

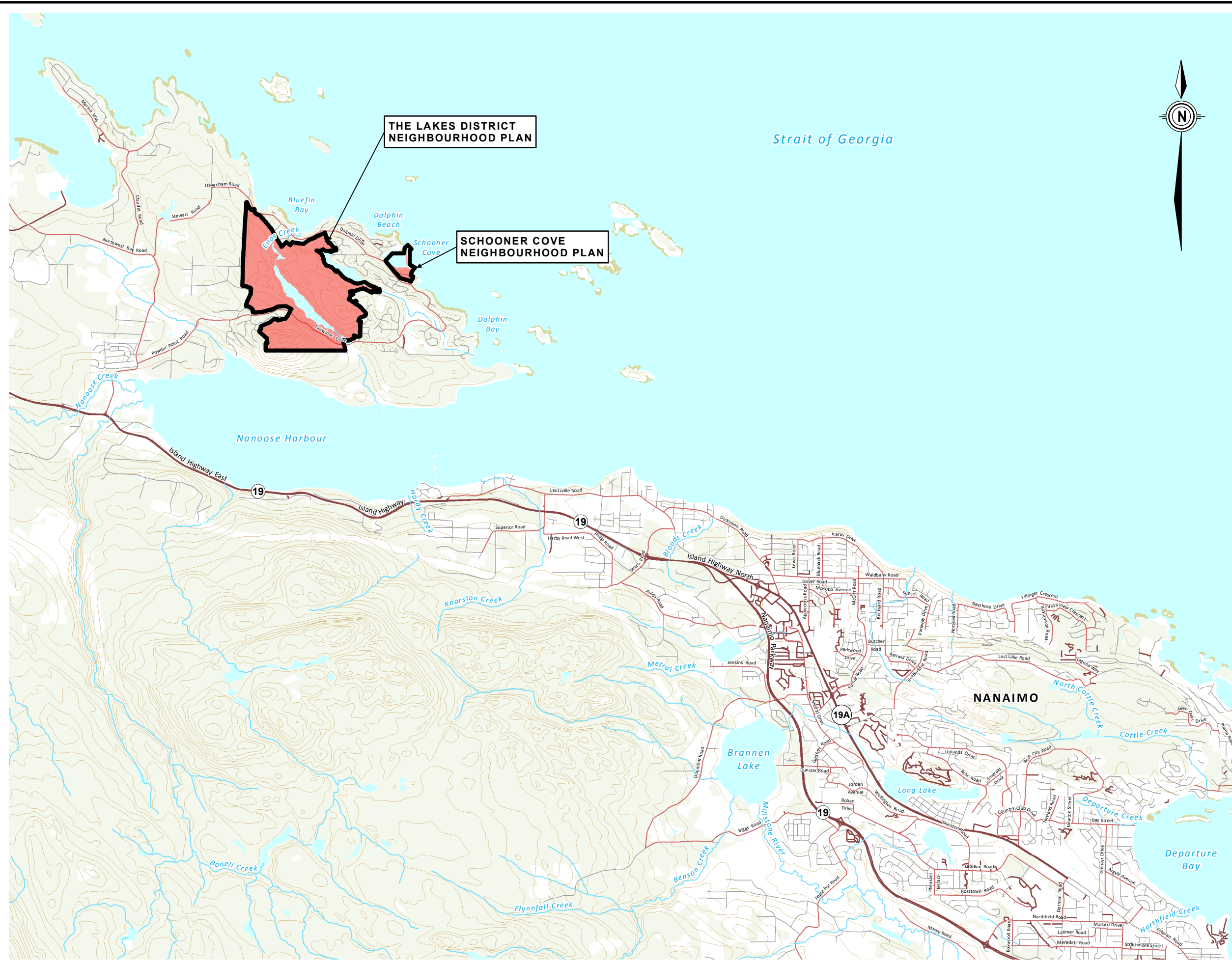
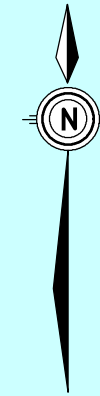


**Bentall Kennedy
The Lakes District and
Schooner Cove ISMP**

Legend

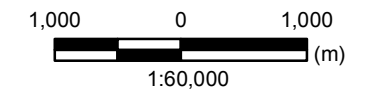
-  Neighbourhood Area
-  Major Road



Reference: Topographic map reproduced under licence from Her Majesty the Queen in Right of Canada, with permission of Natural Resources Canada.



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Project No. 2964-001	Date November 2013
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**Regional
Location Map**

Figure 1




Path: C:\2900-2999\2964-002\430-GIS\MXD-Rp\2964002_Fig1_Location.mxd Date Saved: 19/11/2013 2:56:40 PM Author: J.Lau

**Bentall Kennedy
The Lakes District and
Schooner Cove ISMP**

Legend

-  Neighbourhood Area
-  Existing lake
-  Existing Detention Pond
-  Existing Wetlands
-  Existing Watercourse
-  Existing Ditch
-  Wetland ID
-  Watercourse ID
-  Ditch ID

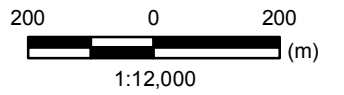
Pre-development Drainage Catchment

-  Drainage Catchment
-  Catchment Draining to Dolphin Lake
-  Catchment Draining to Enos Lake

Reference: Base data from Ekistics.



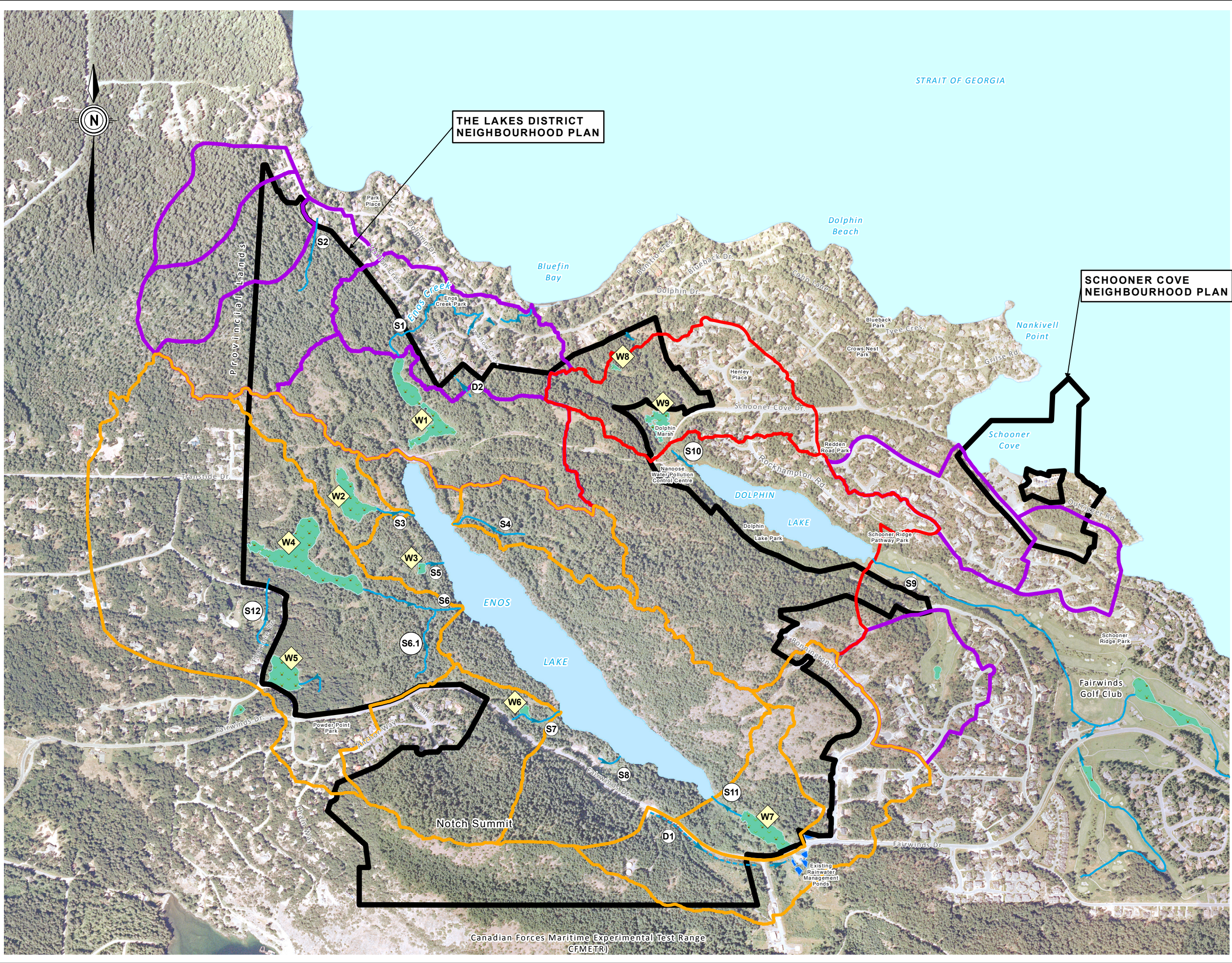
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2007 Air Photo

Figure 2



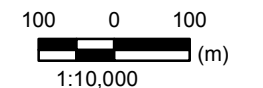
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Legend

-  Neighbourhood Area
 -  Existing Lake
 -  Existing Detention Pond
 -  Existing Wetlands
 -  Existing Watercourse
 -  Existing Ditch
 -  Civic Infrastructure
 -  Community Park (Active)
 -  Fairwinds Golf Club
- Land Use Designation**
- | | |
|--|--|
|  Regional Park |  Multiple Dwelling |
|  Community Park |  Community Mixed Use |
|  Future Development Reserve |  Village Mixed Use |
|  Single Dwelling |  Lakehouse Centre |
|  Single Dwelling Duplex |  Civic Infrastructure |
| |  Marina |
| |  Public Road ROW |
- Reference:** Base data from Ekistics.

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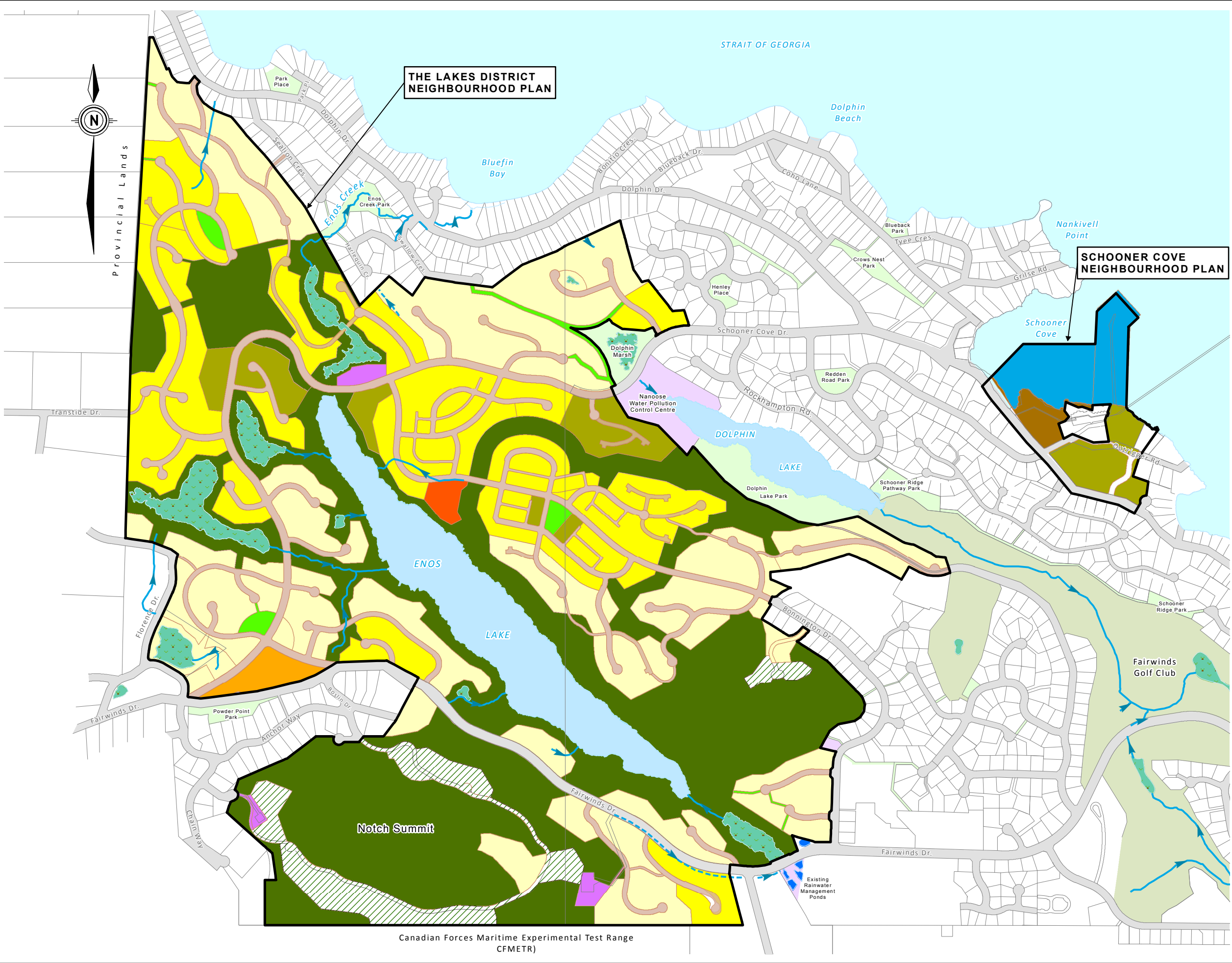
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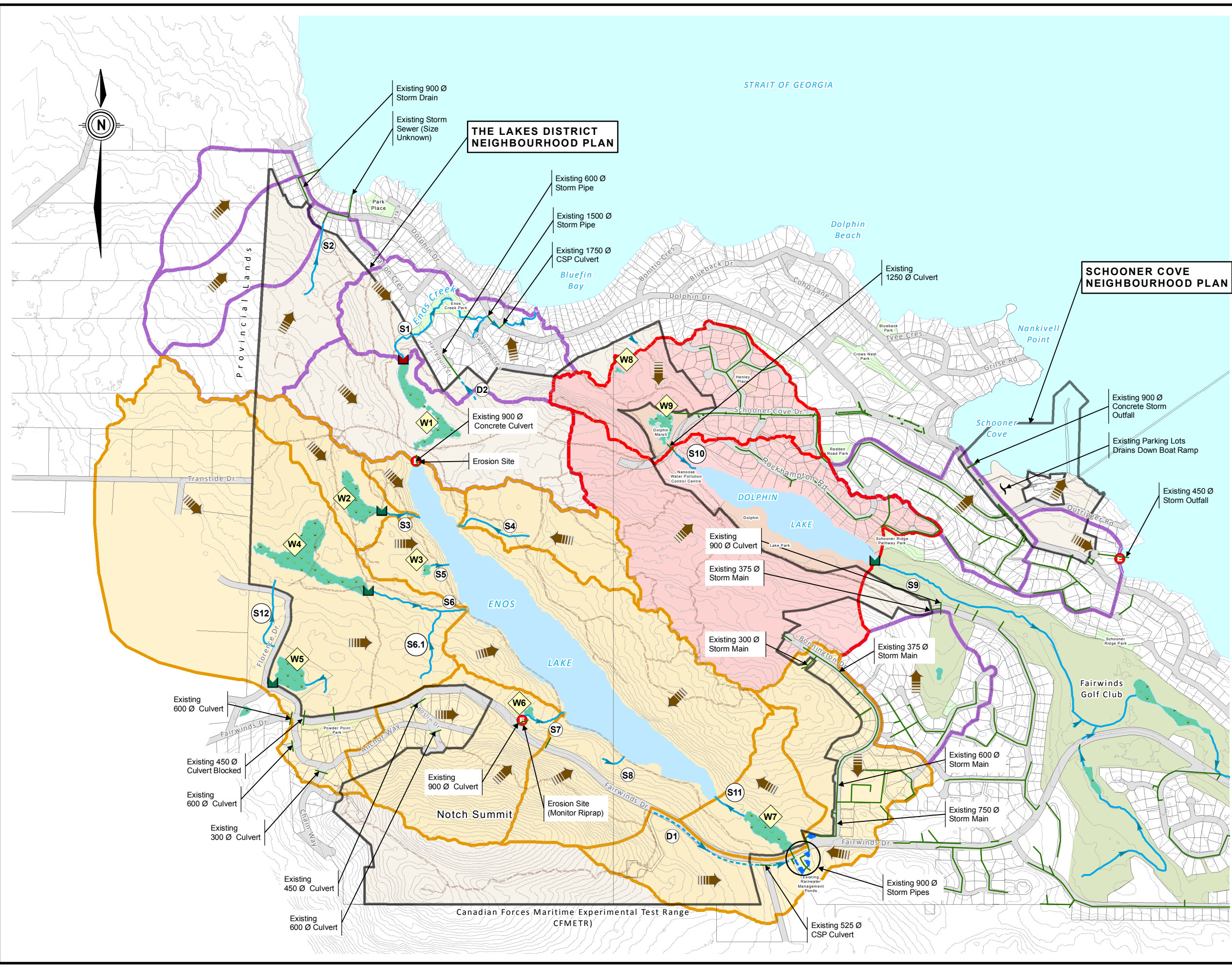
Future Land Use

Figure 4



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 Author: JIau



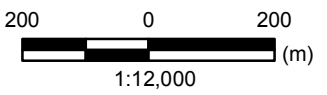
**Bentall Kennedy
 The Lakes District and
 Schooner Cove ISMP**

Legend

- Neighbourhood Area
- Existing Lake
- Existing Detention Pond
- Existing Wetlands
- Existing Watercourse
- Existing Ditch
- Existing Paths
- Contour (2 m Interval)
- Existing Storm Network
- Flow Direction
- Erosion Site
- Pre-development Drainage Catchment
 - Drainage Catchment
 - Catchment Draining to Dolphin Lake
 - Catchment Draining to Enos Lake
- Existing Beaver Dam
 - Not Active
 - Somewhat Active

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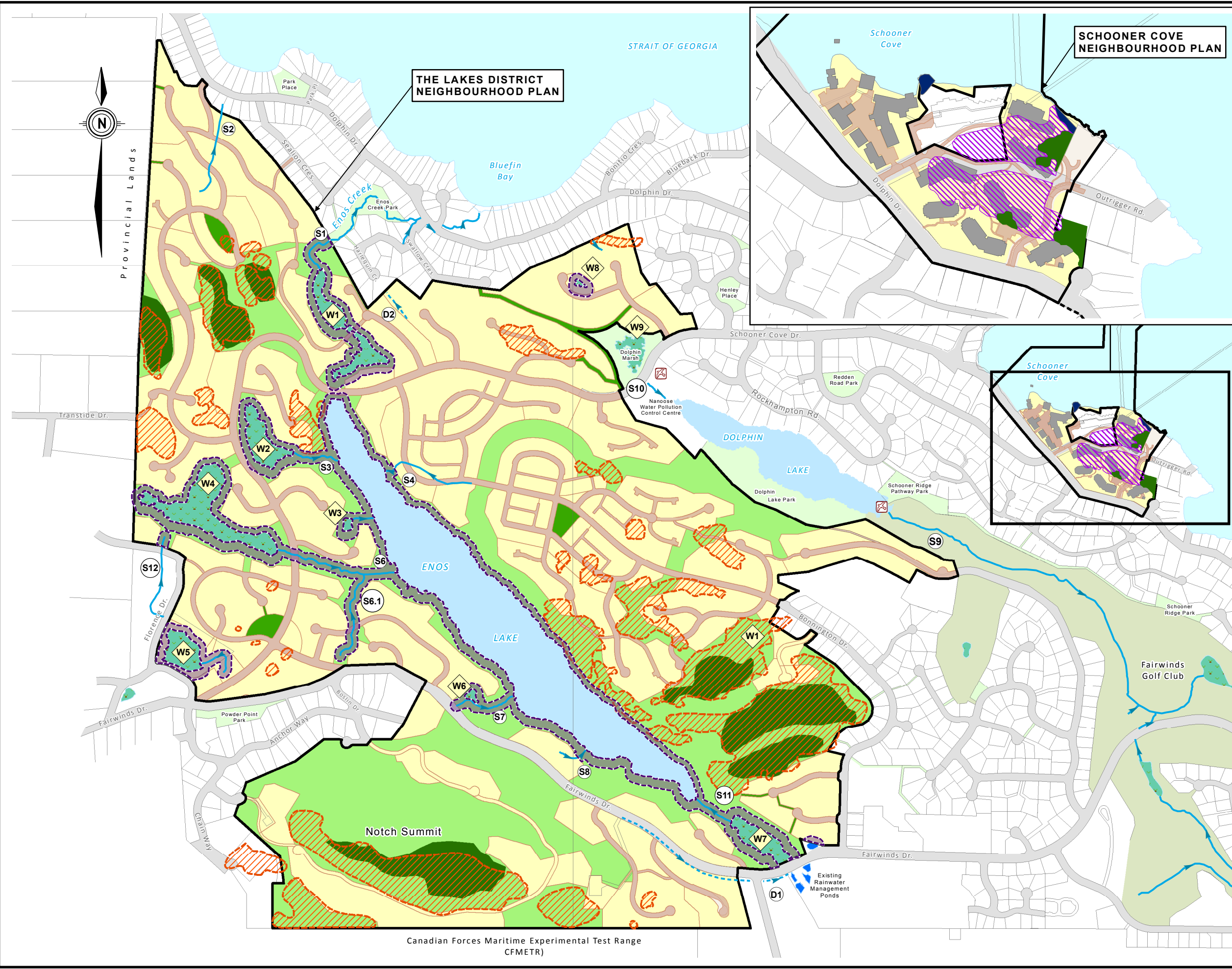


Project No. 2964-002	Date November 2013
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**Existing
 Drainage System**

Figure 5

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 Author: J.Lau

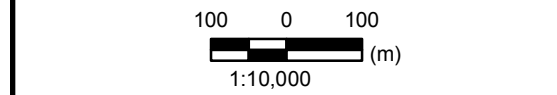


**Bentall Kennedy
 The Lakes District and
 Schooner Cove ISMP**

- Legend**
- Neighbourhood Area
 - Eagle Nest Location
 - Existing Lake
 - Existing Detention Pond
 - Existing Wetlands
 - Existing Watercourse
 - Existing Ditch
 - Existing Road
 - Proposed Road
 - Regional Park
 - Community Park
 - Development Area
 - Streamside Protection and Enhancement Area (SPEA)
 - Coastal Bluff Ecosystem
 - Environmentally Sensitive Areas (Garry Oak Ecosystem)
 - Garry Oak Meadow
 - Second Growth Douglas Fir/Arbutus Ecosystem
 - Wetland ID
 - Watercourse ID
 - Ditch ID

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Environmentally Sensitive Areas

Figure 6

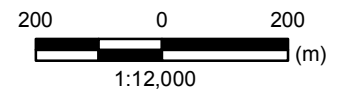
**Bentall Kennedy
The Lakes District and
Schooner Cove ISMP**

Legend

-  Neighbourhood Area
-  Existing Lake
-  Existing Detention Pond
-  Existing Wetlands
-  Contour (2 m Interval)
-  Existing Storm Network
-  Existing Legal
-  Proposed Lots
-  Existing Watercourse
-  Existing Ditch
-  Proposed Cutoff Ditch
-  Pre-development Drainage Catchment
-  Strategic Location for Modelled Flow Estimate Reporting
-  Flow Direction
-  Watercourse ID
-  Ditch ID
- Post-development Drainage Catchment**
-  Drainage Catchment
-  Catchment Draining to Dolphin Lake
-  Catchment Draining to Enos Lake

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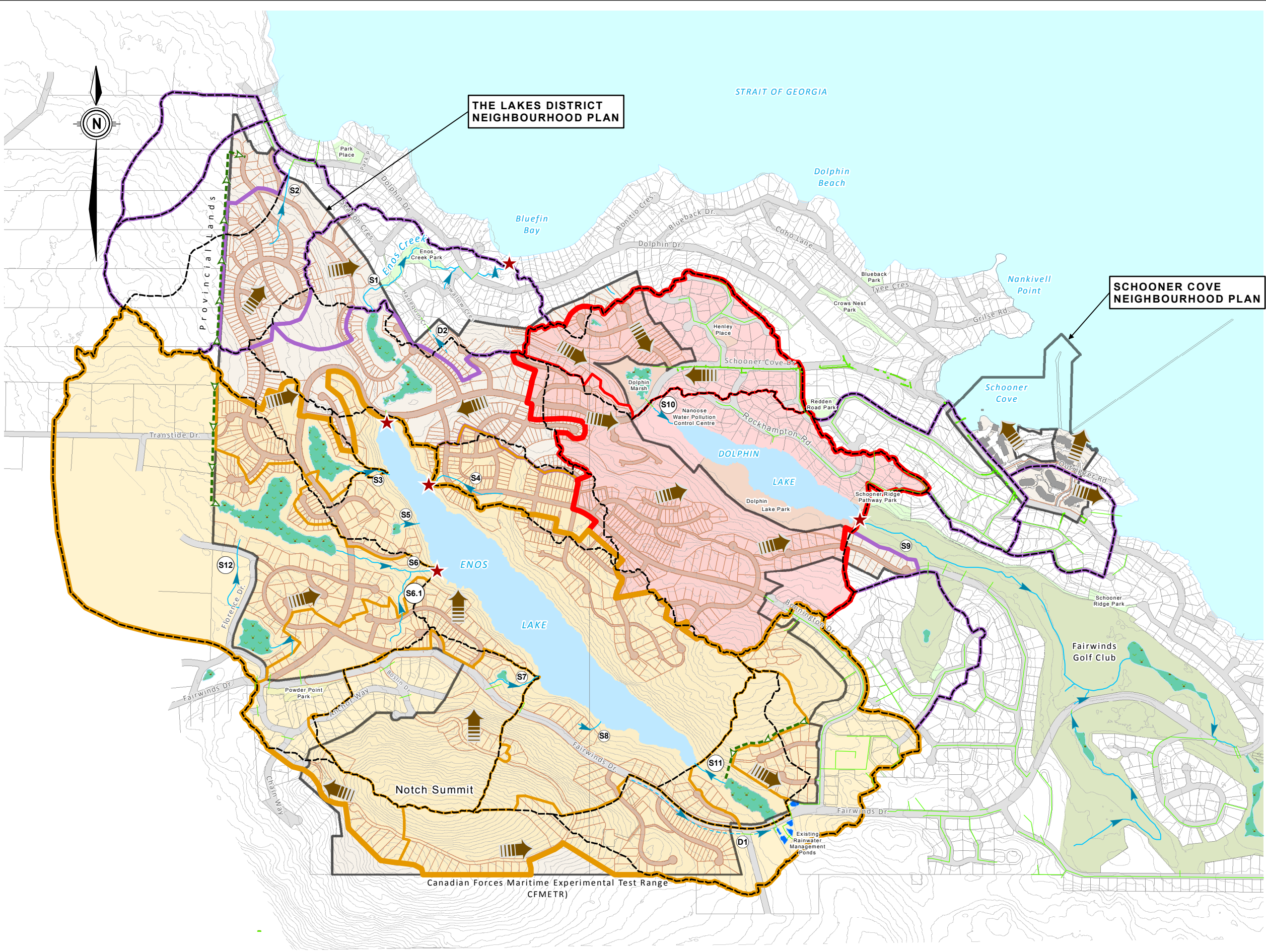
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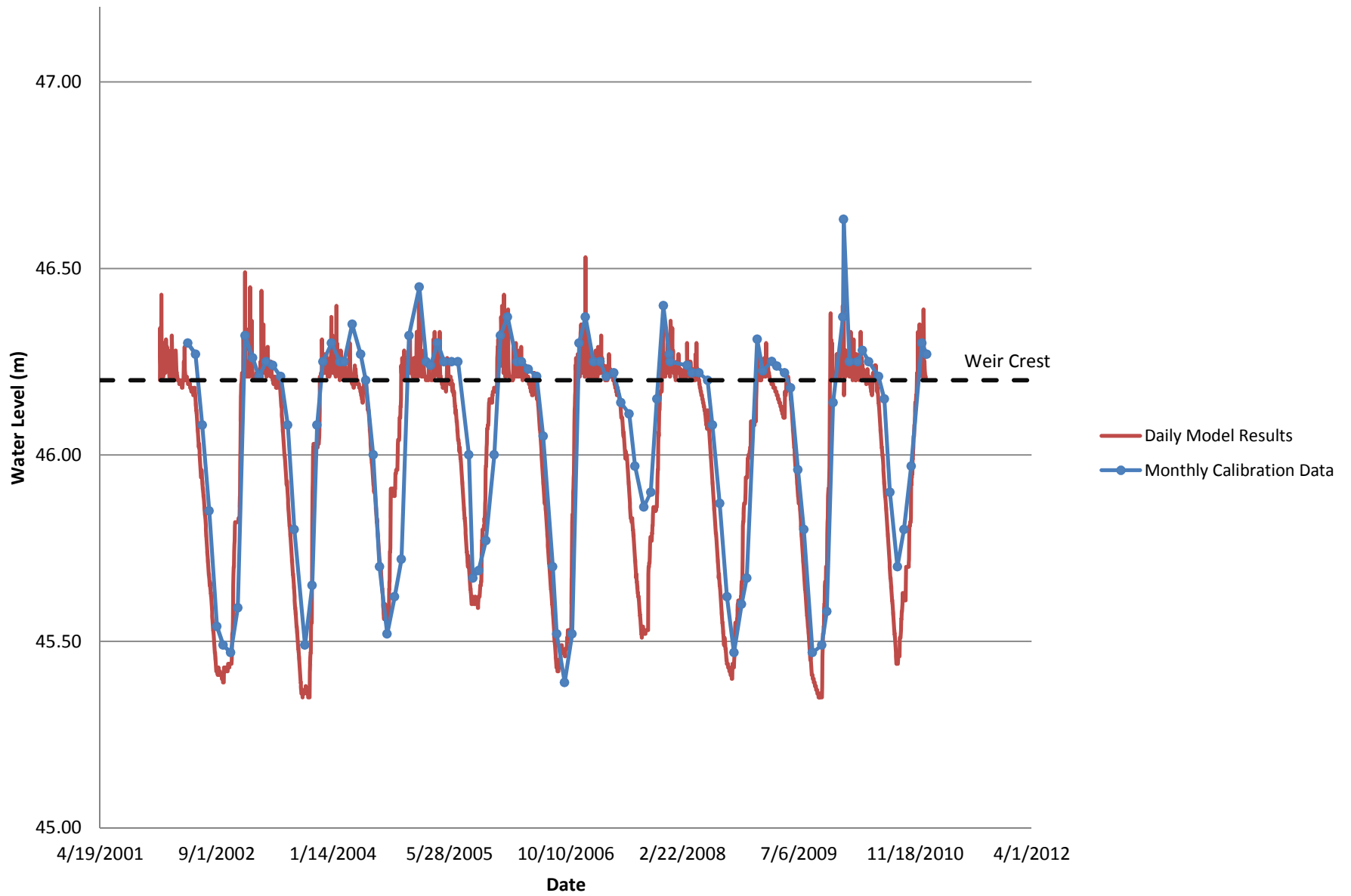
**Pre- and Post-
Development
Drainage Catchments**

Figure 7

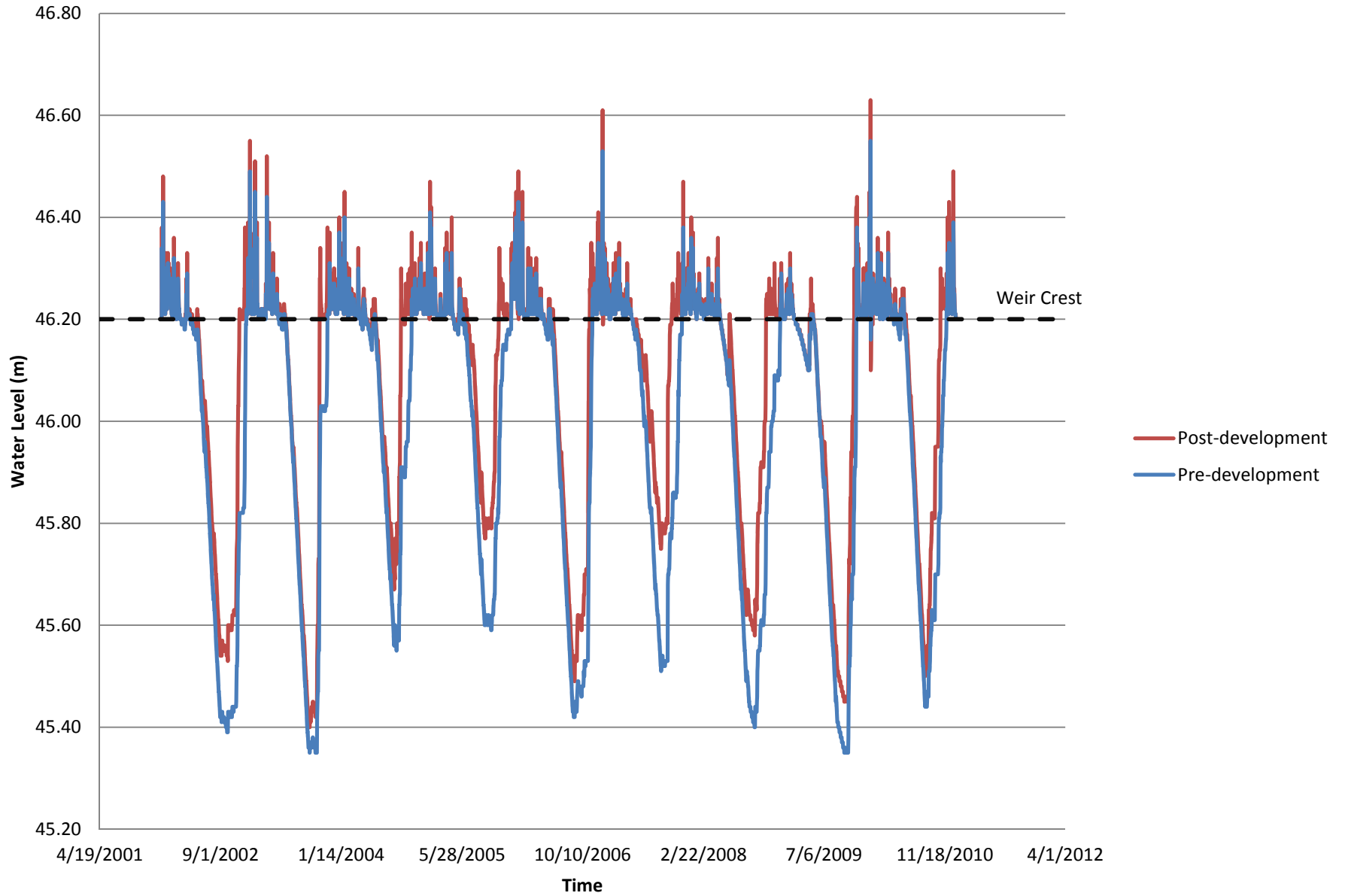


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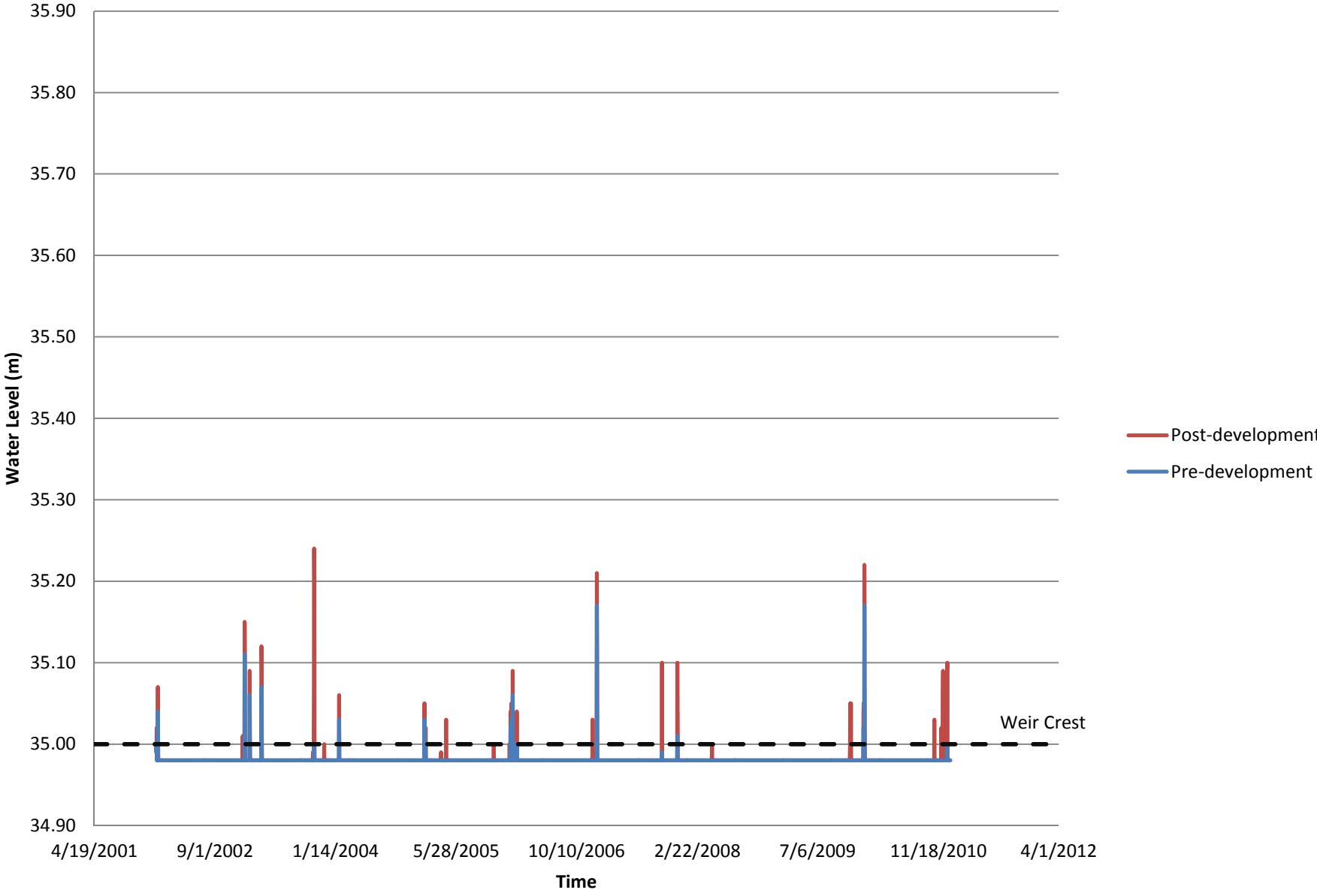
Enos Lake Water Balance Model Validation



Enos Lake Pre- and Post-Development Water Levels



Dolphin Lake Pre- and Post-Development Water Levels



**Bentall Kennedy
The Lakes District and
Schooner Cove ISMP**

Legend

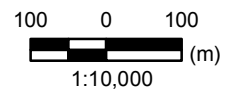
- Neighbourhood Area
- Existing Lake
- Existing Detention Pond
- Existing Wetlands
- Existing Watercourse
- Existing Ditch
- Contour (2 m Interval)
- Existing Storm Network
- Existing Legal
- Flow Direction
- Post-development Drainage Catchment
- Flow Splitter Low Flow to Creek/Wetland High Flow Diverted to Lake
- Wetland ID
- Watercourse ID
- Ditch ID

Proposed Drainage System

- Proposed Cutoff Ditch
- Proposed Storm Sewer (Drains to)**
- Existing Storm System (Water Quality Required and Capacity Checked)
- Creek (Water Quality and Detention Required)
- Lake (Water Quality Required)
- Wetland (Water Quality Required)
- Proposed Storm Outlet (Drains to)**
- Creek
- Lake/Ocean
- Wetland

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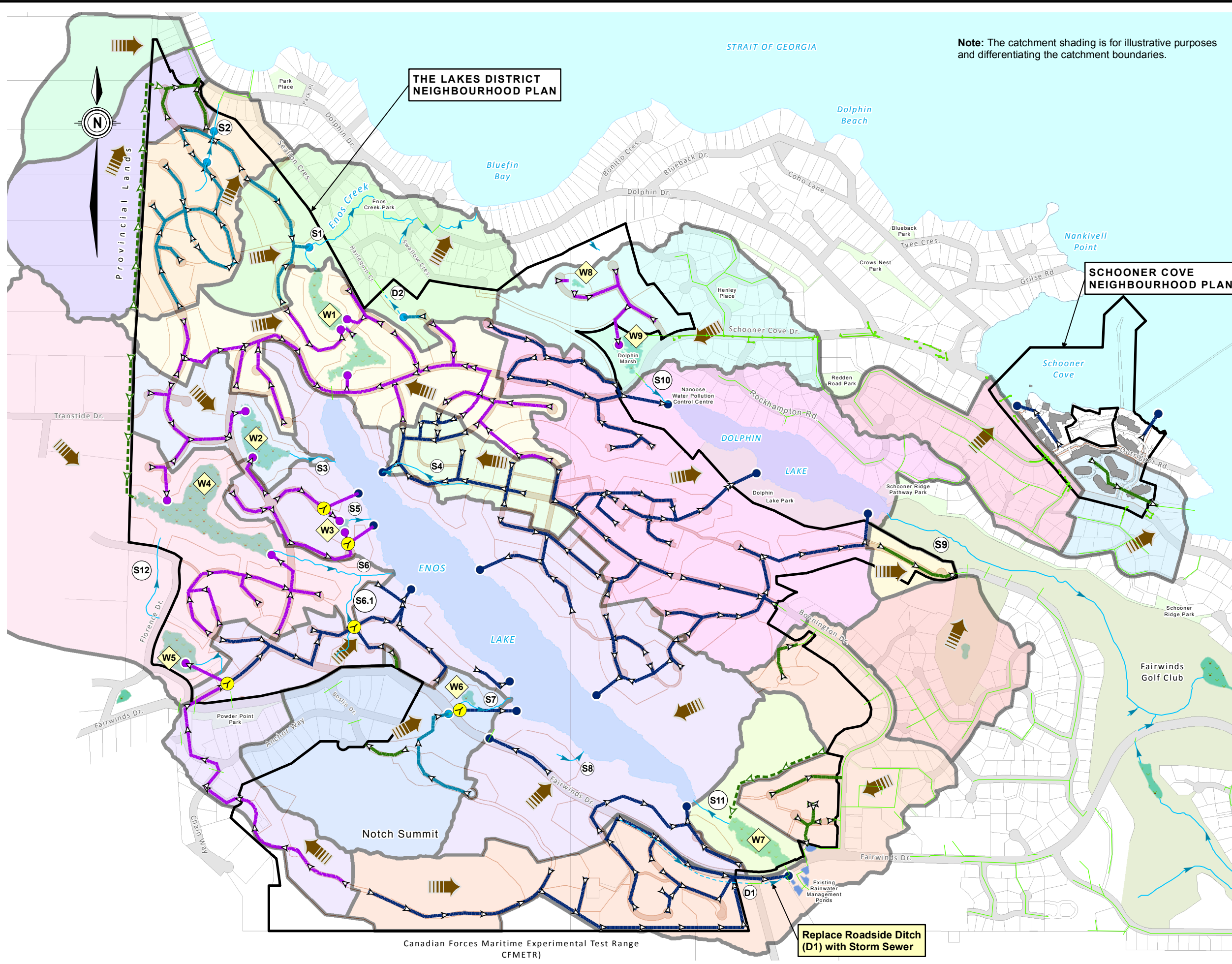
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**Proposed
Drainage System**

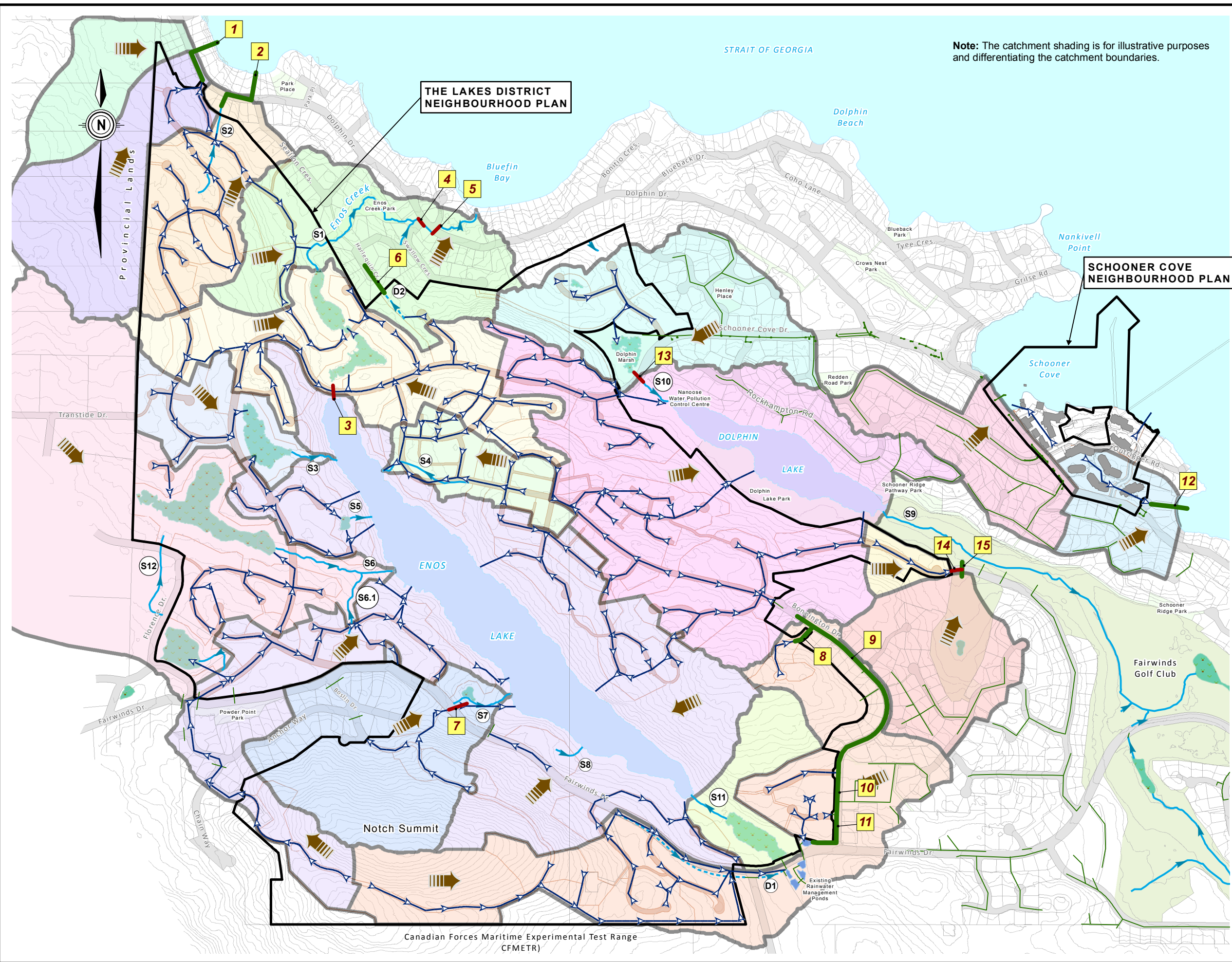
Figure 11



Note: The catchment shading is for illustrative purposes and differentiating the catchment boundaries.

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**Bentall Kennedy
 The Lakes District and
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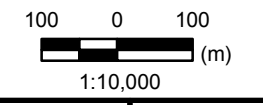
Legend

- Neighbourhood Area
- Existing Lake
- Existing Detention Pond
- Existing Wetlands
- Existing Watercourse
- Existing Ditch
- Contour (2 m Interval)
- Existing Storm Network
- Proposed Lots
- Proposed Drainage Pathway
- Assessed Storm Pipe
- Assessed Culvert
- Flow Direction
- Post-development Drainage Catchment
- Watercourse ID
- Ditch ID
- Pipe/Culvert ID

Reference: Base data from Ekistics.

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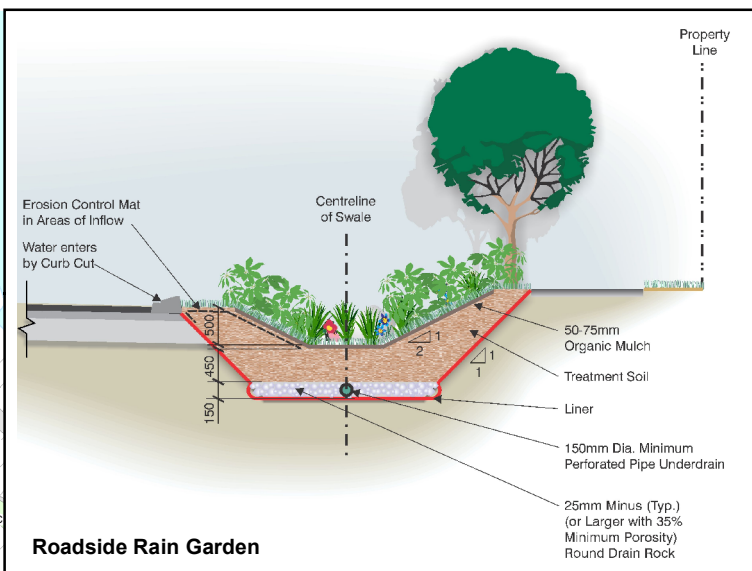
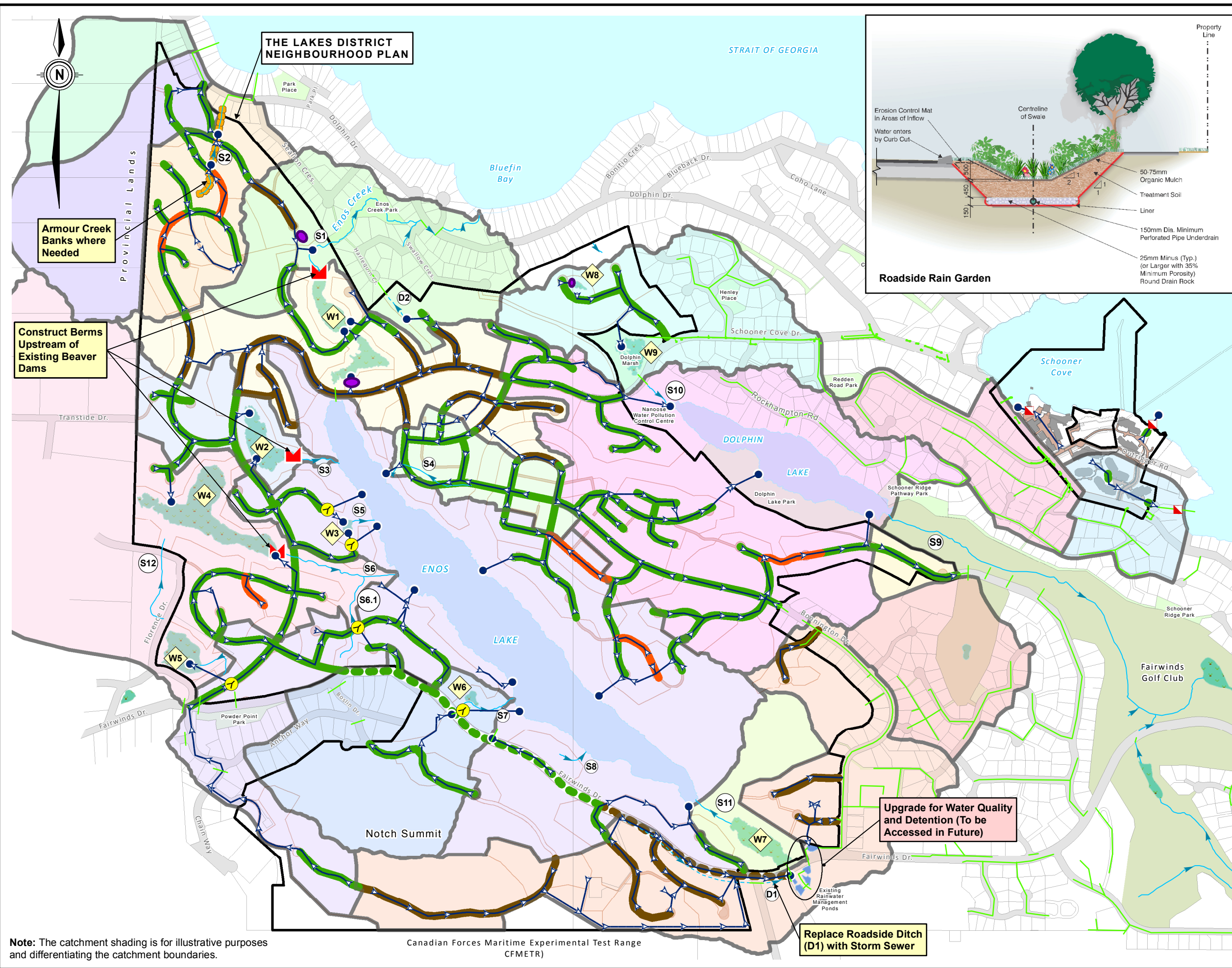
Project No.
2964-002

Date
November 2013

**Impact to
 Downstream Drainage**

Figure 12

Path: C:\2900-2999\2964-002\430-GIS\MXD-Rp\2964002_Fig13_ProposedStormwaterManagement.mxd Date Saved: 21/11/2013 9:35:57 AM Author: Jlau



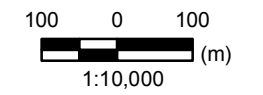
Bentall Kennedy
The Lakes District and Schooner Cove ISMP

Legend

- Neighbourhood Area
- Existing Lake
- Existing Detention Pond
- Existing Wetlands
- Existing Watercourse
- Existing Ditch
- Existing Storm Network
- Proposed Drainage Pathway
- Rainwater Creeks or Piped Outlets
- Post-development Drainage Catchment
- Proposed Regional Wetland
- Proposed Regional Wetland and Detention
- Proposed Oil/Grit Separator
- Flow Splitter Low Flow to Creek/Wetland High Flow Diverted to Lake
- Proposed Roads > 10% Grade (No Rain Garden)
- Rain Gardens within Roads
- Roadways Draining to Regional Facilities
- Rain Gardens within Roads
- Roadways Draining to Regional Facilities

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Proposed Stormwater Management Environmental Protection Measures
Figure 13

Note: The catchment shading is for illustrative purposes and differentiating the catchment boundaries.

Canadian Forces Maritime Experimental Test Range (CFMETR)

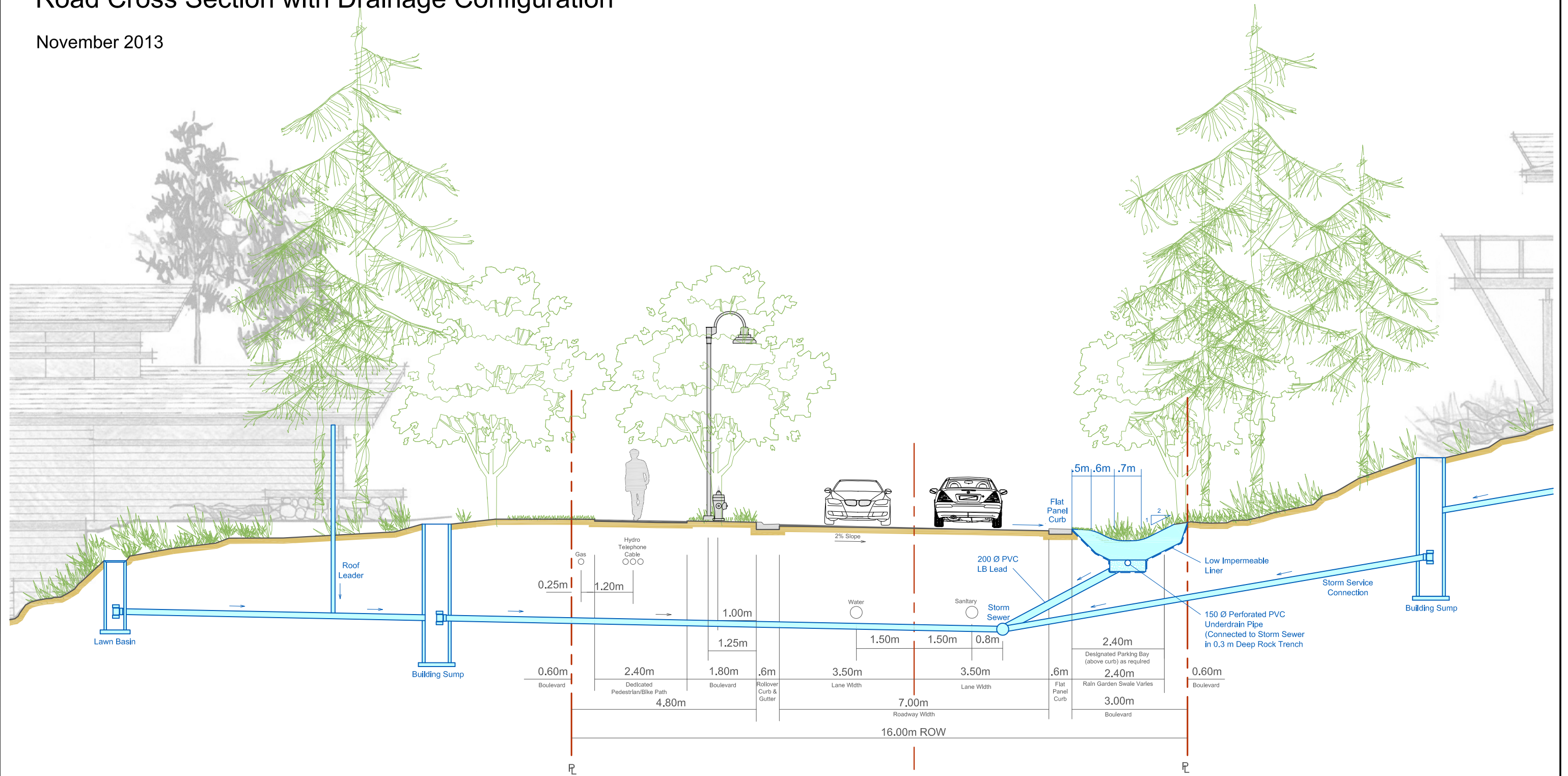
Replace Roadside Ditch (D1) with Storm Sewer

Upgrade for Water Quality and Detention (To be Accessed in Future)

11/19/2013 3:52 PM

Minor Collector 50 km/h Road Cross Section with Drainage Configuration

November 2013



Minor Collector 50 km/h

Typical Condition



Q:\2900-2999\2964-002\501-Drawings\2964-002-Cross-Section_Fig14.dwg

Path: C:\2900-2999\2964-002\430-GIS\MXD-Rp\2964002_Fig15_Pre_PostWetlandCatchments.mxd Date Saved: 21/11/2013 8:47:43 AM
 Author: JIau

THE LAKES DISTRICT NEIGHBOURHOOD PLAN

Note: The catchment shading is for illustrative purposes and differentiating the catchment boundaries.

Stormwater Management Environmental Protection Measures (See Figure 13 for Details)

- Proposed Roads > 10 % Grade (No Rain Garden)
- Existing Road with Modifications
 - Rain Gardens within Roads
 - Roadways Draining to Regional Facilities
- Proposed Roads
 - Rain Gardens within Roads
 - Roadways Draining to Regional Facilities

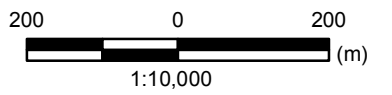
**Bentall Kennedy
The Lakes District and
Schooner Cove ISMP**

Legend

- Neighbourhood Area
- Existing Lake
- Existing Detention Pond
- Existing Wetlands
- Contour (2 m Interval)
- Existing Storm Network
- Existing Legal
- Proposed Lots
- Existing Watercourse
- Existing Ditch
- Proposed Cutoff Ditch
- Flow Direction
- Flow Splitter Low Flow to Creek/Wetland High Flow Diverted to Lake
- Pre-development Wetland Catchment
- Post-development Wetland Catchment
- Assessment to Existing Wetlands**
 - Construct Detention Facility Upstream
 - Utilize Wetland for Detention
 - Divert High Flows Around Wetland
- Wetland ID

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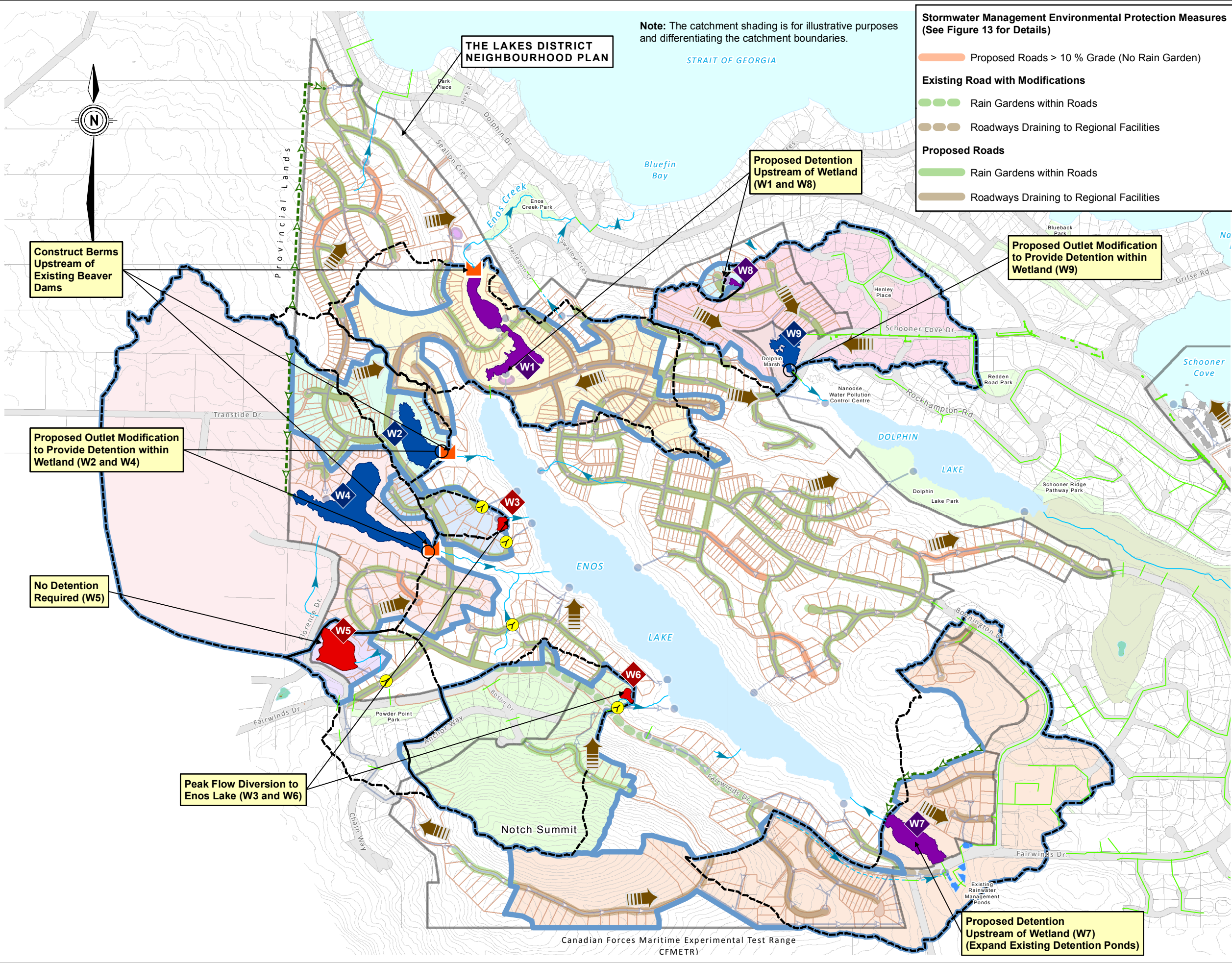
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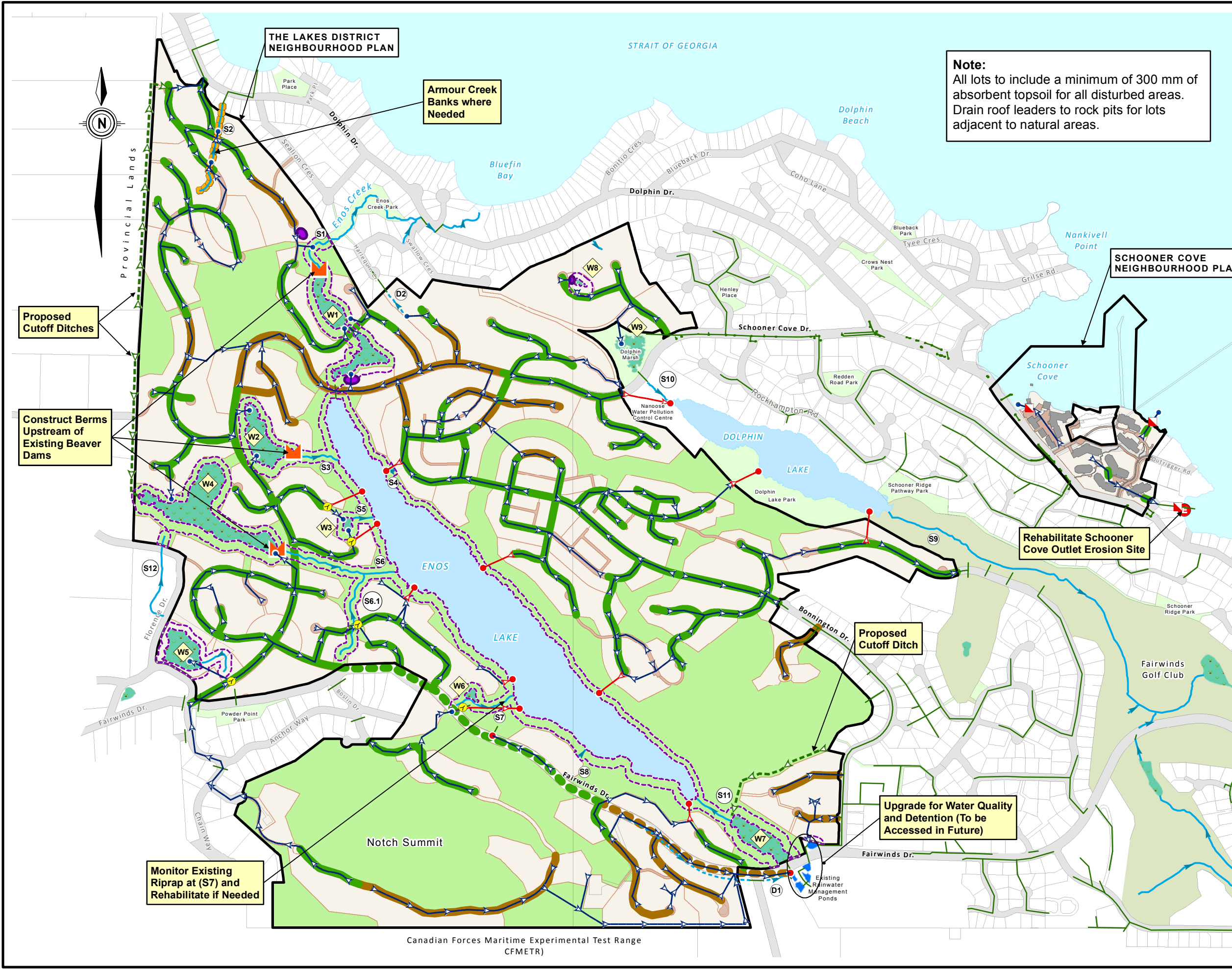
**Hydrologic Assessment
of Wetlands**

Figure 15



Canadian Forces Maritime Experimental Test Range (CFMETR)

Path: Q:\2900-2999\2964-002\430-GIS\MXD-Rp\2964002_Fig16_ISMP.mxd Date Saved: 21/11/2013 9:42:22 AM
 Author: J.Lau



Note:
 All lots to include a minimum of 300 mm of absorbent topsoil for all disturbed areas.
 Drain roof leaders to rock pits for lots adjacent to natural areas.

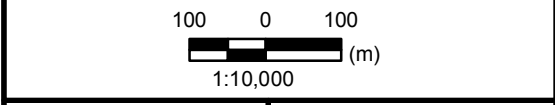
**Bentall Kennedy
 The Lakes District and
 Schooner Cove ISMP**

- Legend**
- Neighbourhood Area
 - Existing Lake
 - Existing Detention Pond
 - Existing Wetlands
 - Existing Watercourse
 - Existing Ditch
 - Proposed Cutoff Ditch
 - Piped Outlets with Energy Dissipators to Wetlands or Creeks
 - Rainwater Creeks or Piped Outlets to Enos Lake or Dolphin Lake (to be Selected During Detailed Design)
 - Proposed Regional Wetland
 - Proposed Regional Wetland and Detention
 - Proposed Oil/Grit Separator
 - Flow Splitter Low Flow to Creek/Wetland High Flow Diverted to Lake
 - Wetland ID
 - Watercourse ID
 - Ditch ID
 - Conserve Environmentally Sensitive Areas as Regional Parks
 - Streamside Protection and Enhancement Area (SPEA)

- Existing Road with Modifications**
- Rain Gardens within Roads
 - Roadways Draining to Regional Facilities
- Proposed Roads**
- Rain Gardens within Roads
 - Roadways Draining to Regional Facilities

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ISMP Plan

Figure 16