trail System
- Provide visitors with opportunities to spend more money when on site.
- Continually monitor customer service and conduct on-site market research campaigns as necessary to measure customer satisfaction.
- Continue to leverage tourism industry partnerships, public relations, community outreach, and corporate sponsorship.

Cost recovery is a prime requirement for all services and programs delivered at DPCA. In the development of programs, the following factors will be considered: anticipated attendance, income sources, market, volunteer resources, HCA staffing requirements, advertising, insurance, administration, operation costs and maintenance expenses.

Concepts embodied in this Master Plan are to be weighed against the marketing demands for increased performance, attendance, programming, market penetration, awareness and ultimately financial return.



9.0 PROGRAMMING

9.1 Special Events and Programming

DPCA has been used as a filming location, and filming on site will continue to be supported by HCA with strict procedures so the integrity of the site is not sacrificed.

The Development Zone outlined in this Master Plan offers HCA opportunities to host special events, programming, and services in a location away from the Escarpment environment. Wedding parties have used the market site in the past for outdoor service, photographic opportunities, outdoor reception and more. Concession services may be provided at the market buildings. These uses are to be explored further by HCA for the market site moving forward.



School and community groups will be welcomed to reserve use of the market property for day-use camps etc. HCA will investigate this need further in the life of this plan, to determine if additional capital improvements such as group picnic shelters or storage areas are required to support this activity.

9.2 Education and Interpretive Programs

Education and interpretive programs are an opportunity to entice new visitors, and provide variety for repeat visitors. Opportunities range from self-guided tours with interpretive signs and storytelling mobile applications along the trail system, to hands-on activities, educational demonstrations, live shows, workshops, and more.

Some potential themes that could be explored include:

- Water Management
- Wildlife and Bird Watching
- The Niagara Escarpment
- Local History
- Role of Conservation Authorities

All programs should relate to HCA's strategic value of providing outdoor learning experiences, and increasing knowledge and awareness of the value of our environment and heritage.

10.0 SUMMARY

DPCA is a unique natural area with environmentally sensitive lands. The overall intent of this Master Plan is to ensure protection and conservation of the natural areas while creating a visitor hub on the tablelands with connections to the Dofasco 2000 Trail and Saltfleet Conservation Area.

Continued safe enjoyment of the property will require capital work to be completed. See *Appendices 1 and 2* for more information. The following items are recommended to be implemented in order of priority to achieve this goal:

.1 Natural Areas:

The former agricultural lands south of Ridge Road will be the focus of HCA's restoration management activities and new wetland development. The wetland development will be the most significant capital investment in the life of this plan.

HCA's development focus in the natural areas of the gorge will be enhancing biodiversity and long-term forest resiliency, management of the existing trail system, hazard tree removals, invasive species management, tree planting, restoration of degraded areas, and closure of unauthorized trails. Site monitoring, annual maintenance and restoration programs, and ongoing visitor education will be necessary to support this goal.

.2 Conservation Area:

The recent acquisition of the punchbowl market lands south of Ridge Road is the most significant change for DPCA. This acquisition expands the potential for DPCA to provide a visitor hub for exploration of the Punchbowl and Gorge, Bruce Trail, Dofasco 2000 Trail and the new Saltfleet Conservation Area. These lands are targeted as a priority area for capital development to improve customer service and drive revenue. New capital investment to improve traffic flow into the conservation area, more parking, visitor amenities, site security, and pedestrian and cyclist access are targeted for this area.

3 Day Use Activities:

The new land acquisition provides for improved day use activity areas at the existing market buildings. This plan sets out guidelines to allow for a number of recreational activities, educational programs, and events to occur at this location. This location will also help serve a growing number of visitors and drive revenue for the Hamilton Mountain conservation areas operation.



11.0 APPENDIX CONTENTS

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| APPENDIX 3 | Operating Revenue and Expenses |
| APPENDIX 4 | Visitor Data – Trail Counter Summary and Public Survey Results |
| APPENDIX 5 | Natural Inventory – Species Lists |
| APPENDIX 6 | References |

APPENDIX 1

Mapping

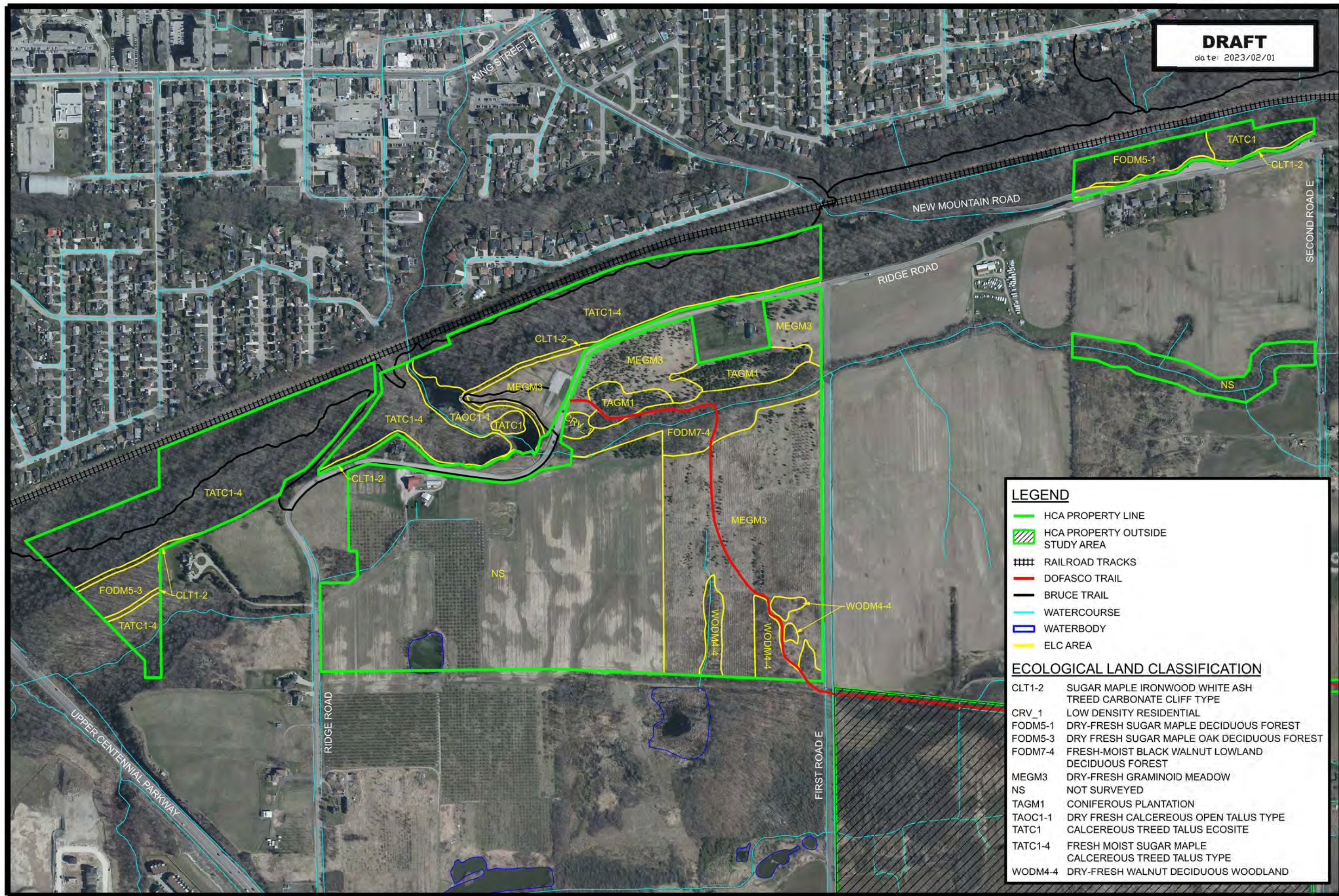
| | |
|-------|--------------------------------|
| Map 1 | Ecological Land Classification |
| Map 2 | Conservation Area Zones |
| Map 3 | Trails Master Plan |
| Map 4 | Site Concept |
| Map 5 | Buildings & Structures |

DRAFT
date: 2023/02/01



DATE: 2023/02/01

**ECOLOGICAL LAND CLASSIFICATION
DEVIL'S PUNCHBOWL C.A. MASTER PLAN**



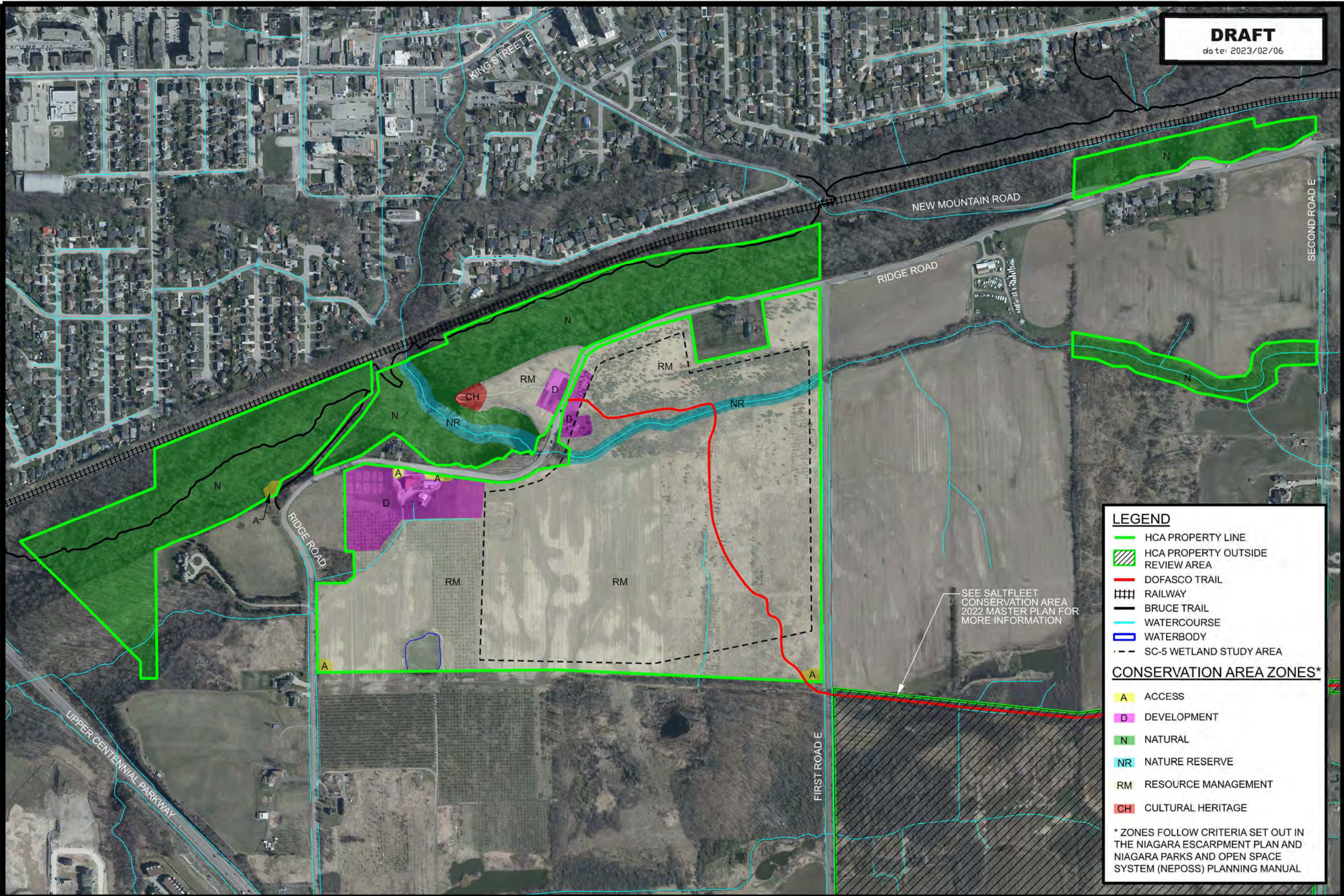
| LEGEND | |
|--------|---------------------------------|
| | HCA PROPERTY LINE |
| | HCA PROPERTY OUTSIDE STUDY AREA |
| | RAILROAD TRACKS |
| | DOFASCO TRAIL |
| | BRUCE TRAIL |
| | WATERCOURSE |
| | WATERBODY |
| | ELC AREA |

| ECOLOGICAL LAND CLASSIFICATION | |
|--------------------------------|-----------------------------------------------------------|
| CLT1-2 | SUGAR MAPLE IRONWOOD WHITE ASH TREED CARBONATE CLIFF TYPE |
| CRV_1 | LOW DENSITY RESIDENTIAL |
| FODM5-1 | DRY-FRESH SUGAR MAPLE DECIDUOUS FOREST |
| FODM5-3 | DRY FRESH SUGAR MAPLE OAK DECIDUOUS FOREST |
| FODM7-4 | FRESH-MOIST BLACK WALNUT LOWLAND DECIDUOUS FOREST |
| MEGM3 | DRY-FRESH GRAMINOID MEADOW |
| NS | NOT SURVEYED |
| TAGM1 | CONIFEROUS PLANTATION |
| TAOC1-1 | DRY FRESH CALCEREOUS OPEN TALUS TYPE |
| TATC1 | CALCEREOUS TREED TALUS ECOSITE |
| TATC1-4 | FRESH MOIST SUGAR MAPLE CALCEREOUS TREED TALUS TYPE |
| WODM4-4 | DRY-FRESH WALNUT DECIDUOUS WOODLAND |

DRAFT
date: 2023/02/06



DATE: 2023/02/06



LEGEND

- HCA PROPERTY LINE
- HCA PROPERTY OUTSIDE REVIEW AREA
- DOFASCO TRAIL
- RAILWAY
- BRUCE TRAIL
- WATERCOURSE
- WATERBODY
- SC-5 WETLAND STUDY AREA

CONSERVATION AREA ZONES*

- A ACCESS
- D DEVELOPMENT
- N NATURAL
- NR NATURE RESERVE
- RM RESOURCE MANAGEMENT
- CH CULTURAL HERITAGE

* ZONES FOLLOW CRITERIA SET OUT IN THE NIAGARA ESCARPMENT PLAN AND NIAGARA PARKS AND OPEN SPACE SYSTEM (NEPOSS) PLANNING MANUAL

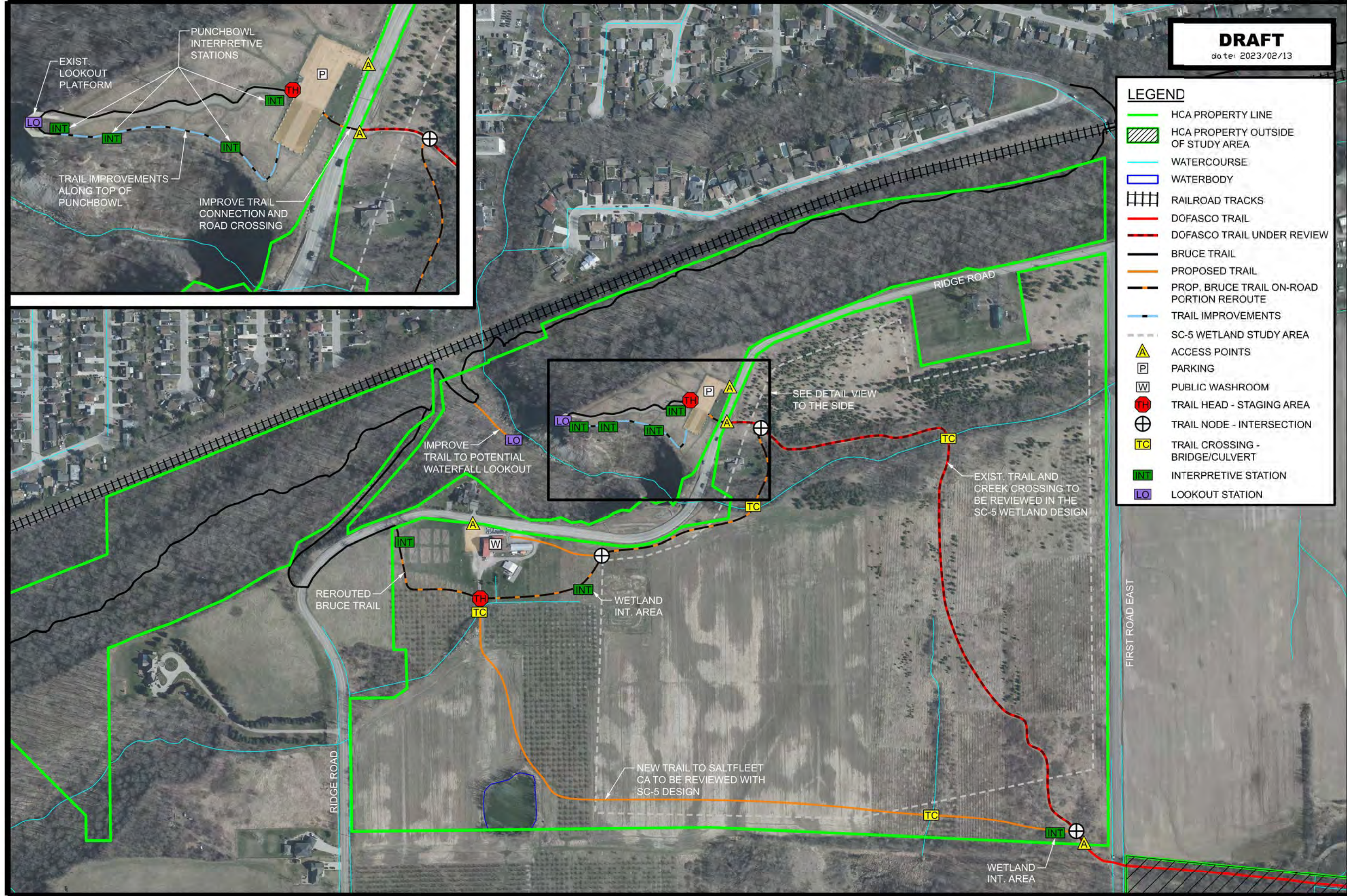
**CONSERVATION AREA ZONES
DEVIL'S PUNCHBOWL C.A. MASTER PLAN**

DRAFT
date: 2023/02/13



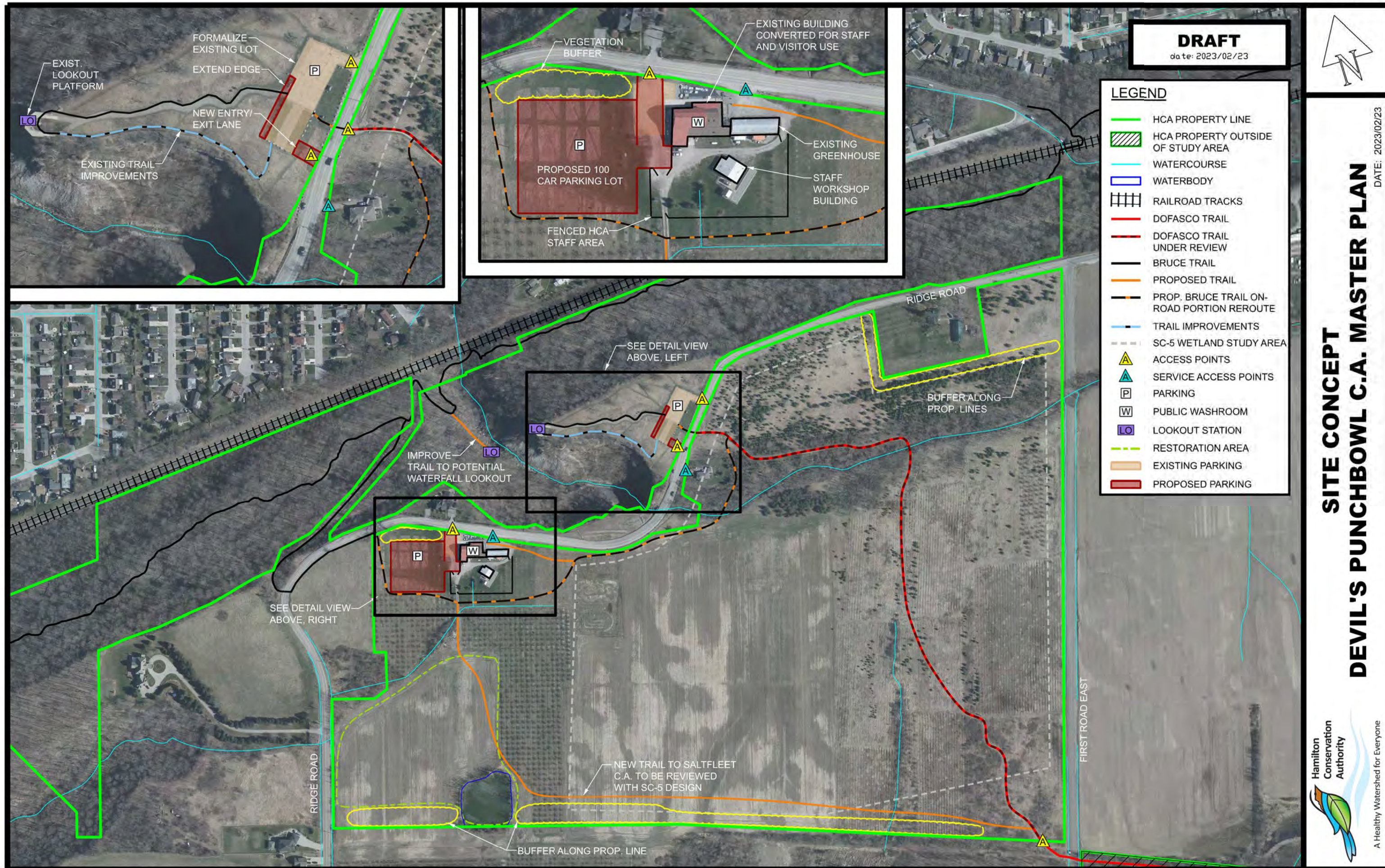
LEGEND

- HCA PROPERTY LINE
- HCA PROPERTY OUTSIDE OF STUDY AREA
- WATERCOURSE
- WATERBODY
- RAILROAD TRACKS
- DOFASCO TRAIL
- DOFASCO TRAIL UNDER REVIEW
- BRUCE TRAIL
- PROPOSED TRAIL
- PROP. BRUCE TRAIL ON-ROAD PORTION REROUTE
- TRAIL IMPROVEMENTS
- SC-5 WETLAND STUDY AREA
- ▲ ACCESS POINTS
- P PARKING
- W PUBLIC WASHROOM
- TRAIL HEAD - STAGING AREA
- ⊕ TRAIL NODE - INTERSECTION
- TC TRAIL CROSSING - BRIDGE/CULVERT
- INT INTERPRETIVE STATION
- LO LOOKOUT STATION



**TRAILS MASTER PLAN
DEVIL'S PUNCHBOWL C.A. MASTER PLAN**

DATE: 2023/02/13

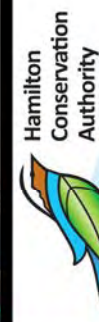


DRAFT
date: 2023/02/23

| LEGEND | |
|--------|-------------------------------------------|
| | HCA PROPERTY LINE |
| | HCA PROPERTY OUTSIDE OF STUDY AREA |
| | WATERCOURSE |
| | WATERBODY |
| | RAILROAD TRACKS |
| | DOFASCO TRAIL |
| | DOFASCO TRAIL UNDER REVIEW |
| | BRUCE TRAIL |
| | PROPOSED TRAIL |
| | PROP. BRUCE TRAIL ON-ROAD PORTION REROUTE |
| | TRAIL IMPROVEMENTS |
| | SC-5 WETLAND STUDY AREA |
| | ACCESS POINTS |
| | SERVICE ACCESS POINTS |
| | PARKING |
| | PUBLIC WASHROOM |
| | LOOKOUT STATION |
| | RESTORATION AREA |
| | EXISTING PARKING |
| | PROPOSED PARKING |

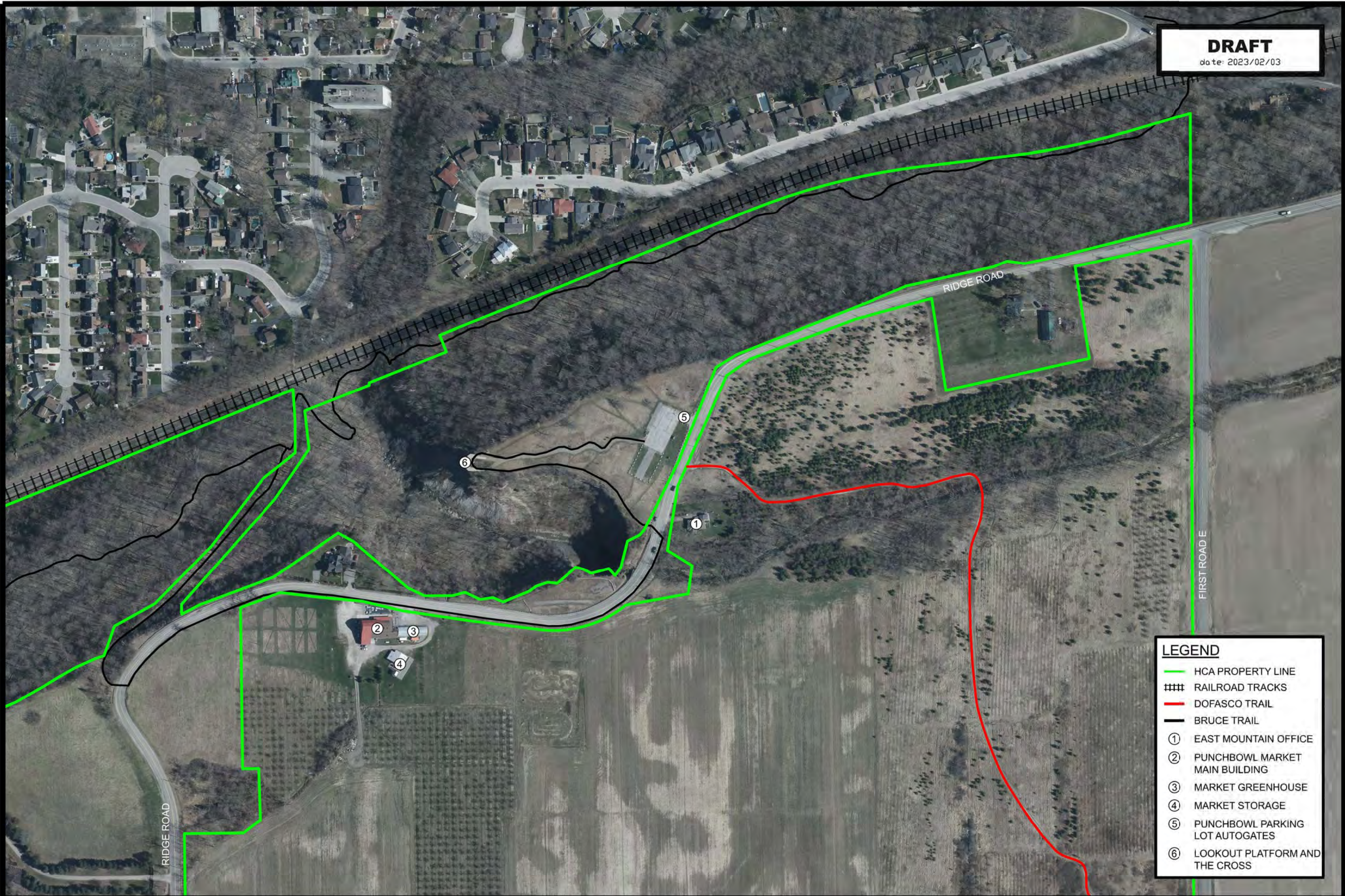
SITE CONCEPT
DEVIL'S PUNCHBOWL C.A. MASTER PLAN

DATE: 2023/02/23



A Healthy Watershed for Everyone

DRAFT
date: 2023/02/03



LEGEND

- HCA PROPERTY LINE
- ### RAILROAD TRACKS
- DOFASCO TRAIL
- BRUCE TRAIL
- ① EAST MOUNTAIN OFFICE
- ② PUNCHBOWL MARKET MAIN BUILDING
- ③ MARKET GREENHOUSE
- ④ MARKET STORAGE
- ⑤ PUNCHBOWL PARKING LOT AUTOGATES
- ⑥ LOOKOUT PLATFORM AND THE CROSS

**BUILDINGS AND STRUCTURES MAP
DEVIL'S PUNCHBOWL C.A. MASTER PLAN**

DATE: 2023/02/03



A Healthy Watershed for Everyone

Capital Development Priorities

DRAFT –DEVIL’S PUNCHBOWL CAPITAL DEVELOPMENT PRIORITIES: 2022 - 2032

A. Site Concept Improvements *Budget (XX)

- A1** New Wetland South of Ridge Road
- A2 Existing Day-Use Parking Upgrades
- A3 Trail Re-Routes: Upper Punchbowl & Ridge Road
- A4 Ridge Road Trail Crossings
- A5 Lower Gorge Signage
- A6 Interpretive Signage
- A7 Entrance Signage
- A8 Site Studies (non-wetland development items)
- A9# Public Washroom
- A10# New Visitor Entrance and Parking Areas
- A11# New Entrance Gatehouse, Autogates
- A12# New Multi-Use Trail – Market to Saltfleet
- A13# Market Entrance Signage
- A14# Market Interpretive Signage
- A15# Operations Work Yard

B. Conservation Area Improvements *Budget (XX)

- B1 Perimeter Fencing
- B2 Perimeter Service Gates
- B3 General Building Improvements
- B4 Site Structures
- B5 Trails
- B6 Site Signage
- B7+ Invasive Species Management
- B8+ Natural Area Restoration
- B9+ Watercourse Restoration

* Budget costs are in 2022 dollars, projects and budgets to be reviewed annually.

** Major capital item dependent on fundraising.

These items dependent on HCA operating the market buildings.

+ Costs subject to ecological findings and recommendations.

Estimated Revenue and Expenses

**Devil’s Punchbowl Annual Operation
Estimated Revenues and Expenses***

| Operation Revenues | Amount | % of Revenues |
|--------------------------------|-------------------|----------------------|
| Admissions (Auto Gate, Passes) | \$ 140,000 | 93 % |
| Miscellaneous | \$ 10,000 | 7 % |
| Total Revenues | \$ 150,000 | 100% |

| Operation Expenses | Amount | % of Expenses |
|-------------------------------|-------------------|----------------------|
| Salaries – Wages and Benefits | \$ 66,000 | 44 % |
| Equipment | \$ 31,500 | 21 % |
| Taxes | \$ 19,500 | 13 % |
| Office | \$ 15,000 | 10 % |
| Materials and Supplies | \$ 6,000 | 4 % |
| Maintenance | \$ 4,500 | 3 % |
| Contracts | \$ 4,500 | 3 % |
| Utilities | \$ 3,000 | 2% |
| Total Expenses | \$ 150,000 | 100% |

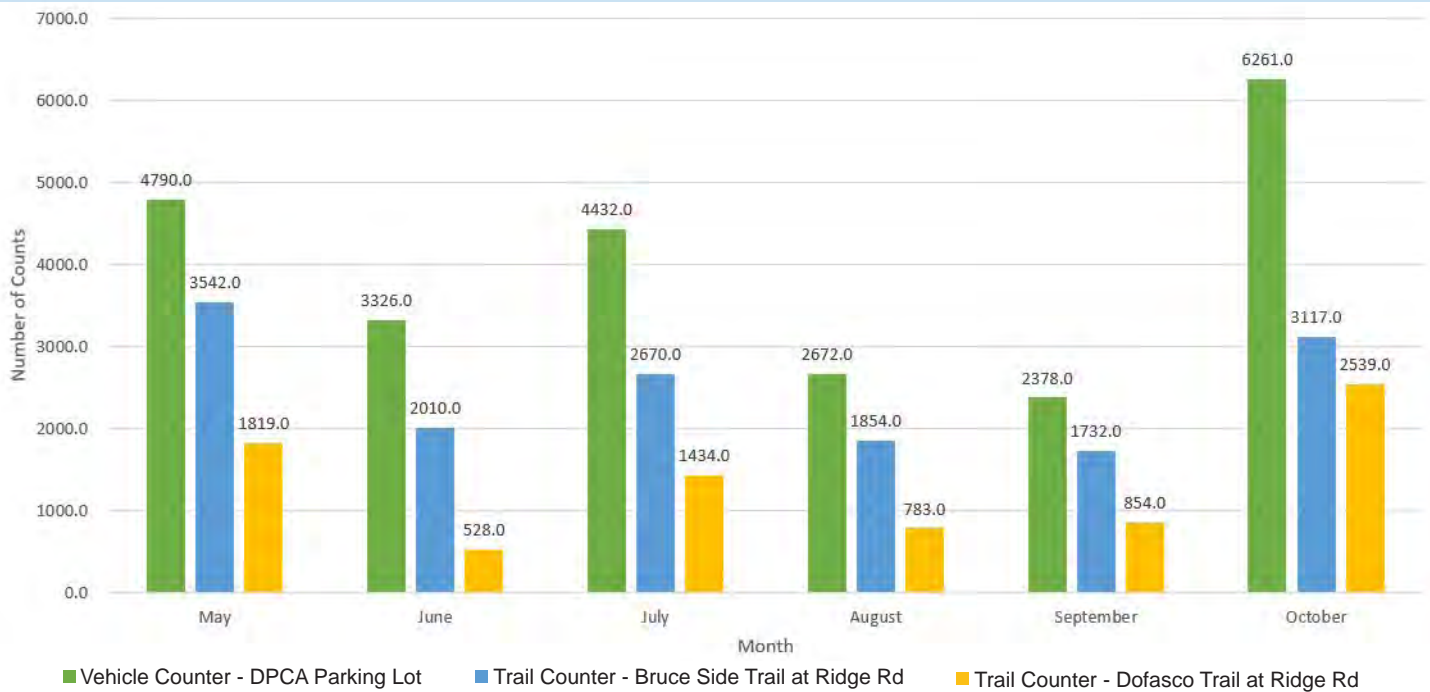
*Based on East Hamilton Mountain Operation Revenue and Expenses for 2020 and 2021. Average annual revenue and costs estimated above are based on a 40-car paid parking lot, these figures to be adjusted by HCA to account for adding a 100-car paid parking lot on the market lands

APPENDIX 4

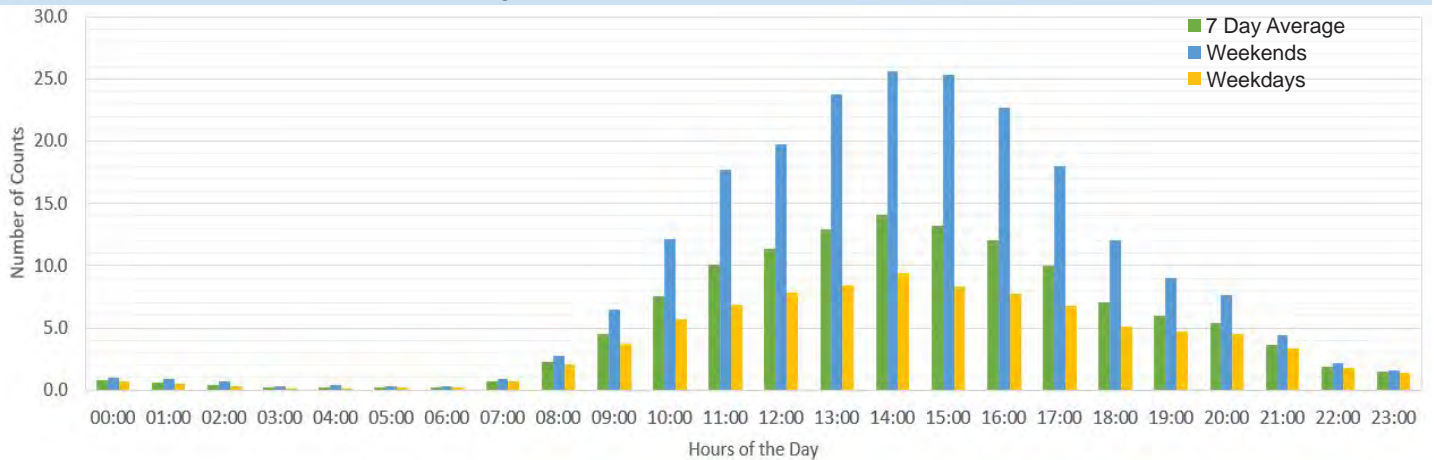
Visitor Data – Trail Counter Summary and Public Survey Results

Vehicle and Trail Counter Summary

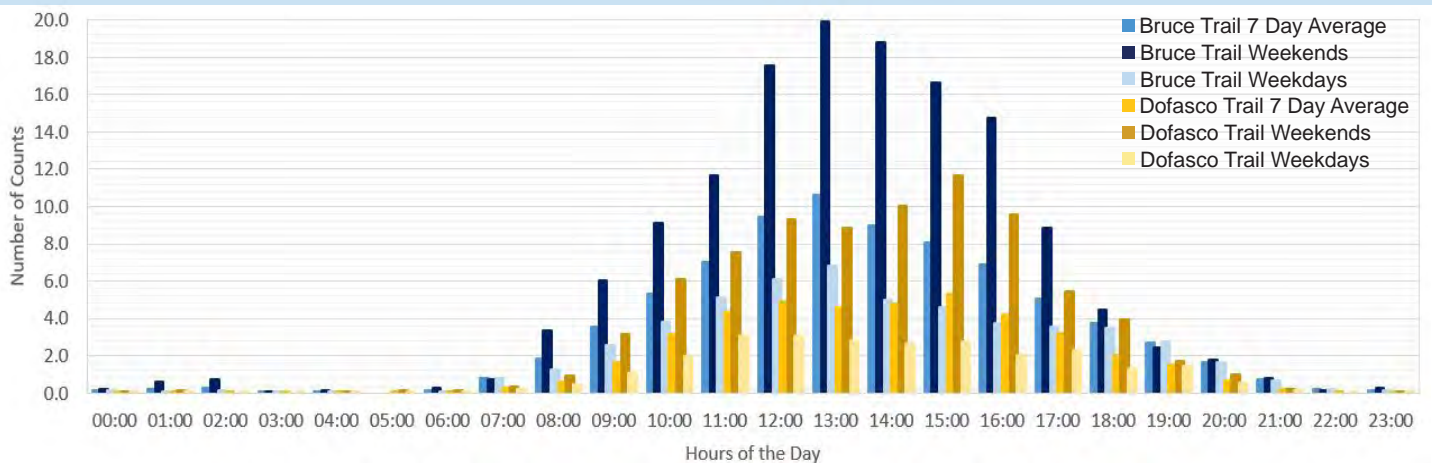
Devil's Punchbowl Vehicle and Trail Counters - Monthly Totals 2022



Parking Lot Vehicle Counter - 24 Hour Counts



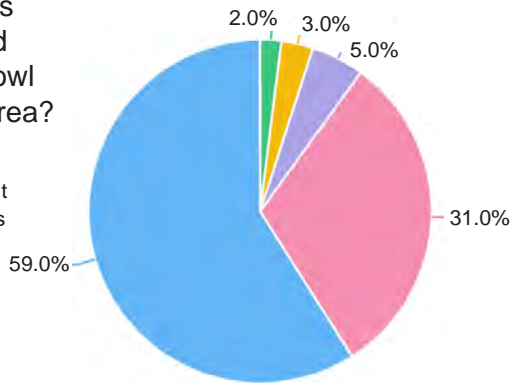
Trail Counters (Bruce Side Trail at Ridge Rd and Dofasco Trail at Ridge Rd) - 24 Hour Counts



Devil's Punchbowl Survey Results Summary

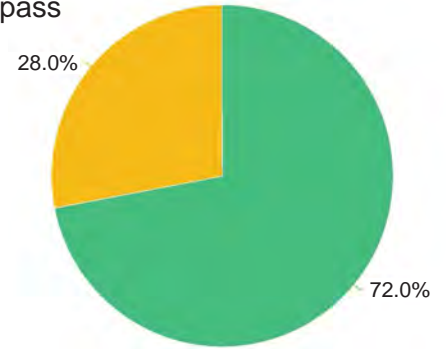
How many times have you visited Devil's Punchbowl Conservation Area?

- I have not visited
- I am planning to visit
- More than five times
- One to five times
- One time

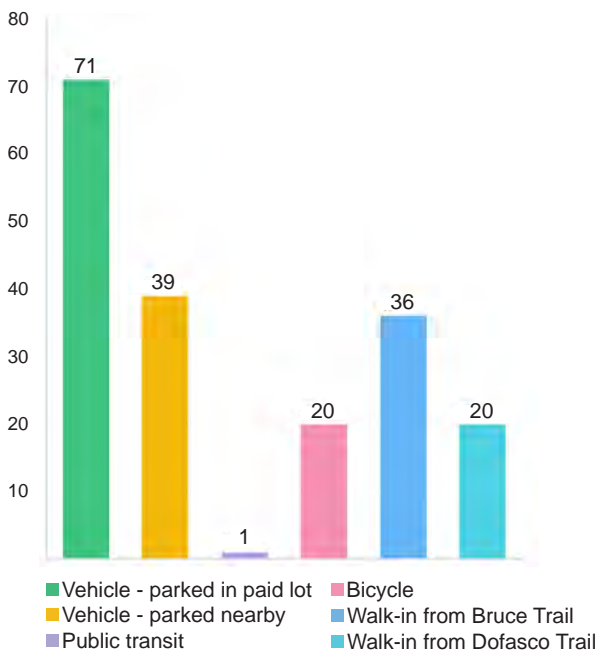


Are you an HCA Membership pass holder?

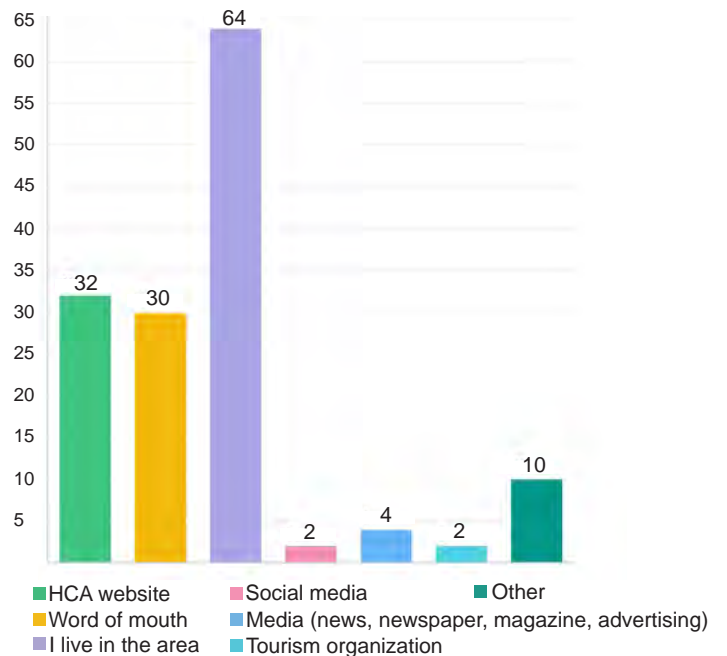
- Yes
- No



How did you travel to Devil's Punchbowl Conservation Area? (Choose all that apply)

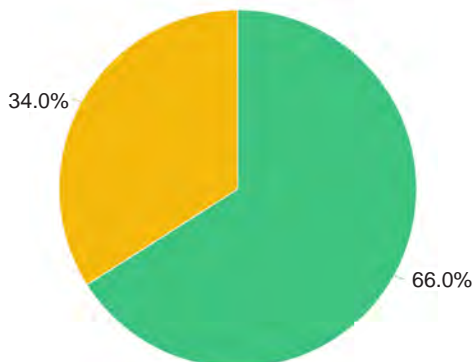


How did you learn about Devil's Punchbowl Conservation Area? (Choose all that apply)



Are you aware that the Dofasco 2000 Trail connects DPCA, Saltfleet and Vinemount Conservation Areas?

- Yes
- No



What was your favourite thing about your visit?

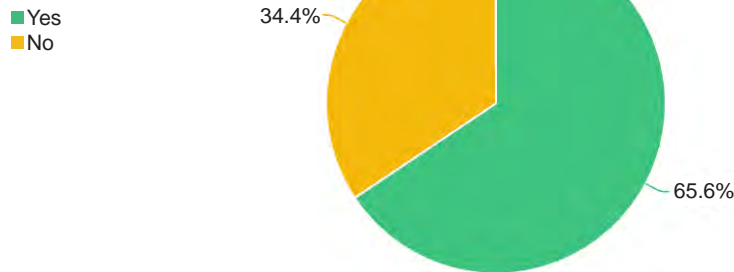
- The geological features
- The view
- Being in nature
- The accessibility
- The waterfall
- Different each time you see it
- The trails
- Visiting the market

Do you have any comments or suggestions for us?

- Improved directional signage
- More parking
- Connect to other trails
- Better access to market
- Access to washrooms
- More safety signage

DPCA Market Lands Survey Results Summary

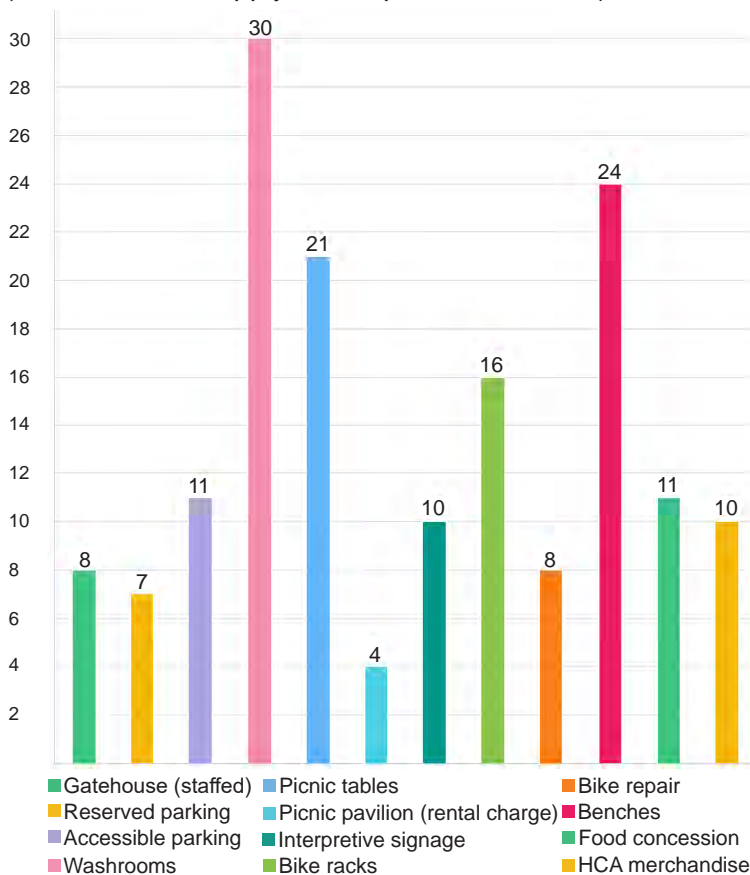
Do you visit the Punchbowl Market and Bakery from the conservation area?



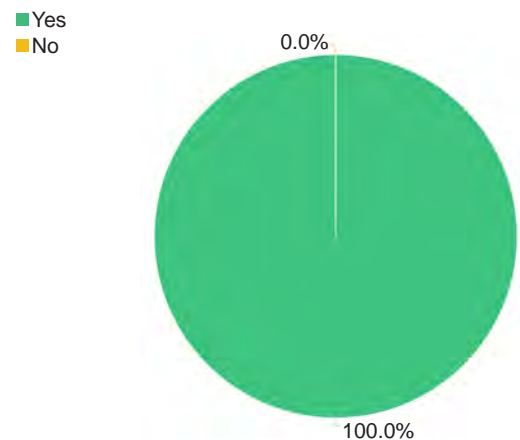
From the market site, would you hike or bike on the Dofasco Trail to Saltfleet Conservation Area?



HCA is considering the market lands to be the “gateway” to Devil’s Punchbowl Conservation Area. Along with expanded parking, what services would be important to you? (Choose all that apply, 32 respondents in total)



New wetlands are being planned for part of the market lands. Would you visit the wetlands while at the conservation area?



What is your favourite thing about your visit to the market and bakery?

- Supporting small business
- Delicious baked goods
- Local produce
- Friendly staff
- Nice treat after hiking
- Souvenirs

Do you have any comments or suggestions for us?

- Keep focus on nature and conservation
- Include directional signage
- Improved pedestrian paths along Ridge Road
- Make sure the area is accessible
- Opportunities for guided visits
- Garbage and recycling facilities

APPENDIX 5

Natural Inventory – Species List

- 5.1 Plants
- 5.2 Breeding Birds
- 5.3 Mammals
- 5.4 Butterflies and Dragonflies

Plant Species Inventoried

5.1

| HCA staff | iNat | SPECIES_CODE | SCIENTIFIC_NAME_NHIC | COMMON_NAME_NHIC |
|-----------|------|--------------|-------------------------------------|-------------------------|
| x | x | P-ACENEGU | Acer negundo | Manitoba Maple |
| x | | P-ACESANI | Acer nigrum | Black Maple |
| x | x | P-ACEPLAT | Acer platanoides | Norway Maple |
| x | | P-ACESACC | Acer saccharinum | Silver Maple |
| x | x | P-ACESASA | Acer saccharum | Sugar Maple |
| x | x | P-ACTPACH | Actaea pachypoda | White Baneberry |
| x | x | P-ACTRUBR | Actaea rubra | Red Baneberry |
| x | | P-AESHIPP | Aesculus hippocastanum | Horse Chestnut |
| x | x | P-EUPRUGO | Ageratina altissima var. altissima | Common White Snakeroot |
| x | | P-AGRGRYP | Agrimonia gryposepala | Hooked Agrimony |
| x | | P-AGR_SP | Agrimonia sp. | Agrimony Species |
| x | | P-AGRGIGA | Agrostis gigantea | Redtop |
| x | | P-ALIPLAN | Alisma triviale | Northern Water-plantain |
| x | x | P-ALLPETI | Alliaria petiolata | Garlic Mustard |
| x | | P-ALLTRIC | Allium tricoccum | Wild Leek |
| x | | P-AMB_SP | Ambrosia sp. | Ragweed Speices |
| t | t | P-AQUCANA | Aquilegia canadensis | Red Columbine |
| x | | P-ARANUDI | Aralia nudicaulis | Wild Sarsaparilla |
| x | x | P-ARCLAPP | Arctium lappa | Great Burdock |
| x | x | P-ARITRTR | Arisaema triphyllum ssp. triphyllum | Jack-in-the-pulpit |
| x | x | P-ASACANA | Asarum canadense | Canada Wild-ginger |
| x | x | P-ASCSYRI | Asclepias syriaca | Common Milkweed |
| x | | P-AST_SP | Aster sp. | Aster Species |
| t | t | P-BARVULG | Barbarea vulgaris | Bitter Wintercress |
| x | x | P-BETPAPY | Betula papyrifera | Paper Birch |
| x | | P-BIDFRON | Bidens frondosa | Devil's Beggarticks |
| x | | P-BID_SP | Bidens sp. | Beggar-ticks Species |
| x | | P-BRA_SP | Brassica sp. | Mustard Species |
| x | | P-BROININ | Bromus inermis | Smooth Brome |
| x | x | P-CARCONC | Cardamine concatenata | Cut-leaved Toothwort |
| x | | P-CARDIPH | Cardamine diphylla | Two-leaved Toothwort |
| x | | P-CARALBU | Carex albursina | White Bear Sedge |

Plant Species Inventoried (cont.)

| HCA staff | iNat | SPECIES_CODE | SCIENTIFIC_NAME_NHIC | COMMON_NAME_NHIC |
|-----------|------|--------------|---------------------------------------------|-------------------------------|
| x | | P-CARCEPD | Carex cephaloidea | Thin-leaved Sedge |
| x | | P-CARPLAN | Carex plantaginea | Plantain-leaved Sedge |
| t | t | P-CARPLAT | Carex platyphylla | Broad-leaved Sedge |
| x | | P-CARVULP | Carex vulpinoidea | Fox Sedge |
| x | | P-CARCORD | Carya cordiformis | Bitternut Hickory |
| x | x | P-CAUGIGA | Caulophyllum giganteum | Giant Blue Cohosh |
| x | | P-CAUTHAL | Caulophyllum thalictroides | Blue Cohosh |
| t | t | P-CERCANA | Cercis canadensis | Eastern Redbud |
| x | x | P-CHEMAJU | Chelidonium majus | Greater Celandine |
| x | x | P-CICINTY | Cichorium intybus | Chicory |
| x | | P-CIRLUCA | Circaea canadensis ssp. canadensis | Canada Enchanter's Nightshade |
| x | | P-CIRVULG | Cirsium vulgare | Bull Thistle |
| x | x | P-CORALTE | Cornus alternifolia | Alternate-leaved Dogwood |
| x | | P-CORFORA | Cornus racemosa | Gray Dogwood |
| x | x | P-CORRUGO | Cornus rugosa | Round-leaved Dogwood |
| x | | P-CORSTOL | Cornus sericea | Red-osier Dogwood |
| x | | P-CRA_SP | Crataegus sp. | Hawthorn Species |
| x | x | P-CYSBULB | Cystopteris bulbifera | Bulblet Fern |
| x | | P-DACGLOM | Dactylis glomerata | Orchard Grass |
| x | x | P-DAUCARO | Daucus carota | Wild Carrot |
| x | | P-DICCANA | Dicentra canadensis | Squirrel-corn |
| x | x | P-DICCUCU | Dicentra cucullaria | Dutchman's Breeches |
| x | x | P-DIPFUSY | Dipsacus fullonum | Common Teasel |
| x | x | P-DRYMARG | Dryopteris marginalis | Marginal Wood Fern |
| x | | P-ELYCANA | Elymus canadensis | Canada Wildrye |
| x | | P-ELYRIPA | Elymus riparius | Eastern Riverbank Wildrye |
| x | | P-ELYVIVI | Elymus virginicus var. virginicus | Virginia Wildrye |
| x | | P-ERIANNU | Erigeron annuus | Annual Fleabane |
| x | | P-ERIPHPH | Erigeron philadelphicus var. philadelphicus | Philadelphia Fleabane |
| x | x | P-ERYAMAM | Erythronium americanum ssp. americanum | Yellow Trout-lily |
| x | | P-EUOOBOV | Euonymus obovatus | Running Strawberry Bush |
| x | | P-EUPPERF | Eupatorium perfoliatum | Common Boneset |

Plant Species Inventoried (cont.)

| HCA staff | iNat | SPECIES_CODE | SCIENTIFIC_NAME_NHIC | COMMON_NAME_NHIC |
|-----------|------|--------------|---------------------------------|------------------------------|
| x | | P-ASTMACR | Eurybia macrophylla | Large-leaved Aster |
| x | | P-EUTGRAM | Euthamia graminifolia | Grass-leaved Goldenrod |
| x | x | P-FAGGRAN | Fagus grandifolia | American Beech |
| t | t | P-FRAVEAM | Fragaria vesca ssp. americana | American Woodland Strawberry |
| x | x | P-FRAVIRG | Fragaria virginiana | Wild Strawberry |
| x | x | P-FRAAMER | Fraxinus americana | White Ash |
| x | | P-FRAPENN | Fraxinus pennsylvanica | Green Ash |
| t | t | P-GALAPAR | Galium aparine | Cleavers |
| x | x | P-GERROBE | Geranium robertianum | Herb-Robert |
| x | | P-GEUALEP | Geum aleppicum | Yellow Avens |
| x | | P-GEU_SP | Geum sp. | Avens Species |
| t | t | P-GEURBA | Geum urbanum | Wood Avens |
| x | | P-GLEHEDE | Glechoma hederacea | Ground Ivy |
| x | x | P-HAMVIRG | Hamamelis virginiana | American Witch-hazel |
| t | t | P-HEMFULV | Hemerocallis fulva | Orange Daylily |
| x | x | P-HESMATR | Hesperis matronalis | Dame's Rocket |
| x | | P-HIE_SP | Hieracium sp. | Hawkweed Species |
| x | x | P-HYDVIRG | Hydrophyllum virginianum | Virginia Waterleaf |
| x | | P-IMPCAPE | Impatiens capensis | Spotted Jewelweed |
| x | | P-IMP_SP | Impatiens sp. | Jewel-weed Species |
| x | x | P-JUGCINE | Juglans cinerea | Butternut |
| x | | P-JUGNIGR | Juglans nigra | Black Walnut |
| x | | P-LAC_SP | Lactuca sp. | Lettuce Species |
| x | x | P-LAPCANA | Laportea canadensis | Wood Nettle |
| x | x | P-LAPCOMM | Lapsana communis | Common Nipplewort |
| x | | P-LEEORYZ | Leersia oryzoides | Rice Cutgrass |
| x | x | P-LEOCACA | Leonurus cardiaca ssp. cardiaca | Common Motherwort |
| x | | P-CHRLEUC | Leucanthemum vulgare | Oxeye Daisy |
| x | | P-LIGVULG | Ligustrum vulgare | European Privet |
| t | t | P-LINVULG | Linaria vulgaris | Butter-and-eggs |
| x | | P-LON_SP | Lonicera sp. | Honeysuckle Species |
| x | | P-LONTATA | Lonicera tatarica | Tartarian Honeysuckle |

Plant Species Inventoried (cont.)

| HCA staff | iNat | SPECIES_CODE | SCIENTIFIC_NAME_NHIC | COMMON_NAME_NHIC |
|-----------|------|--------------|-----------------------------|----------------------------|
| x | x | P-LOTORN | Lotus corniculatus | Garden Bird's-foot Trefoil |
| x | | P-LYCUNIF | Lycopus uniflorus | Northern Water-horehound |
| x | | P-LYTSALI | Lythrum salicaria | Purple Loosestrife |
| x | x | P-MAIRARA | Maianthemum racemosum | Large False Solomon's Seal |
| x | | P-MALPUMI | Malus pumila | Common Apple |
| x | | P-MEDLUPU | Medicago lupulina | Black Medic |
| x | | P-MELALBA | Melilotus albus | White Sweet-clover |
| x | | P-MELOFFI | Melilotus officinalis | Yellow Sweet-clover |
| x | | P-MEN_SP | Mentha sp. | Mint Species |
| x | x | P-MONFIST | Monarda fistulosa | Wild Bergamot |
| x | | P-MOR_SP | Morus sp. | Mulberry Species |
| x | | P-PREALTI | Nabalus altissimus | Tall Rattlesnakeroot |
| x | | P-GRA_SP | no data1 | Grass Species |
| x | | P-MOS_SP | no data2 | Moss Species |
| x | x | P-OSTVIRG | Ostrya virginiana | Eastern Hop-hornbeam |
| x | | P-PARQUIN | Parthenocissus quinquefolia | Virginia Creeper |
| x | | P-PAT_SP | Parthenocissus sp. | Virginia Creeper Species |
| x | | P-PARINSE | Parthenocissus vitacea | Thicket Creeper |
| x | | P-POLHYDR | Persicaria hydropiper | Marshpepper Smartweed |
| x | | P-POLHYDS | Persicaria hydropiperoides | False Waterpepper |
| x | | P-POLPERS | Persicaria maculosa | Spotted Lady's-thumb |
| x | | P-PHAARUN | Phalaris arundinacea | Reed Canary Grass |
| x | | P-PHLPRAT | Phleum pratense | Common Timothy |
| x | | P-PHRAUST | Phragmites australis | Common Reed |
| x | x | P-PICGLAU | Picea glauca | White Spruce |
| x | | P-PICPUNG | Picea pungens | Blue Spruce |
| x | x | P-PILPUMI | Pilea pumila | Dwarf Clearweed |
| x | | P-PIL_SP | Pilea sp. | Clearweed Species |
| x | | P-PINRESI | Pinus resinosa | Red Pine |
| x | x | P-PINSTRO | Pinus strobus | Eastern White Pine |
| x | | P-PLAMAJO | Plantago major | Common Plantain |
| x | | P-PODPELT | Podophyllum peltatum | May-apple |

Plant Species Inventoried (cont.)

| HCA staff | iNat | SPECIES_CODE | SCIENTIFIC_NAME_NHIC | COMMON_NAME_NHIC |
|-----------|------|--------------|----------------------------------|----------------------------|
| x | | P-POPDEDE | Populus deltoides ssp. deltoides | Eastern Cottonwood |
| x | | P-POPTREM | Populus tremuloides | Trembling Aspen |
| t | t | P-POTRECT | Potentilla recta | Sulphur Cinquefoil |
| x | | P-PRUAMER | Prunus americana | American Plum |
| x | x | P-PRUAVIU | Prunus avium | Sweet Cherry |
| x | x | P-PRUSERO | Prunus serotina | Black Cherry |
| x | x | P-PRUVIVI | Prunus virginiana | Choke Cherry |
| x | x | P-PYRCOMM | Pyrus communis | Common Pear |
| t | t | P-QUEALBA | Quercus alba | White Oak |
| x | | P-QUEBICO | Quercus bicolor | Swamp White Oak |
| x | | P-QUEMACR | Quercus macrocarpa | Bur Oak |
| x | | P-QUERUBR | Quercus rubra | Northern Red Oak |
| x | x | P-RANACRI | Ranunculus acris | Tall Buttercup |
| x | | P-RANRECU | Ranunculus recurvatus | Hooked Buttercup |
| x | x | P-RHACATH | Rhamnus cathartica | Common Buckthorn |
| x | x | P-RHUTYPH | Rhus typhina | Staghorn Sumac |
| x | | P-RIBAMER | Ribes americanum | Wild Black Currant |
| x | | P-RIBCYN | Ribes cynosbati | Prickly Gooseberry |
| x | | P-ROBPSEU | Robinia pseudoacacia | Black Locust |
| x | | P-ROSCARO | Rosa carolina | Carolina Rose |
| x | x | P-ROSMULT | Rosa multiflora | Multiflora Rose |
| t | t | P-ROSRUGO | Rosa rugosa | Rugosa Rose |
| x | x | P-RUBOCCI | Rubus occidentalis | Black Raspberry |
| x | x | P-RUBODOR | Rubus odoratus | Purple-flowering Raspberry |
| x | | P-RUM_SP | Rumex sp. | Dock Species |
| x | | P-SAL_SP | Salix sp. | Willow Species |
| x | | P-SAMCANA | Sambucus canadensis | Common Elderberry |
| x | x | P-SAMRAPU | Sambucus racemosa ssp. pubens | Red Elderberry |
| x | | P-SANCANA | Sanguinaria canadensis | Bloodroot |
| x | | P-SCIVALI | Schoenoplectus tabernaemontani | Soft-stemmed Bulrush |
| t | t | P-SCISIBE | Scilla siberica | Siberian Squill |
| x | | P-SIUSUAV | Sium suave | Hemlock Water-parsnip |

Plant Species Inventoried (cont.)

| HCA staff | iNat | SPECIES_CODE | SCIENTIFIC_NAME_NHIC | COMMON_NAME_NHIC |
|------------------|-------------|---------------------|-----------------------------------------|--------------------------|
| x | x | P-SOLDULC | Solanum dulcamara | Bittersweet Nightshade |
| x | | P-SOLALAL | Solidago altissima var. altissima | Eastern Tall Goldenrod |
| x | | P-SOLCAES | Solidago caesia | Blue-stemmed Goldenrod |
| x | | P-SOLCANA | Solidago canadensis | Canada Goldenrod |
| x | x | P-SOLFLEX | Solidago flexicaulis | Zigzag Goldenrod |
| x | | P-SOL_SP | Solidago sp. | Goldenrod Species |
| x | | P-SON_SP | Sonchus sp. | Sow-thistle Species |
| x | | P-ASTCORD | Symphyotrichum cordifolium | Heart-leaved Aster |
| t | t | P-ASTERER | Symphyotrichum ericoides var. ericoides | White Heath Aster |
| x | | P-ASTLATE | Symphyotrichum lateriflorum | Calico Aster |
| x | | P-ASTNOVA | Symphyotrichum novae-angliae | New England Aster |
| x | | P-ASTPUPU | Symphyotrichum puniceum var. puniceum | Swamp Aster |
| x | | P-ASTUROP | Symphyotrichum urophyllum | Arrow-leaved Aster |
| x | x | P-TANVULG | Tanacetum vulgare | Common Tansy |
| x | x | P-TAROFFI | Taraxacum officinale | Common Dandelion |
| x | | P-THADIOI | Thalictrum dioicum | Early Meadow-rue |
| x | x | P-TILAMER | Tilia americana | American Basswood |
| x | | P-TORJAPO | Torilis japonica | Erect Hedge-parsley |
| x | | P-RHURADI | Toxicodendron radicans | Poison Ivy |
| x | | P-RHURARY | Toxicodendron radicans var. rydbergii | Western Poison Ivy |
| t | t | P-TRAPORR | Tragopogon porrifolius | Purple Goat's-beard |
| t | t | P-TRAPRPR | Tragopogon pratensis | Meadow Goat's-beard |
| x | x | P-TRIPRAT | Trifolium pratense | Red Clover |
| x | | P-TRIPEPE | Trifolium repens | White Clover |
| x | x | P-TSUCANA | Tsuga canadensis | Eastern Hemlock |
| x | x | P-TUSFARF | Tussilago farfara | Colt's-foot |
| x | | P-ULMAMER | Ulmus americana | American Elm |
| x | | P-ULMRUBR | Ulmus rubra | Slippery Elm |
| x | | P-URTDIDI | Urtica dioica ssp. dioica | European Stinging Nettle |
| t | t | P-UVUGRAN | Uvularia grandiflora | Large-flowered Bellwort |
| x | | P-VERURTI | Verbena urticifolia | White Vervain |
| x | | P-VIBACER | Viburnum acerifolium | Maple-leaved Viburnum |

Plant Species Inventoried (cont.)

| HCA staff | iNat | SPECIES_CODE | SCIENTIFIC_NAME_NHIC | COMMON_NAME_NHIC |
|------------------|-------------|---------------------|-----------------------------|-------------------------|
| t | t | P-VIBLANA | Viburnum lantana | Wayfaring-tree |
| x | | P-VICCRAC | Vicia cracca | Tufted Vetch |
| x | | P-VICTETR | Vicia tetrasperma | Four-seeded Vetch |
| t | t | P-VIOCANA | Viola canadensis | Canada Violet |
| x | | P-VIOPUBE | Viola pubescens | Yellow Violet |
| x | x | P-VITRIPA | Vitis riparia | Riverbank Grape |

Breeding Bird Species Inventoried

5.2

| ebird Data | NAI | HCA Staff | HCA Staff | iNat | Species_Code | OFO_Scientific_Name | OFO_Common_Name |
|------------|--------|-----------|-----------|------------|--------------|---------------------------|---------------------------|
| x | | | | | B-COHA | Accipiter cooperii | Cooper's Hawk |
| x | | | | | B-SSHA | Accipiter striatus | Sharp-shinned Hawk |
| | x | | | | B-SPSA | Actitis macularius | Spotted Sandpiper |
| x | | | | | B-NSWO | Aegolius acadicus | Northern Saw-whet Owl |
| x | x (PO) | x | x | | B-RWBL | Agelaius phoeniceus | Red-winged Blackbird |
| x | | | | | B-WODU | Aix sponsa | Wood Duck |
| x | | | | | B-MALL | Anas platyrhynchos | Mallard |
| | x | | | | B-RTHU | Archilochus colubris | Ruby-throated Hummingbird |
| x | | | | | B-GBHE | Ardea herodias | Great Blue Heron |
| x | | | | | B-LEOW | Asio otus | Long-eared Owl |
| x | x (PO) | x | | x | B-CEDW | Bombycilla cedrorum | Cedar Waxwing |
| x | x (PR) | | | | B-CAGO | Branta canadensis | Canada Goose |
| x | x (CO) | | | x | B-RTHA | Buteo jamaicensis | Red-tailed Hawk |
| x | | | | | B-RSHA | Buteo lineatus | Red-shouldered Hawk |
| x | | | | | B-BWHA | Buteo platypterus | Broad-winged Hawk |
| x | x (CO) | x | x | x | B-NOCA | Cardinalis cardinalis | Northern Cardinal |
| x | x (PO) | | x | x | B-TUVU | Cathartes aura | Turkey Vulture |
| x | | | | | B-BRCR | Certhia americana | Brown Creeper |
| x | x (PO) | | | | B-CHSW | Chaetura pelagica | Chimney Swift |
| x | x | | | | B-KILL | Charadrius vociferus | Killdeer |
| x | | | | | B-NOHA | Circus hudsonius | Northern Harrier |
| x | x (PO) | | | | B-YBCU | Coccyzus americanus | Yellow-billed Cuckoo |
| x | | | | | B-BBCU | Coccyzus erythrophthalmus | Black-billed Cuckoo |
| x | x (CO) | | x | | B-NOFL | Colaptes auratus | Northern Flicker |
| x | x (PO) | | | | B-RODO | Columba livia | Rock Pigeon |
| x | | | | | B-OSFL | Contopus cooperi | Olive-sided Flycatcher |
| x | x (PO) | x | x | x | B-EAWP | Contopus virens | Eastern Wood-Pewee |
| x | | | | | B-BLVU | Coragyps atratus | Black Vulture |
| x | x (PR) | | x | x | B-AMCR | Corvus brachyrhynchos | American Crow |
| x | | | | | B-CORA | Corvus corax | Common Raven |
| x | x (CO) | x | x | x | B-BLJA | Cyanocitta cristata | Blue Jay |
| | x (PO) | | | | B-BOBO | Dolichonyx oryzivorus | Bobolink |
| x | x (PR) | x | x | x (winter) | B-DOWO | Dryobates pubescens | Downy Woodpecker |
| x | x (PO) | | | | B-HAWO | Dryobates villosus | Hairy Woodpecker |
| x | x (CO) | x | x | | B-GRCA | Dumetella carolinensis | Gray Catbird |
| x | x (PO) | x | x | | B-ALFL | Empidonax alnorum | Alder Flycatcher |
| x | x (PO) | | | | B-LEFL | Empidonax minimus | Least Flycatcher |

Breeding Bird Species Inventoried (cont.)

| ebird Data | NAI | HCA Staff | HCA Staff | iNat | Species_Code | OFO_Scientific_Name | OFO_Common_Name |
|------------|--------|-----------|-----------|------|--------------|---------------------------|--------------------------|
| x | x | x | | | B-WIFL | Empidonax traillii | Willow Flycatcher |
| | x | | | | B-HOLA | Eremophila alpestris | Horned Lark |
| x | | | | | B-RUBL | Euphagus carolinus | Rusty Blackbird |
| x | | | | | B-MERL | Falco columbarius | Merlin |
| x | | | | | B-PEFA | Falco peregrinus | Peregrine Falcon |
| x | x | | | | B-AMKE | Falco sparverius | American Kestrel |
| | x | | | | B-MOWA | Geothlypis philadelphia | Mourning Warbler |
| x | x (PO) | x | | | B-COYE | Geothlypis trichas | Common Yellowthroat |
| x | x (PO) | | | | B-HOFI | Haemorhous mexicanus | House Finch |
| x | | | | | B-BAEA | Haliaeetus leucocephalus | Bald Eagle |
| x | x (PO) | | | | B-BARS | Hirundo rustica | Barn Swallow |
| | x (PO) | | | | B-WOTH | Hylocichla mustelina | Wood Thrush |
| x | x (PO) | x | x | | B-BAOR | Icterus galbula | Baltimore Oriole |
| x | x | | | | B-OROR | Icterus spurius | Orchard Oriole |
| x | | | | | B-DEJU | Junco hyemalis | Dark-eyed Junco |
| x | | | | | B-NSHR | Lanius borealis | Northern Shrike |
| x | x | | | | B-HERG | Larus argentatus | Herring Gull |
| x | x | | | | B-RBGU | Larus delawarensis | Ring-billed Gull |
| x | x | x | x | | B-RBWO | Melanerpes carolinus | Red-bellied Woodpecker |
| x | | | | | B-WITU | Meleagris gallopavo | Wild Turkey |
| | x | | | | B-SWSP | Melospiza georgiana | Swamp Sparrow |
| x | x (CO) | x | x | | B-SOSP | Melospiza melodia | Song Sparrow |
| | x (CO) | | | | B-NOMO | Mimus polyglottos | Northern Mockingbird |
| x | | | | | B-BAWW | Mniotilta varia | Black-and-white Warbler |
| x | x (PR) | x | | | B-BHCO | Molothrus ater | Brown-headed Cowbird |
| x | x (PO) | | x | | B-GCFL | Myiarchus crinitus | Great Crested Flycatcher |
| x | | | | | B-TEWA | Oreothlypis peregrina | Tennessee Warbler |
| x | | | | | B-NAWA | Oreothlypis ruficapilla | Nashville Warbler |
| x | | | | | B-OSPR | Pandion haliaetus | Osprey |
| | x | | | | B-NOWA | Parkesia noveboracensis | Northern Waterthrush |
| x | x (PO) | | | | B-HOSP | Passer domesticus | House Sparrow |
| | x (PO) | | | | B-SAVS | Passerculus sandwichensis | Savannah Sparrow |
| x | x (PO) | x | x | x | B-INBU | Passerina cyanea | Indigo Bunting |
| x | | | | | B-DCCO | Phalacrocorax auritus | Double-crested Cormorant |
| x | x (PO) | | | | B-RINP | Phasianus colchicus | Ring-necked Pheasant |
| x | x (PO) | | | | B-RBGR | Pheucticus ludovicianus | Rose-breasted Grosbeak |
| x | x (PO) | | | | B-SCTA | Piranga olivacea | Scarlet Tanager |

Breeding Bird Species Inventoried (cont.)

| ebird Data | NAI | HCA Staff | HCA Staff | iNat | Species_Code | OFO_Scientific_Name | OFO_Common_Name |
|------------|--------|-----------|-----------|------------|--------------|----------------------------|-------------------------------|
| x | | | | | B-SNBU | Plectrophenax nivalis | Snow Bunting |
| x | x (CO) | x | x | | B-BCCH | Poecile atricapillus | Black-capped Chickadee |
| x | x | | | | B-BGGN | Polioptila caerulea | Blue-gray Gnatcatcher |
| | | | | x | B-VESP | Poocetes gramineus | Vesper Sparrow |
| x | x (PO) | | | | B-PUMA | Progne subis | Purple Martin |
| x | x (CO) | | | | B-COGR | Quiscalus quiscula | Common Grackle |
| x | | | | | B-RCKI | Regulus calendula | Ruby-crowned Kinglet |
| x | | | | | B-GCKI | Regulus satrapa | Golden-crowned Kinglet |
| x | x | | | | B-BANS | Riparia riparia | Bank Swallow |
| x | | | | | B-EAPH | Sayornis phoebe | Eastern Phoebe |
| x | x | | | | B-AMWO | Scolopax minor | American Woodcock |
| x | x (PO) | | | | B-OVEN | Seiurus aurocapilla | Ovenbird |
| x | | | | | B-NOPA | Setophaga americana | Northern Parula |
| x | | | | | B-BTBW | Setophaga caerulea | Black-throated Blue Warbler |
| x | | | | | B-BBWA | Setophaga castanea | Bay-breasted Warbler |
| | | x | | | B-HOWA | Setophaga citrina | Hooded Warbler |
| x | x | | | | B-YRWA | Setophaga coronata | Yellow-rumped Warbler |
| x | | | | | B-BLBW | Setophaga fusca | Blackburnian Warbler |
| x | | | | | B-MAWA | Setophaga magnolia | Magnolia Warbler |
| x | | | | | B-PAWA | Setophaga palmarum | Palm Warbler |
| x | | | x | | B-CSWA | Setophaga pennsylvanica | Chestnut-sided Warbler |
| x | x (PO) | x | x | | B-YWAR | Setophaga petechia | Yellow Warbler |
| x | x (PO) | | | | B-AMRE | Setophaga ruticilla | American Redstart |
| x | x | | | | B-BLPW | Setophaga striata | Blackpoll Warbler |
| x | | | | | B-CMWA | Setophaga tigrina | Cape May Warbler |
| x | | | | | B-BTGW | Setophaga virens | Black-throated Green Warbler |
| x | x | | | | B-EABL | Sialia sialis | Eastern Bluebird |
| x | | | | | B-RBNU | Sitta canadensis | Red-breasted Nuthatch |
| x | x (PO) | x | | x | B-WBNU | Sitta carolinensis | White-breasted Nuthatch |
| x | | | | | B-PISI | Spinus pinus | Pine Siskin |
| x | x (PR) | x | x | x | B-AMGO | Spinus tristis | American Goldfinch |
| | x | | | | B-CCSP | Spizella pallida | Clay-colored Sparrow |
| x | x (PO) | | | | B-CHSP | Spizella passerina | Chipping Sparrow |
| x | x (PO) | x | x | | B-FISP | Spizella pusilla | Field Sparrow |
| x | | | | x (winter) | B-ATSP | Spizelloides arborea | American Tree Sparrow |
| x | x (CO) | | | | B-NRWS | Stelgidopteryx serripennis | Northern Rough-winged Swallow |
| x | x (PO) | | | | B-EAME | Sturnella magna | Eastern Meadowlark |

Breeding Bird Species Inventoried (cont.)

| ebird Data | NAI | HCA Staff | HCA Staff | iNat | Species_Code | OFO_Scientific_Name | OFO_Common_Name |
|-------------------|------------|------------------|------------------|-------------|---------------------|---------------------------------|------------------------|
| x | x (CO) | | x | | B-EUST | <i>Sturnus vulgaris</i> | European Starling |
| x | x | x | | | B-TRES | <i>Tachycineta bicolor</i> | Tree Swallow |
| x | x (PO) | | | | B-CARW | <i>Thryothorus ludovicianus</i> | Carolina Wren |
| x | x (PO) | x | x | | B-HOWR | <i>Troglodytes aedon</i> | House Wren |
| x | x (PO) | | | | B-WIWR | <i>Troglodytes hiemalis</i> | Winter Wren |
| x | x (PO) | x | x | x | B-AMRO | <i>Turdus migratorius</i> | American Robin |
| x | x (PR) | | | | B-EAKI | <i>Tyrannus tyrannus</i> | Eastern Kingbird |
| x | x | | | | B-WAVI | <i>Vireo gilvus</i> | Warbling Vireo |
| x | x (PO) | x | x | | B-REVI | <i>Vireo olivaceus</i> | Red-eyed Vireo |
| x | | | | | B-PHVI | <i>Vireo philadelphicus</i> | Philadelphia Vireo |
| x | | | | | B-BHVI | <i>Vireo solitarius</i> | Blue-headed Vireo |
| x | x (PO) | | | | B-MODO | <i>Zenaida macroura</i> | Mourning Dove |
| x | x (VO) | | | | B-WTSP | <i>Zonotrichia albicollis</i> | White-throated Sparrow |

Mammal Species Inventoried

5.3

| NAI | HCA Staff | iNat | Species_Code | Scientific_Name_NHIC | Common_Name_NHIC |
|------------|------------------|-------------|---------------------|-----------------------------|-----------------------------|
| x | | x | M-NSTS | Blarina brevicauda | Northern Short-tailed Shrew |
| | x | | M-COYO | Canis latrans | Coyote |
| x | | | M-VIOP | Didelphis virginiana | Virginia Opossum |
| x | | | M-WOOD | Marmota monax | Woodchuck |
| x | | | M-MEVO | Microtus pennsylvanicus | Meadow Vole |
| x | | | M-MINK | Neovison vison | American Mink |
| x | | | M-WTDE | Odocoileus virginianus | White-tailed Deer |
| | | x | M-MUSK | Ondatra zibethicus | Muskrat |
| x | | | M-WFMO | Peromyscus leucopus | White-footed Mouse |
| x | | x | M-RACC | Procyon lotor | Northern Raccoon |
| x | x | | M-GRSQ | Sciurus carolinensis | Eastern Gray Squirrel |
| x | | | M-EACO | Sylvilagus floridanus | Eastern Cottontail |
| x | x | | M-EACH | Tamias striatus | Eastern Chipmunk |
| x | | | M-RESQ | Tamiasciurus hudsonicus | Red Squirrel |

Butterflies and Dragonflies Inventoried

| NAI | HCA Staff | iNat | Species_Code | NHIC_Scientific_Name | NHIC_Common_Name |
|------------|------------------|-------------|---------------------|-----------------------------|---------------------------|
| x | | | O-GRDA | Anax junius | Common Green Darner |
| x | | | L-LESK | Ancyloxypha numitor | Least Skipper |
| x | | | O-EBJE | Calopteryx maculata | Ebony Jewelwing |
| x | | | L-SPAZ | Celastrina lucia | Northern Spring Azure |
| x | | | L-SUAZ | Celastrina neglecta | Summer Azure |
| x | | x | L-WONY | Cercyonis pegala | Common Wood-Nymph |
| x | | | L-CORI | Coenonympha tullia | Common Ringlet |
| x | | | L-ORSU | Colias eurytheme | Orange Sulphur |
| x | | x | L-COSU | Colias philodice | Clouded Sulphur |
| x | | | L-ETBL | Cupido comyntas | Eastern Tailed Blue |
| x | | x | L-MONA | Danaus plexippus | Monarch |
| x | | | O-FABL | Enallagma civile | Familiar Bluet |
| x | | x | L-SSSK | Epargyreus clarus | Silver-spotted Skipper |
| x | | | O-EAPO | Erythemis simplicicollis | Eastern Pondhawk |
| x | | | L-SIBL | Glaucopsyche lygdamus | Silvery Blue |
| x | | | O-EAFO | Ischnura verticalis | Eastern Forktail |
| x | | | O-DTWH | Leucorrhinia intacta | Dot-tailed Whiteface |
| x | | | O-WISK | Libellula luctuosa | Widow Skimmer |
| x | | | O-TSSK | Libellula pulchella | Twelve-spotted Skimmer |
| x | | | L-VICE | Limenitis archippus | Viceroy |
| | x | | L-WHAD | Limenitis arthemis arthemis | White Admiral |
| | | x | L-GYMO | Lymantria dispar | Gypsy Moth |
| x | | | L-LWSA | Megisto cymela | Little Wood-Satyr |
| x | | x | L-MOCL | Nymphalis antiopa | Mourning Cloak |
| x | | | L-COTO | Nymphalis l-album | Compton Tortoiseshell |
| x | | | L-TISW | Papilio glaucus | Eastern Tiger Swallowtail |
| x | | | L-BLSW | Papilio polyxenes | Black Swallowtail |
| x | | | L-COSW | Pholisora catullus | Common Sootywing |
| x | | | L-PHYPAS | Phyciodes cocyta | Northern Crescent |
| x | | | L-PECR | Phyciodes tharos | Pearl Crescent |
| x | | x | L-CAWH | Pieris rapae | Cabbage White |
| x | | x | O-COWH | Plathemis lydia | Common Whitetail |
| x | | | L-PESK | Polites peckius | Peck's Skipper |
| x | | | L-COMM | Polygonia comma | Eastern Comma |
| x | | | L-QUMA | Polygonia interrogationis | Question Mark |
| x | | | L-BAHA | Satyrium calanus | Banded Hairstreak |
| x | | | L-GSFR | Speyeria cybele | Great Spangled Fritillary |
| x | | | L-EUSK | Thymelicus lineola | European Skipper |
| x | | | O-BLSA | Tramea lacerata | Black Saddlebags |
| x | | x | L-READ | Vanessa atalanta | Red Admiral |
| x | | | L-AMLA | Vanessa virginiensis | American Lady |

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A Healthy Watershed for Everyone

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