

Corporate Water Gauge

World's 1st and Original Context-Based Water Metric

A Cutting-Edge Solution for Measuring the
Sustainability of Organizational Water Use

Center for Sustainable Organizations
Woodstock, VT

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(First published in early 2009)



Introduction

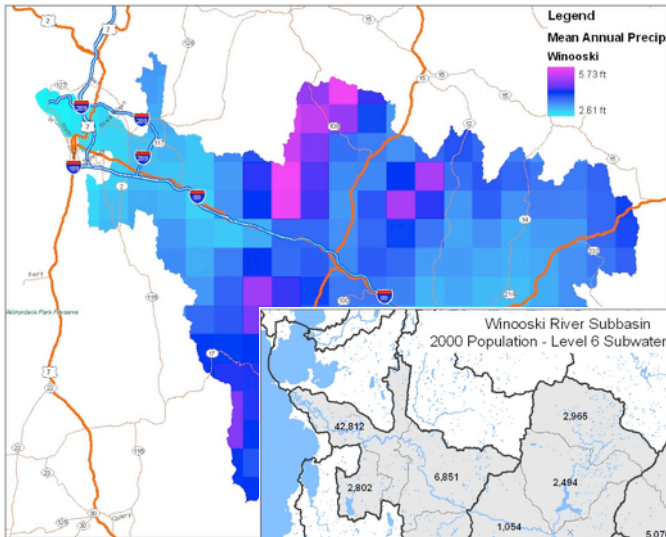
- A context-based metric for assessing the sustainability of an organization's water use
- Based on the [context-based approach](#) to sustainability measurement and reporting developed by the [Center for Sustainable Organizations](#)
- Consumption is measured against a facility-specific allocation of available renewable supplies at the local, watershed level
 - A watershed-centric approach
- Technology-enabled
 - Spreadsheet-based metric
 - GIS for spatial analysis using meteorological, topographical, population and economic datasets from scientific and gov't sources



A 4-Step Method

1. Identify watershed(s) in which facilities consume and return water (sources and sinks of water)
2. Determine net renewable water supplies in watershed(s) of interest and allocate fair, just and proportionate shares to facilities
3. Determine net water consumption by facilities in watershed(s) of interest
4. Populate *Corporate Water Gauge*[®] quotient with data developed in steps 1 through 3 above, and compute sustainability scores, accordingly



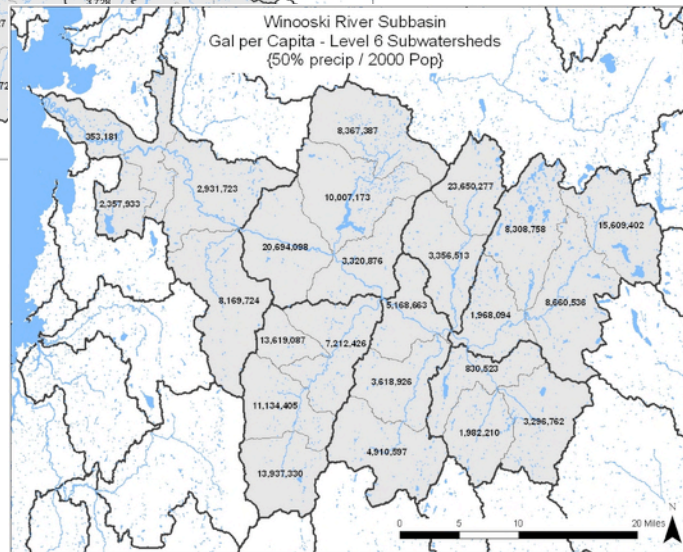


GIS functionality used to calculate available renewable water resources within specific watersheds at facility level of analysis.

Makes innovative use of GIS tools



GIS functionality also used to determine local populations within watersheds at facility locations of interest.



GIS functionality then used to determine a facility's fair, just and proportionate share of available renewable supplies, using either its contributions to GDP or its workforce size – or both – as a proxy



Making Allocations

- Calculations of available renewable supplies are made at the individual facility level based on:
 - Watershed areas (polygons) in which facilities are located
 - Volume of locally available water (via annual precipitation levels)
- Adjustments then made for:
 - Evapotranspiration
 - Ecological functions
 - Domestic residential needs
- Allocations to organizations then made in two ways:
 - Economic method: per an organization's contributions to GDP
 - Per capita method: per an organization's workforce size



Sample Report



Organization/Facility Name: TransGlobal, Inc./U.S. Plant
Year of Analysis: 2008

Hydrological Unit #1: Braintree Subwatershed Level 6
Hydrological Unit #2: Delta River Subbasin Level 4

Quotient Scores

Per Capita (Level 6)

- Numerator 25,550,000
 - Denominator 32,800,000 = **0.78***

Economic (Level 4)

- Numerator 21,800,000
 - Denominator 98,440,000 = **0.22***

Intensity (Level 6)

- Numerator 25,550,000
 - Denominator 99,600,000 = **0.26 gals./unit**

*Scores of ≤ 1.0 are sustainable; scores of >1.0 are unsustainable.

Background Data

e.g., precipitation, population and economic data.

Numerators

| | <u>Braintree L6</u> | <u>Delta River L4</u> |
|-------------------------|---------------------|-----------------------|
| - On-site in (gals.) | 15,700,000 | 15,700,000 |
| - Municipal in (gals.) | 32,500,000 | 32,500,000 |
| - On-site out (gals.) | (10,500,000) | (10,500,000) |
| - Municipal out (gals.) | <u>(12,150,000)</u> | <u>(15,900,000)</u> |
| Net Consumption (gals.) | 25,550,000 | 21,800,000 |

Denominators

| | <u>Braintree L6</u> | <u>Delta River L4</u> |
|------------------------------|---------------------|-----------------------|
| Per Capita (Level 6) (gals.) | 32,800,000 | |
| Economic* (Level 4) (gals.) | | 98,440,000 |
| Intensity (Level 6) | | |
| - Production vol. (units) | 99,600,000 | |

*Function of economic performance; basis varies.

Key Principles

- Sustainability of water use should be assessed relative to local, site-specific conditions
 - Renewable supplies should be determined by reference to associated watershed boundaries
 - Stocks of surface and groundwater resources should be preserved and not drawn down
 - Human use of water resources should be deferential to local ecological needs
- Water use should be measured against available renewable supplies that are allocated to individual facilities using economic and/or per capita criteria



Advantages Over Other Tools

- Complements other risk- or stress-related tools
- Measures sustainability performance with local context taken fully into account (i.e., *is context-based*)
 - Assesses water use in terms of locally available renewable supplies, which are allocated to individual facilities in economic and/or per capita terms
 - Makes it possible to score sustainability performance at a local, regional, national, global, and enterprise-wide level with local contexts taken fully into account
- Makes use of advanced GIS tools in combination with site-specific datasets



What Form Does It Take?

- An integrated solution (Corporate Water Gauge):
 - A context-based water metric embodied in a spreadsheet
 - A GIS technique for measuring water use and supply in watersheds (using third-party datasets)
 - Support services for teaching and/or help with implementation
- Output:
 - Spreadsheet files with context-based sustainability scores
 - Graphical depictions of relevant watershed areas and data
 - Relevant GIS shapefiles w/site-specific data
- Terms of availability:
 - Metric is free and open-source to end users in return for due attribution to CSO as its source whenever used



Contact us for more info!

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