

# **Corporate Water Stewardship: *Quantified***

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Wendy Larson

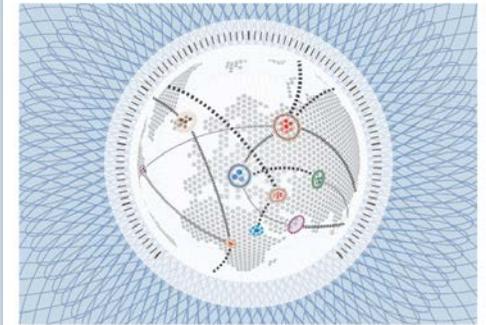
ACWI - Water Resources Adaptation to  
Climate Change Workgroup

March 9, 2017

# Growing Risks to Businesses

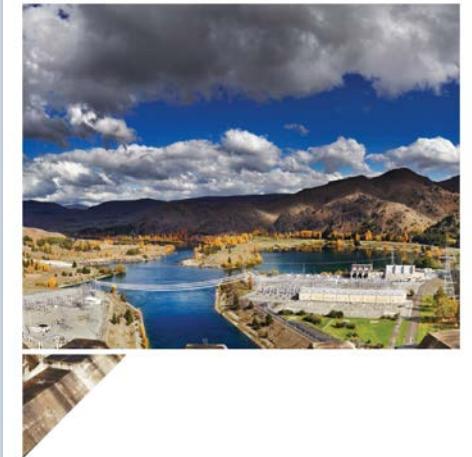
- ...extreme weather events, **climate change**, **water crises** consistently among the top ranked global risks for past seven years  
*(World Economic Forum, 2017)*
- ..disclosing companies reported **US\$14 billion in water-related impacts** this year *(CDP Water, 2016)*
- ...managing water in a more **holistic** sense *(CDP Water, 2016)*

## The Global Risks Report 2017 12th Edition

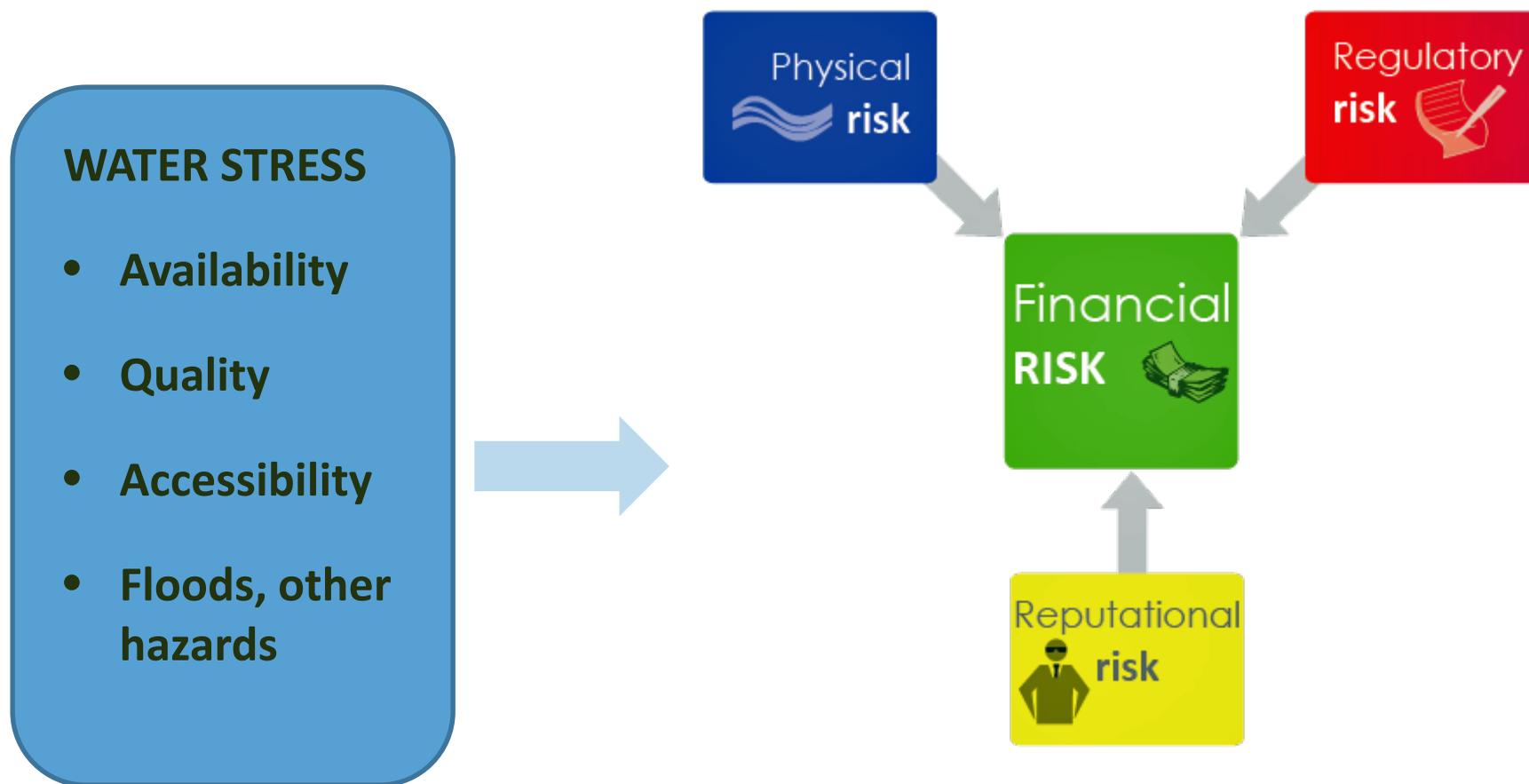


### Thirsty business: Why water is vital to climate action 2016 Annual Report of Corporate Water Disclosure

Written on behalf of 640 investors with US\$67 trillion in assets



# Key Water Risk Drivers



Risks will grow with climate change impacts and increased competition for water

# Corporate Water Stewardship

## *Approach\**

- Identify and manage water-related business risks
- Understand and mitigate adverse impacts on ecosystems and communities
- Contribute to and help enable more sustainable management of shared freshwater resources



Photo Credit: Pacific Institute

*\*As defined by Pacific Institute*



# Evolution of Water Stewardship: Beyond Efficiency

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**Compliance**



**Water efficiency**



**Water risk reduction**



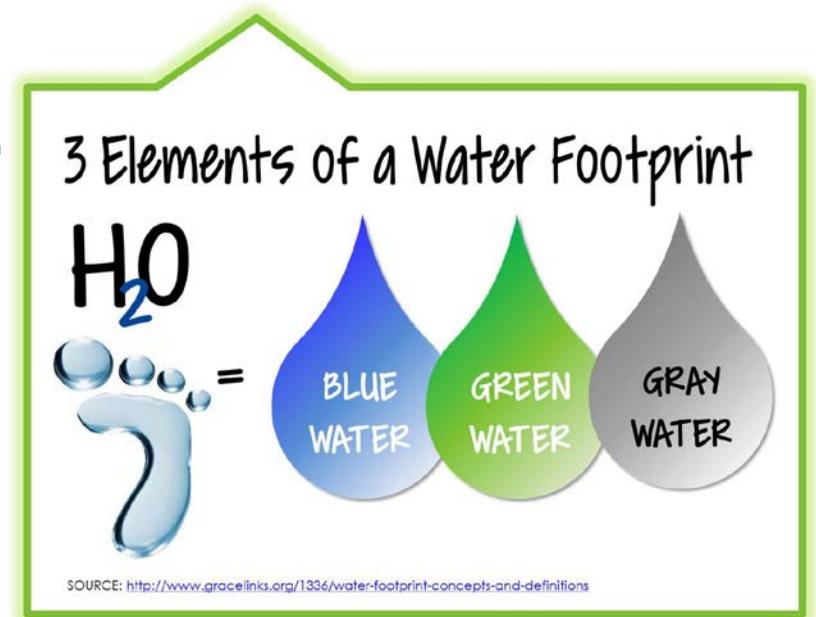
**Water stewardship**

- Meet Regulations
- “Do no harm”
- Reduce operational water use
- Treat & reduce wastewater
- Measure water use and risks in operations & supply chain
- Mitigate water risks where needed
- Contribute to more sustainable management of shared resources



# Accounting

- Water footprint accounts for direct and indirect use
- Measured in terms of water volumes consumed and/or polluted
- Indicates locations & timing of use (not just volumes)



- *Blue* Volume of surface or groundwater consumed
- *Green* Volume of rainwater consumed
- *Grey* Volume of freshwater to assimilate pollution

# Water Risks



*Supply vs. Demand*



Erik Enbody

*Biodiversity*



*Drought Severity*



*Governance*

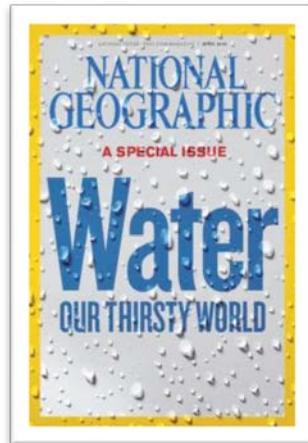


World Vision

*Water Access*



*Water Pollution*



*Media Coverage*



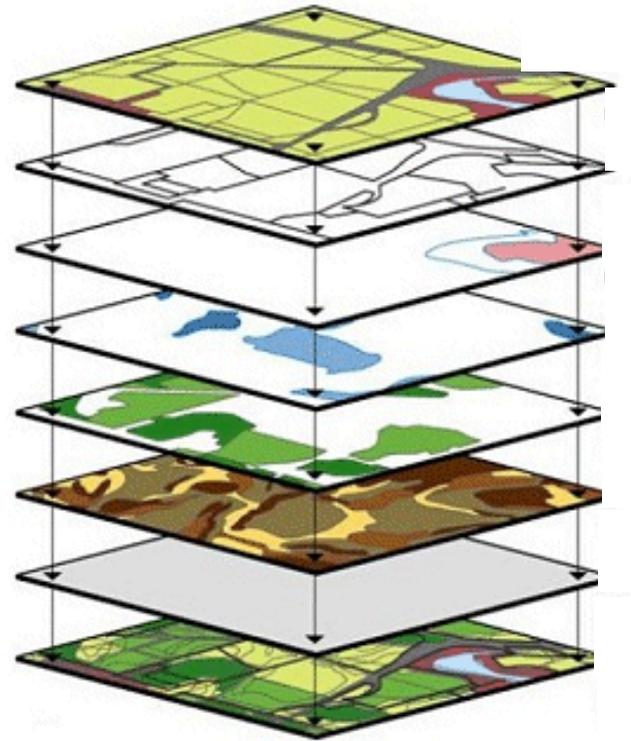
AP

*Flood Occurrence*



# Water Risk Tools

- Aqueduct Water Risk Atlas
- WBCSD Global Water Tool
- GEMI Local Water Tool
- WWF-DEG Water Risk Filter
- WFN WaterStat



# Engaging “Outside the Fenceline”

- Risk can't be managed solely within fenceline
- Seek opportunities for collective action



## *CEO Water Mandate: Six Core Elements for Water Management*

**Direct Operations**



**Supply Chain & Watershed Mgmt.**



**Collective Action**



**Public Policy**



**Community Engagement**



**Transparency**



# AWS International Water Stewardship Standard

## *Engage, Implement, Certify*

### *AWS Standard Steps and Continuous Improvement*



Source: <http://www.allianceforwaterstewardship.org/>

- Globally-consistent, ISEAL compliant standard, outlines the expectations of responsible water stewardship
- **Water Stewardship Plan that links:**
  - Site risk
  - Shared water challenges
  - Desired outcomes of water stewardship
    - ❖ Good water quality
    - ❖ Sustainable water balance
    - ❖ Healthy important water related areas
    - ❖ Good water governance
- **Option for third-party verification**

# Alignment of AWS with SDG for Water

## Alliance for Water Stewardship

✓ Good Water Quality Status

✓ Sustainable Water Balance

✓ Good Water Governance

✓ Viable Important Water-Related Areas

## Global Goals for Sustainable Development (SDGs)

✓ SDG 6: CLEAN WATER AND SANITATION



### Water Access, Sanitation & Hygiene

**6.1** Achieve universal and equitable access to safe and affordable drinking water for all

**6.2** Achieve access to adequate and equitable sanitation and hygiene for all



### Water Quality & Quantity

**6.3** Improve water quality

**6.4** Increase water-use efficiency, ensure sustainable withdrawals and supply, and reduce the number of people suffering from water scarcity



### Water Management & Governance

**6.5:** Implement integrated water resources management

**6a:** Expand international cooperation and capacity-building

**6b:** Support and strengthen the participation of local communities



### Freshwater Ecosystems

**6.6** Protect and restore water-related ecosystems



# Time-Bound Goals

## *Quantitative Targets (examples)*

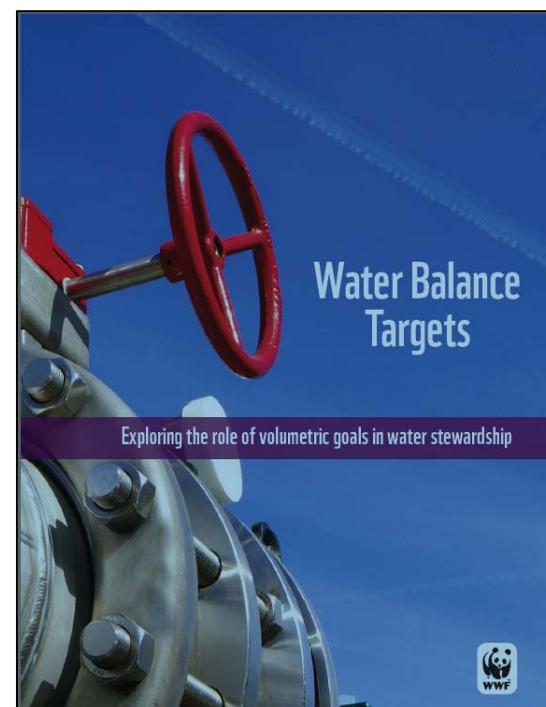
- Optimize water efficiency in operations
  - Improve water efficiency of direct operations by X%
  - Treat 100% of wastewater to standards
- Encourage good practice throughout supply chain
  - Reduce water use in agricultural supply chain by X%
- Collaborate to advance sustainable water management
  - Replenish (balance) 100% of water consumed in operations



# Water Balance Targets

## *Key Features*

- Protect, restore, provide a volume of water for nature and communities
- Locally-relevant projects
  - Community access to safe water supply
  - Watershed restoration and protection
- Quantifiable benefits
- Collaborative partnerships
- One component of water strategy



Bass, L., and W. Larson. 2016. *Water Balance Targets: Exploring the role of volumetric goals in water stewardship*. World Wildlife Fund and LimnoTech. Washington, DC

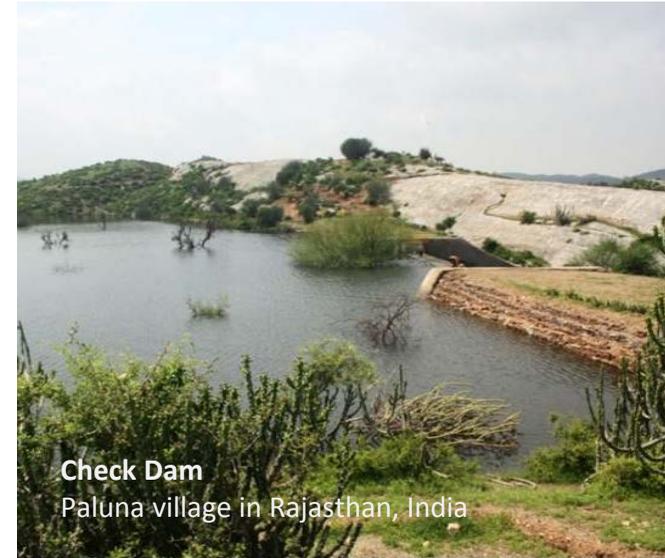
# Example Watershed Interventions



**Forest Protection & Reforestation**  
Rio Grande Rio Chico, Brazil



**Terracette in Coffee farms**  
El Salvador



**Check Dam**  
Paluna village in Rajasthan, India



**Invasive Removal**  
Rio Grande Rio Chico, Brazil



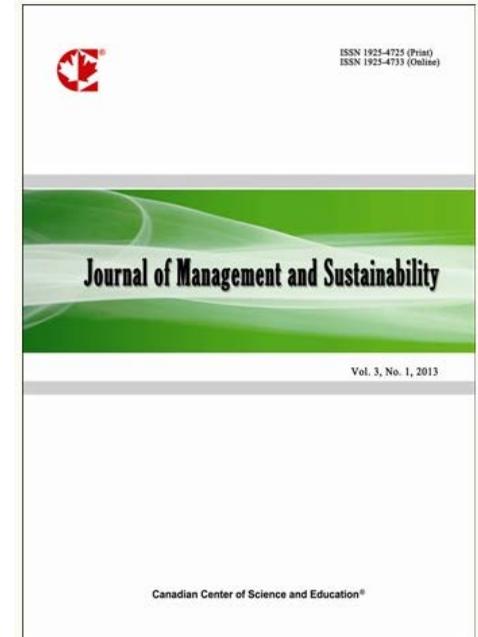
**Cattle Exclusion**  
Latin America

# Achieving Quantifiable Improvements

## *Data and Analytics*

- Scientifically-defensible, widely applied and vetted methodologies
- Measure or estimate change in water budget as a result of intervention  
For example:

- Volume *provided* for safe drinking water
- Volume *treated* to relevant standard
- Volume *restored or returned* to nature
- Volume *saved* through efficient irrigation



*Corporate Water Stewardship:  
Achieving a Sustainable Balance*  
<http://www.ccsenet.org/journal/index.php/jms/issue/view/961>

# Carson National Forest, NM

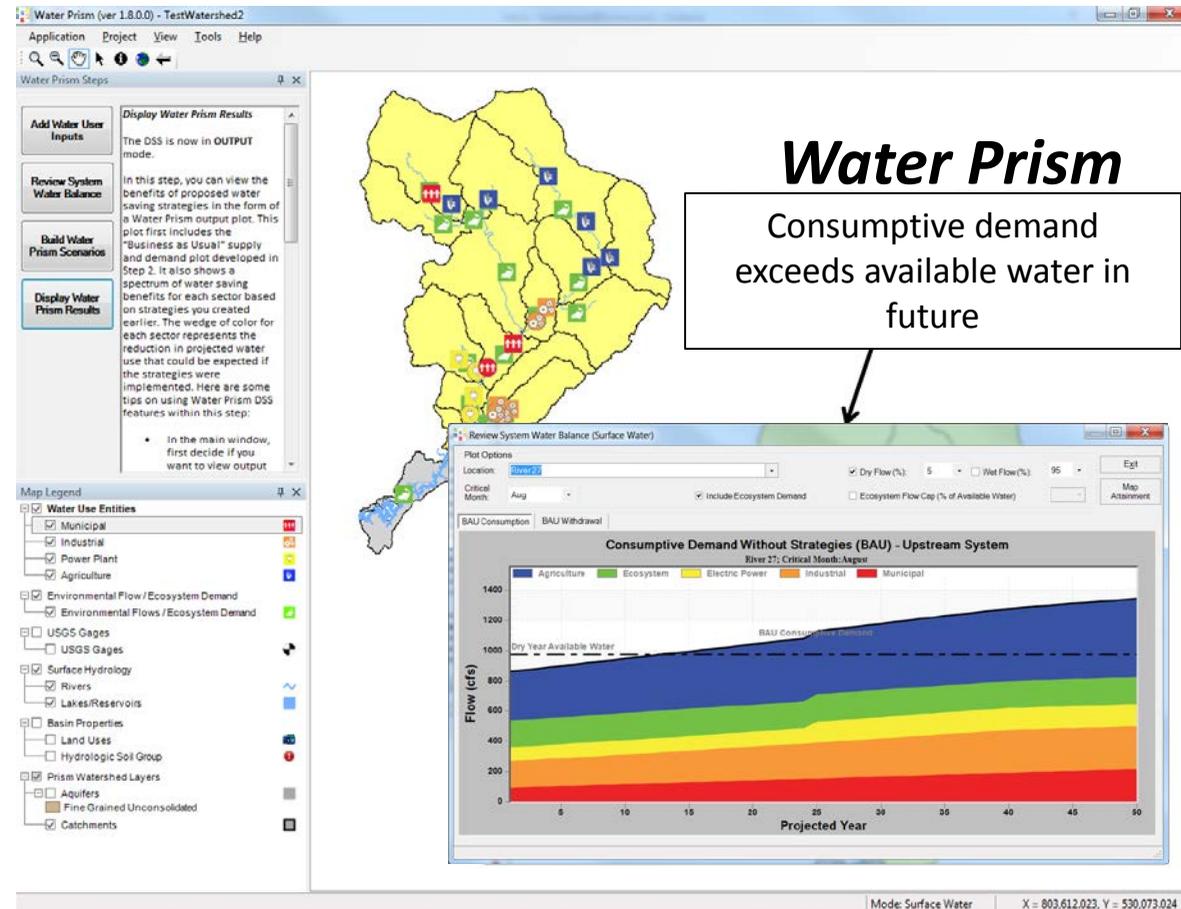
- Partnered with National Forest Foundation
- Recreational and mining activities altered the hydrology and wetland, eroding gullies adding excessive sediment
- High mountain wet meadow restoration
  - Raised the groundwater elevation adjacent to the creek
  - Created 4 acres of new wetland and riparian area
  - Reduced gully erosion and sediment contribution to creek
- **Calculated replenish benefit:** increase in groundwater storage with meadow restoration, adjusted for % of cost share



# Water Prism

## *Basin Scale Decision Support System*

- Fine scale understanding of water use in context of supply
  - Verify water quantity risk
  - Explore competing demand across sectors
  - Encourage stakeholder collaboration
- Compute system water balance on regional scale
  - Evaluate consumption and withdrawal risk
  - Explore water saving strategies
  - Environmental flow limits
  - Tradeoffs with various water saving strategies and other sectors



Weintraub, L., H. Tao, and T. Redder, 2017. *Water Prism: A Tool to Assess Water Availability Risk and Investigate Water Management Strategies*. Journal of the American Water Resources Association (JAWRA) 1-21. DOI: 10.1111/1752-1688.12519 (IN PRESS)



# Water Stewardship in Vermont

- Donated up to \$1M/year to address water quality issues including impacts of phosphorus runoff on Lake Champlain
- Support development of innovative decision- support tool
  - User-friendly, web-based platform
  - Prioritizes projects based on performance and costs
  - Tracks progress toward goals
  - Supports outcome-driven, evidence-based approach
- Fund portfolio of impactful projects



*to benefit*



*and benefit*



Prioritize Investments

Local Watersheds

Lake Champlain



# Clean Water Roadmap (CWR)

arcgis.limno.com/CleanWaterRoadmap/Map-planning.vbhtml#

Home Documents Contact CWR Outreach Manage Account Log out VERMONT

**Clean Water Roadmap Tools**

Land type(s): All Land Types  
 Variable: Yield (kg/ha/y)  
 Color scheme: Green to red

Manage Scenarios

Baseline mode  
 Scenario mode

Create/select scenario:  
 Demonstration  
 Publish status:  
 Not Shared  
 Owner: Anonymous  
 Created: 12/07/2016 4:44 PM  
 Last revised: 12/07/2016 4:46 PM  
 Edit Settings Delete

Map Layers

- Streams
- Villages
- Towns
- Counties
- Lake Champlain Basin
- Tactical Basins
- HUC-12 Basins
- NHDPlus Catchments
- Water Quality Blueprint (WQB): Conservation Value
- Water Quality Blueprint (WQB): Water Quality Impact

Tactical Basin Scenario TP Loading

Tactical Basin Load (75,940 kg/y, -6.1%)

- Cropland (30,921 kg/y, -13.6%)
  - AGRR: General Agricultural Land (1,365 kg/y)
  - CRNC: Corn (non-clay) (556 kg/y)
  - SCNC: Soybeans (non-clay) (18.1 kg/y)
  - SPAS: Fallow/Idle Cropland (1,373 kg/y)
  - CHNC / HCNC: Corn/Hay (non-clay) (5,600 kg/y)
  - CRCL: Corn (clay) (5,358 kg/y)
  - SCCL: Soybean (clay) (264 kg/y)
  - CHCL / HCCL: Corn/Hay (clay) (16,388 kg/y, -22.9%)
    - HSG D (16,374 kg/y, -22.9%)
      - 0-5% (5,777 kg/y, -11.4%)
      - 5-10% (6,366 kg/y, -29.9%)
      - > 10% (4,232 kg/y, -25.0%)
    - HSG Water (13.8 kg/y, -21.4%)
- Pasture / Hay (18,268 kg/y)
- Farmsteads (684 kg/y)
- Developed (4,961 kg/y)
- Roads (6,779 kg/y)
- Forest (11,806 kg/y)
- Grass/Shrub Land (1,140 kg/y)

Annual TP Load Comparison

Cropland

Tactical Planning Basin

Basin Name: Southern Lake Champlain  
 Zoom to

(ha) by LULC Group

Pasture / Hay  
 Farmsteads  
 Developed  
 Roads  
 Forest  
 Grass/Shrub Land  
 Wetlands

Tactical Basin: Baseline Summary

Metric	Value	(Tactical Basin)	(LC Basin)
TP Load (kg/y)	80,861	n/a	n/a
Mean Yield (kg/ha/y)	0.61	n/a	n/a
Area (ha)	131,834	n/a	n/a
Conservation Value	36.55	n/a	n/a
WQ Impact Score	18.34	n/a	n/a

arcgis.limno.com/CleanWaterRoadmap/Map-planning.vbhtml#

Click on the "Compare" tab for a visual comparison of baseline and scenario phosphorus loading

# Key Observations of Corporate Water Stewardship

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- Growing water stress poses financial stress
  - Water competes with other environmental issues
- Most successful stewardship efforts are tied to enterprise sustainability
- Evolving towards quantification, accountability, evidence
  - Show programs are worth it; goals with quantified metrics
  - Seek to improve water at the basin scale
  - Context is key
  - Variability in available water with climate change
- Partnerships with other companies, NGOs & governments essential



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