



# Ottawa's Great Forest: The South March Highlands

**South March Highlands – Carp River Conservation Inc.**

*[All photos in this presentation were taken in or of the South March Highlands]*



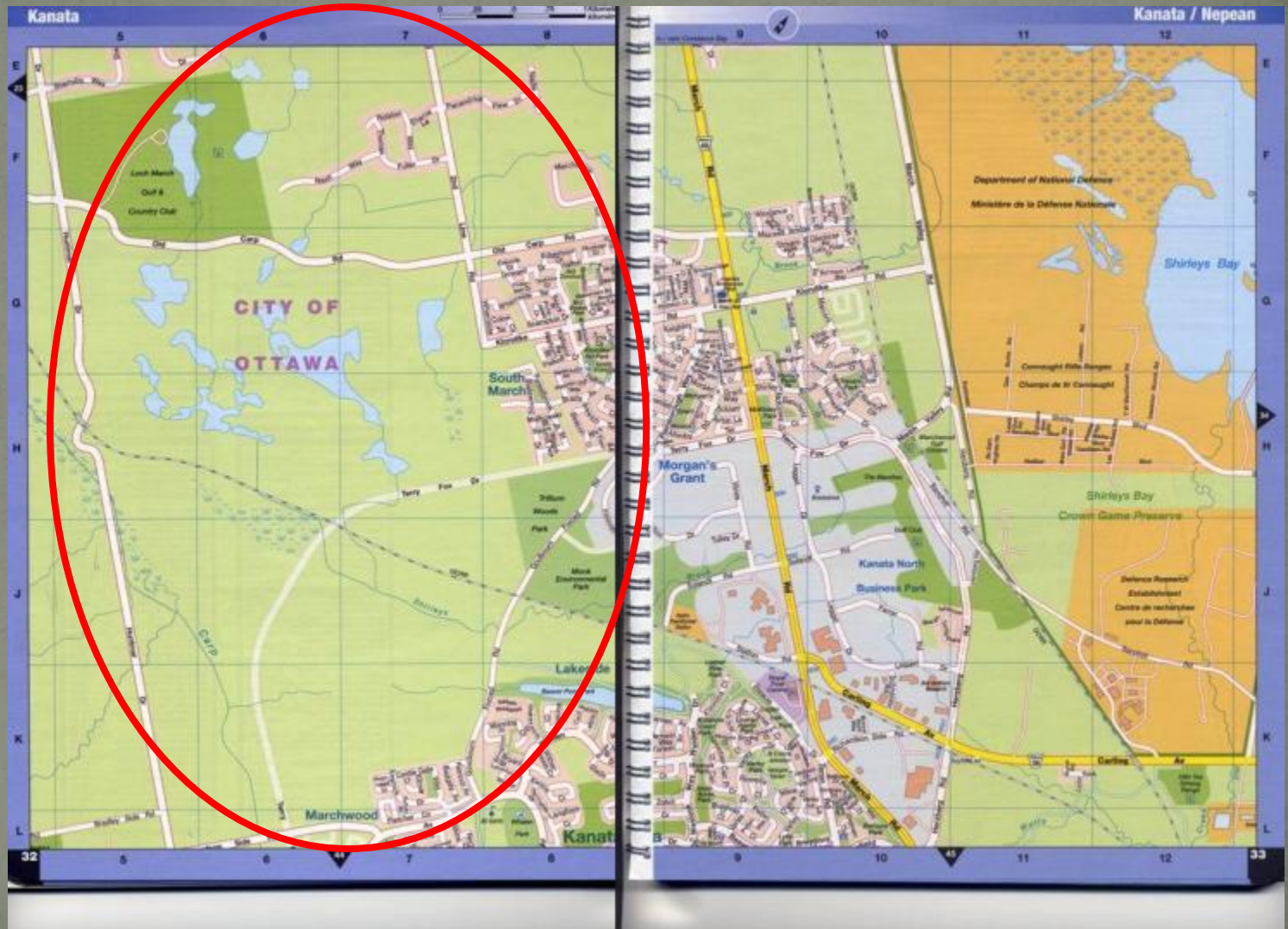
# Where are the South March Highlands?

South of  
March Road

East of  
Huntmar

West of  
March Road

North of  
Where we  
Are Now





# A “Wild Island” Inside Ottawa

10,000 Years Old

3x Larger Than Stanley Park



30 Eco-Types  
Of Vegetation

Visible Canadian  
Shield

10 Distinct  
Habitats



# National Capital's 3 Major Eco-Corridors





# Transit Systems To The Wild Island





# SMH is the Aquifer for North Kanata





# Hydrology Affects 3 Sub-Watersheds

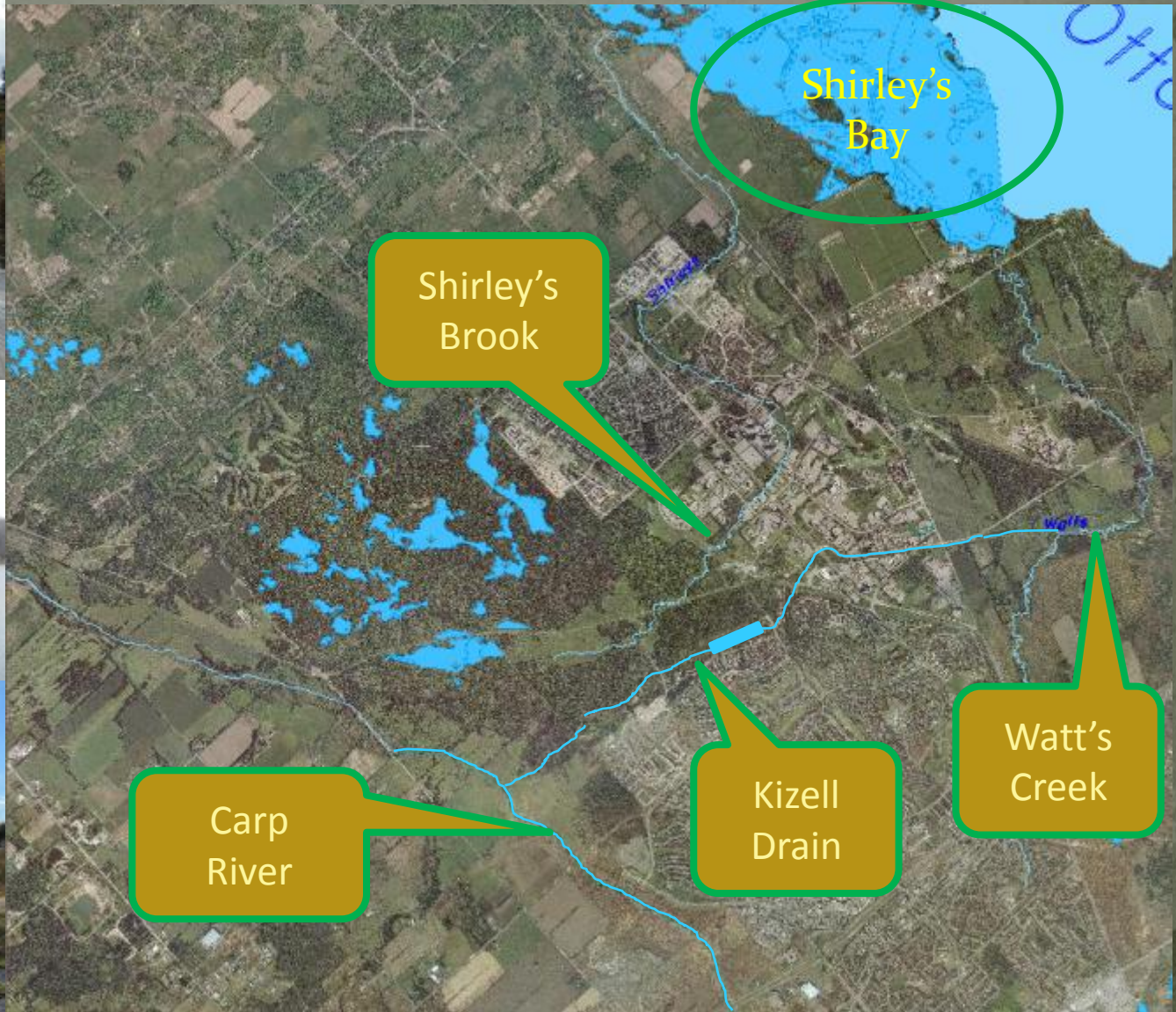
Klondike Pond



Goose Pond



Heron Pond





# Rich GeoHeritage – Shield Rock is Extensive



Shield Rock  
Is 1 Billion  
Years Old

**LEGEND**

- TERRY FOX DRIVE SITE
- ROADWAY
- RIVER OR STREAM
- WATERBODY
- FLOODPLAIN COMPENSATION AREA

**SURFICIAL GEOLOGY**

- 1a TILL, PLAIN WITH LOCAL RELIEF < 10 m
- 1b TILL, DRUM-LINED
- 2 TILL, HUMMOCKY TO ROLLING WITH LOCAL RELIEF 10 TO 30 m
- 3 ICE CONTACT STRATIFIED DRIFT: GRAVEL & SAND
- 3.g OFFSHORE MARINE DEPOSITS: CLAY, SILTY CLAY & SILT
- 4 OFFSHORE MARINE DEPOSITS: CLAY, SILTY CLAY & SILT (GULLIES & RAVINES)
- 5 OFFSHORE MARINE DEPOSITS: CLAY & SILT UNDERLYING EROSIONAL TERRACES
- 6 OFFSHORE MARINE DEPOSITS: CLAY & SILT UNDERLYING EROSIONAL TERRACES (GULLIES & RAVINES)
- 7 DELTAIC AND ESTUARY DEPOSITS: MEDIUM TO FINE GRAINED SAND (GULLIES & RAVINES)
- 8 DELTAIC AND ESTUARY DEPOSITS: MEDIUM TO FINE GRAINED SAND (GULLIES & RAVINES)
- 9a NEARSHORE SEDIMENTS: GRAVEL, SAND & BOULDERS
- 9b NEARSHORE SEDIMENTS: FINE TO MEDIUM GRAINED SAND
- 10a ALLUVIAL DEPOSITS: SILTY SAND, SILT, SAND & CLAY
- 10b ALLUVIAL DEPOSITS: SILTY SAND, SILT, SAND & CLAY (GULLIES & RAVINES)
- 10c ALLUVIAL DEPOSITS: MEDIUM GRAINED STRATIFIED SAND WITH SOME SILT
- 10d ALLUVIAL DEPOSITS: MEDIUM GRAINED STRATIFIED SAND WITH SOME SILT (GULLIES & RAVINES)
- 11 ORGANIC DEPOSITS: MUCK & PEAT
- 12 DUNE
- 13 DUNE (GULLIES & RAVINES)
- 14 LANDSLIDE AREA
- 15 LANDSLIDE AREA (GULLIES & RAVINES)
- 16 BEDROCK: INTRUSIVE & METAMORPHIC
- 17 BEDROCK: LIMESTONE, DOLOMITE, SANDSTONE & LOCAL SHALE
- 18 BEDROCK: LIMESTONE, DOLOMITE, SANDSTONE & LOCAL SHALE (GULLIES & RAVINES)
- 19 WATER

**NOTE:**  
The figure is to be read in conjunction with the accompanying Geoder Associates Ltd. report No. 06-1121-0027

**REFERENCE:**  
BELANGER, J. R., URBAN GEOLOGY OF THE NATIONAL CAPITAL AREA, GEOLOGICAL SURVEY OF CANADA, OPEN FILE D3258, 2001  
Projection: Transverse Mercator. Datum: NAD 83. Coordinate System: UTM Zone 18

0 50 100  
1:20,000 METRES

**PROJECT:** TERRY FOX DRIVE PERMIT TO TAKE WATER

**TITLE:** SURFICIAL GEOLOGY



# Only Location In Ottawa with Exposed Canadian Shield



One of Many Locations Where Shield  
is Magnificently Displayed



Impressive Even after “Development”



# Shield Rock is Always Close To Surface



Max Depth  
of Shield is  
1m

Any Development  
Requires Blasting





# Distinctive and Unique GeoMorphology





# Heron Pond's Sandstone Barren Was Once Polished Like a Mirror

500m Long  
Nepean  
Sandstone  
Pavement  
Barren





# Reminders of Ancient Glaciers

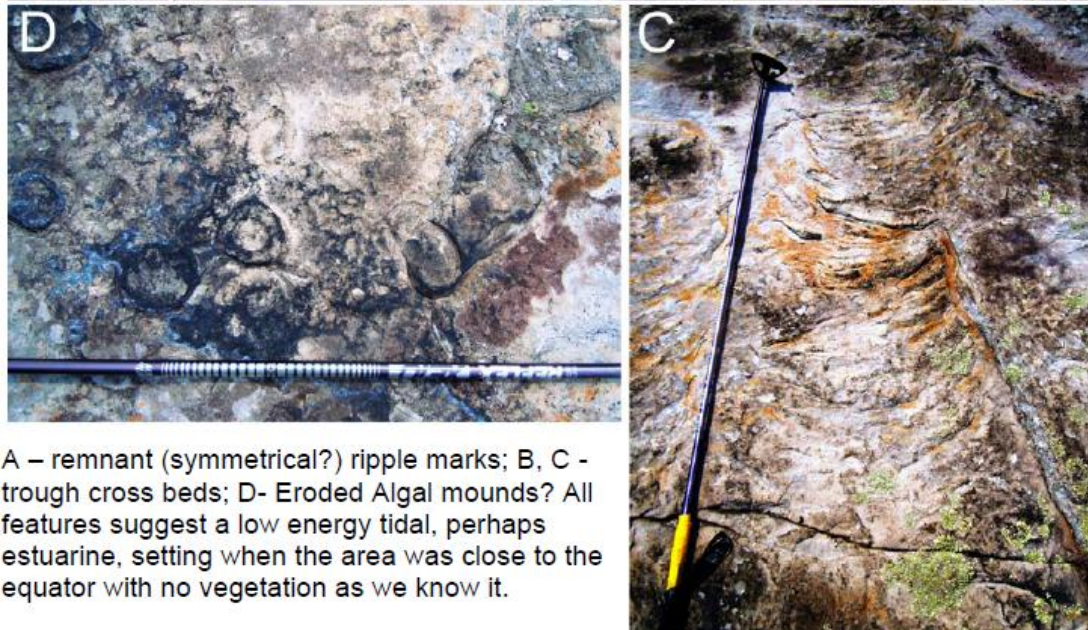
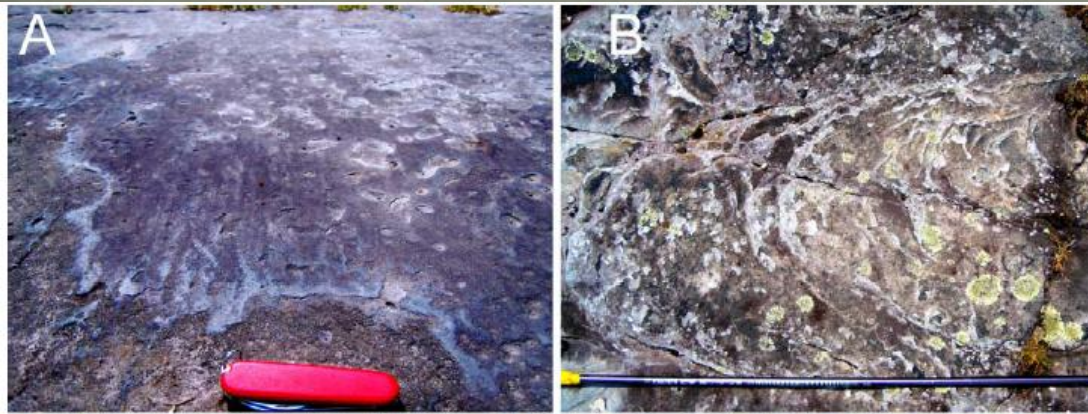


In area B, glacial chatter marks (above); striations (top right) and crescent gouges are evident. Only chatter marks and crescent gouges provide ice movement direction. The striated surface retains a remnant mm-thick glacial pavement of semi-fused quartz grains.





# Ancient Sea on Display



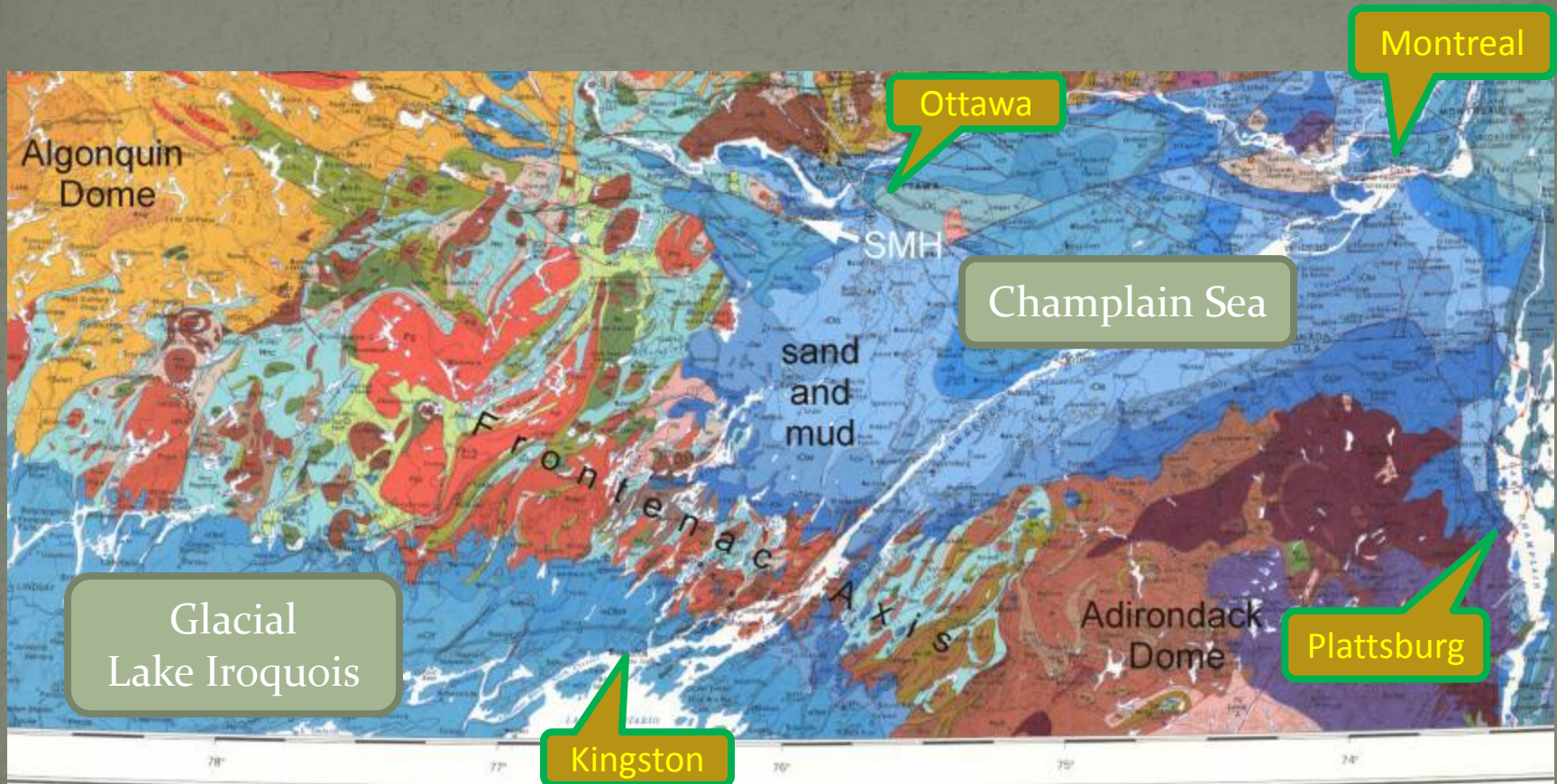
A – remnant (symmetrical?) ripple marks; B, C - trough cross beds; D- Eroded Algal mounds? All features suggest a low energy tidal, perhaps estuarine, setting when the area was close to the equator with no vegetation as we know it.

The only known area in Ottawa with unequivocal dewatering cylinders preserved in Paleozoic sandstone – An Ancient Spring





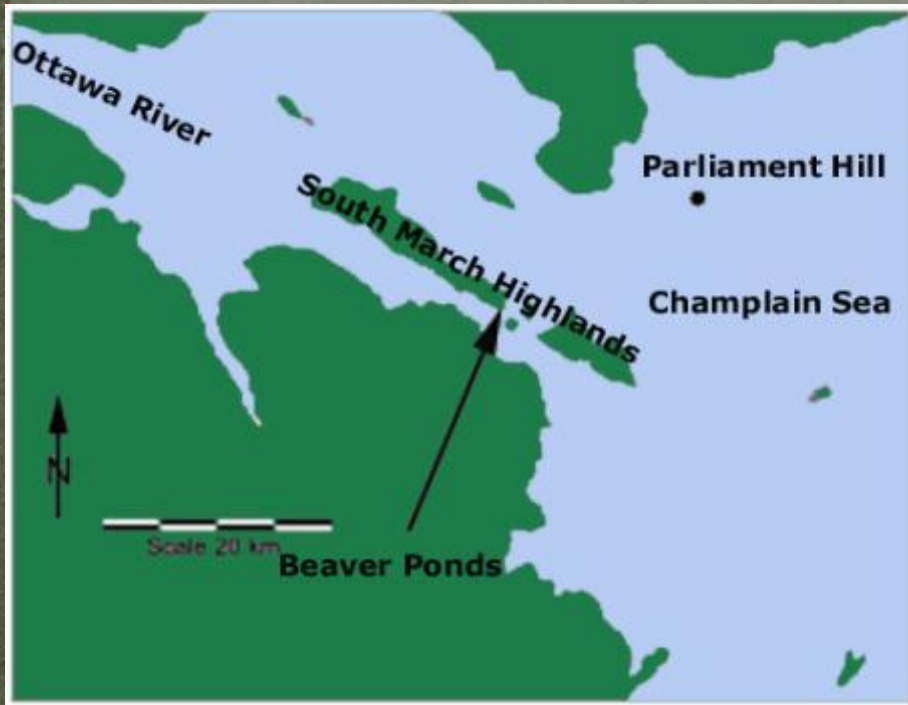
# The Original Turtle Island in the Champlain Sea?



The SMH was an island at a time when Frontenac Axis geological formation separated Glacial Lake Iroquois (precursor to Lake Ontario) from salt waters of the Champlain Sea 8,000 - 12,000 years ago



# Ancient Civilization Populated Shoreline of Champlain Sea & Lampsilis Lake



*"... the rocky upland areas ... should be considered to be of high potential for occupation by early postglacial sea mammal hunters along subsequent shorelines as local sea levels dropped from about 120 m above current sea level at around 11,000 years ago, to 90 meters above sea level at some time around 9,000 years ago. "*

*Dr. Robert McGhee – Retired Curator Canadian Museum of Civilization*



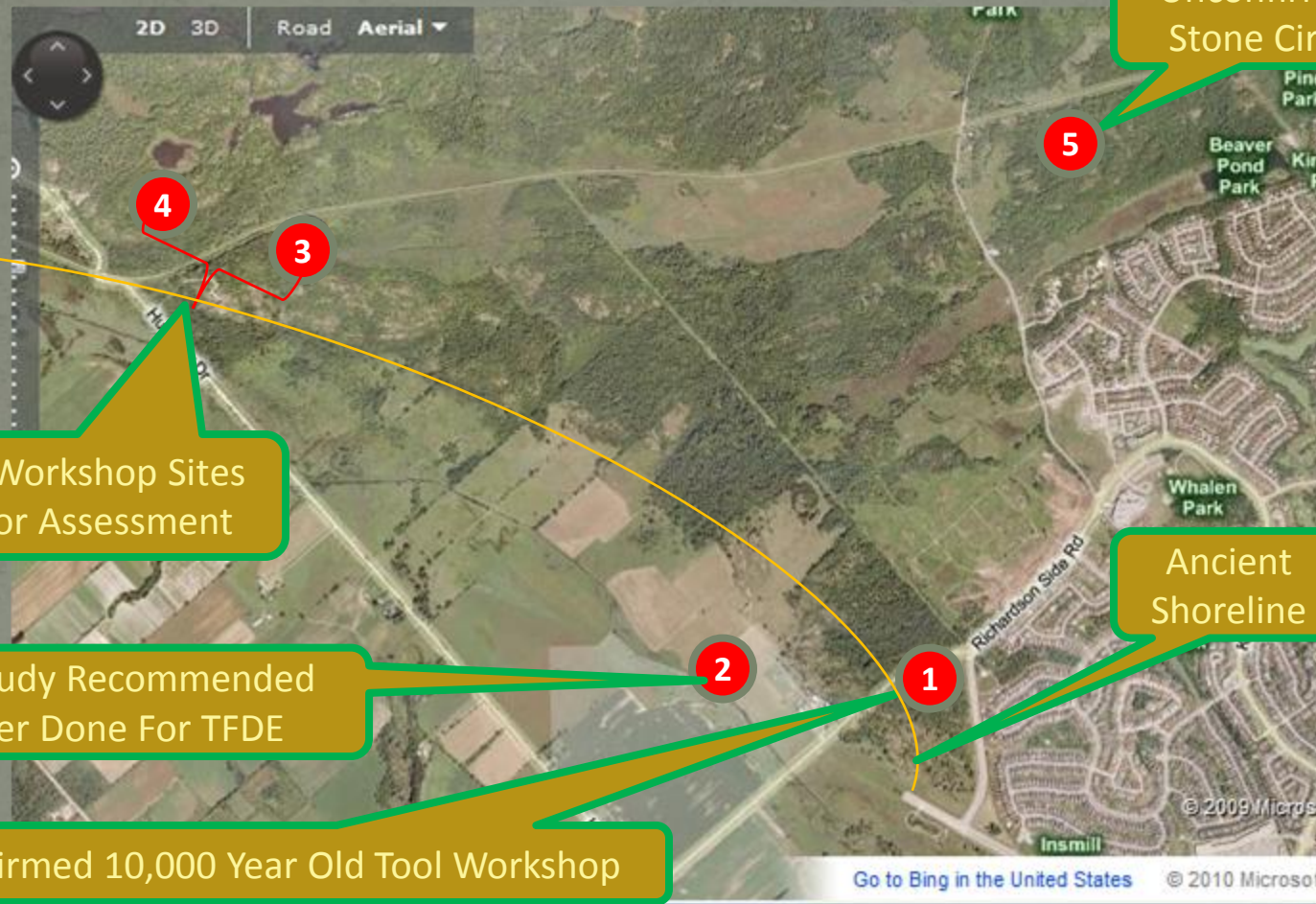
*"Several centuries later, circa 9,800 BCE, a huge freshwater table, Lampsilis Lake, replaced the Champlain Sea in the Ottawa Valley and throughout the St. Lawrence lowlands...we estimate the level of Lampsilis Lake in the central Ottawa Valley ... to have been roughly 70 meters. "*

*Dr. Marcel Laliberte – National Capital Commission  
Archaeological Resource Potential [1998]*

**Anything below Elevation of 90 m  
is submerged**



# National Historic Value Known Archaeological Sites In SMH



Unconfirmed Stone Circle

5

4

3

Validated Workshop Sites  
Waiting For Assessment

Stage 3 Study Recommended  
But Never Done For TFDE

2

1

Ancient Shoreline

Confirmed 10,000 Year Old Tool Workshop



# 8,000 – 10,000 Year Old Chopping Tool



Bi-Face clearly developed by hand and consistent with Late Paleo- Early Archaic Indian tool technology

Found at location (1) at elevation where approximate age is 8,000 - 10,000 BCE

Still sharp !





# 500 Generation Old – Chiselled Core



Tool marks clearly developed by hand

Quartzite indicates Paleo-Archaic Indian

Found at location (3) workshop

Elevation indicates approximate age  
as 10,000 BCE





# Ancient Stone Tool Twice As Old As Stonehenge or Egyptian Pyramids



Pyramidal shape developed by hand

Quartzite material indicates Late Paleo-Indian origin

Found at location (4) workshop

Elevation (115 m) consistent with approximate age of 10,000 BCE



# Euro-Canadian Cultural Sites Too



**McMurtry's Tannery  
(Circa 1860)**

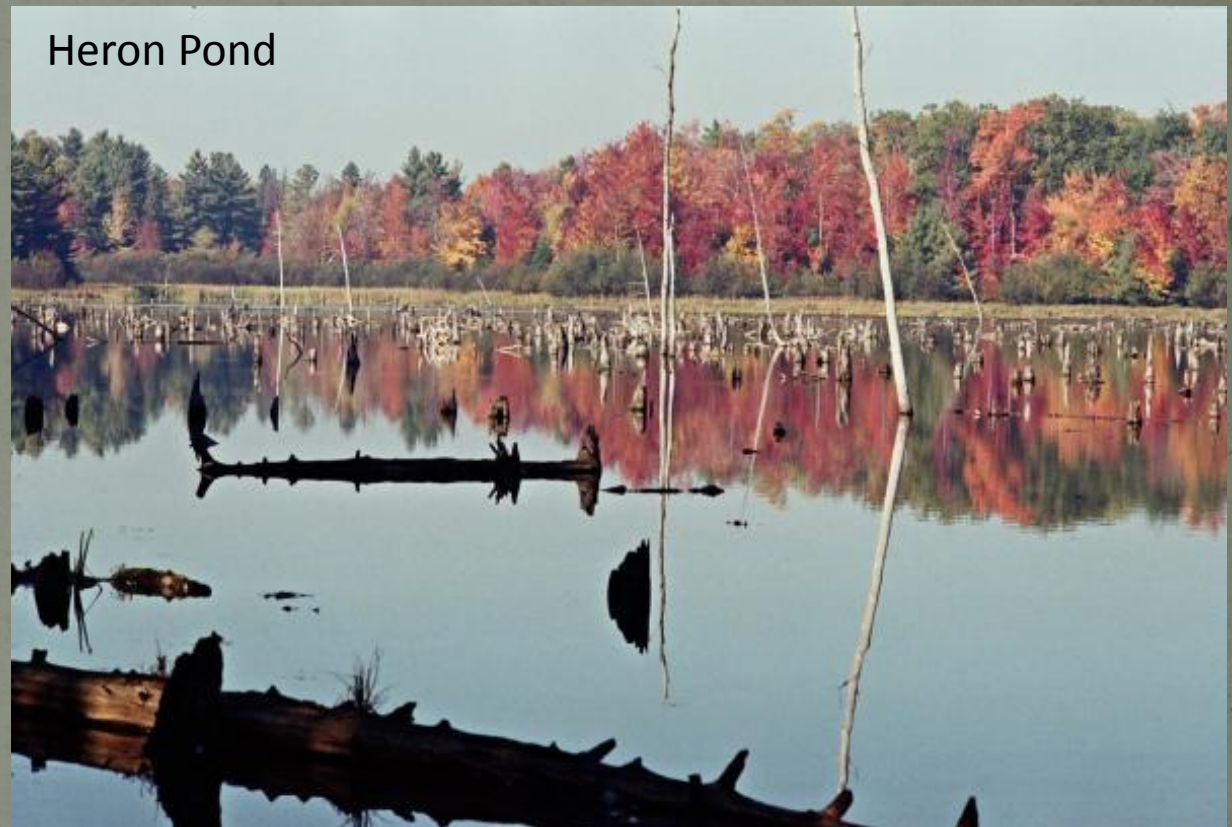
## **Also:**

- **Several 19<sup>th</sup> Century homestead sites dating back to 1820 (as old as Pinhey's Point)**
- **Richardson Stone House dating back to approx. 1860 (as old as the Log Farm)**
- **A Feldspar Mine dating approximately to 1919-1921 (unique in Ottawa)**



# SMH Saves March Township from 1870 Fire

- 1870 Forest Fire destroyed most of Ottawa Valley
- Highlands and Wetlands of SMH provided critical firebreak
- Signs of that Fire can still be seen today
- Several trees survived the great Fire and are over 130 years old





# Old Growth Commonly Found

## MNR Technical Handbook: “Old Growth” (pages 45-46)

- ✓ Large proportion of trees in older age classes
- ✓ Many 120 – 140 years old
- ✓ Broad spectrum of tree sizes with some very tall trees
- ✓ Uneven canopy due to fallen trees
- ✓ Abundant fallen logs various stages of decomposition
- ✓ Forest supports a high diversity of wildlife species





# 10,000 Year Old Transition Zone

Coniferous  
Meets  
Deciduous





# *Natural Heritage: Densest Bio-Diversity In Ottawa*

[*Gidakiiminaan*]

Unknown Number of  
Insect, Fungi &  
Bryophyte Species

Over 679 Species:  
440 Native Plants  
164 Avian  
75 Mammals, Fish,  
Amphibians, Reptiles

All Within an  
Area of 3 x 4 km





# Just Some of the Wildlife Documented

- Red Wolf, Coyote
- Canada Lynx, Red Fox
- Black Bear
- Fischer, Long-tail Weasel
- Beaver, Muskrat
- Ermine, River Otter, Mink
- Snoeshoe Hare, Cottontail Rabbit
- Meadow Jumping Mouse, Deer Mouse, House Mouse, White Footed Mouse
- Meadow Vole, Star-Nosed Mole, Southern Red-Backed Vole
- Barred Owl, Eastern Screech Owl, Great Grey Owl, Great Horned Owl, Long Eared Owl, Northern Saw-whet Owl
- Cooper's Hawk, Red Tail Hawk, Red Shouldered Hawk, Sharp Skinned Hawk, Broad Winged Hawk
- Northern Flying Squirrel
- Silver Haired Bat, Hoary Bat, Big Brown Bat, Little Brown Bat
- Common Shrew, Northern Short-tailed Shrew, Pygmy Shrew, Smokey Shrew
- Blanding's Turtle, Snapping Turtle, Eastern Painted Turtle, Musk Turtle





# Largest Deer Wintering Yard In Ottawa

- 875 ha deer habitat





# Provincially Significant Life Science Area

895 Hectares  
Rated ANSI

Highest Floristic  
Diversity of Any  
Natural Area in  
Ottawa

5.08 = Highest  
Coefficient of  
Conservation in  
Ottawa

440 Species  
Native Vascular Plants

26 Species  
Traditionally Used for  
Native Medicine

2 Endangered  
6 Provincially Rare  
64 Regionally Rare  
50 Uncommon  
Native Vascular Plants





# Trillium Woods is Part of SMH



*“Trillium Woods, which is like a chunk of the Gatineau in the urban landscape of Ottawa, with rich plant and animal life found nowhere else in the urban part of the City”*

Ottawa Urban Natural Areas Environmental Evaluation  
[Muncaster & Brunton, 2008]



# + Provincially Significant Wetland Complex

114 Hectares  
Rated ANSI

164 Avian Species  
Observed

1 Endangered  
4 Threatened  
5 Special Concern  
30 Regionally Rare  
Avian Species

Shirley's Pond



# 136 Nesting Bird Species in the SMH





# Undocumented Number of Vernal Pools

Over 26 identified species of  
Herpetofauna

Monarch Butterfly is Species-at-Risk  
in South March Highlands

3 Threatened Species  
2 Special Concern





# Yet No Comprehensive Biological Survey Ever Done

Wildlife  
Movement  
Only Studied  
In Winter

SMH Is  
Unevaluated  
Candidate ANSI  
For 20 Years?

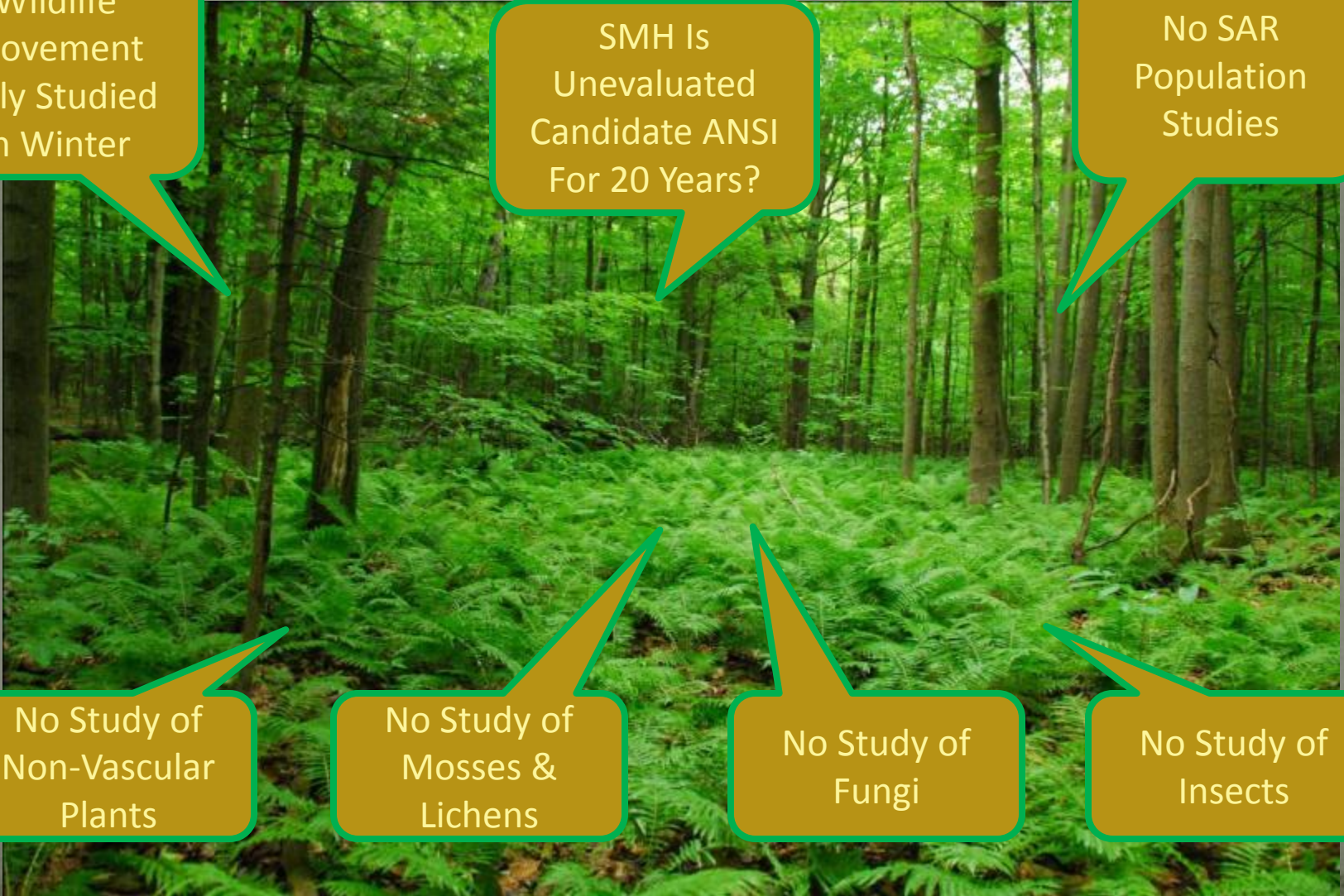
No SAR  
Population  
Studies

No Study of  
Non-Vascular  
Plants

No Study of  
Mosses &  
Lichens

No Study of  
Fungi

No Study of  
Insects





# 20 Documented Species At Risk

## Endangered or Threatened

- American Ginseng
- Butternut
- Loggerhead Shrike
- Bobolink
- Whip-poor-will
- Golden Winged Warbler
- Olive Sided Flycatcher
- Western Chorus Frog
- Blanding's Turtle
- Eastern Musk Turtle
- Chimney Swift

## Special Concern

- Bridle Shiner
- Short Eared Owl
- Black Tern
- Common Nighthawk
- Snapping Turtle
- Eastern Milksnake
- Monarch Butterfly
- Bald Eagle
- Red Headed Woodpecker





# 18 Candidate SAR Also Found in SMH

- 
- A photograph of a turtle, likely a Painted Turtle, resting on a log in a pond. The turtle's shell is dark with light-colored patterns, and its head and legs are visible. The water is calm, reflecting the surrounding environment.
- Evening Grosbeak
  - Eastern Wood Peewee
  - Wood Thrush
  - Bank Swallow
  - American Bullfrog
  - American Kestrel
  - Belted-Kingfisher
  - Field Sparrow
  - Eastern Red-Backed Salamander
  - Blue-Spotted Salamander
  - American Toad
  - Bluntnose Minnow
  - Boreal Chickadee
  - Killdeer
  - Midland Painted Turtle
  - Green Frog
  - Wood Frog
  - Northern Two-Lined Salamander

Species Found In SMH That Are Also Listed For  
Evaluation by COSEWIC as Potential Species at Risk



# 11 Species Extirpated By Development

- Cathcart's Woodsia
- Oregon Woodsia
- Spiny Coon-tail
- Adder's-tongue Fern
- Back's Sedge
- Large Duckweed
- Long-spurred Violet
- Showy Orchis
- Southern Arrow-wood
- Strawberry-blight
- Virginia Spring Beauty





# Development Eats Away at Ottawa's Great Forest





# Impact of Winter Tree Clearing on Wildlife



- Denning mammals killed by tree-cutting machines or freeze-to-death due to loss of shelter



- 2/3 of Porcupine Population estimated killed in Beaver Pond Forest due to Winter Clearcut

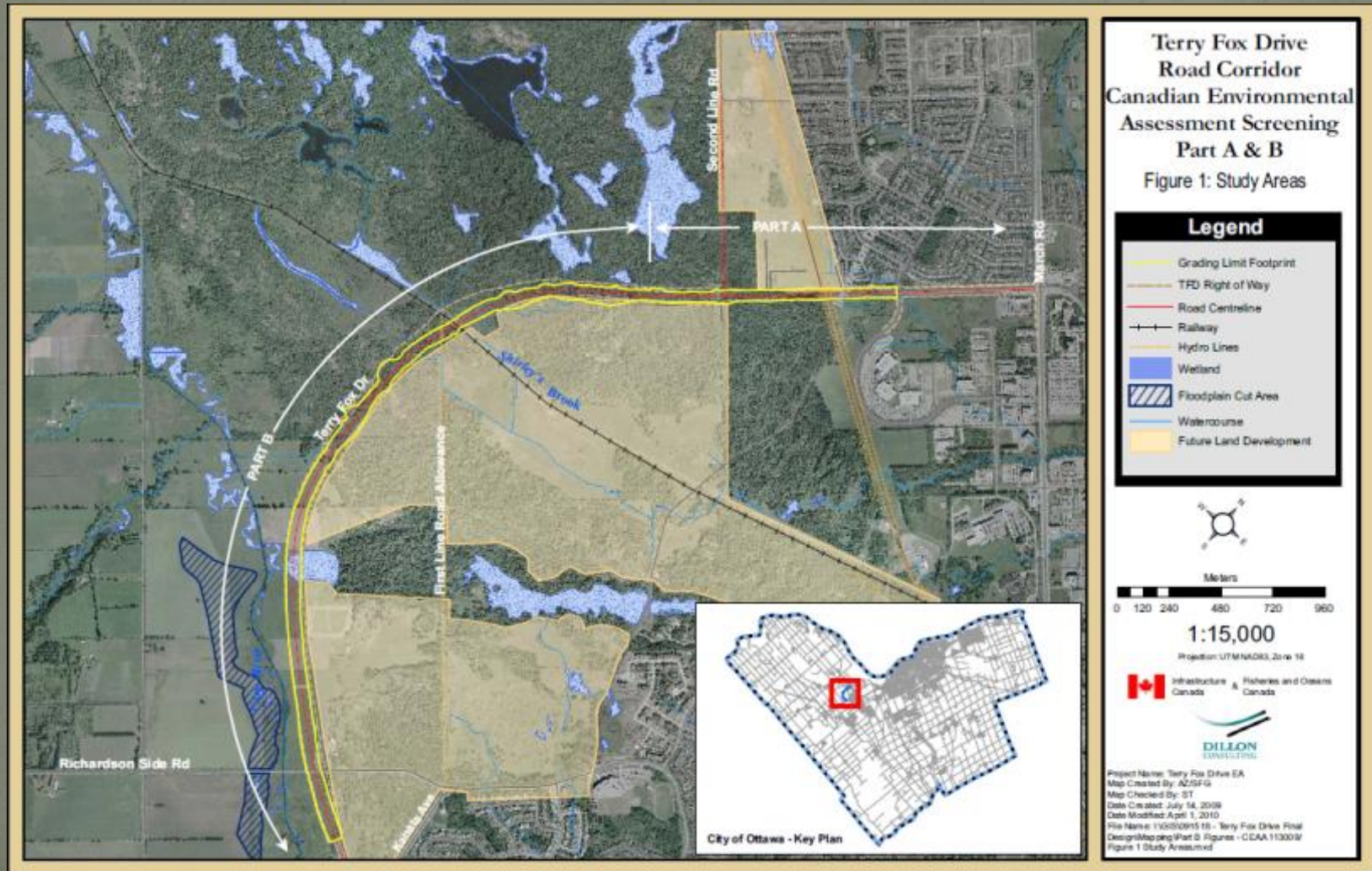


- Hibernating amphibians & reptiles are crushed by heavy equipment



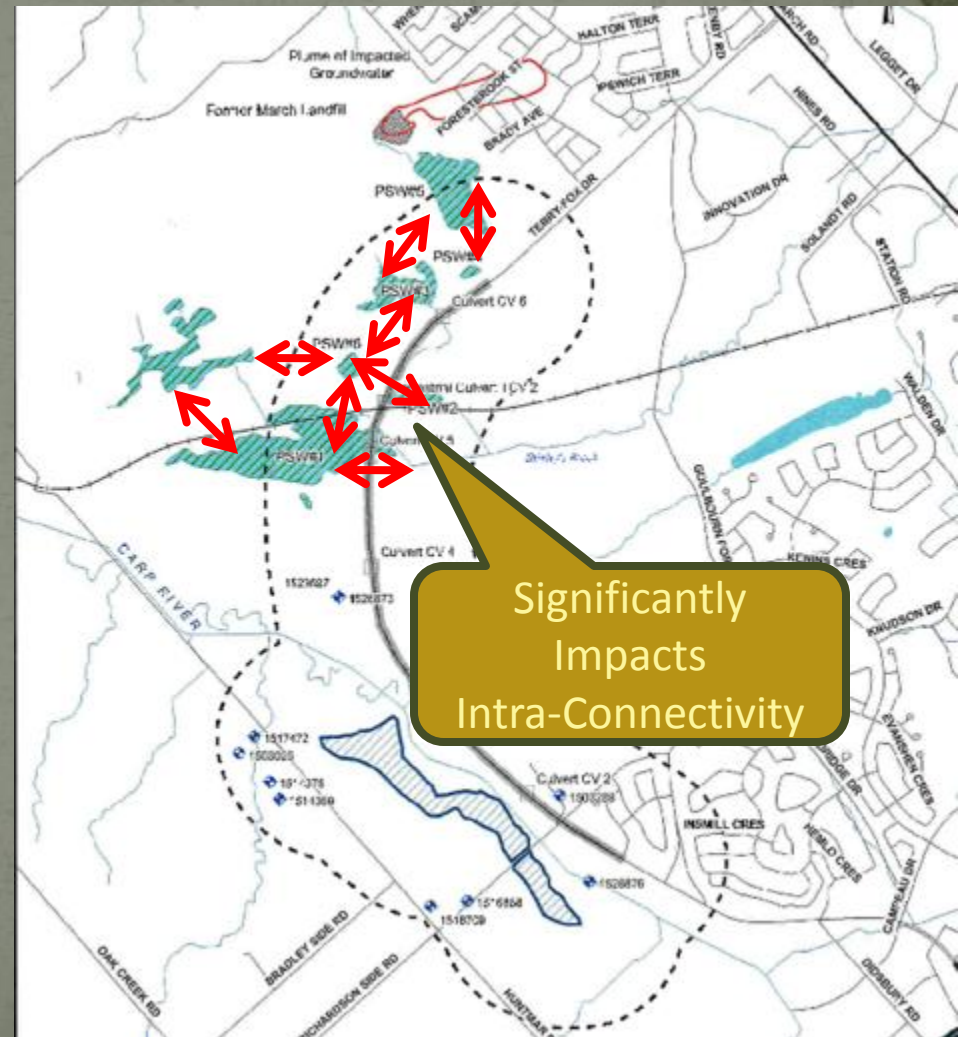
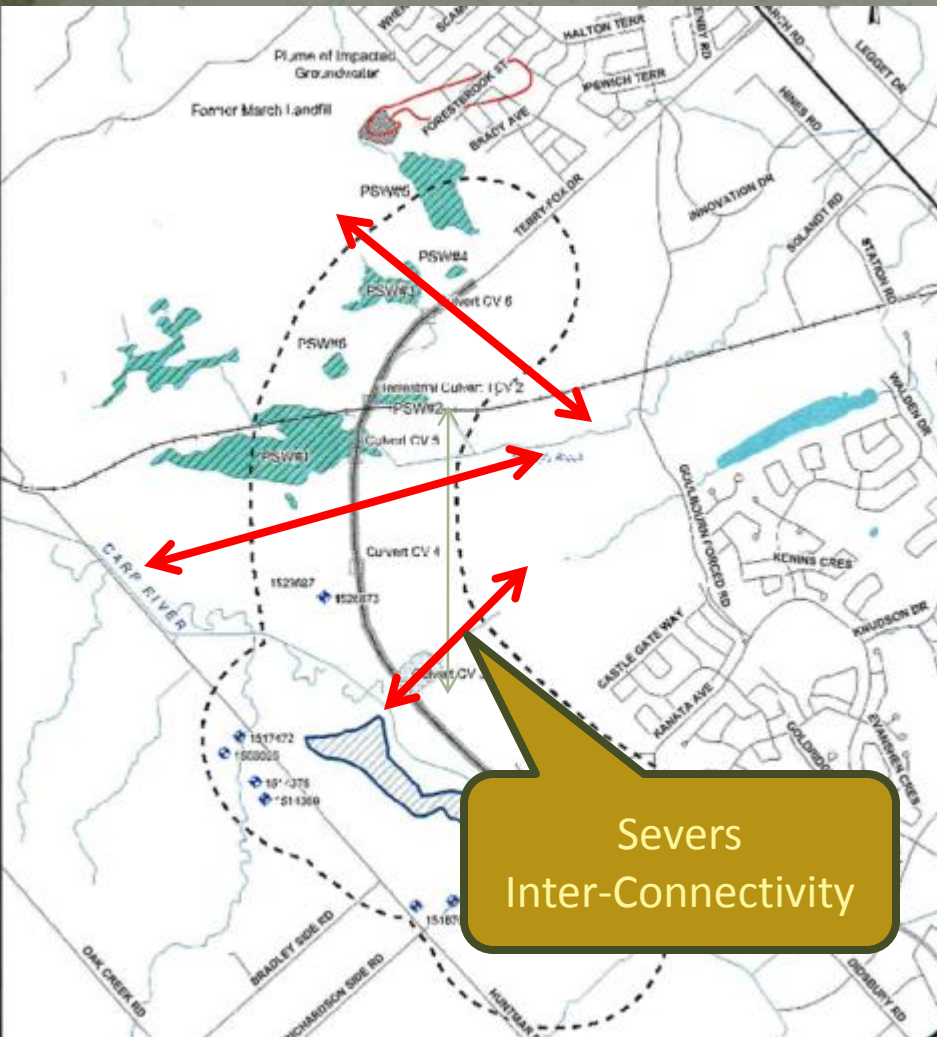


# Terry Fox Drive Extension Severs SMH by 1/2 Development Currently Underway in Interior Half





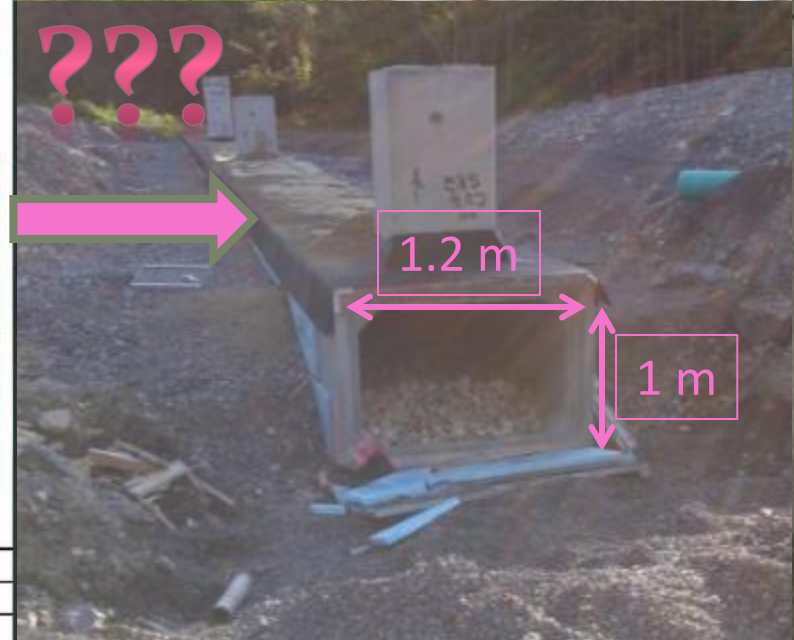
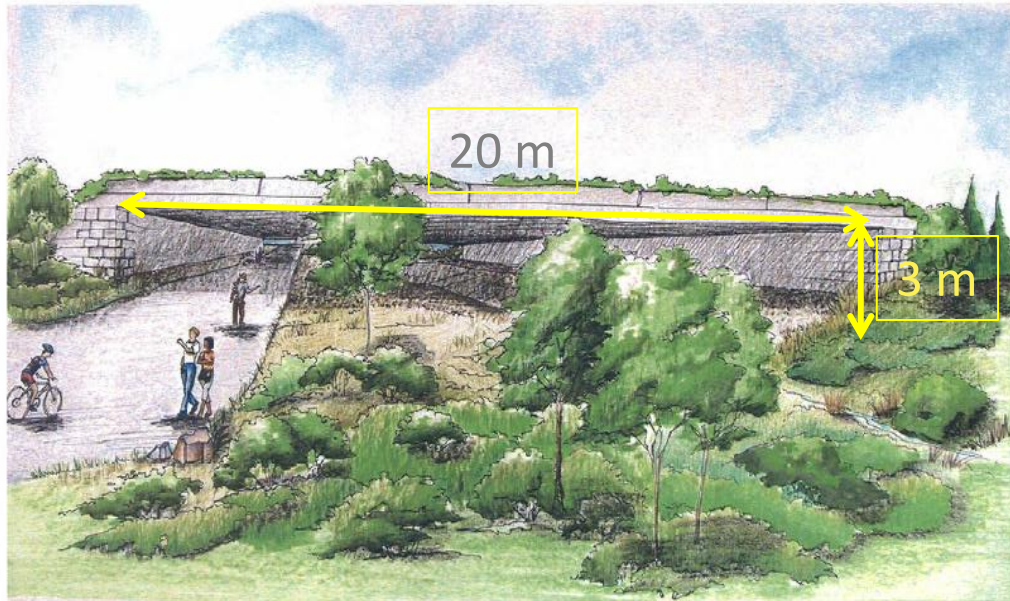
# City Admits That TFDE Severs Eco-Connectivity





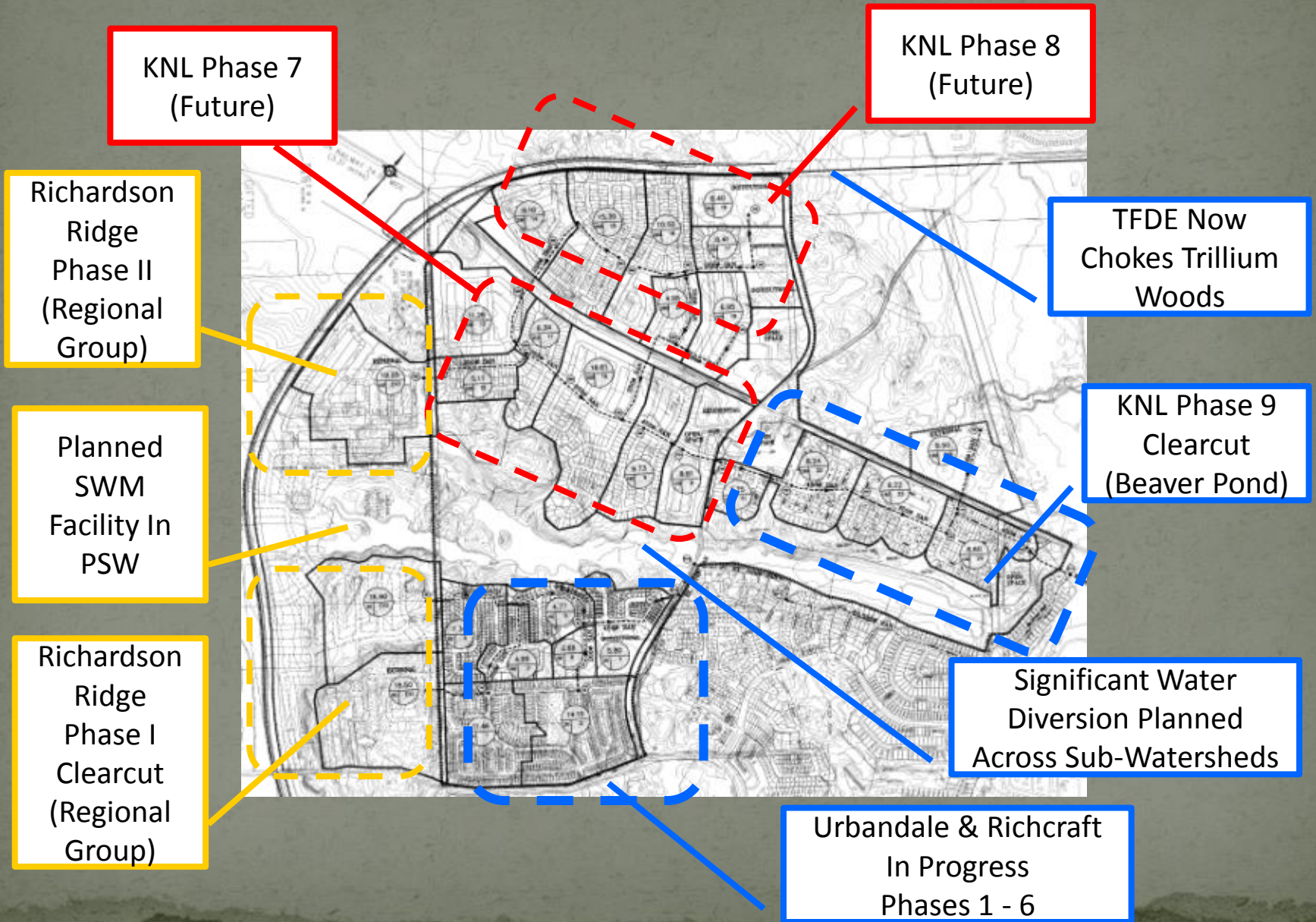
# Unmitigated Environmental Impact

- 2007 EA Addendum
  - Promised Eco-passages & No Fencing
- 2010 As-Built Road
  - Eco-passages replaced by unusable tunnels
  - Fencing creates “Berlin Wall”





# Current Status of Development





# Green Infrastructure is Multi-Purpose

- **Regulating**

- Wetland water storage & retention
- Filtering and cleaning air & water
- Natural control of pests & insects & related diseases
- Natural prevention against invasive species
- Climate & temperature regulation

- **Provisioning**

- Replenishment of natural resources
- Renewable supply of food, fibre, water
- Habitat for Biodiversity
- Eco-corridor Functions
- Agricultural Pollination

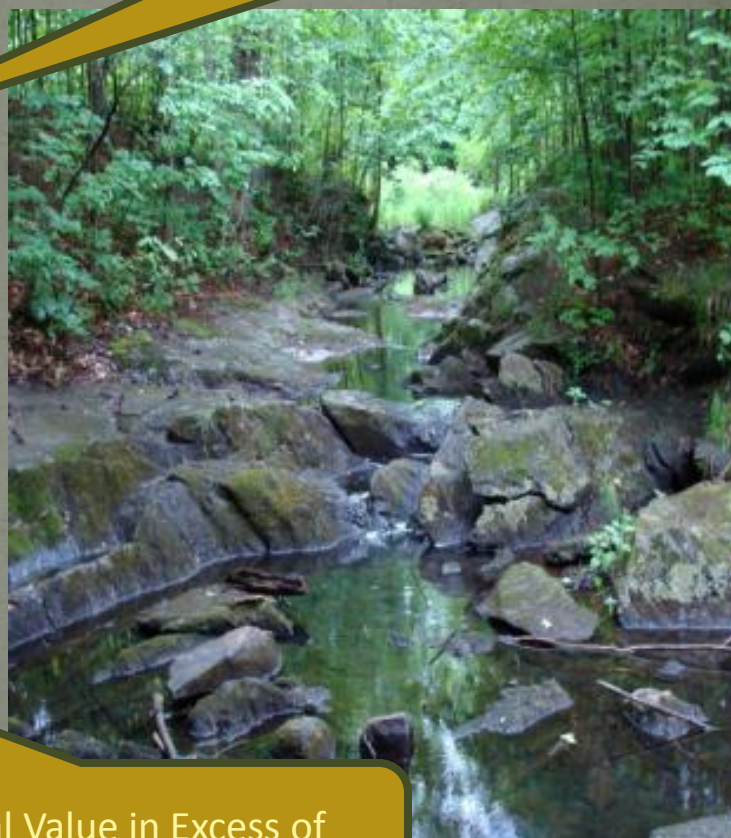
- **Cultural**

- Educational & Artistic Value
- Health & Spiritual Benefits
- Recreational & Eco-Tourism Value

- **Supporting**

- Soil formation & Erosion control
- Carbon storage & GHG uptake
- Nutrient Cycling

All These Functions Are Free  
and Automatically  
Renewable at Zero Cost



Total Value in Excess of  
\$35 M per year in SMH



# “Developed” Infrastructure is Single Purpose

- “Development” reduces multi-purpose landscape to a single purpose
  - Housing
  - Commercial, etc.
- “Developed” Infrastructure must be rebuilt / repaired periodically
  - Roads, Bridges
  - Subdivisions
  - Storm Water Management Facilities
  - Construction = Temporary job creation vs. Eco-Tourism = Permanent jobs
- “Development” impacts adjacent environment
  - Loss of wetland function directly related to reduced water quality in Ontario
  - Significant loss of biodiversity and increase in invasive species

Terry Fox Dr  
July 24, 2009





# Located Just Beyond Current Greenbelt Corridor

*SMH Mistakenly Excluded from 3 working Concepts for Greenbelt Master Plan*





# “Shepherd’s Hook” Extends Greenbelt



Creates  
National Symbol  
Of  
Stewardship

SMH

National Historic Park  
For Anishinabe  
First Nations

Shepherd's Hook Costs  
Less Than Purchasing  
3x F-35 Fighter Jets

Stony  
Swamp

Latitude 45.2774 N  
Longitude 75.8182 W  
Altitude 101 meters  
1.5 kilometers



# Alternative Vision of Eco-Corridors Revitalizing The Emerald Necklace





Will You Defend This Forest?





# Questions About South March Highlands?

