**INTRODUCTION TO THE ENVIRONMENTAL MANAGEMENT STRATEGY (EMS)**

**What is the EMS?**
- The Primary purpose of the EMS is to consolidate and fine tune environmental policies and practices, incorporating the OCP principles and values that draw people to Maple Ridge.

**Top Reasons for the EMS → Planning for Change**
- Sustainable management of the natural resources that provide our community with social, economic, and ecological benefits
- Continue to attract and invest in sustainable growth
- Build a resilient community in the face of climate change
- Maximize efficiencies and cost savings associated with the services provided by the natural environment
- Reducing impacts to neighbouring properties from development-related activity
  → Essentially it is for our long-term sustainability

**EMS Process**

The purpose of this open house is to obtain your input on draft strategies.
**OFFICIAL COMMUNITY PLAN (OCP) CONTEXT**

*Environmental Management Model – Goals*

1. Protect significant ecosystems
2. Anticipate and respond to impacts of climate change
3. Determine appropriate DP guidelines and bylaws
4. Identify requirements for environmental studies or impact assessments
5. Maintain and improve ecosystem health and human safety

**OCP Natural Features Section Objectives**

1. A comprehensive approach based on ecosystem principles incorporating land, water and air
2. A perspective that anticipates climate change and strives to reduce its causes while mitigating impacts
3. A balanced evaluation process incorporating economic, social, and environmental sustainability
4. The cultivation and strengthening of community partnerships to help enhance the success of policies and programs.

**OCP and Other Existing Tools**
KEY FINDINGS TO DATE

These key findings are based on consultation with stakeholders:

Identified Successes to Date

- OCP Framework for Environmental Management
- Streamside Protection Regulations
- Environmental Mapping System
- Extensive Natural Areas Remaining
- Dedicated Knowledgeable Staff

Identified Challenges to Date

- Appropriate Scale, Long Term Planning
- Habitat Fragmentation
- Public Desire for Input, Information and Awareness
- Tree Removal and Related Impacts (e.g., erosion, habitat loss, heat, aesthetics)
- Limited Municipal Environmental Resources

Identified Opportunities

- Support and Motivation for a Strategy
- Extent of and Value Natural Environment
- Passionate Public
- Opportunities for Partnerships
KEY TECHNICAL FINDINGS TO DATE

These findings are based on analysis by the consulting team:

The OCP provides a strong framework for environmental management
Some of the tools are confusing and do not fully cover the objectives

The Watercourse DP and Watercourse Protection Bylaw are successful
There are gaps in education, monitoring and long-term protection of riparian areas

The environmental mapping system is excellent
The environmentally significant areas identified by the District have not been fully incorporated into policy or OCP maps

There is a tree cutting bylaw
Tree management is not required in rural areas, it does not adequately address impacts or mitigation to neighbouring properties; it does not cover protection of significant sized or unique trees; nor does it require/provide funds for replacement

Rainwater management on-site source controls are required under the Watercourse Protection Bylaw
Rainwater management design details, standards, and maintenance requirements are not clearly identified by the District

The Natural Features DP has served the District well as a “catch-all” for environmental best management practices
The requirements as written are confusing and the OCP Natural Features map does not include all important resources and ecosystems

Hazards are addressed through various bylaws
Hazards are not addressed in a clear and comprehensive manner

From the City of Surrey Ecosystem Management Study
Har Law, 2014
Three Goals of the EMS

Goal A: Conserve and manage our natural assets

The natural assets covered by this goal are the mostly undeveloped watercourses, forests, natural parks, fish and wildlife corridors and hubs, and significant groundwater recharge areas within the District’s planning area as well as the extensive natural areas within and surrounding the District that are administered by others.

Stakeholders have expressed extremely strong support for protecting and managing the health, ecological integrity and diversity of terrestrial and aquatic ecosystems that support fish, wildlife and provide our citizens with valuable economic, social, and ecological benefits.

Goal B: Design and build sustainable neighbourhoods

This goal focuses on areas to be developed, and guiding them to achieve sustainable and smart growth principles. The work required to fulfil this goal involves refining bylaws for better protection of watercourses and habitats, existing trees, and soils, especially on steep slopes.

Stakeholders have extremely strong support for sustainable neighbourhoods, especially design and management that will result in a significant and healthy urban forest, safe and attractive neighbourhoods, and rainwater management that respects the water quality and quantity in urban watercourses in both urban and rural areas.

Goal C: Improve communications and environmental awareness

This goal focuses on how all participants – Mayor and Council, staff, other organizations, stakeholder groups, business interests, and the public – will work together to understand and implement the EMS.

Stakeholders have a strong interest in better and more communication, and education programs that focus on environmental awareness and education.
GOAL A: CONSERVE AND MANAGE OUR NATURAL ASSETS

Potential Strategies Identified to Date

A1. Identify, protect and manage the terrestrial and aquatic ecosystems that support important habitats within the District’s administrative boundaries.

Potential Tools
- ESA mapping of ecosystems, wildlife corridors and hubs
- Ecological network management strategy to acquire land over time through purchase, compensation, development process, conservancies, trusts, partnerships
- Invasive Plant Management Strategy

A2. Identify, protect and manage Crown lands and watershed areas within and extending beyond the District’s boundaries in collaboration with other jurisdictions.

Potential Tools
- Watershed Management Plans
- Groundwater/Recharge Area Management Plans
- Partner on Management Plans for Crown and Metro lands - address resource use, eco-tourism, recreation

Ecosystems and Some Services They Provide

Different combinations of services are provided to human populations from the various types of ecosystems represented here. Their ability to deliver the services depends on complex biological, chemical, and physical interactions, which are in turn affected by human activities.

From Living Beyond Our Means: Natural Assets and Human Well-being

Millennium Ecosystem Assessment, 2005
GOAL A:
CONSERVE AND MANAGE OUR NATURAL ASSETS (CONT’D)

A3. Evaluate the socio-economic values and benefits of natural assets.

Potential Tools
- Quantitative and qualitative valuation studies
- Precautionary Principle to link short-term decisions and long-term gains or losses
- Performance targets and measurements of ecological health

A4. Prepare and implement incentives for land owners to conserve or preserve significant natural areas or features that are not protected under municipal regulations.

Potential Tools
- Tax incentives
- Density bonus or density transfer incentives
- DCC reduction
- Conservation trusts

A5. Prepare policies related to filling and environmental practices on agricultural and rural lands.

Potential Tools
- Consideration of tree clearing impacts on neighbouring properties - drainage, windfall impacts, groundwater disturbance
- Work with qualified agricultural and environmental professionals on soil quality, water management, invasive species, and contamination impacts in rural areas

From Natural Capital in BC’s Lower Mainland:
Valuing the Benefits from Nature
David Suzuki Foundation and Pacific Farmland Foundation, 2010
GOAL B:
DESIGN AND BUILD SUSTAINABLE NEIGHBOURHOODS

Potential Strategies Identified to Date

B1. Protect, enhance and manage forests and mature and significant trees in developed and rural areas in recognition of the impacts of tree clearing and the multiple environmental, social and economic benefits provided by trees to surrounding properties and the public.

Potential Tools
- Tree Management Bylaw – to address tree clearing impacts in urban and rural areas, require replacement or cash in lieu, enforcement and monitoring
- Urban Forest Management Strategy – emphasize protection of existing trees and forests, tree canopy targets, incentives for tree planting, education

B2. In the Watercourse Protection Bylaw, provide more specific design guidelines and maintenance requirements for rainwater management and improve enforcement and monitoring.

B3. Refine and clarify the Development Permit (DP) structure.

Watercourse DP  ➔ Applies to  Watercourses, ponds and wetlands
Natural Features DP  ➔ Applies to  Other ecosystems (terrestrial), recharge areas, visible slopes, vulnerable aquifers, significant wildlife corridors and habitat
Hazards DP  ➔ Applies to  Steep slopes, provincial floodplain, and wildfire hazard areas

From Metro Vancouver’s Ecological Health Action Plan
Metro Vancouver, 2014
GOAL B:
DESIGN AND BUILD SUSTAINABLE NEIGHBOURHOODS
(CONT’D)

B4. Review and update the Soil Deposit/Removal Bylaws.

Potential Contents
• Identify locations for placing future fill
• Address safety, potential contamination and risk management
• Improve information, accountability and clarity

B5. Establish incentives for sustainable development practices that capture the spirit of comprehensive “smart growth” principles.

Potential Tools
• Sustainability checklist
• Tax incentives, density bonus or transfer DCC reduction
• Sustainable design guidelines in all District bylaws

B6. Use adaptive management.

Potential Tools
• Strengthen monitoring and enforcement
• Establish indicators and targets
• Use full-cost accounting for decision-making

Examples of Tools
Internet search, 2010
GOAL C: IMPROVE COMMUNICATIONS AND ENVIRONMENTAL AWARENESS

Potential Strategies Identified to Date

C1. Improve communications among District staff and stakeholders in the community.
   **Potential Tools**
   - Structure for better communications among departments and with community stakeholders
   - Support an annual stakeholder meeting to facilitate networking and collaboration among stakeholder groups
   - Marketing and communications – information hub, web page, social media, smart phone app, local Green Guide, brochures, maps, signs, etc.

C2. Expand environmental education and awareness.
   **Potential Tools**
   - Expand outreach and support for stewardship groups
   - Expand nature experiences, eco-tourism opportunities
   - Celebrate community assets

C3. Further explore the establishment of an Environmental Advisory Committee.
   **Potential Tools**
   - Define Terms of Reference
   - Select representatives
   - Engage Environmental Advisory Committee in implementing the EMS

C4. Provide more environmental staff resources to reflect the need for broader programs as well as population growth.
Please note:
This map has been prepared by Catherine Beris Associates Inc. as part of the DP recommendations.
How Can Nature Help Our Communities?

- Risk Management
- Rainwater and Storm Water Management
- Community Greenways
- Carbon sequestration
- Energy and Water Conservation
- Eco Tourism and Recreation
- Health and Connectivity to Natural Places
- Higher Resale Values

**Natural Rainwater Management**

- During winter months, evaporation continues to be active while the transpiration component is minimal.
- Storm events are moderated by infiltration, evaporation, and transpiration.
- Water is available in substrata to sustain stream base flows during summer months.
- As winter progresses, the interflow component of stream flow increases.
- During the summer and fall, streams are maintained primarily by glacial melt water and/or groundwater flow.

Nature Often Provides Multiple Social, Economic, and Environmental Benefits To The Community
Environmental Management Strategy Framework

**Communications**
- Neighbourhood consultation/outreach
- Youth Services
- Stewardship Opportunities & Local Resources at Work

**Ecological Health**
- Priority Habitat Management Plans
- Watershed Management Plans
- Park Acquisition Management Program
- Community Greenway Corridors
- Recreation/Eco Tourism
- Invasive Plant Management
- Monitoring & Evaluating Natural Assets
- Groundwater Management Plans

**Sustainable Neighbourhoods**
- Smart Growth on Ground – Town Centre
- Stream Protection and Management
- Food Security
- Soils Management
- Slope Management
- Access/Trails
- Storm and Rainwater Management
- Enhancements/Restoration
- Tree management and protection
- Erosion Site Source Controls
- Integrated Hazard Management
Elements of an Ecological Network

- Regional Biodiversity Core Areas
- Biodiversity Core Areas
- Stepping Stones and linkages (natural & semi-natural)

A Functioning Ecological Network

- A wide vegetation corridor along major watercourses
- Several large natural areas known as core areas
- Connectivity for movement of species among the core habitat areas, either through wide, continuous corridors or a series of ‘stepping stones’
- A diverse mixture of natural areas throughout the developed parts of the city that can serve as wildlife habitat or connect other, larger natural areas
Valuation of Natural Assets and Services

Why do we undervalue nature?

Nature’s benefits are worth trillions, but....

• Are not measured or monitored
• Treated as externalities

If we take care of nature, nature will take care of us.
Maple Ridge Sustainable Development Strategy

Ecological Planning Approach

- Ecological resiliency for hazards
- Less stormwater infrastructure
- Recreation/parks/eco-tourism
- Micro-climate management
- Groundwater management
- Soils conservation
- Energy conservation
- Biodiversity conservation
- Increased value of property

Environmental Planning using ecological design principles can provide various benefits/services:

Smart Growth on the Ground for the Town Centre
- To promote open space and green infrastructure
- To reduce urban sprawl

Urban Containment Boundary
Environmental Review Process

Enhancement and Restoration Opportunities

- Stewardship enhancement
- Invasive plant management
- Habitat enhancement and restoration
- Re-forestation program

Environmental Protection

- Protected Features
- Drainage
- Risk Management
- Enhancement Opportunities
- Trail Networks
- Natural Heritage Features
- Impact Mitigation
- ALR Lands
- Hillside Management

Natural Hazard Abatement

ID Potential Hazards:
A. Slopes
B. Floodplains

Studies Required & Action Taken:
- Geotechnical Studies
- Flood mitigation study
- Tree hazard mitigation study

Case Study: Nelson Peaks

Environmental Assessment
Watershed Level Planning and Management

Partnerships for Protection

Watershed Planning Strategy
Bio-Regional Conservation Strategy

Appropriate Scales
Environmental mapping provides multi-level perspectives for different users and issues.

Regional Scale

Municipal & Watershed

Identify Watershed Management Priorities

- Conservation areas
- Recreation areas
- Resource extraction areas
- Cultural Education areas
- Water & hillside management areas
**Planning for Change**

**Large Scale Clearing Impacts**
- Erosion control
- Drainage and Groundwater
- Slope stability
- Visual Impacts
- Wind Fall Hazard

**Ecosystem Impacts**
- Habitat Fragmentation
- Deforestation
- Contamination
- Difficult to predict impacts in advance

**Population Growth**
- Population around 70,000 for Maple Ridge in 2006 reaching 118,000 by 2040
- Intend to absorb 50% of new dwelling units in town centre in response to public support for infill strategy

**Climate Change**
- The District of Maple Ridge has a goal to reduce community greenhouse gas emissions by 33% below 2007 levels by 2020 and 80% by 2050
- Atmospheric Carbon (20 yrs)
  - Under 550 ppm = 1% GDP
  - Over 550 ppm (10-20 %GDP)
  - Stern Report - 06 UK
- Rise of sea levels worldwide
- Species extinction
- Negative impacts on communities and ecosystems:
  - Flooding
  - Forest fires
  - Droughts
- Significant economic impacts:
  - Unpredictable and extreme weather

**Challenges & Goals of Sustainability**

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<thead>
<tr>
<th>Key Challenges</th>
<th>Sustainability Goals</th>
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<td>Reduce Emissions</td>
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<td>Fossil Fuel &amp; Energy Supply</td>
<td>Renewable Energy / Efficiency</td>
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<td>Water Quantity/Quality Supply</td>
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<td>Economic Prosperity / Viability</td>
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**Intend to absorb 50% of new dwelling units in town centre in response to public support for infill strategy**

**Intend to absorb 50% of new dwelling units in town centre in response to public support for infill strategy**
Major Habitat Management Areas
Legend

- Grant Hill Aquifer
- Whonnock Aquifer

NOTE: