

Feast AND Famine! – Solutions and Tools in Response to a Changing Climate in BC

Floods AND Droughts – What Happened to the Balance?
What We Can Do to Build Water-Resilient Communities



the partnership
for water sustainability in bc



Opala Seamount

Vancouver Island

A group of people are seated around a large table covered with a white tablecloth in a meeting room. They appear to be in a collaborative discussion. There are papers, mugs, and other items on the table. The room has a whiteboard on the left and a framed picture on the wall in the background.

**“Through sharing & learning,
ensure that where we are going is
indeed the right way”**

Jody Watson
Capital Regional District
June 2013

Workshop Road Map

- A. Resilient Communities & Water –
What Happens on the Land Matters
- B. How Local Governments are
Responding to a Changing Climate
- C. Will There be Sufficient Fresh Water
for Agriculture in the Future?
- D. Sustainable Service Delivery for
Watershed Systems

In this workshop you will learn

1. **WHY** accepting risk opens the door to creativity and results in innovation
2. **HOW** local governments can restore the absorbency of the urban landscape
3. **HOW** food security will drive a major shift in the way water and agricultural lands are managed
4. **HOW** the efficiency of landscape irrigation can be improved through use of state-of-the-art tools



The climate in BC is changing:

wetter, warmer winters; longer, drier summers

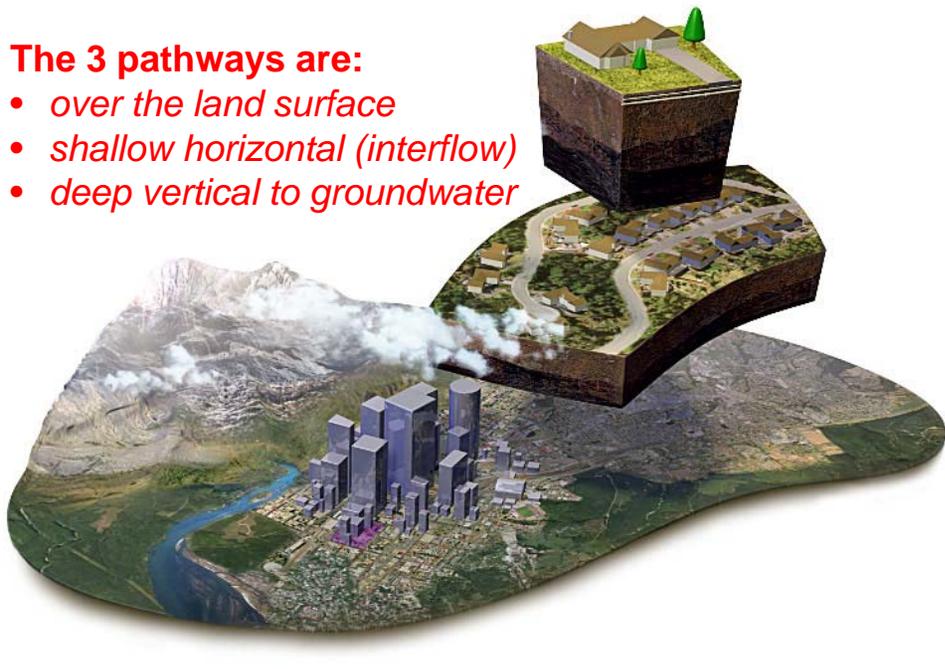
We can sustain water supply in dry weather
and limit drainage impacts in wet weather.

Alignment of mandates, roles and responsibilities is
necessary to successfully **‘Design with Nature’** and
‘restore Water Balance integrity’ in urban regions

INTRODUCING THE NEW PARADIGM – “Watersheds as Infrastructure Assets”

The 3 pathways are:

- *over the land surface*
- *shallow horizontal (interflow)*
- *deep vertical to groundwater*



A watershed is an **integrated system**.

The **three pathways** by which rainfall reaches streams are ‘infrastructure assets’.

The three pathways provide ‘**water balance services**’.

SHIFTING BASELINE & RESTORATIVE DEVELOPMENT:

Apply an understanding of watershed systems as infrastructure assets to...

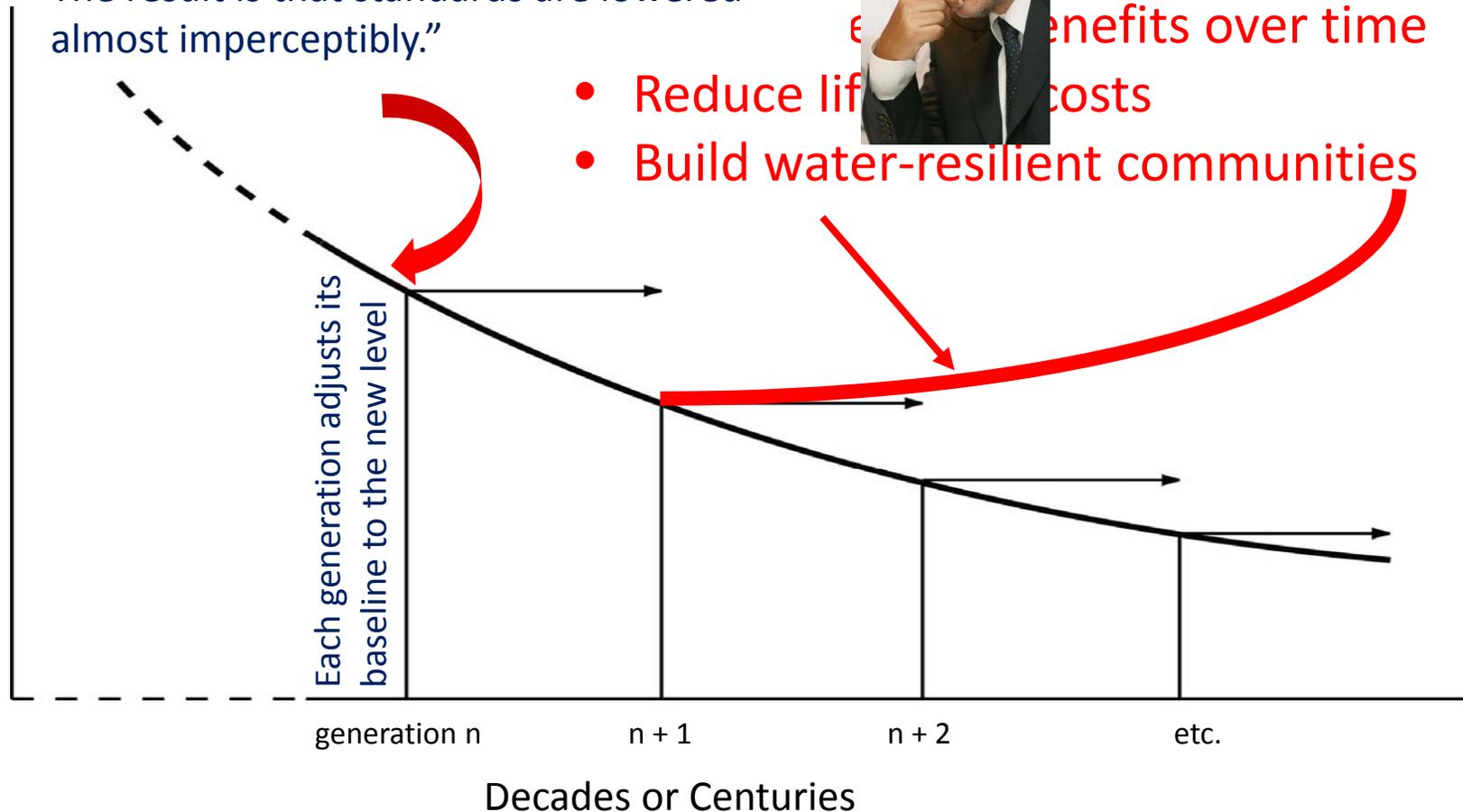
“With each new generation, the expectation of various ecological conditions shifts. The result is that standards are lowered almost imperceptibly.”



“...back”
...social and
...benefits over time

- Reduce life cycle costs
- Build water-resilient communities

Some Good Thing = Driver for Action
(Aquatic Habitat, Salmon, Clean Water or...)



CONTEXT -

It has taken more than a decade to implement a policy, program and regulatory framework that makes possible 'Water-Resilient Communities

AN OVER-ARCHING THEME:

What happens on the land matters!

2003 – The Teachable Year

2008 – Call to Action

2014 – Game-Changers Enable Action

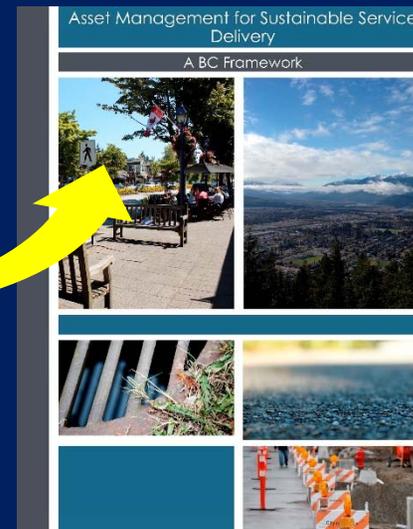


CONTEXT -

What Happens on the Land Matters:

Of the three drivers for action, the **BC Framework** is the lynch-pin because....

...it provides local government with the financial incentive for integration of watershed systems thinking into asset management



INTENT -

Five regional districts are partners in the Georgia Basin Inter-Regional Educational Initiative (IREI)...

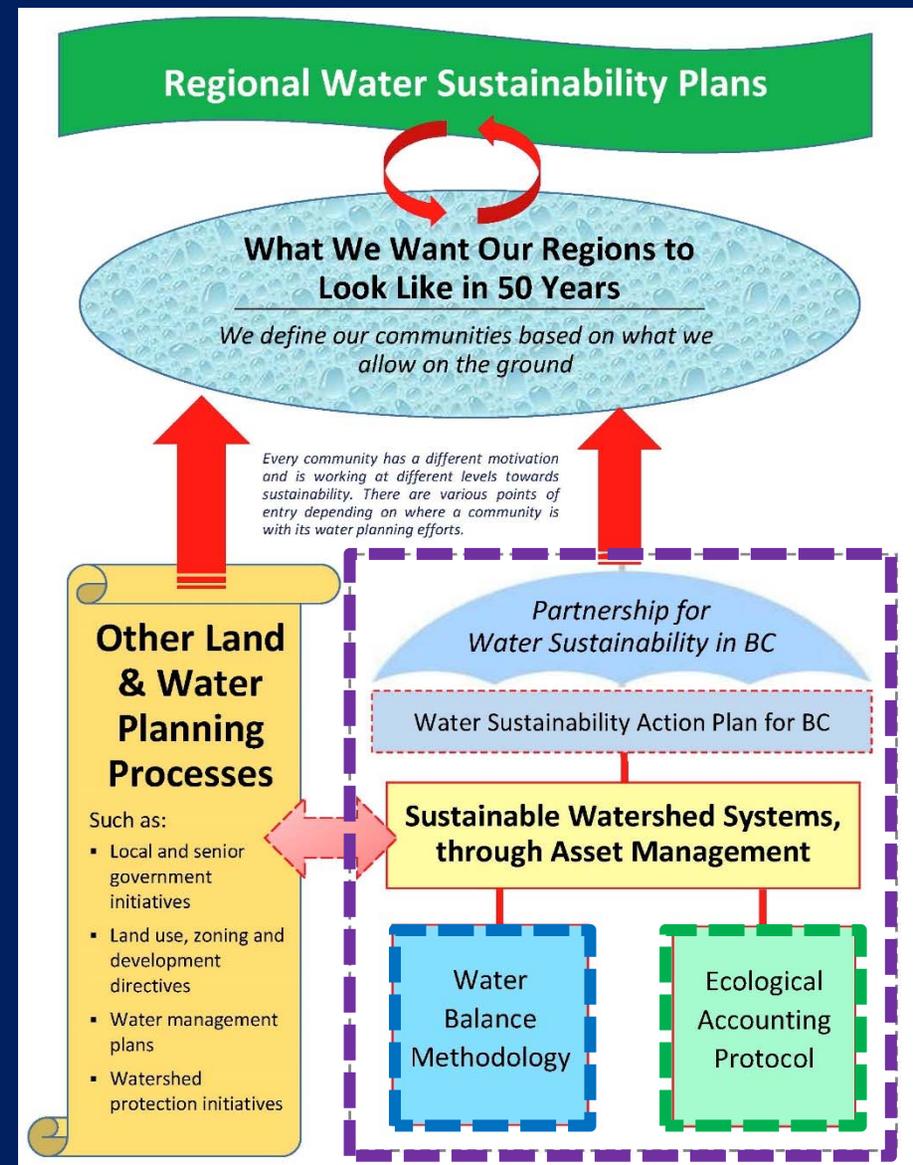


*Metro Vancouver, Capital Region,
Cowichan Region, Nanaimo Region
and Comox Valley*

- Launched in 2012
- The Partnership is the secretariat
- In April 2015, the five Regional Boards recommitted through 2017 to work as a team
- **By 2017**, a program goal is that all local governments would understand how to achieve 'Sustainable Watershed Systems, through Asset Management'

INTENT -

Over the next two years, the IREI program will add to the BC Framework by showing how to integrate *watershed systems thinking*, including adaptation to a changing climate, into asset management



RESULTS -

Everyone needs to agree on expectations and how all the players will work together, and after that each community can reach its goals in its own way

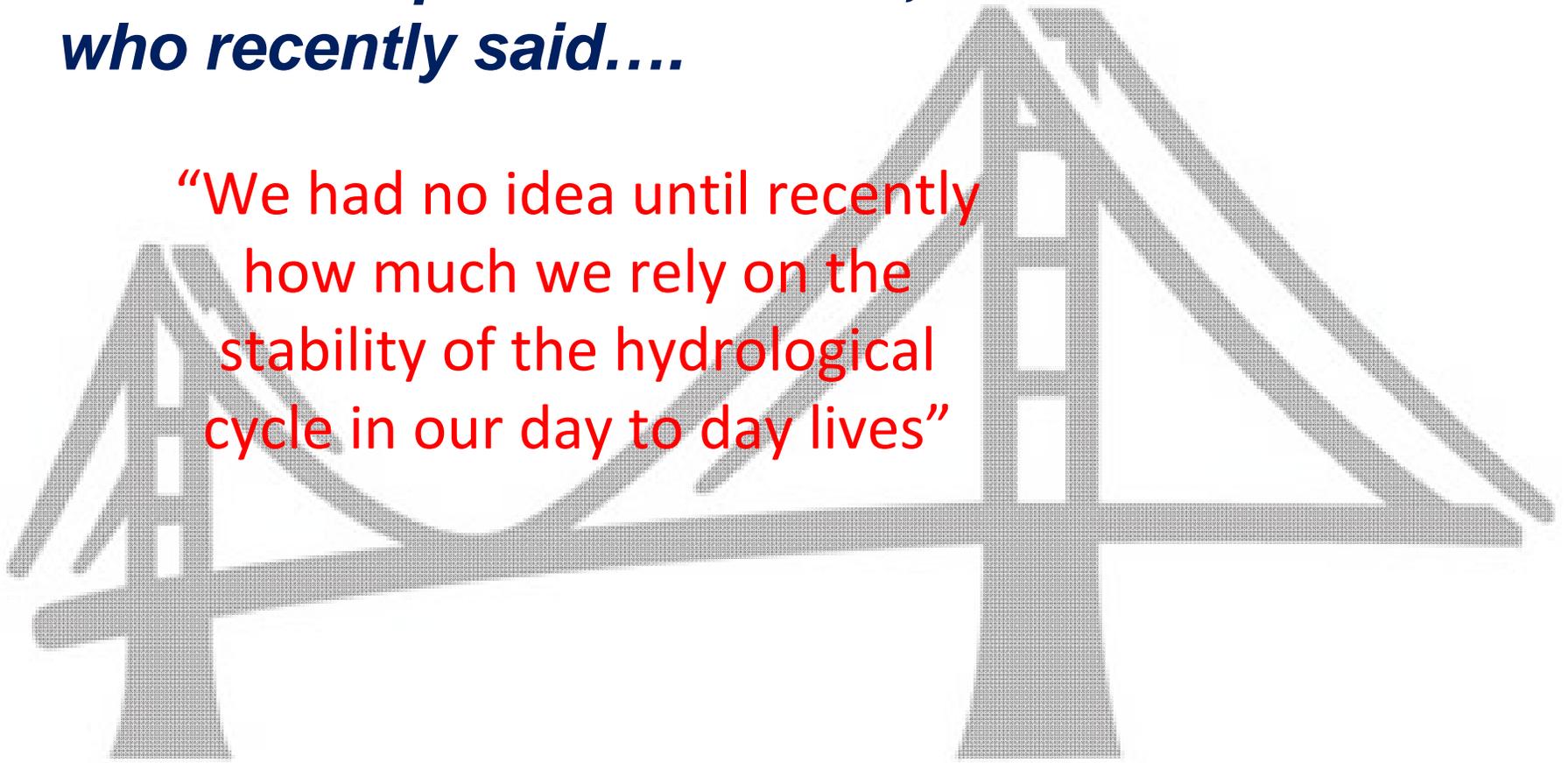


Glen Brown
General Manager (Victoria Operations)
Union of BC Municipalities

“The ‘regional team approach’ is founded on partnerships and collaboration; and seeks to align actions at three scales – provincial, regional and local.”

***Next, over to Bob Sandford,
water champion and author,
who recently said....***

***“We had no idea until recently
how much we rely on the
stability of the hydrological
cycle in our day to day lives”***





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The Storm after the Calm: *Hydro-Climatic Change & Its Consequences*

*A Presentation by
R.W. Sandford
EPCOR Chair, Water Security
United Nations University
Institute for Water, Environment & Health*





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***Follow the Water:
But pay attention to ice and snow.***



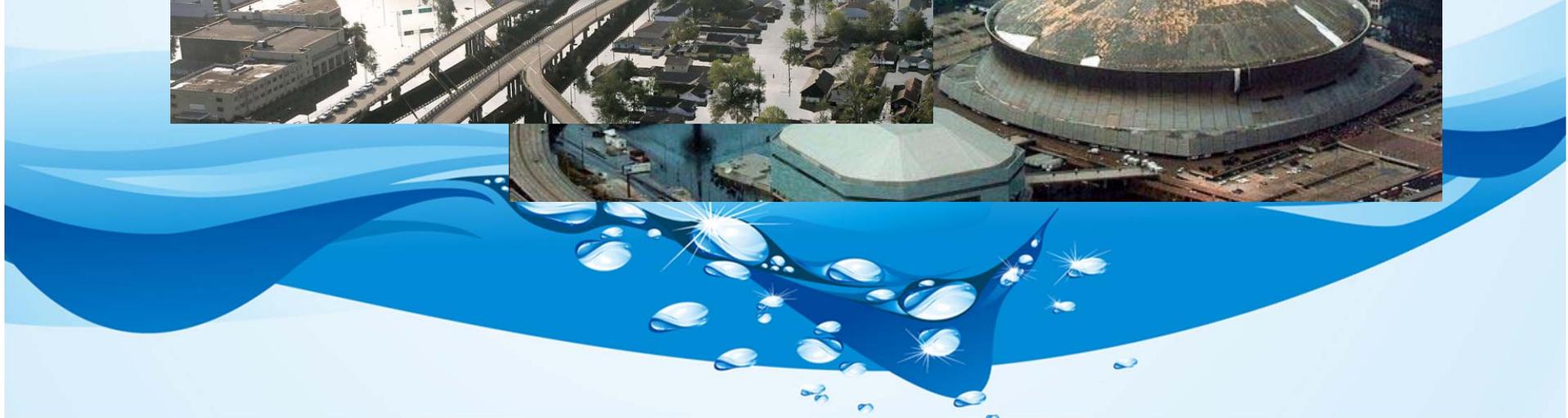


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Water & Climate Security: Follow the water



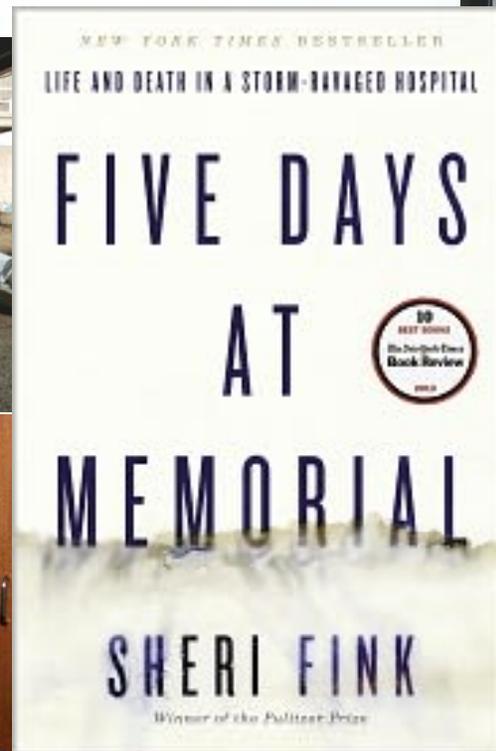


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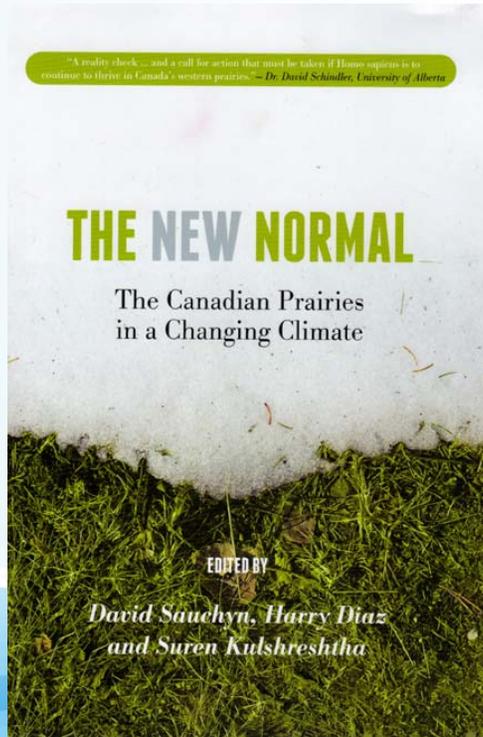


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Follow the Water: Flooding on the Central Great Plains



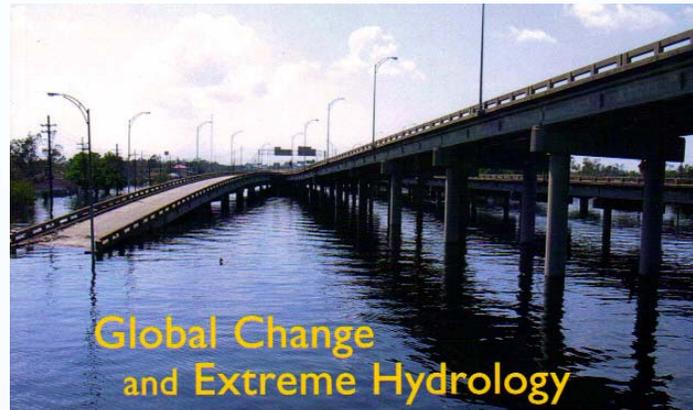


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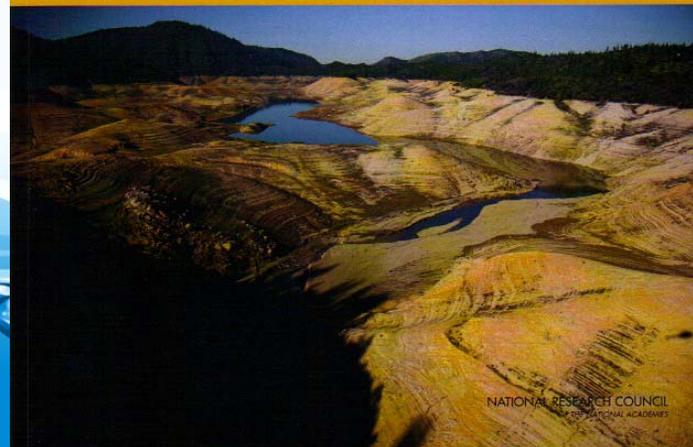
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Follow the Water: *www.nap.edu*



**Global Change
and Extreme Hydrology**

TESTING CONVENTIONAL WISDOM



NATIONAL RESEARCH COUNCIL
OF NATIONAL ACADEMIES

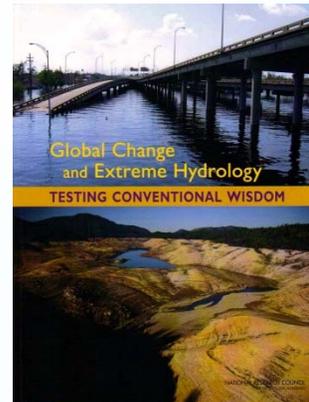


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“Continuing to use the assumption of stationarity in designing water management systems is, in fact, no longer practical or even defensible.”



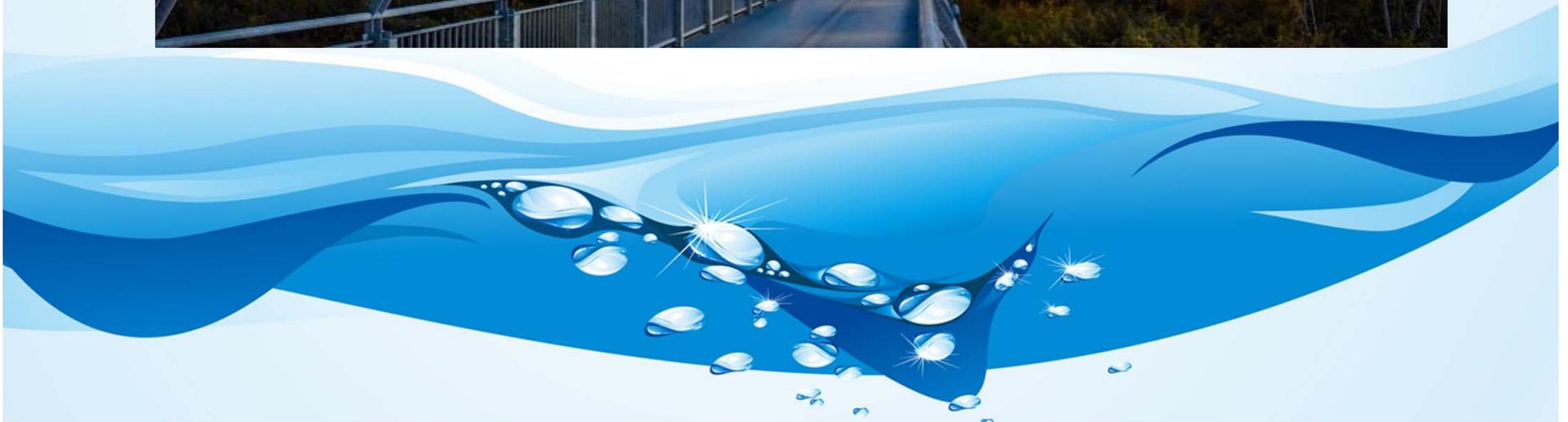


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Follow the Water: Liveable, Flood Resilient Cities



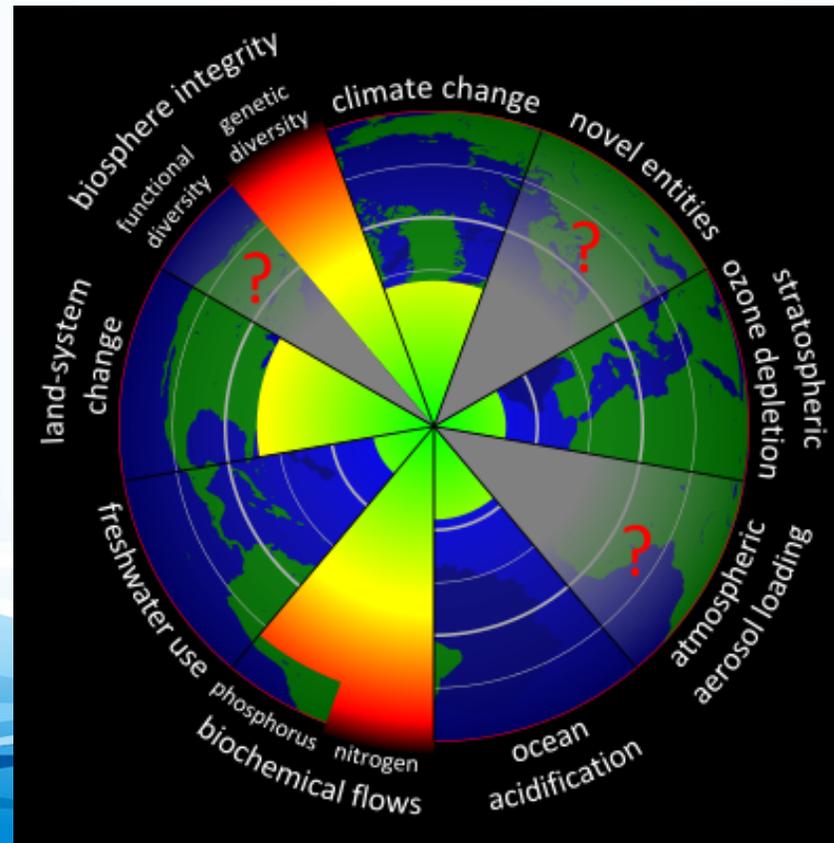


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Earth System Function: Follow the Water





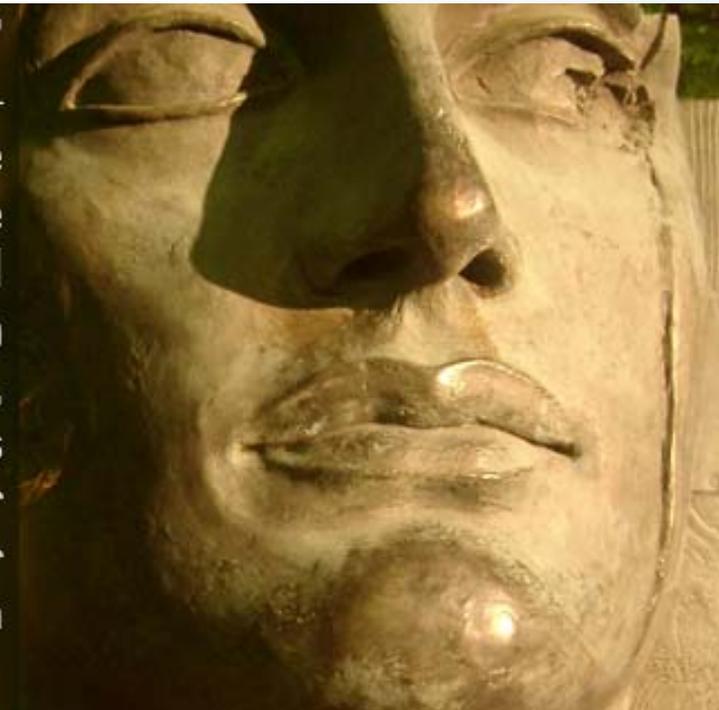
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Follow the Water: A new geological era?

The 'Anthropocene'
[or human-centered] geo-
logical epoch may be
characterized by the
collapse of natural
systems' built-in
resilience strategies,
meaning human beings
will take on even greater
responsibility for
environmental disruption
and/or wellbeing...





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UNITED NATIONS SUSTAINABLE DEVELOPMENT SUMMIT 2015

1 NO POVERTY 	2 ZERO HUNGER 	3 GOOD HEALTH AND WELL-BEING 	4 QUALITY EDUCATION 	5 GENDER EQUALITY 	6 CLEAN WATER AND SANITATION
7 AFFORDABLE AND CLEAN ENERGY 	8 DECENT WORK AND ECONOMIC GROWTH 	9 INDUSTRY, INNOVATION AND INFRASTRUCTURE 	10 REDUCED INEQUALITIES 	11 SUSTAINABLE CITIES AND COMMUNITIES 	12 RESPONSIBLE CONSUMPTION AND PRODUCTION
13 CLIMATE ACTION 	14 LIFE BELOW WATER 	15 LIFE ON LAND 	16 PEACE AND JUSTICE STRONG INSTITUTIONS 	17 PARTNERSHIPS FOR THE GOALS 	 THE GLOBAL GOALS For Sustainable Development

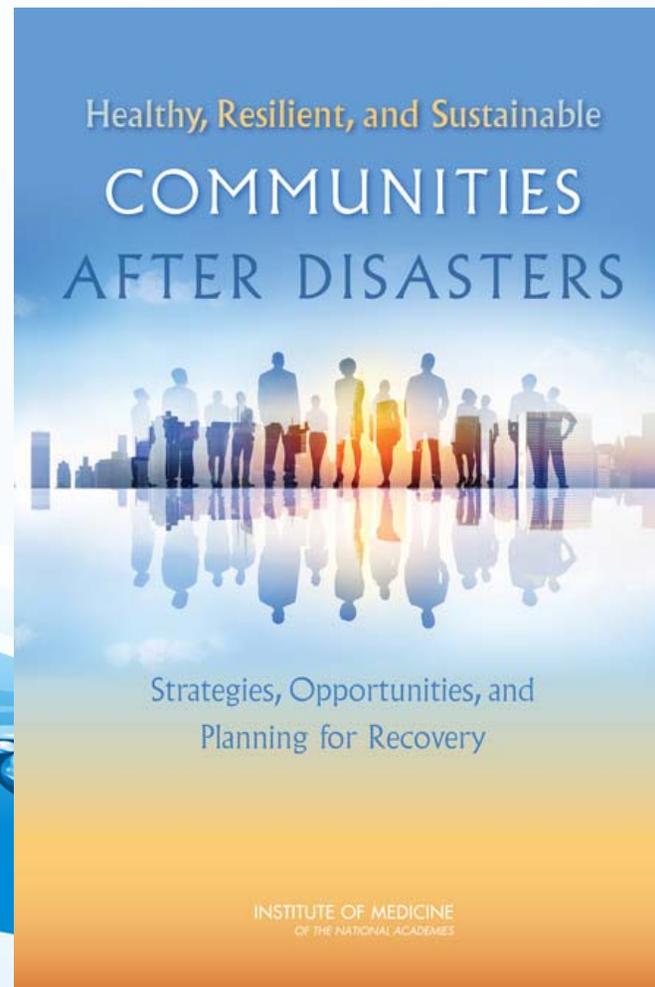


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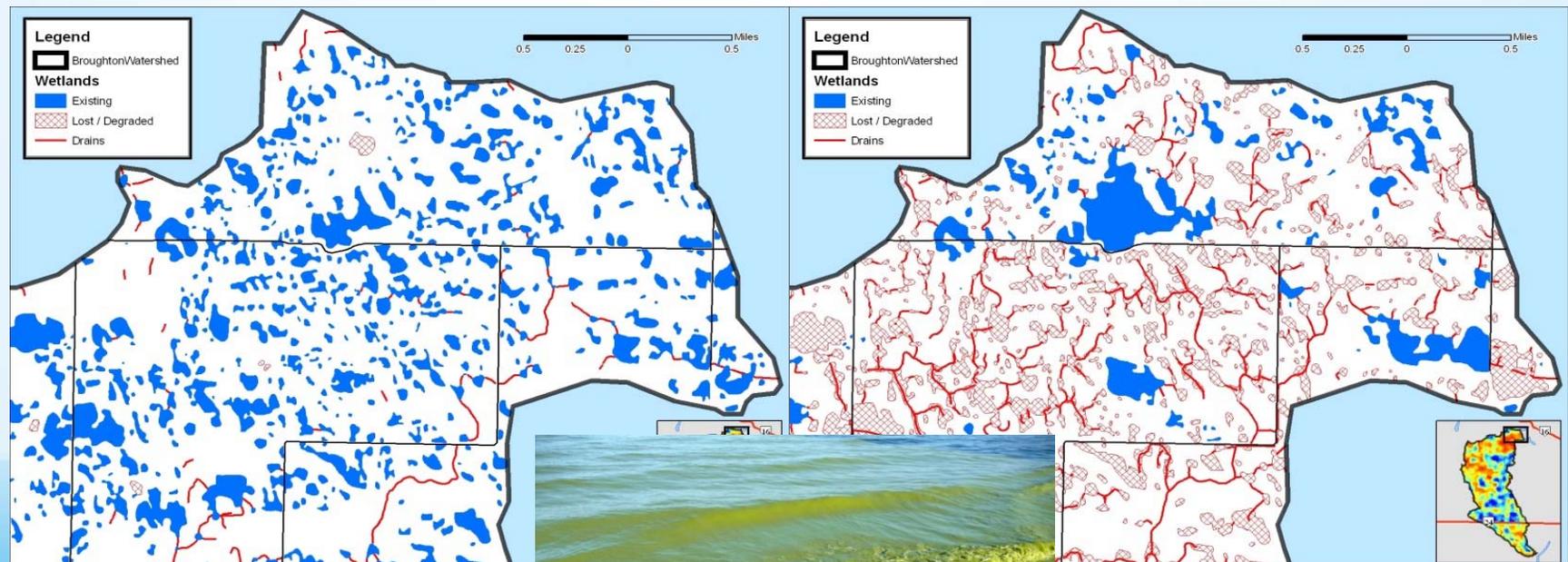


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Follow the Water: Restorative Development





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2015

International
Year of Soils





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*“Here, you see, it takes all
the running you can do, to
keep in the same place”*



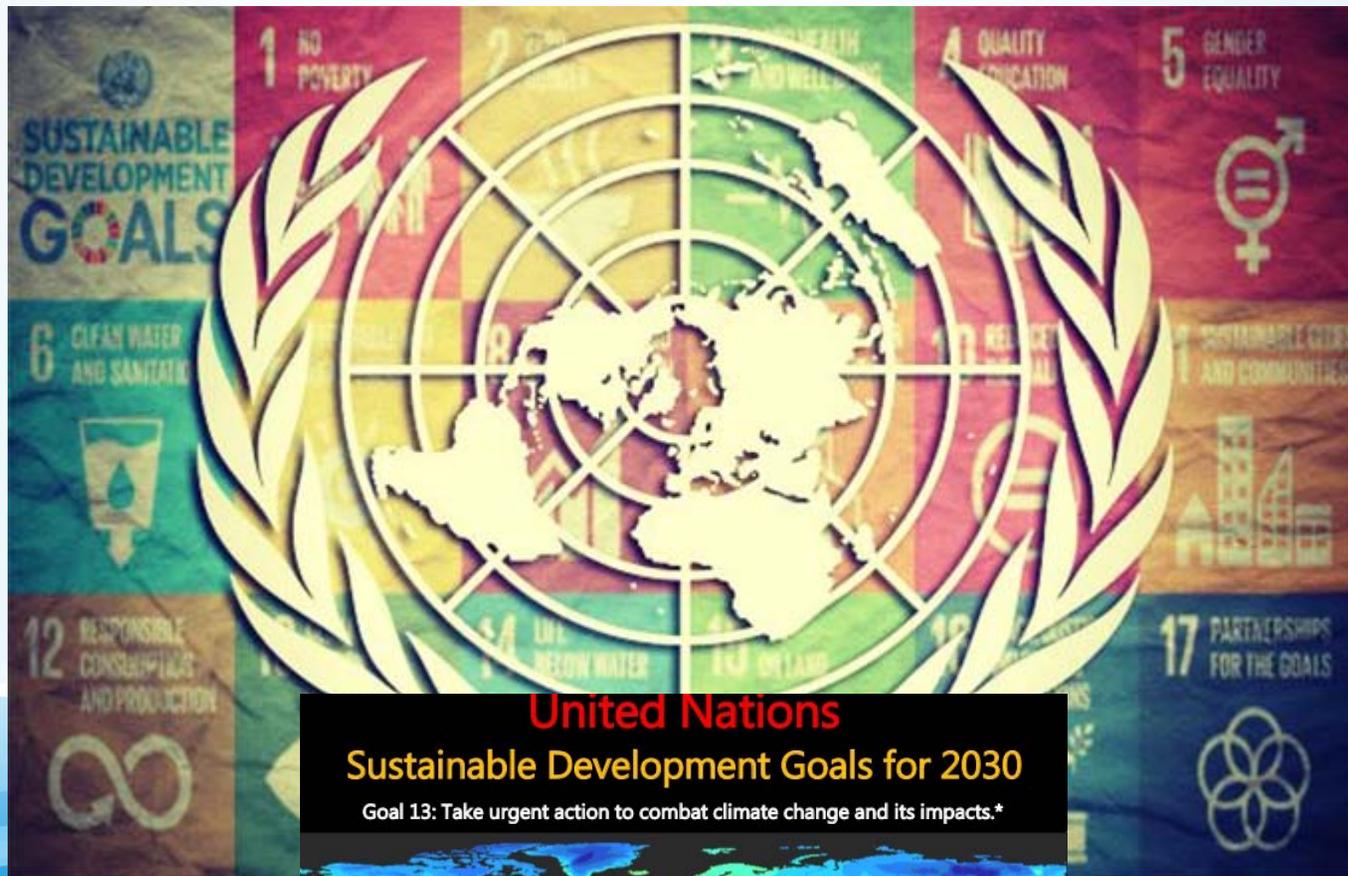
Sir John Tenniel



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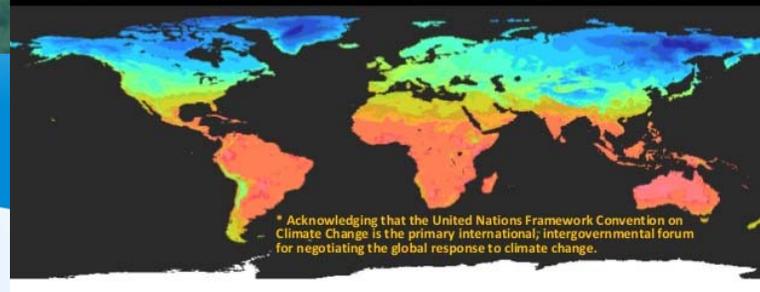
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United Nations Sustainable Development Goals for 2030

Goal 13: Take urgent action to combat climate change and its impacts.*



* Acknowledging that the United Nations Framework Convention on Climate Change is the primary international, intergovernmental forum for negotiating the global response to climate change.



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The Storm after the Calm: *Hydro-Climatic Change & Its Consequences*

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Water & Climate Security: Published This Fall

ROBERT WILLIAM SANDFORD

STORM WARNING

WATER *and* CLIMATE SECURITY
in a CHANGING WORLD

