



# ***Water Balance Management in the Okanagan Now What Do We Do?***

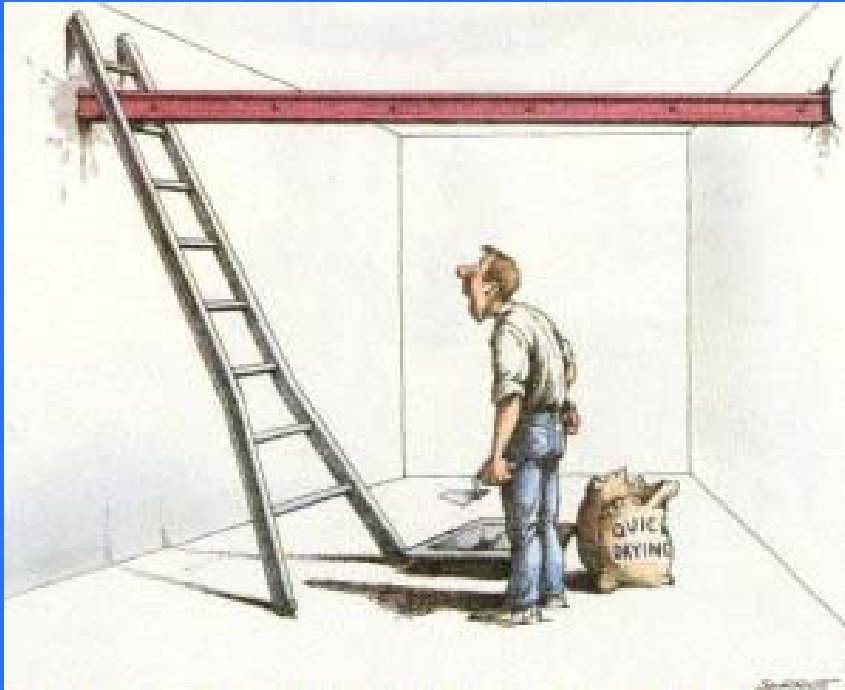
**Presentation by Kim Stephens**

**In Collaboration With**

**Erik Karlsen, Ted van der Gulik & Ron Smith**

**Water Sustainability Committee of the BCWWA**

# “Convening for Action”



- **What**  
is the problem?
- **So What**  
can be done about it?
- **Now What**  
will be done?

# **Presentation Road Map**

- Okanagan Water Balance Strategy**
- Saving Water-on-the-Ground**
- Water Sustainability Action Plan**
- Designing with Nature**

“To Make Change Happen, It Has to Happen on the Ground”

A large center pivot irrigation system is shown in a lush green field. The system consists of a central pivot point with multiple arms extending outwards, each ending in a wheel and a series of smaller wheels. Water is being distributed from the center point, creating a misty spray that covers the field. The sky is a clear, bright blue.

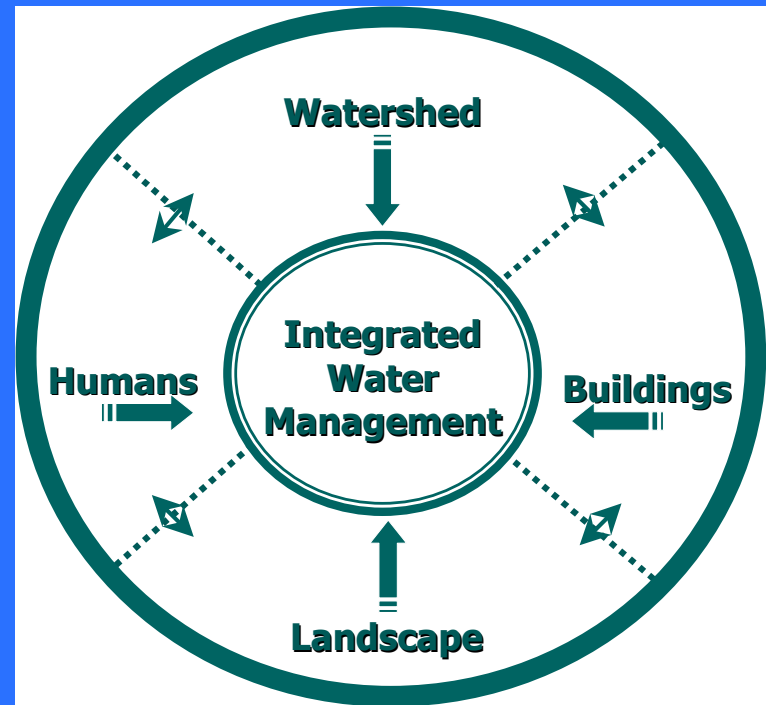
**“The water resources of the Okanagan will be totally allocated in less than 25 years.”**

**“To move toward sustainable water management...requires difficult decisions now.”**

**Water OUT = Water IN!  
What's the Balance?**

# Everything is Connected!

Will it be  
Cumulative  
Impacts  
or  
Cumulative  
Benefits?



**The Decisions We Make Ripple Through Time!**

# **Achieving an ‘Okanagan Water Balance’ Relies on Changing Behaviour at the Site Scale**

- **What Is Our Starting Point?**
- **Where Do We Want To Be?**
- **How Will We Get There?**



“Look Back to Look Ahead”

# Current Okanagan Water Use Provides Our Starting Point

**Over 85% is Used for Outdoor Purposes:**

- ~70% for Agricultural Irrigation
- >15% for Lawn, Gardens & Open Space Irrigation  
In Cities, Towns and Villages

# Where Do We Want To Be?

1990 Demand Management Report

If Reduce  
Water Use  
By One-Third



Increase  
Irrigated  
Farmland  
by 40%

OR

Support an  
Additional  
200,000  
People



# Building a Vision & Creating a Legacy

- **Issue:** How We Manage Population Growth
- **Impact:** Growth Resulting in Urban Densification  
(Land Constraints; Smaller Lots)
- **Sustainability:** *Means Design with Nature*
- **Built Environment:** We Can Improve It
- **Natural Environment:** We Can Protect It
- **Cumulative Benefits:** Accrue Over Time
- **Outcome:** Sustain Community Livability

# Okanagan Water Balance Strategy

- 1. Understand that Natural and Built Environments are Connected**
- 2. Embrace Water as the Unifying Element for Sustaining Livability**
- 3. Increase Agricultural Water Use Efficiency to Offset Climate Variability and / or Expand Irrigated Farmland**
- 4. Reduce Residential Water Use to Support Population Growth in Urban Centres**

# **Presentation Road Map**

- Okanagan Water Balance Strategy**
- Saving Water-on-the-Ground**
- Water Sustainability Action Plan**
- Designing with Nature**

# Okanagan Agricultural Strategy



- **Foundation**: Water Balance
- **Desired Outcome**: Create an Okanagan Database
- **Goal**: Develop Property-by-Property Understanding
- **Objective**: Make Informed Decisions to Save Irrigation Water
- **Result**: Planning Tool Benefits Agricultural & Urban Sectors



# Steps to Irrigation Sustainability

- 1. Efficiency:** Select the most efficient type of irrigation system possible
- 2. Uniformity:** Design the system to obtain the best uniformity (i.e. means do not over-water!)
- 3. Scheduling:** Schedule irrigation timing according to soil moisture or climate data



# Tools for Irrigation Sustainability

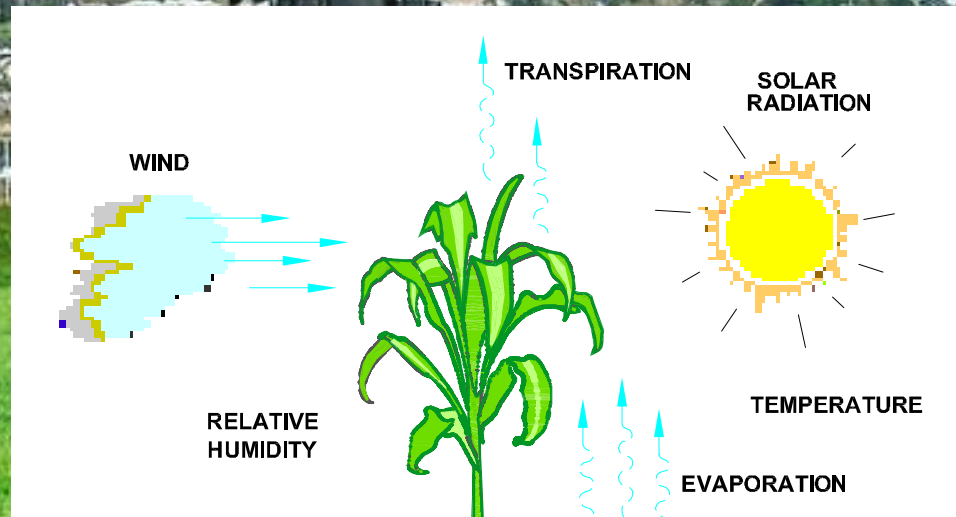
---

- **Certified Irrigation Designers (IIABC)**
- ***farmwest.com***
- **Environmental Farm Planning Program**
- **Irrigation Scheduling Calculator**



# *farmwest.com*

- Climate Station Network
- Real-Time ET Data for Irrigation Scheduling

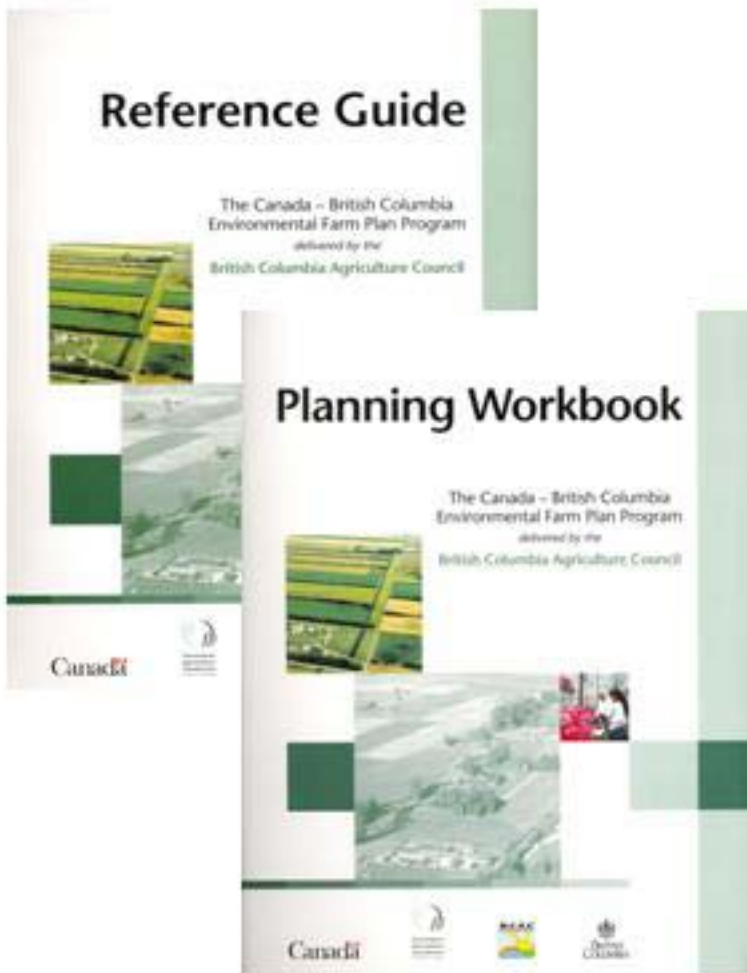


**Ted's Rule-of-Thumb for Irrigation Application:**  
*1 mm/day ET = 1 US gpm per acre*

**Evaptranspiration Process**



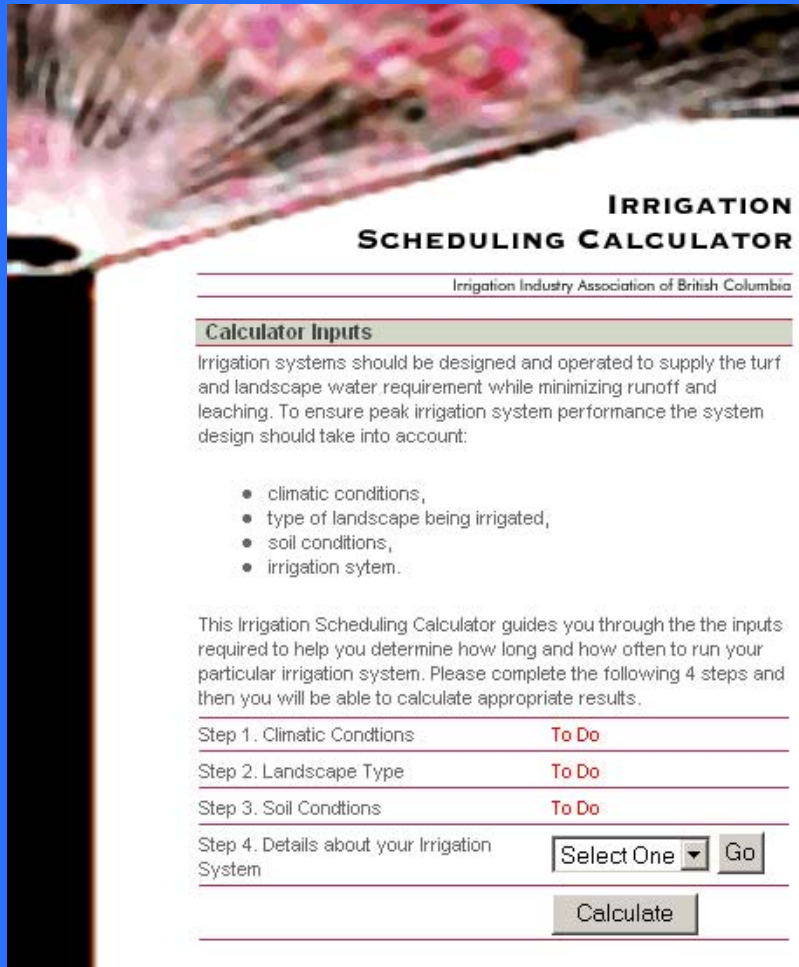
# Environmental Farm Planning Program



- 6000 plans to be funded
- 13 commodity groups signed on
- 60 planners trained
  
- \$ 2000 grants available to prepare Irrigation Management Plans
  
- \$10,000 grants available to implement efficient, uniform irrigation systems



# Irrigation Calculator



**IRRIGATION SCHEDULING CALCULATOR**  
Irrigation Industry Association of British Columbia

**Calculator Inputs**

Irrigation systems should be designed and operated to supply the turf and landscape water requirement while minimizing runoff and leaching. To ensure peak irrigation system performance the system design should take into account:

- climatic conditions,
- type of landscape being irrigated,
- soil conditions,
- irrigation system.

This Irrigation Scheduling Calculator guides you through the the inputs required to help you determine how long and how often to run your particular irrigation system. Please complete the following 4 steps and then you will be able to calculate appropriate results.

Step 1. Climatic Conditions	To Do
Step 2. Landscape Type	To Do
Step 3. Soil Conditions	To Do
Step 4. Details about your Irrigation System	Select One <input type="button" value="Go"/>

- An On-Line Tool
- Will be Available at *Irrigation BC* site or *waterbucket.ca*
- Integrated with **Climate Data**
- Determine When & How Much to Irrigate Turf

# Presentation Road Map

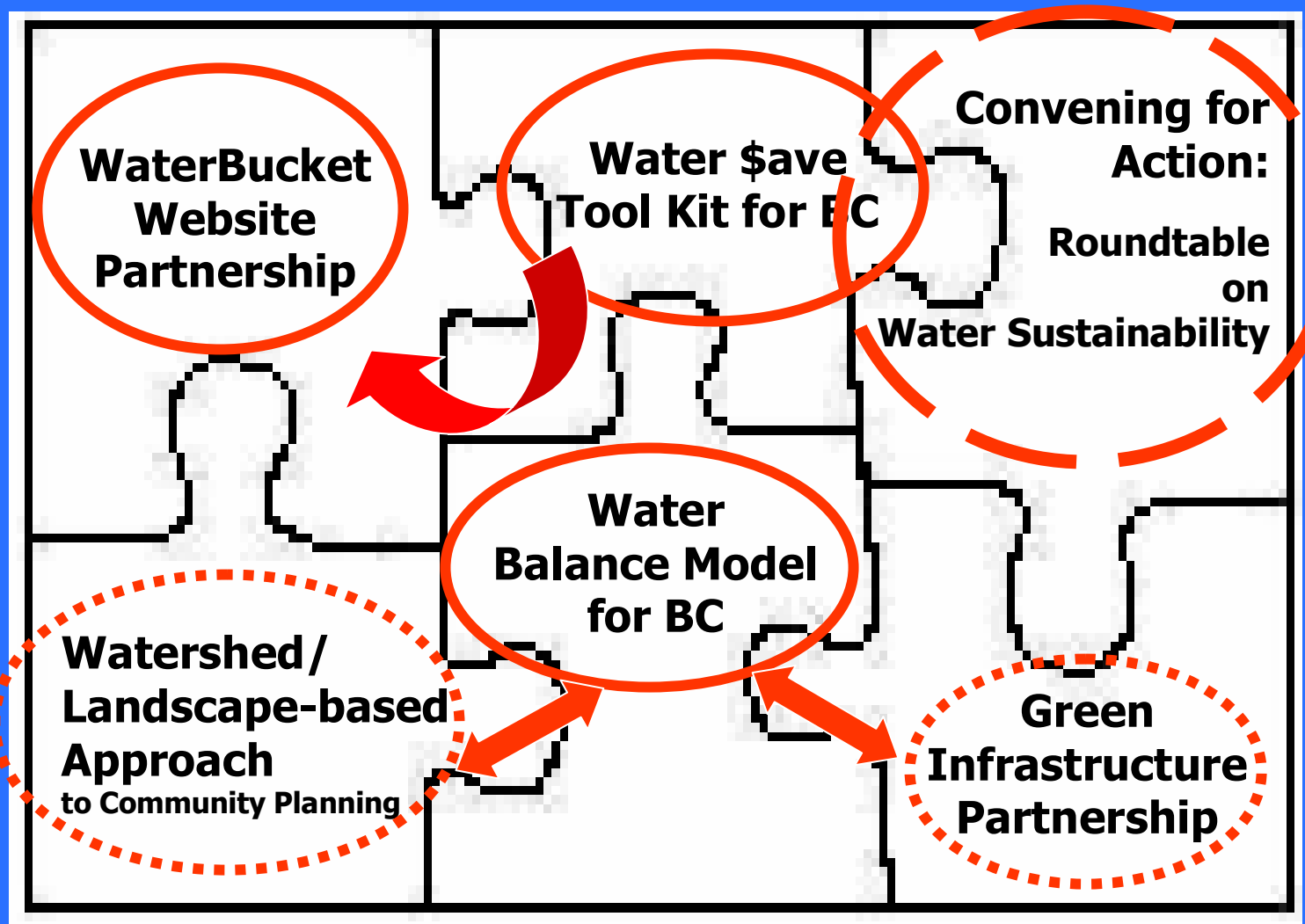
- Okanagan Water Balance Strategy**
- Saving Water-on-the-Ground**
- Water Sustainability Action Plan**
- Designing with Nature**

# **The Water Sustainability Action Plan for BC....**

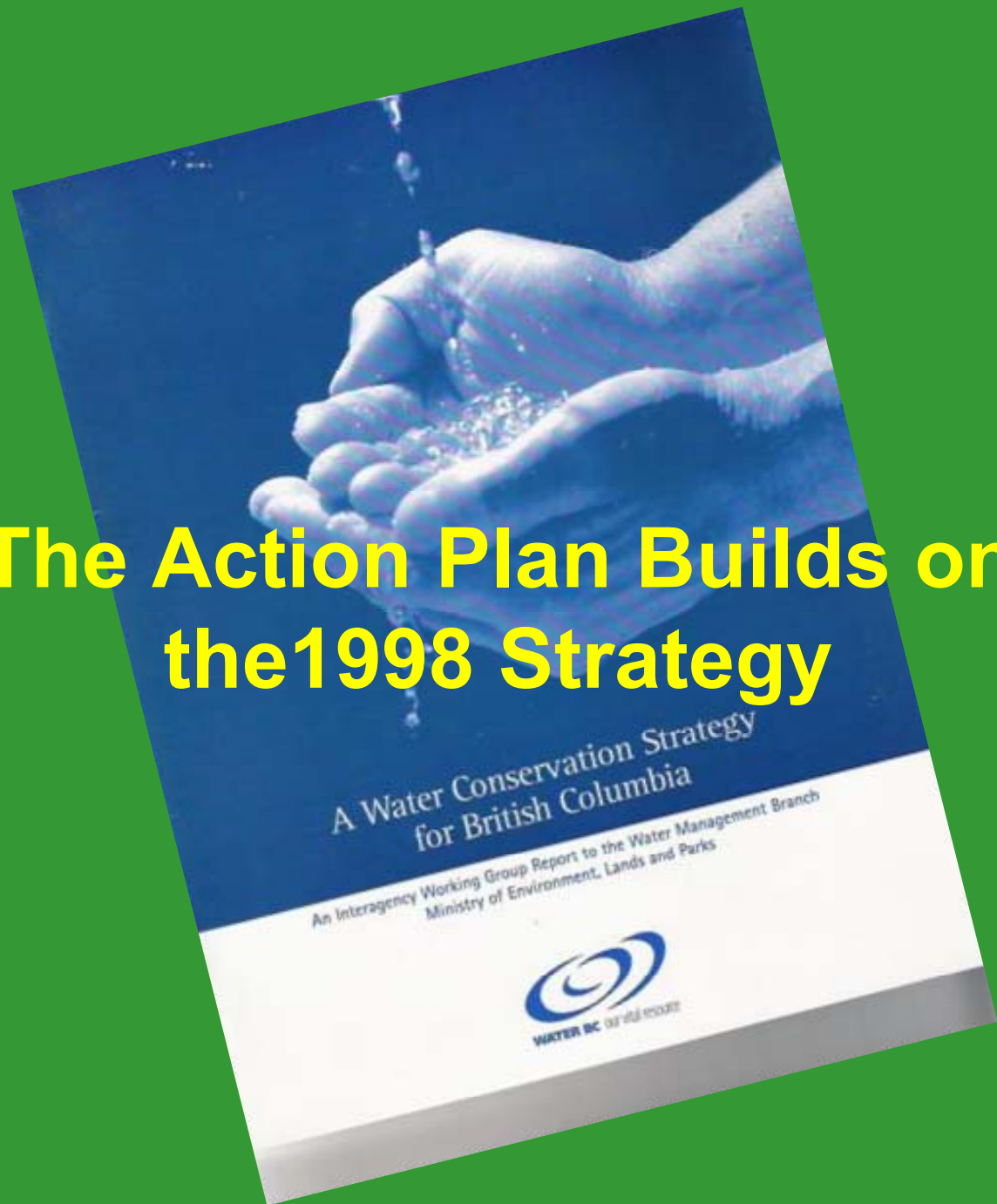
**... provides an umbrella for on-the-ground  
initiatives that are informing Provincial policy  
through shared responsibility**



# Action Plan Elements



# The Action Plan Builds on the 1998 Strategy



A Water Conservation Strategy  
for British Columbia

An Interagency Working Group Report to the Water Management Branch  
Ministry of Environment, Lands and Parks



An aerial photograph of a city, likely Vancouver, taken during the "golden hour" of sunset. The city is nestled in a valley, with a prominent clock tower (the City Hall tower) visible. The background features a range of mountains under a sky with soft, orange and pink clouds. The foreground is dominated by a dense forest of evergreen trees.

# **The Mission is to Create a Legacy**

- 1. Influence choices by individuals and organizations**
- 2. Use the term “sustainability” as a lens for considering approaches that influence choices**

# Watershed / Landscape-Based Approach to Community Planning

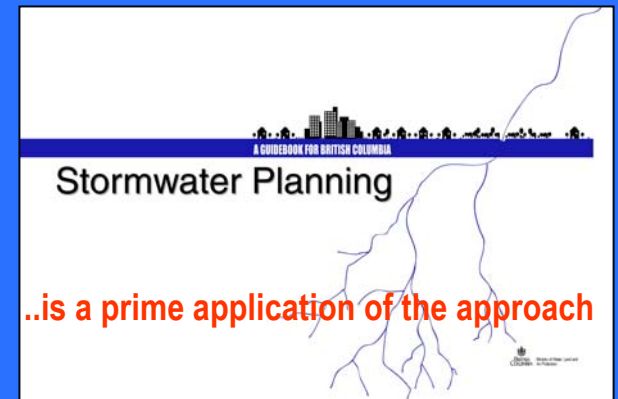
Articulates a Philosophy

Defines a Methodology

**“Planning with Reference to Watershed Features”**

Integrate at Three Scales:

- Watershed
- Neighbourhood
- Site



# The Water Balance Model has been developed as an extension of the Guidebook



A GUIDEBOOK FOR BRITISH COLUMBIA

## Stormwater Planning

**WATER Balance MODEL FOR BRITISH COLUMBIA**

Partners • About • Home

Access Model • Resources • Background

### Greater Vancouver Regional District Develops Design Guidelines to Complement Water Balance Model

[CLICK BELOW TO DOWNLOAD SOURCE CONTROL POSTERS...More](#)

To complement the Water Balance Model, the Stormwater Inter-Agency Group (SIAG) - a technical committee of the Greater Vancouver Regional District (GVRD) - commissioned a research project to create *Stormwater Source Controls: Preliminary Design Guidelines*. This work is based on the adaptation of design standards from areas of Europe and North America with similar climatic and soil conditions.

"The objective of this project is to reduce information barriers that stand in the way of effective implementation of rainwater source controls in the GVRD. It...[More](#)"

Tree Type	Stemflow	Crown Interception	Throughfall
Pear Tree	8%	15%	77%
Evergreen Oak Tree	15%	27%	58%

In most natural wooded conditions in the GVRD, 90% of rainfall volume never becomes runoff. It is either soaked into the soils or evaporates. Trees, shrubs, grasses, surface organic matter, and soils all play a role.

**Annual Subscription Fee Now in Effect - It's time to upgrade your Free Trial Account if you wish to retain your scenarios in the database!**

During the first year of website operation, the Inter-Governmental Partnership (IGP) waived the Annual Subscription Fee. The transition period ended on October 15th 2004. From now on, Water Balance Model scenarios will be purged from the database every seven (7) days unless you are a subscriber...[More](#)

**Create a Project**  
Develop Scenarios  
Describe Native Soils  
Add Land Use Information  
Describe Surface Types

To Learn More About Using the Model View these Tutorials

**Learn why** the Water Balance Model is an important resource  
**See how** the Water Balance Model can be applied.  
**View recent presentations**



# Green Infrastructure Partnership Deliverables



- Green Infrastructure Policy Guide for Elected Officials
- Green Infrastructure Technical Guide for Senior Municipal Staff
- Model Subdivision Bylaw
- Green Infrastructure Standards
- Decision Support Tools
- Streamlined Environmental Approvals Protocol
- Outreach & Continuing Education Program

Water Use & Conservation

Rainwater Management

Green Infrastructure

Watershed - Based Planning

**WATER  
\$AVE  
TOOL  
KIT**

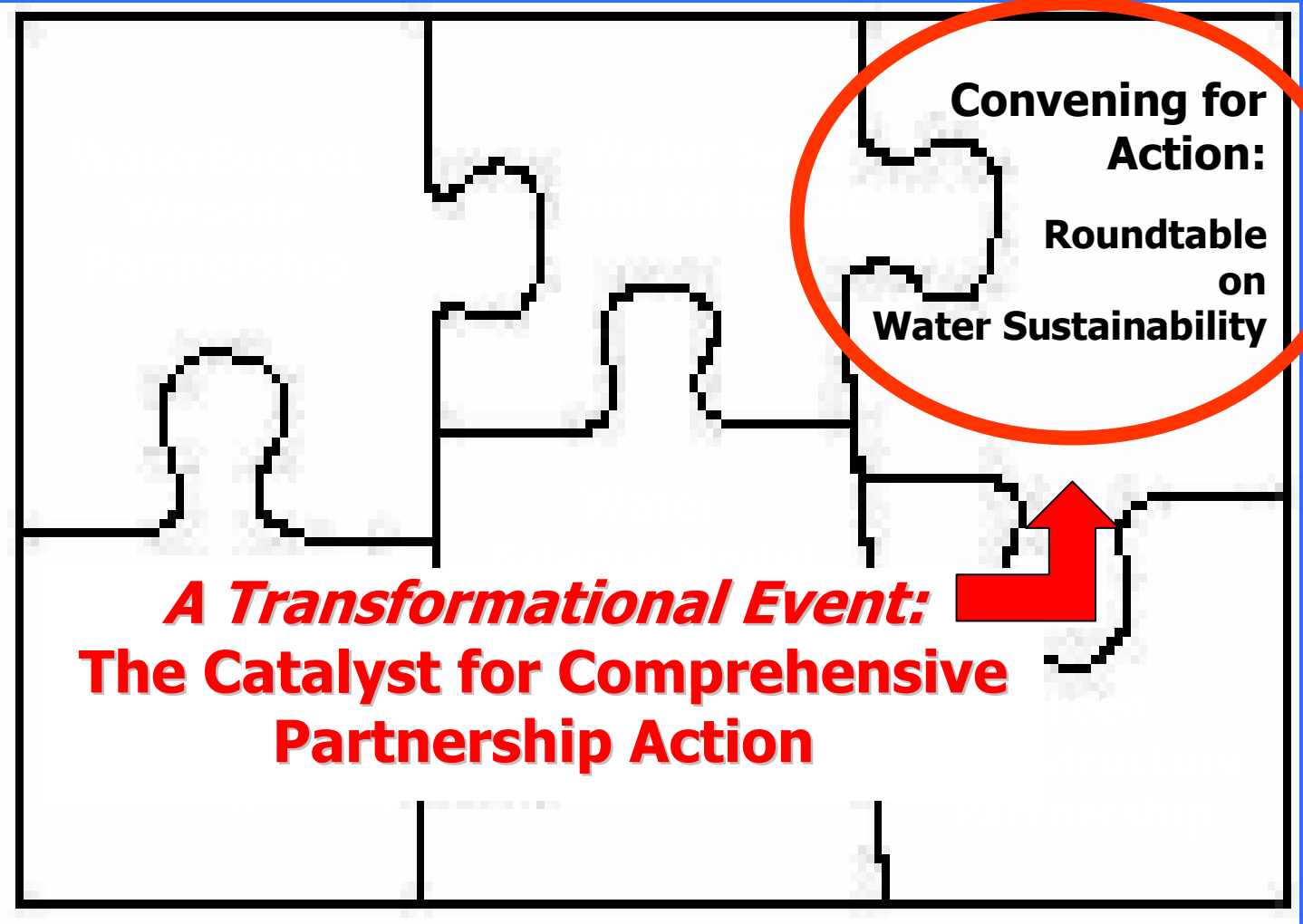


**Water \$ave Tool Kit  
is the first drop in the WaterBucket...**

- case studies, success stories, lessons learned**
- searchable references, links, databases**

**waterbucket.ca**

*sustainable approaches to water resources*



**Convening for  
Action:  
Roundtable  
on  
Water Sustainability**

***A Transformational Event:*  
The Catalyst for Comprehensive  
Partnership Action**

# Build Momentum Through Coordination of Events

- **Build on the Last, and Pave the Way for the Next**
  - ☒ CWRA Kelowna Conference
  - ☒ UBCM Environment Conference
  - ☒ BCWWA Technology Transfer Workshop
  - ☒ BCWWA Vancouver Island Workshop
  - ☒ Water in the City (*Victoria*)
- **Ensure Consistent Messaging**



# **Presentation Road Map**

- Okanagan Water Balance Strategy**
- Saving Water-on-the-Ground**
- Water Sustainability Action Plan**
- Designing with Nature**



**The Missing Link  
in Watershed Planning has been...**

**A tool that quantifies the benefits –  
in terms of reducing **rainwater runoff volume**  
- of installing source controls under different  
land use, soil and climate conditions**



## Inter-Governmental Partnership: Vision

**To promote changes in land development practices so that:**

- The built environment will preserve and/or restore the natural water balance over time
- Performance targets will be achieved for rainwater runoff volume and flow rate reduction at the source, *where rain falls*

# Water Balance Model promotes Integration of Perspectives

- 
- **Planners:** Tool for Better Use of Space
  - **Engineers:** Tool for Infiltration Pre-Design
  - **Landscape Architects:** Tool for Green Solutions
  - **Educators:** Tool for Social Marketing



A scenic view of a residential development. In the foreground, there is a calm pond with some reeds and grasses. In the background, several houses with gabled roofs are visible, along with a larger multi-story building on the left. The sky is overcast with light clouds.

## How the Water Balance Model is being used to make better decisions:

- **Local Governments** -  
when communicating with the public
- **Planners and Engineers** –  
when setting performance targets
- **Developers and their Consultants** -  
when testing scenarios
- **Environmental Agencies** -  
when monitoring watershed health

**Having a Performance Target  
provides the starting point for  
*Integrated Solutions***



# And in Conclusion:

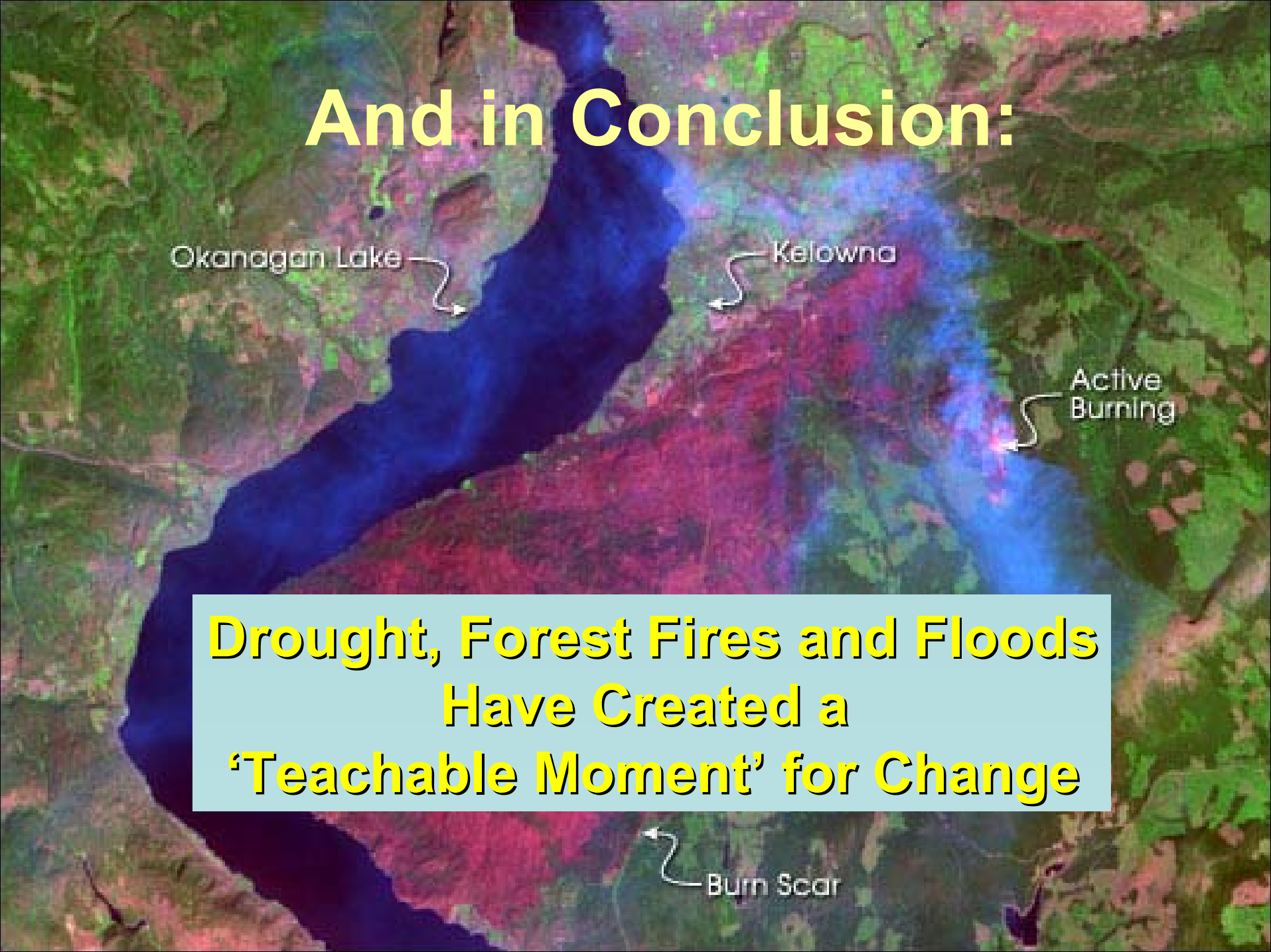
Okanagan Lake

Kelowna

Active  
Burning

**Drought, Forest Fires and Floods  
Have Created a  
'Teachable Moment' for Change**

Burn Scar



# Actions on the Ground...

...Will Result in  
**Cumulative Benefits**  
**Over Time!**

