# COWICHAN DISTRICT HOSPITAL REPLACEMENT PROJECT

Presentation for Cowichan Watershed Board March 27, 2023



Cowichan District Hospital









## Landscape Ethic

#### Fostering a Landscape of Respect

Si'emstuhw – Respect "The concept of respect should guide all our interactions in the natural world. We are to treat every animate and inanimate object in a manner which fosters respect." – Sarah Morales, "Snuw'uyulh: fostering an understanding of the Hul'qumi'num legal tradition."

"Our ancestors touched the lands, rivers, and oceans in our territory lightly and with respect. We used only what nature provided, and only what we needed." - Cowichan Tribes, Changing Landscape

The 'weir teachings' are a reminder that our actions have upstream and downstream effects – Quustenuxun, Sept 23rd CDHRP Indigenous Engagement Presentation









# **Overview of Site**

Chemainus River Park

Swuq'us

Maple Bay

OMIAREN

Quamichan

1211403-02

Cowichan

S'aumena

Duncar

HOSPITAL SITE LOCATION

Cowichan 1

LALL DE

## Watershed & Site Context

Swuq'us

Averill Creek Watershed

Hwuyhwuyupelu'

Maple Bay

S'aumuna Xatsa

ada

ransCar

Xatsa

Kw'oukw'aqe'num

Sts'ets'uwi'tun

Kwamutsun

Shquw'utsun Ts'uwxilum Pi'paam

# Watershed & Site Context

Averill Creek

S'aumuna Xatsa

# Watershed & Site Context

BRICE OF



POND



## **Overview of Proposed Design**











## **ENVIRONMENTAL PERMITTING REQUIREMENTS**

## **Environmental Permitting Requirements**



#### • Federal Permitting:

- DFO Request for Review process
  - No direct fish utilization of habitats on site, but wetlands are providing flow and nutrients to a tributary of Averill Creek
  - DFO biologists have determined the project will not likely to result in contravention if the Fisheries Act or Species at Risk Acts with implementation of mitigation measures.





## **Environmental Permitting Requirements**



#### Provincial Permitting:

- Change Approval has been secured under the Water Sustainability Act
  - Required for altering wetland habitats on site
  - Involved:
    - Delineation and characterization of wetlands (including wildlife use)
    - Identifying opportunities to offset lost habitat ("like for like" or instream salmonid habitat) in process.
    - Plans to minimize environmental impacts from construction

#### • General Wildlife Permit under the Wildlife Act

- Required to salvage and relocate amphibians on the site during construction
- Working with amphibian specialist Elke Wind to inventory amphibians and develop a management plan
  - Invasive and native amphibian use
- Amphibian salvage program was successfully implemented.
  - Salvaged habitats were dominated by invasive American bullfrogs.



## **Environmental Permitting Requirements**



- Municipal Permitting (Municipality of North Cowichan):
  - Development permit application under the Official Community Plan Bylaw
    - Property falls within <u>Development Permit Area 5 Farm Land Protection</u>
    - Requires: maintaining a forested buffer between adjacent farmland and the hospital development
    - Other environmentally-specific permitting from MNC defers to the Water Sustainability Act and federal Fisheries Act (both secured)

## Offsetting Program – WSA Approval



#### Offset Loss and Functional Value of Wetland Habitats on Hospital Site

- Loss of ~ 3000m<sup>2</sup> of low-moderate -value wetland habitat = ~6,000m<sup>2</sup> required offsets.
- Eliminated wetlands provided:
  - Retention/infiltration.
  - Water quality maintenance.
  - Hydration for wildlife.
  - Amphibian breeding (invasive species only).
- Offsetting Program Objectives:
  - Create diverse wetland habitats.
    - "Jump start" succession.
  - Improve fish habitat in Averill Creek.





## **Offsetting Program**



#### Bings Creek Watershed – <u>Candidate</u> Sites



#### Sites 1 and 2:

- Create diverse floodplain wetland Ecosystems.
- Improve Bings Creek riparian function.

#### Site 3:

- Create amphibian breeding habitat.
- Habitat for other wildlife
- Design to limit invasive species.

#### Averill Creek Watershed – <u>Candidate</u> Sites



#### Repair and Install Riffles (blue placemarks)

- Improve riffle-pool habitat.
  - Rearing.
  - Spawning
- Instream Cover (LWD)
- Address erosion.

#### Create diverse wetland habitats (polygons)

- Create amphibian breeding habitat.
- Design to limit invasive species.

## MECHANICAL WATER SYSTEMS DESIGN

## **Mechanical Systems**





## **CIVIL & STORMWATER DESIGN**

## **Overview of Proposed Design**

- Maintaining drainage pattern from eastern half of the project site and property to the north towards the existing wetland (blue area)
- Detaining drainage from the west half of the site in rain gardens (pink and orange areas)
- Maintaining 5-year pre-development flow rates



## **Civil Systems**



Water quality measures:

- Filtration through bioswales
- Oil/grit separator upstream of wetland and rain garden
- Additional filtration through wetland / rain garden design

Water quantity measures:

- Infiltration and detention through bioswales, wetland and rain gardens
- Flow control prior to outlet to City storm sewer





## **Overland Flood Route**





0. 25. 35 m



## Parking Lot Design







## Rain Garden Design









### Rain Garden Design





## Retained / Enhanced Wetland Design

Many design considerations for this wetland. Detailed Design.

- Design to:
  - Provide stormwater Storage to meet pre-development flow requirements.
  - Cannot discharge larger rain events south those will flow west.
  - Rainwater to flow through primary bioretention strips/rain gardens prior to release into wetland.
  - Limited standing water as the amphibian biologist has recommended that we do NOT encourage native amphibian breeding (population sink).
  - Considerations for Infection Control related to hospital safety.





## Retained / Enhanced Wetland Design

Some wetland vegetation, seasonally flooded.





#### Remove invasive species, add natives plants:



T'eets'ulhp Douglas spiraea

Qw'iiqw'i'yul'ushulhp trembling aspen

p-shey' soft common rush

tskwim-kwim-mumutth' red osier dogwood

Tl'utl' beaked sedge

## **SEDIMENT & EROSION CONTROL**



# Thank you!

# **Questions and Comments**