

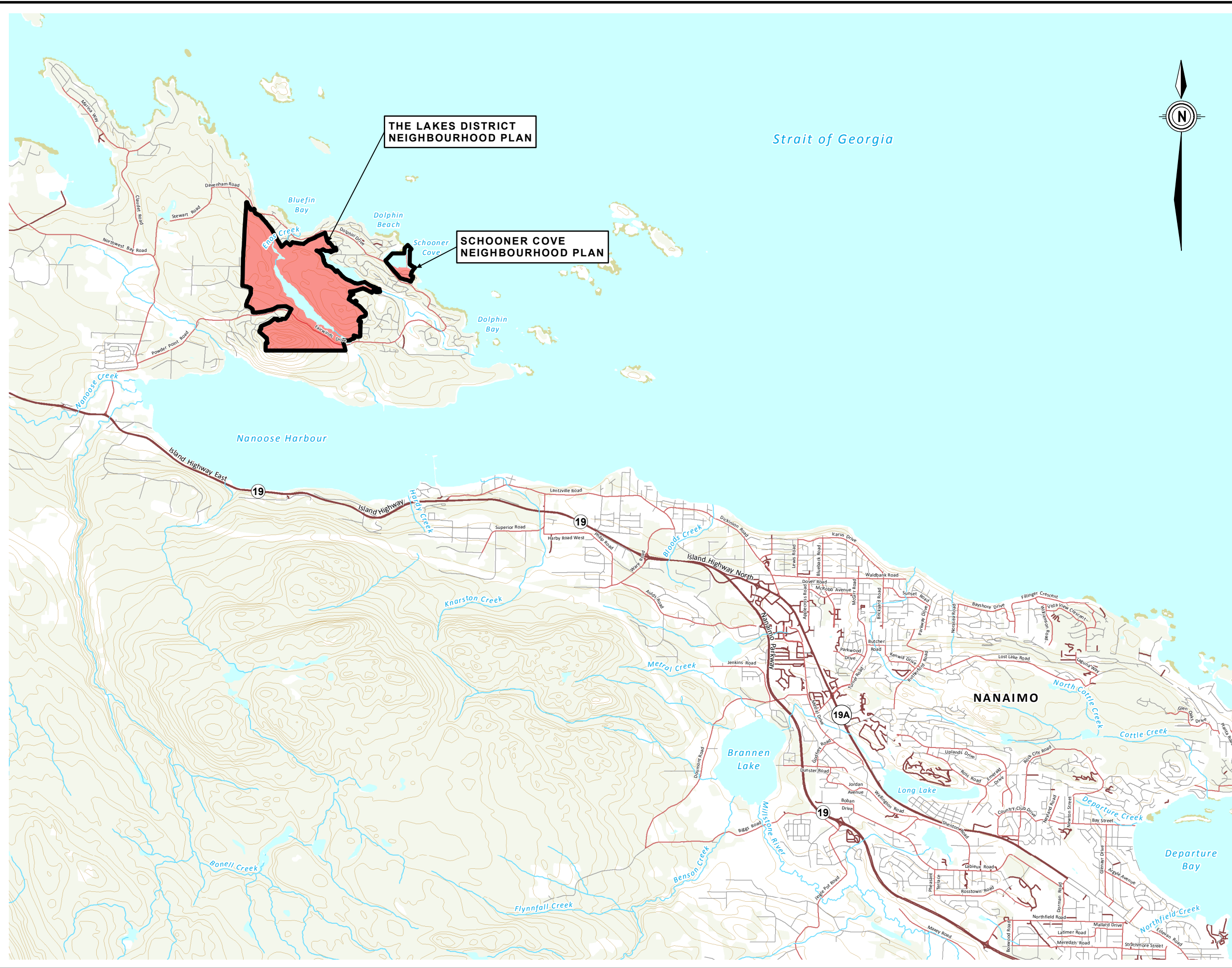
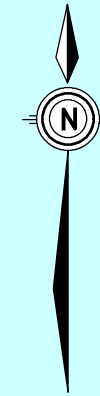


**Bentall Kennedy
The Lakes District and
Schooner Cove ISMP**

Legend

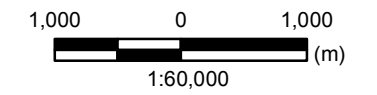
-  Neighbourhood Area
-  Major Road



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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**Regional
Location Map**

Figure 1




Path: C:\2900-2999\2964-002\GIS\MXD-Rp\2964002_Fig1_Location.mxd Date Saved: 09/04/2014 9:25:37 AM 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

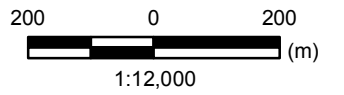
Pre-development Drainage Catchment

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

Reference: Base data from Ekistics.



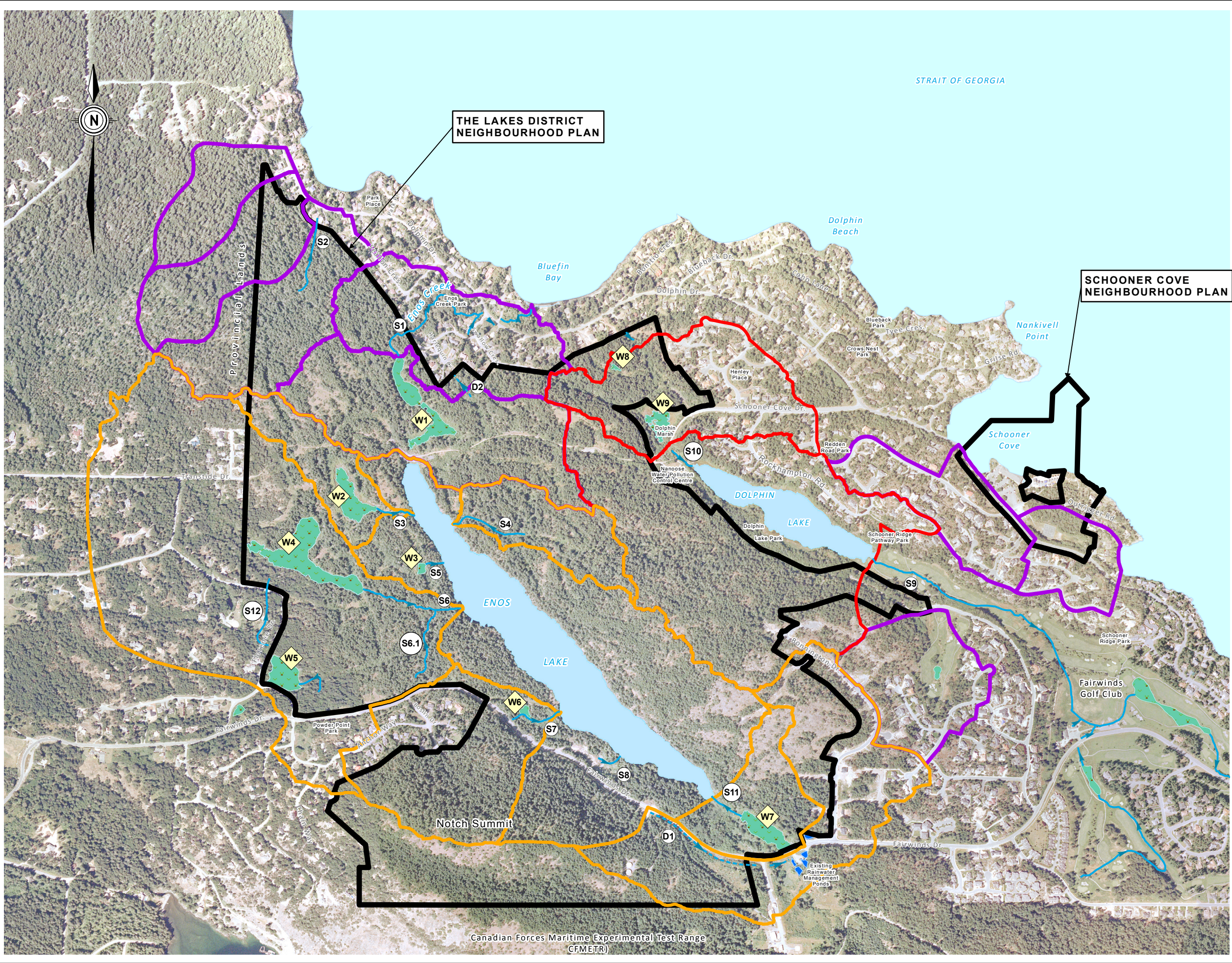
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2007 Air Photo





Figure 2








Path: C:\2900-2999\2964-002\430-GIS\MXD-Rp\2964002_Fig2_Photo.mxd Date Saved: 19/11/2013 2:56:57 PM Author: J.Lau

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

Legend

-  Neighbourhood Area
-  Existing Lake
-  Existing Detention Pond
-  Existing Wetlands
-  Watercourse

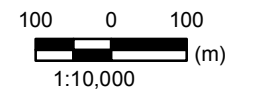
Slope

-  0 - 10 %
-  10 - 20 %
-  20 - 30 %
-  30 - 40 %
-  > 40 %

Reference: Base data from Ekistics.



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2964-002

Date
April 2014























Topography

Figure 3



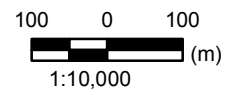
**Bentall Kennedy
The Lakes District and
Schooner Cove ISMP**

Legend

-  Neighbourhood Area
 -  Existing Lake
 -  Existing Detention Pond
 -  Existing Wetlands
 -  Existing Watercourse
 -  Existing Ditch
 -  Civic Infrastructure
 -  Community Park (Active)
 -  Fairwinds Golf Club
 -  Public Road ROW
-
- Land Use Designation**
-  Regional Park
 -  Community Park
 -  Single Dwelling
 -  Single Dwelling Duplex
 -  Multiple Dwelling
 -  Community Mixed Use
 -  Village Mixed Use
 -  Lakehouse Centre
 -  Civic Infrastructure
 -  Marina
 -  The Notch Park Lands Subject to Option to Purchase
 -  Lookout Development Lands

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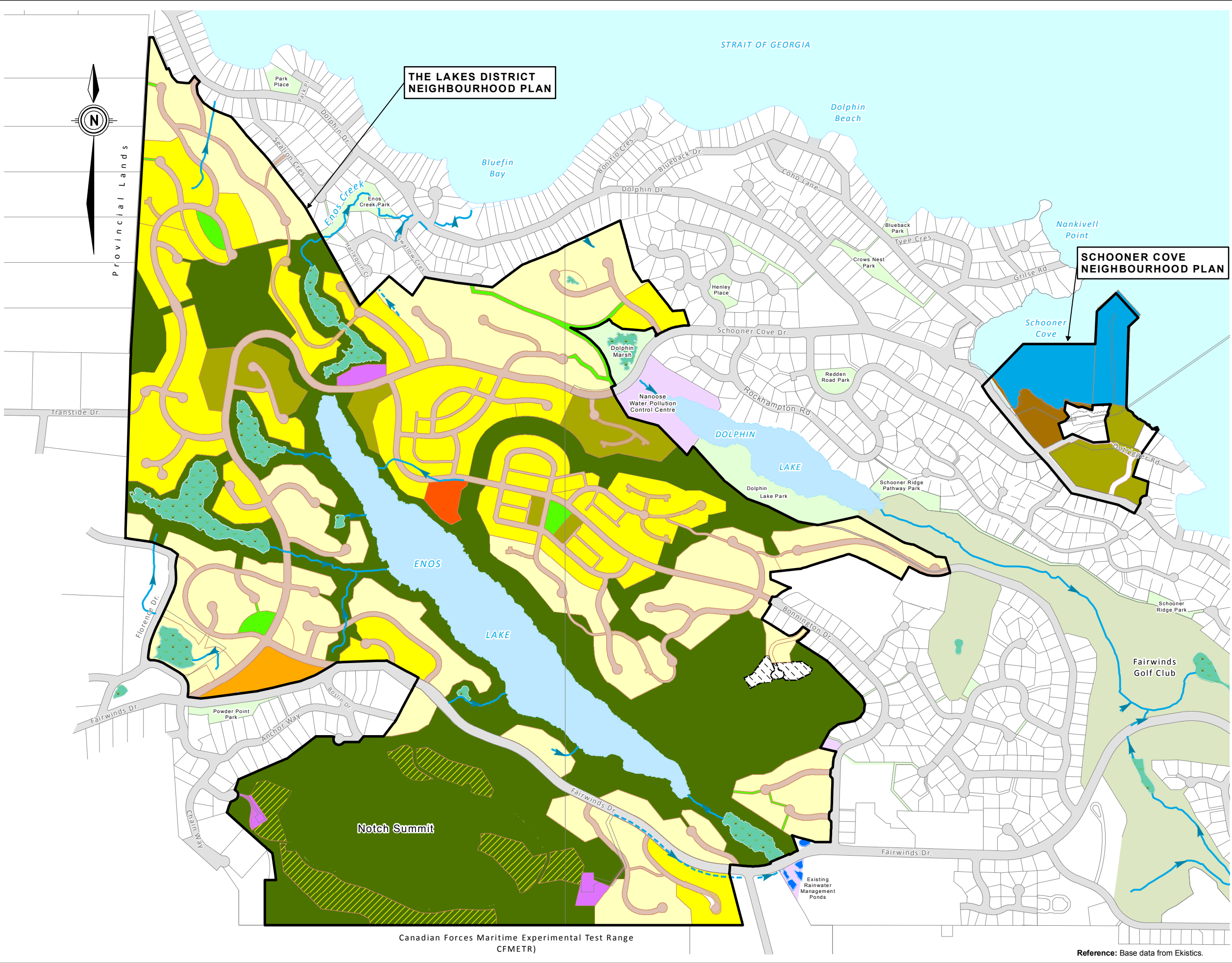
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Future Land Use

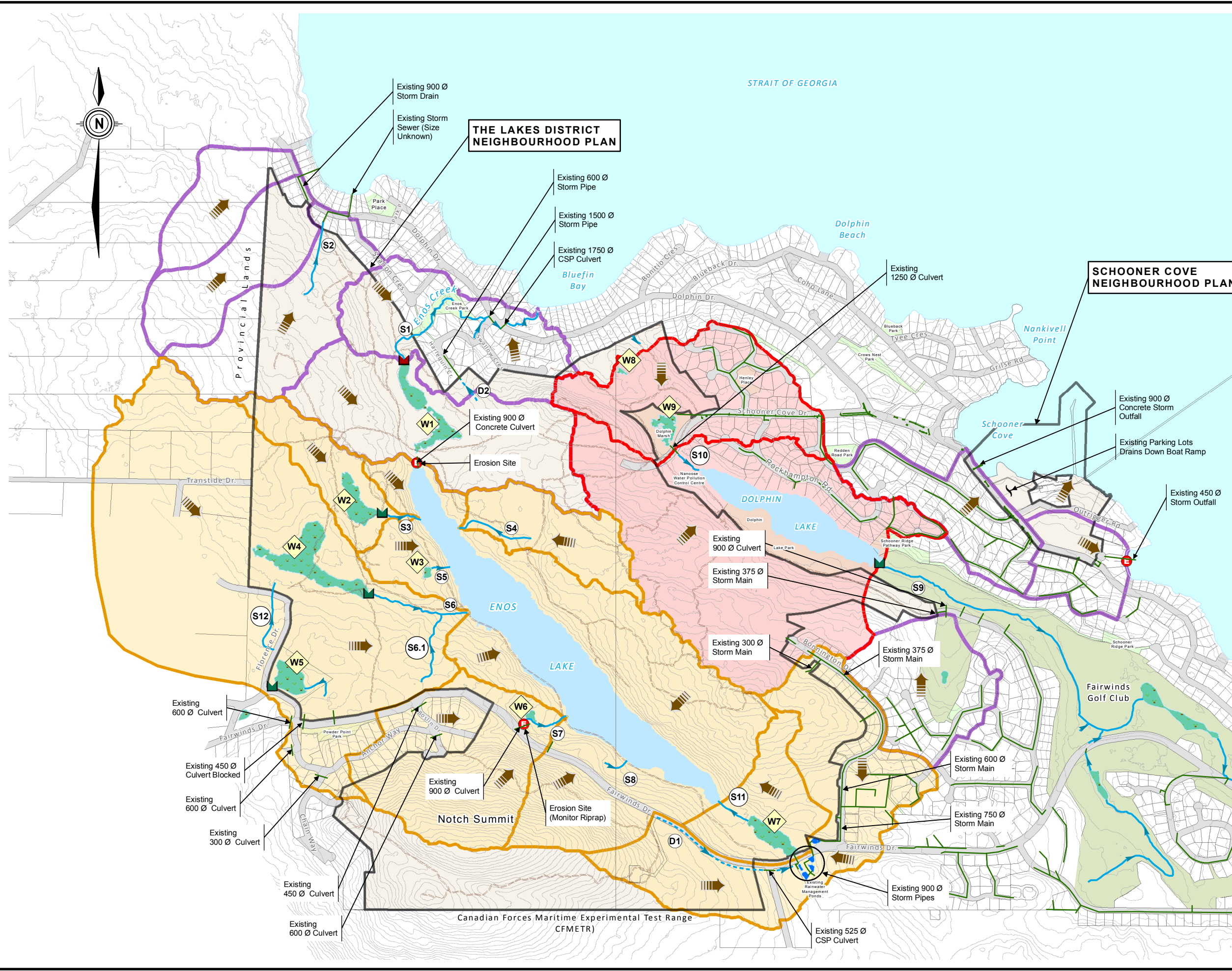
Figure 4



Path: C:\2900-2999\2964-002\GIS\MXD-Rp\2964002_Fig4_Landuse.mxd Date Saved: 09/04/2014 8:55:03 AM Author: JIau

Reference: Base data from Ekistics.

Path: C:\2900-2999\2964-002\430-GIS\MXD-Rp\2964002_Fig5_ExistingStormwaterPlan.mxd Date Saved: 19/11/2013 2:57:31 PM
 Author: J.Lau



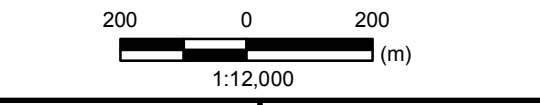
**Bentall Kennedy
 The Lakes District and
 Schooner Cove ISMP**

- Legend**
- Neighbourhood Area
 - Existing Lake
 - Existing Detention Pond
 - Existing Wetlands
 - Existing Watercourse
 - Existing Ditch
 - Existing Paths
 - Contour (2 m Interval)
 - Existing Storm Network
 - Flow Direction
 - Erosion Site
 - Wetland ID
 - Watercourse ID
 - Ditch ID

- 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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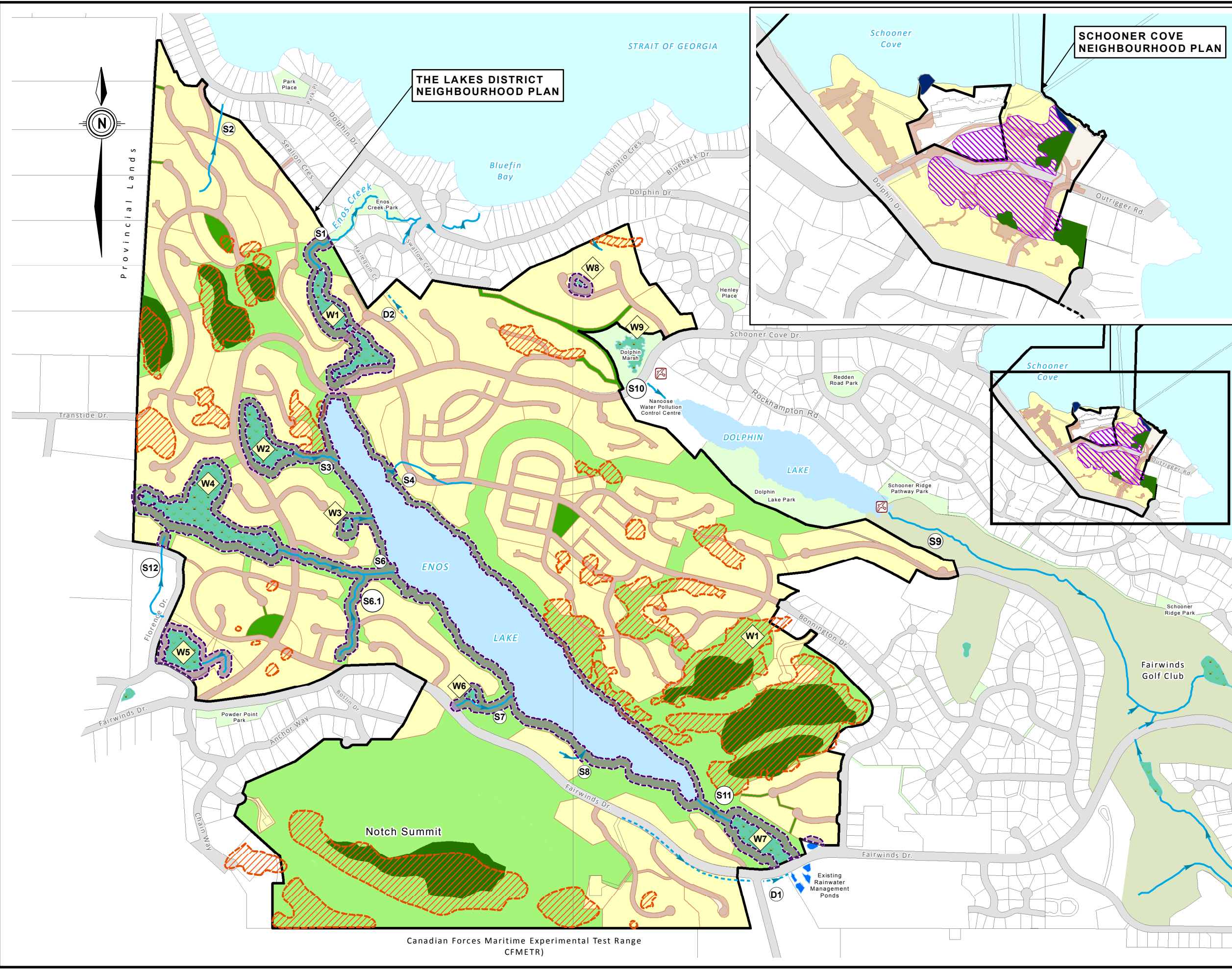


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**Existing
 Drainage System**

Figure 5

Path: C:\2900-2999\2964-002\430-GIS\MXD-Rp\2964002_Fig6_EnvironmentalValues.mxd Date Saved: 09/04/2014 9:12:09 AM
 Author: J.Lau

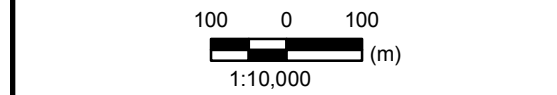


**Bentall Kennedy
 The Lakes District and
 Schooner Cove ISMP**

- 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

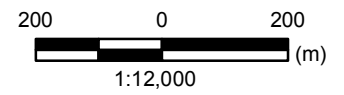
**Bentall Kennedy
The Lakes District and
Schooner Cove ISMP**

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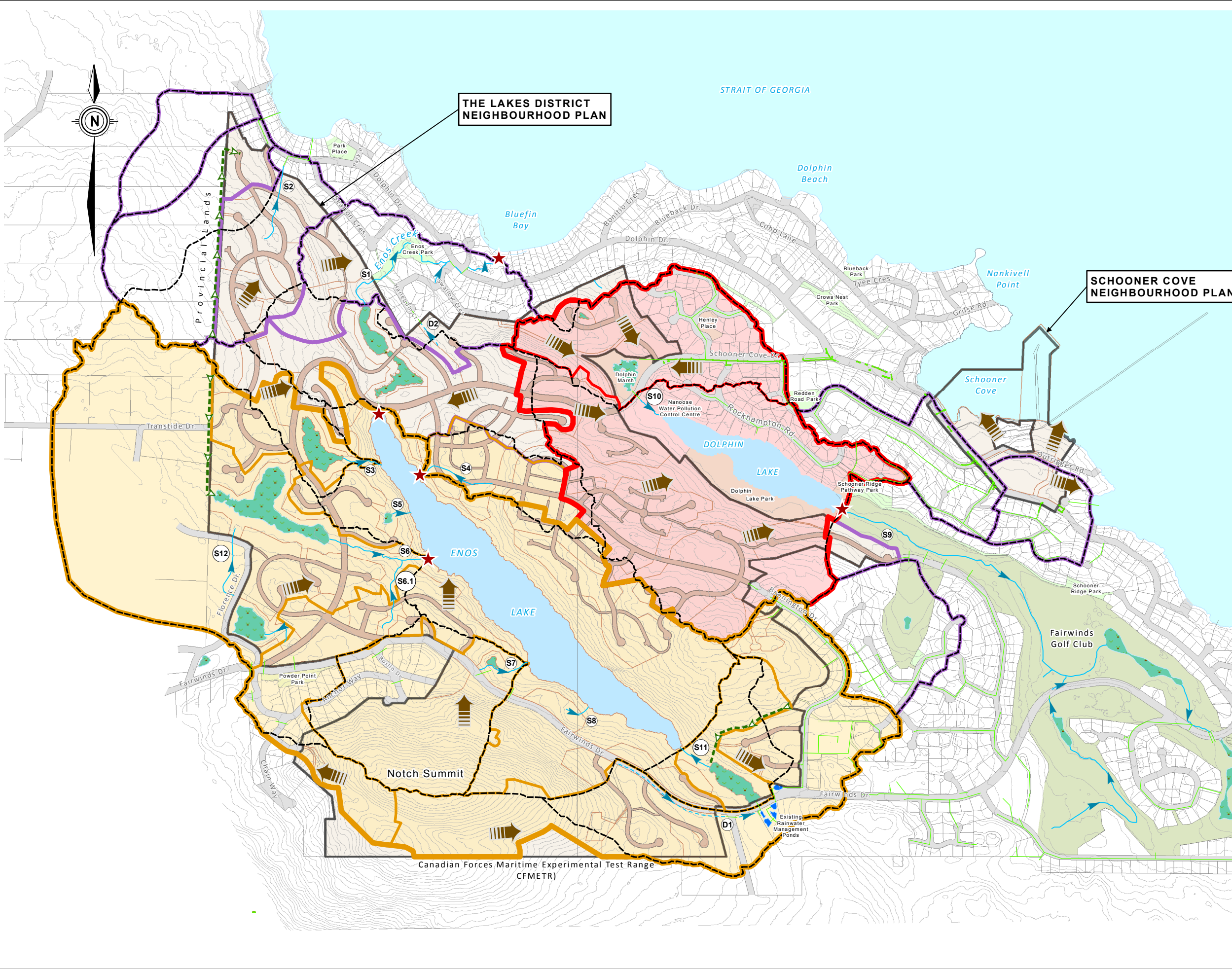
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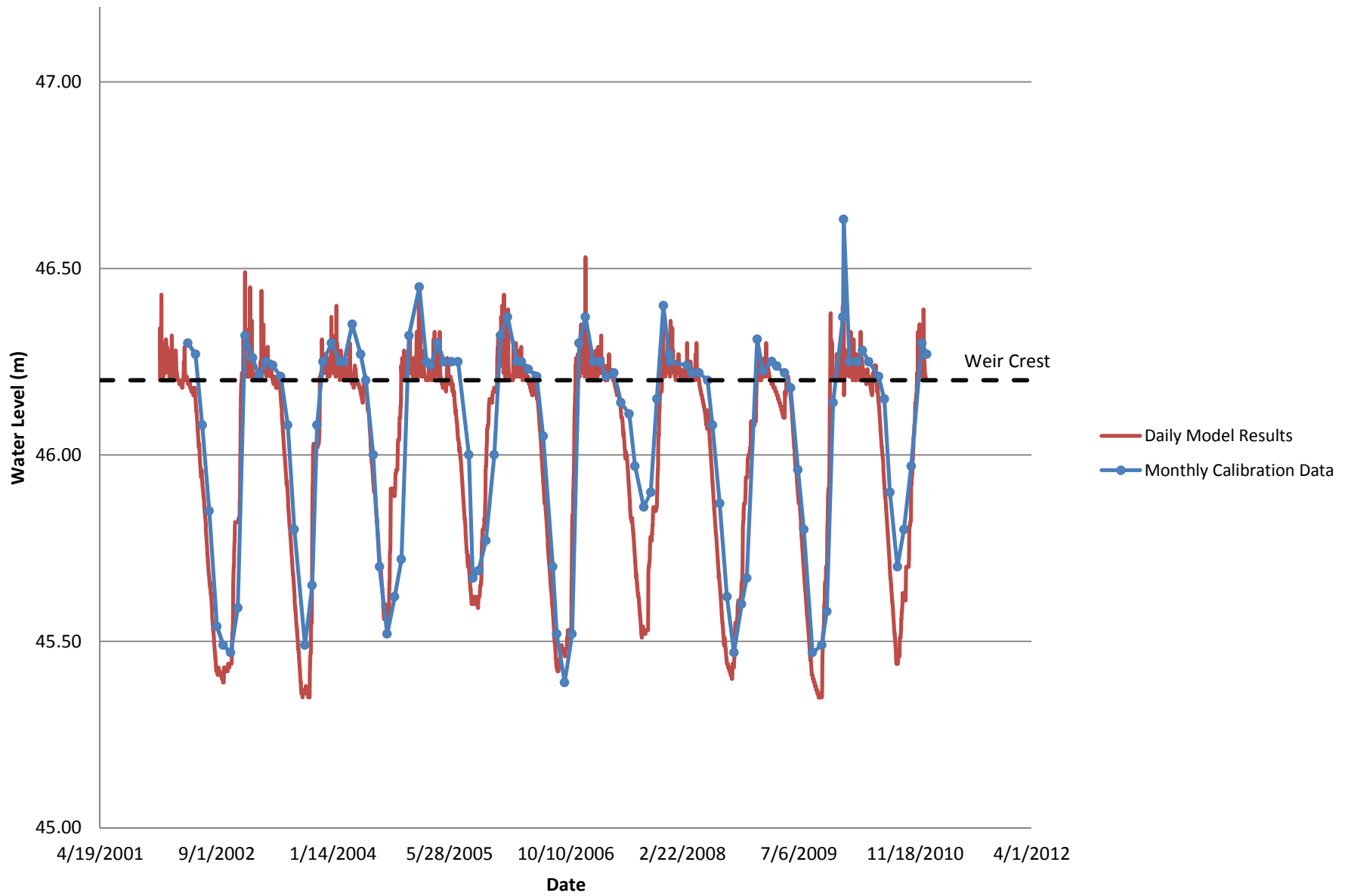
**Pre- and Post-
Development
Drainage Catchments**

Figure 7

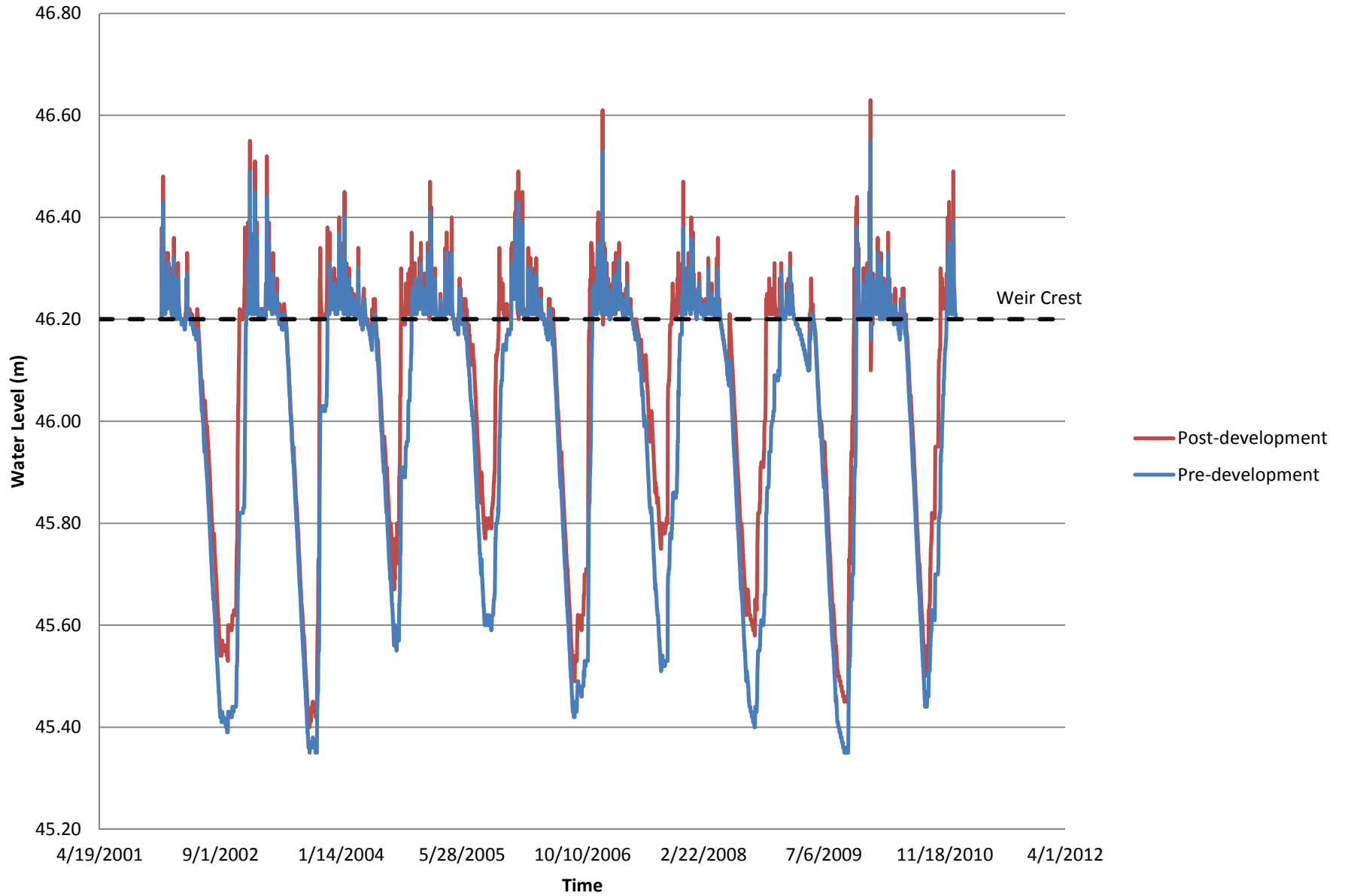


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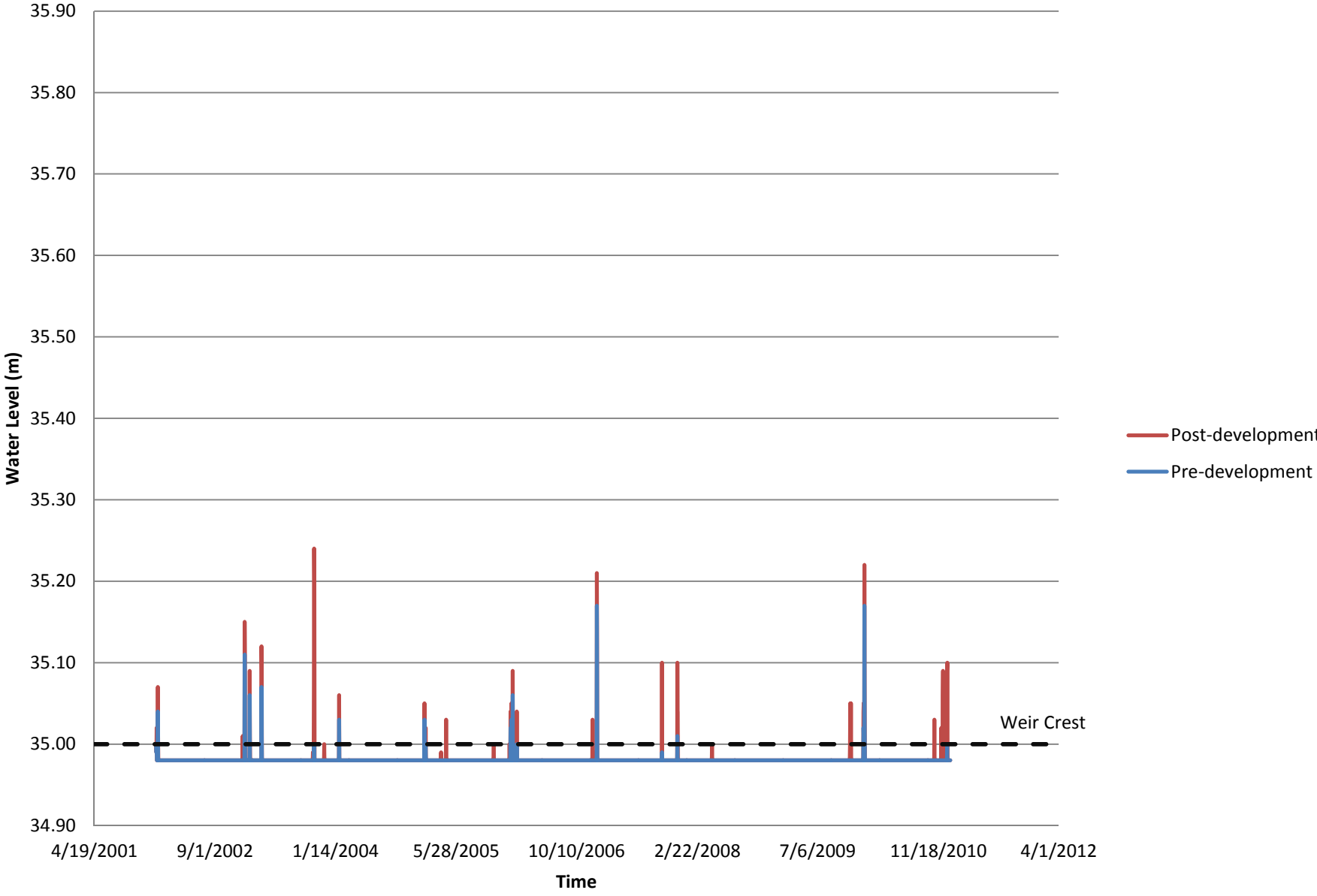
Enos Lake Water Balance Model Validation



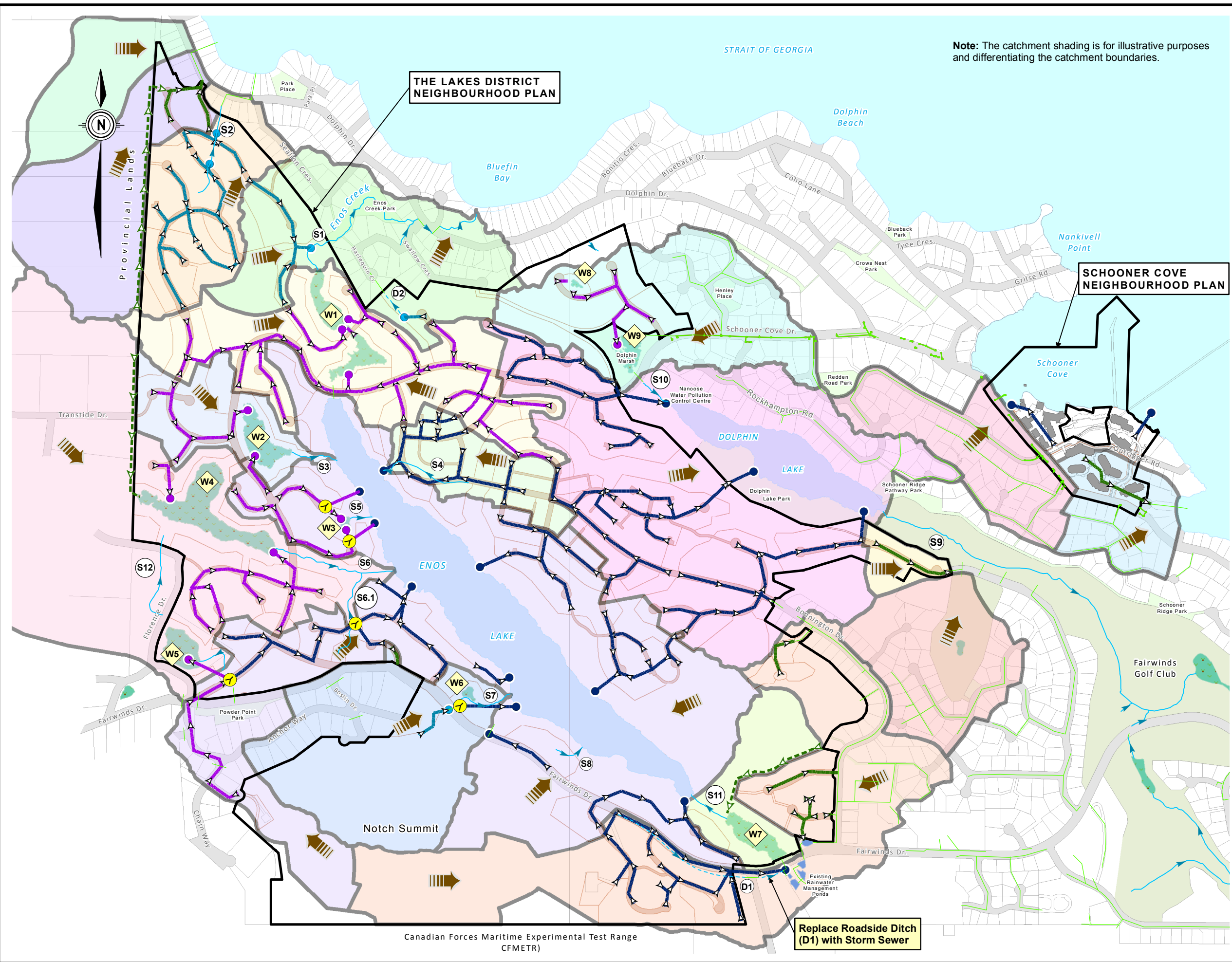
Enos Lake Pre- and Post-Development Water Levels



Dolphin Lake Pre- and Post-Development Water Levels



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

Bentall Kennedy
The Lakes District and
Schooner Cove ISMP

Legend

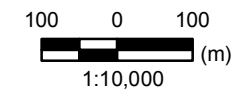
- Neighbourhood Area
- Existing Lake
- Existing Detention Pond
- Existing Wetlands
- Existing Watercourse
- Existing Ditch
- Contour (2 m Interval)
- Existing Storm Network
- Existing Legal
- Flow Direction
- Post-development Drainage Catchment
- Flow Splitter Low Flow to Creek/Wetland High Flow Diverted 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)
 - Lake (Water Quality Required)
 - Wetland (Water Quality Required)
 - Creek (Water Quality and Detention Required)
- Proposed Storm Outlet (Drains to)**
 - Creek
 - Lake/Ocean
 - Wetland

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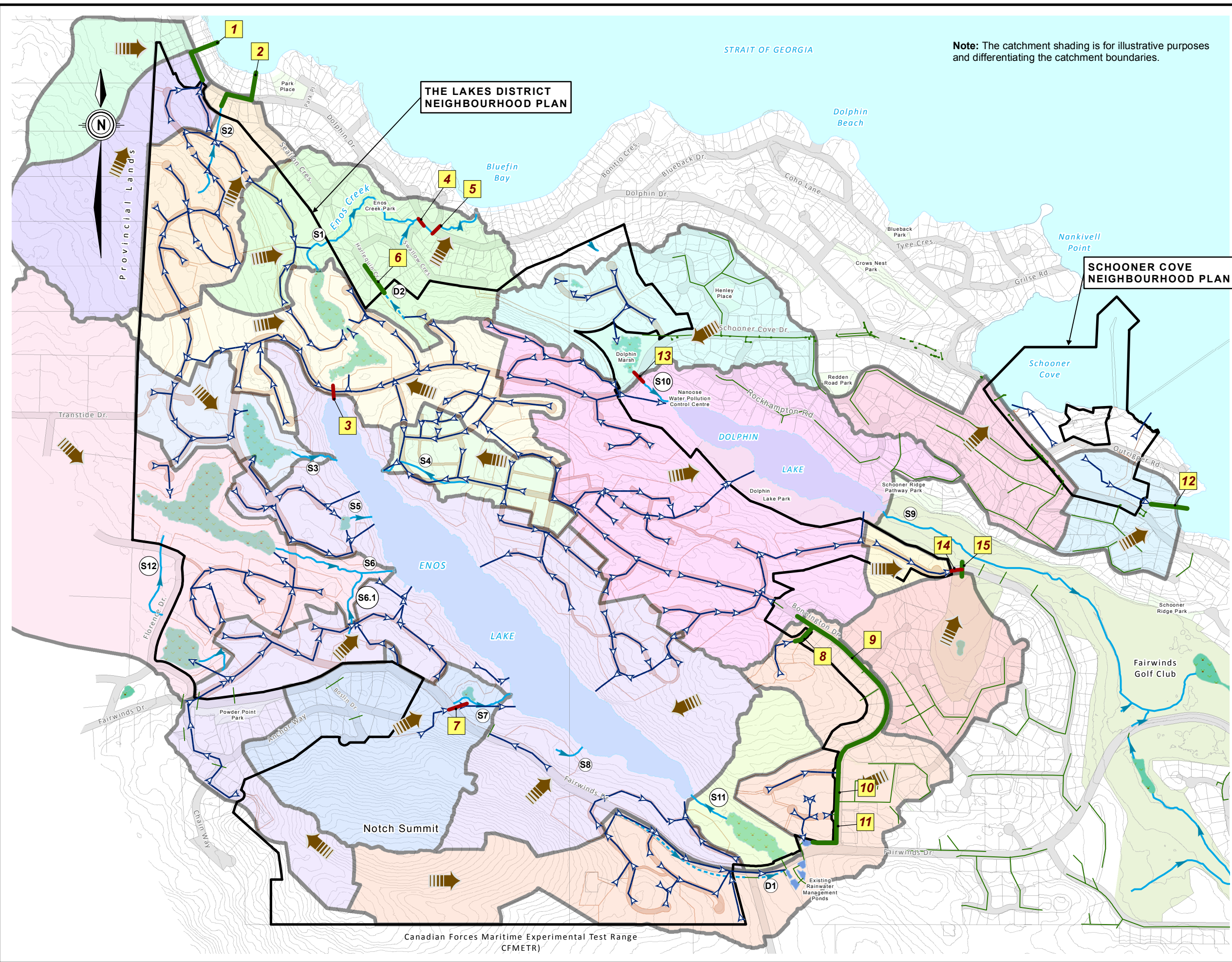


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Proposed
Drainage System

Figure 11

Path: C:\2900-2999\2964-002\GIS\MXD-Rp\2964002_Fig12_Impact.mxd Date Saved: 09/04/2014 9:15:04 AM
 Author: J.Lau



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

Bentall Kennedy The Lakes District and Schooner Cove ISMP

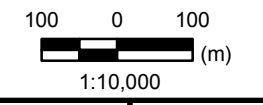
Legend

- Neighbourhood Area
- Existing Lake
- Existing Detention Pond
- Existing Wetlands
- Existing Watercourse
- Existing Ditch
- Contour (2 m Interval)
- Existing Storm Network
- 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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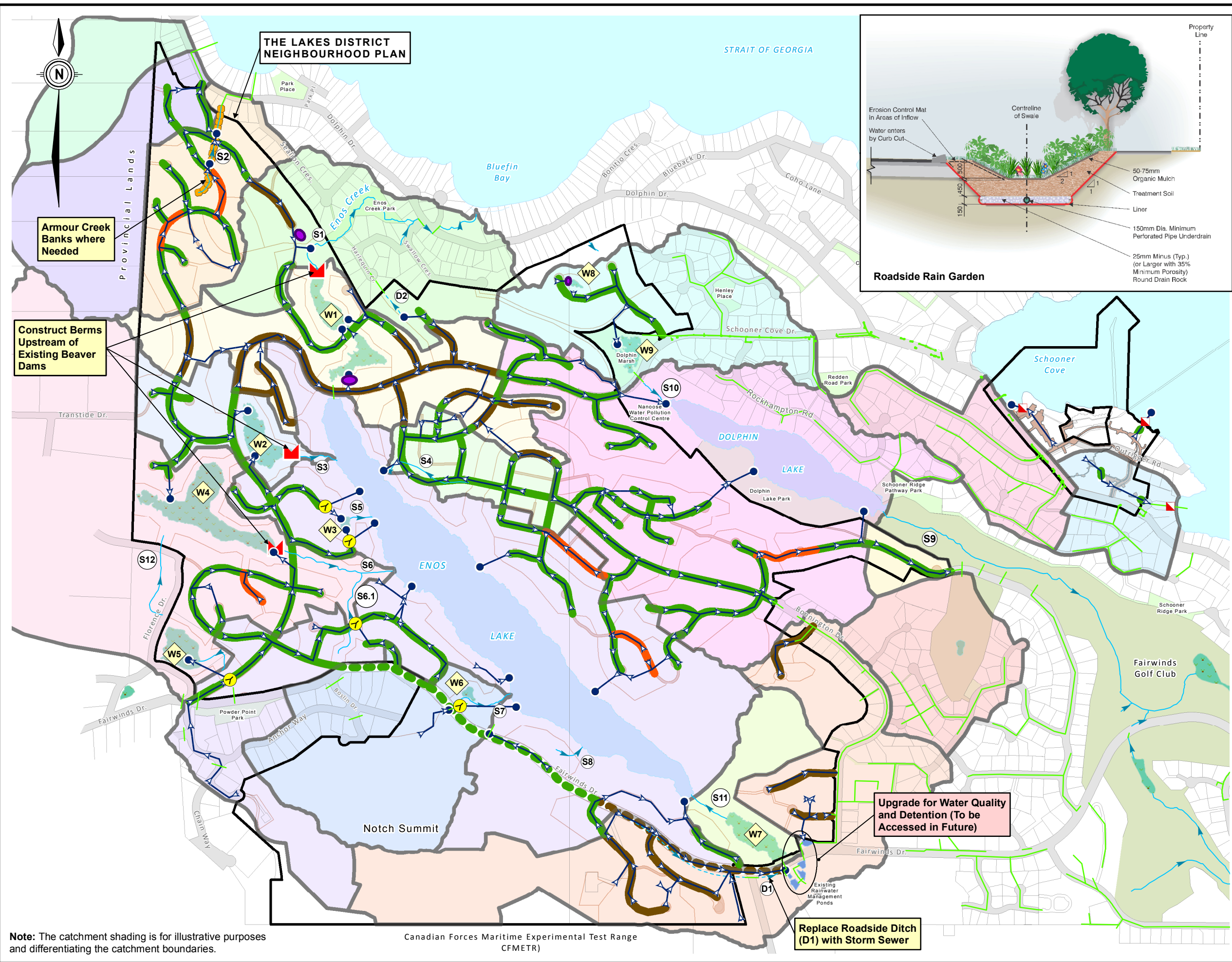


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Impact to Downstream Drainage

Figure 12

Path: C:\2900-2999\2964-002\430-GIS\MXD-Rp\2964002_Fig13_ProposedStormwaterManagement.mxd Date Saved: 09/04/2014 9:16:20 AM
 Author: J.Lau



Bentall Kennedy
The Lakes District and Schooner Cove ISMP

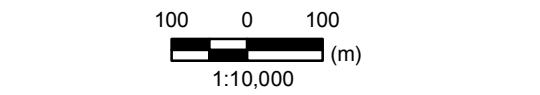
- Legend**
- Neighbourhood Area
 - Existing Lake
 - Existing Detention Pond
 - Existing Wetlands
 - Existing Watercourse
 - Existing Ditch
 - Existing Storm Network
 - Proposed Drainage Pathway
 - Rainwater Creeks or Piped Outlets
 - Post-development Drainage Catchment
 - Wetland ID
 - Watercourse ID
 - Ditch ID

- Water Quality Treatment Measures**
- 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)

- 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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Proposed Stormwater Management Environmental Protection Measures
Figure 13

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

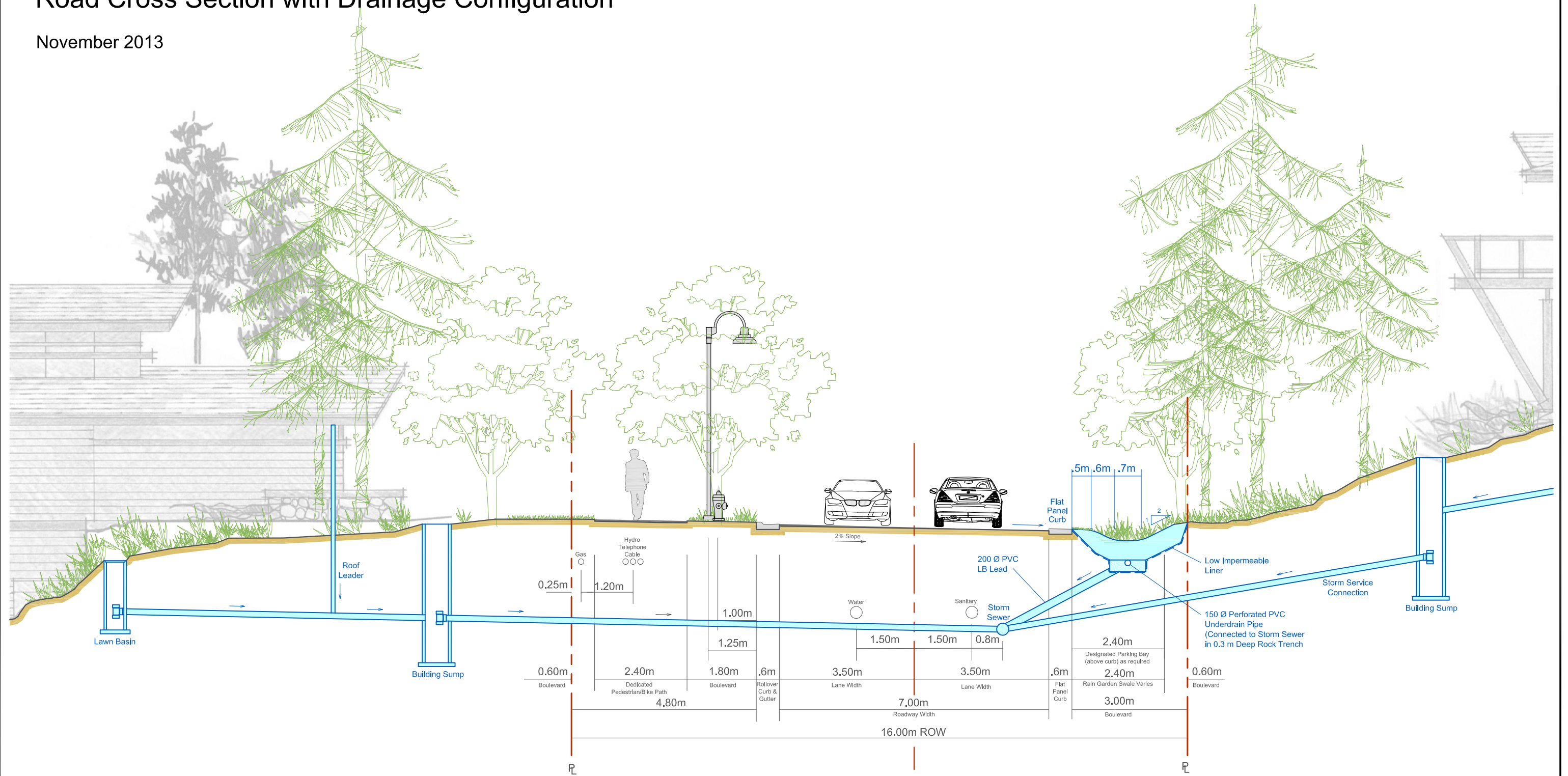
Canadian Forces Maritime Experimental Test Range (CFMETR)

Replace Roadside Ditch (D1) with Storm Sewer

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: 09/04/2014 9:17:20 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

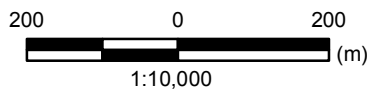
**Bentall Kennedy
The Lakes District and
Schooner Cove ISMP**

Legend

- Neighbourhood Area
- Existing Lake
- Existing Detention Pond
- Existing Wetlands ◆ Wetland ID
- 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

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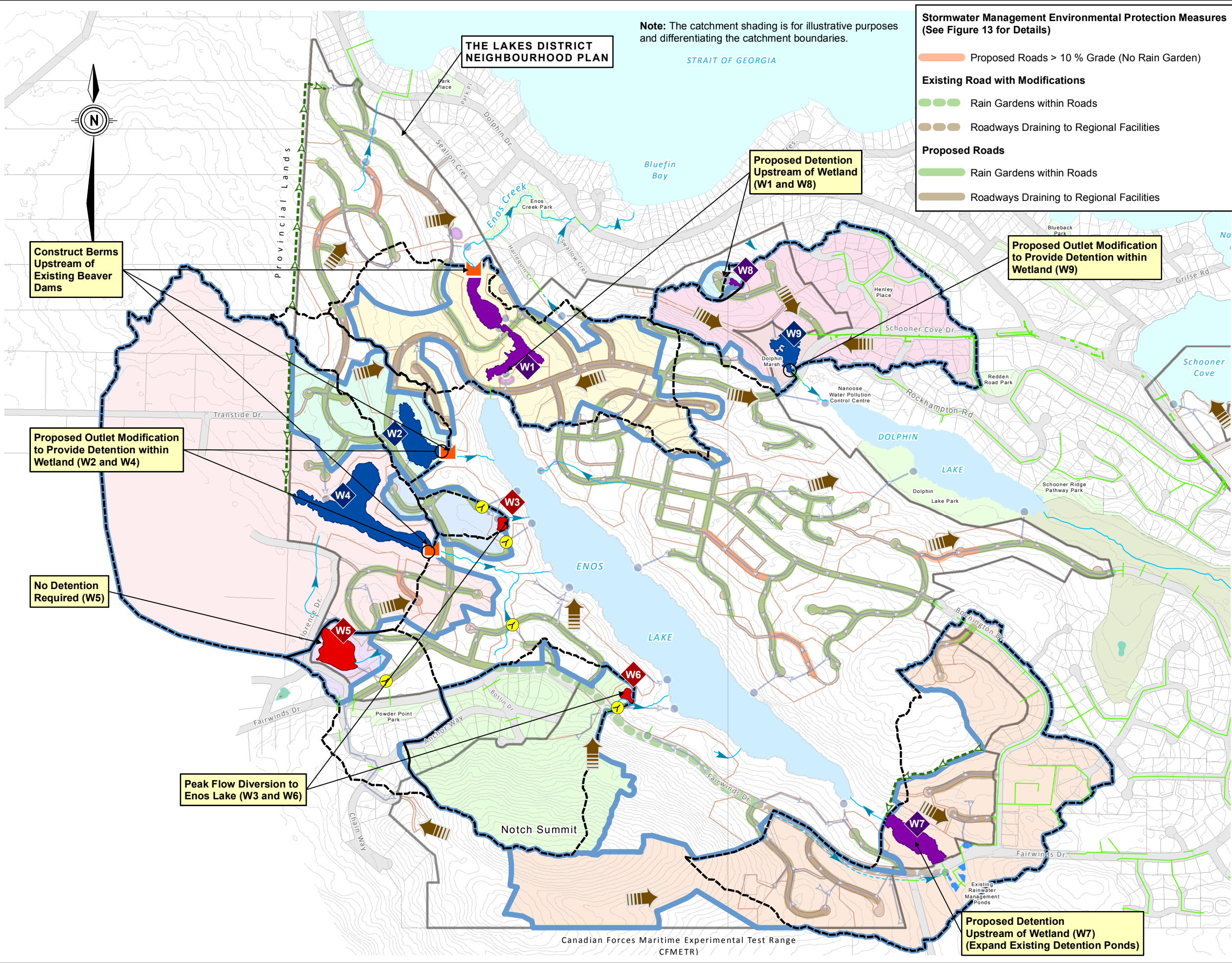
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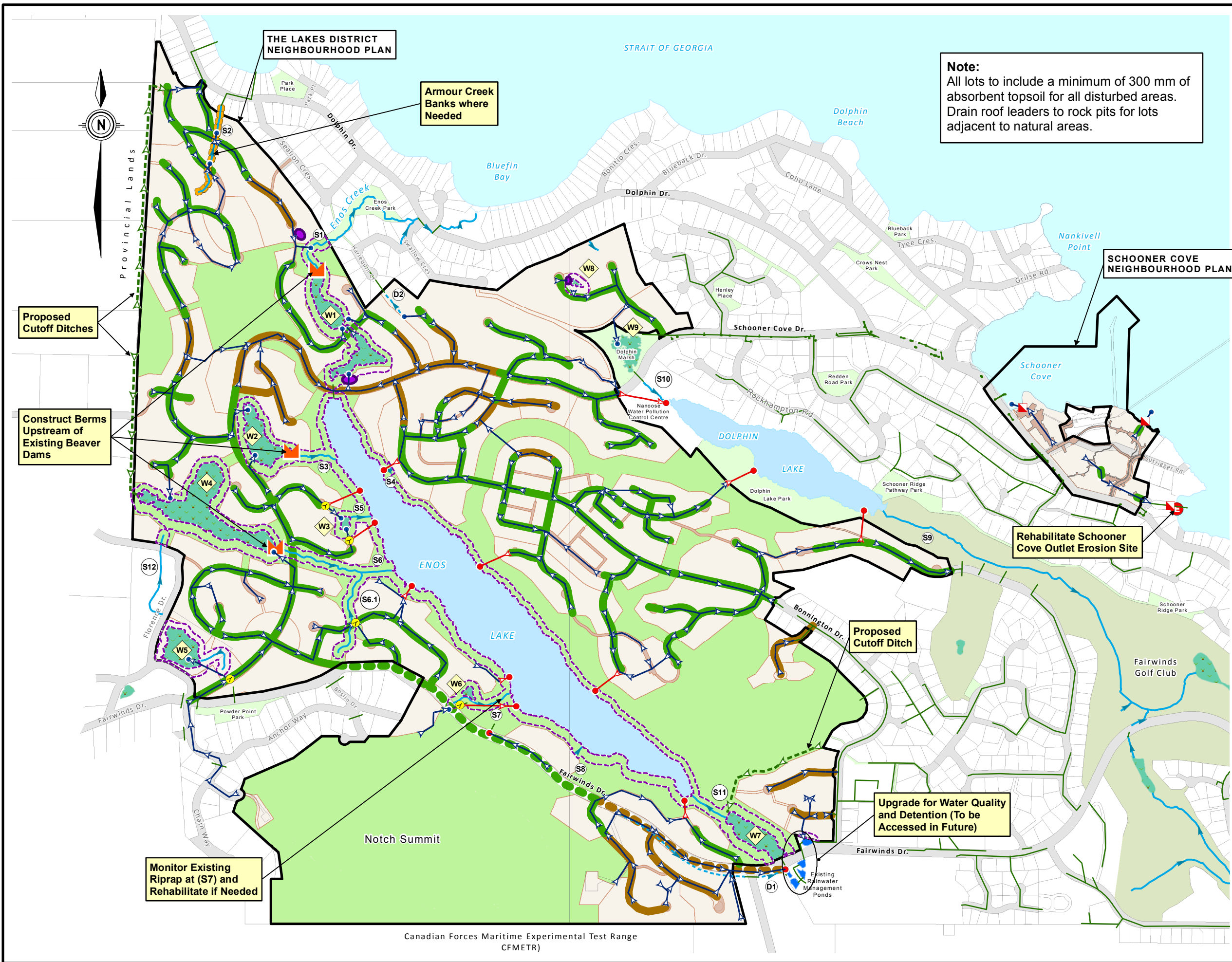
**Hydrologic Assessment
of Wetlands**

Figure 15



Canadian Forces Maritime Experimental Test Range (CFMETR)

Path: C:\2900-2999\2964-002\430-GIS\MXD-Rp\2964002_Fig16_ISMP.mxd Date Saved: 09/04/2014 9:20:29 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.

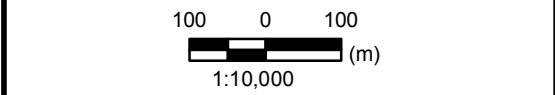
**Bentall Kennedy
 The Lakes District and
 Schooner Cove ISMP**

- Legend**
- Neighbourhood Area
 - Existing Lake
 - Existing Detention Pond
 - Existing Wetlands
 - Existing Watercourse
 - Existing Ditch
 - Wetland ID
 - Watercourse ID
 - Ditch ID
 - Conserve Environmentally Sensitive Areas as Regional Parks
 - Streamside Protection and Enhancement Area (SPEA)
 - 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

- 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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Project No. 2964-002 Date April 2014

ISMP Plan

Figure 16

Canadian Forces Maritime Experimental Test Range (CFMETR)