



GEMI®  
Local Water Tool™ (LWT)

# GEMI Local Water Tool™ (LWT): Definitions and Calculations

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Users are recommended to refer to comprehensive glossaries on water-related terms that have been developed by WBCSD in Water for Business (2010) or the Glossary of Hydrology, UN World Water Assessment Program (<http://hydrologie.org/glu/aglo.htm>).

## [1. Definitions of Terms](#)

## [2. Calculation Methodologies](#)

For additional information or to make suggestions, please contact [info@gemi.org](mailto:info@gemi.org).

Selected terms employed in the GEMI LWT™ are defined below:

## 1. Definitions of Terms

**Beneficial use:** Discharges directly to external organizations for specific use by industry, agriculture, human use or constructed wetlands.

**Chemical Oxygen Demand (COD):** Mass concentration of oxygen equivalent to the amount of a specified oxidant consumed by dissolved or suspended matter when a water sample is treated with that oxidant under defined conditions. Measurement units: mg/l.

**Dashboard:** An overview of key metrics and indicators for the user to quickly assess the performance of an operation.

**Degradation:** A concept related to the lowering in quality of a water body.

**Degradative water use:** Describes the quality change in water used and released back into the same watershed.

**Depletion:** Continued withdrawal of water from groundwater or other water body at a rate greater than the rate of replenishment.

**Ecosystem:** An integrated system formed by the interaction of a community of living organisms, the non-living physical environment, and the processes that affect them.

**Effluent:** see water discharge.

**External Stress Severity Level:** describes the current conditions of a specific water source. It is a result of natural physical conditions and cumulative anthropogenic (human, industry, agriculture) impacts. Each External Stress Severity Issue and Level is defined on the “Droplist” worksheet.

**Gas Processing Operations:** The activities of a company including Liquefied Natural Gas (LNG) Plants, LNG Regasification Plants, gas treating, and Liquefied Petroleum Gas.

**Freshwater:** The constituent content of freshwater should be defined by local regulations. In the absence of local regulations, User should determine best definition for a site based on company policies and global guidelines. A limit of 1,000 mg/L of TDS (the limit set by the World Health Organization for drinking water) is the guidance for categorization of fresh and non-fresh for surface and groundwater.

**Groundwater:** Subsurface water occupying the saturated zone.

**Impact:** A company's individual impact on a particular water sources is defined as the extent to which the volume and/or quality of water used by a company in a specific watershed affects the availability of water for other uses or harms health or ecosystems in any other way.

**Influent source:** origin of water withdrawal.

**Internal Importance Level:** describes the business criticality of each Influent Source and Receiving Waterbody or Entity. Each Internal Importance Level is defined on the "Droplist" worksheet.

**Management plan (method):** Defines how a company is addressing, implementing and monitoring performance on an issue.

**Municipal supply:** Supply of drinking quality water by a public organization.

**Non-communicating underground reservoir:** a confined subsurface water source with no hydrologic connection to other waterbodies.

**Non-Freshwater:** Water that is not considered fresh. See Freshwater definition.

**Oil Sands Operations:** The activities of a company to produce and upgrade oil or bitumen from surface mining or in-situ fields.

**Operation:** The site-level business function. Examples include refining, manufacturing, or mining.

**Opportunity:** Potential top line business enhancements created by voluntary sustainable water management actions.

**Performance indicator:** Qualitative or quantitative information about results or outcomes associated with an effort that is comparable and demonstrates change over time.

**Pollutant/pollution:** A substance/the addition of a substance that impairs the suitability of water for a considered purpose.

**Potable water:** Water that is suitable for drinking.

**Precipitation:** Liquid or solid products of the condensation of water vapor from clouds or deposited from air on the ground.

**Process:** specific activities within an operation. One site/operation may have multiple processes which use or discharge water. For example, a manufacturing operation may have a cooling process, a cleaning process and a chemical reaction process.

**Product:** Any material of commercial value which is extracted, processed, refined, manufactured or transported by an oil company.

**Quality:** The quality of a specific water body is defined by the suitability or condition of the water for a particular use based on its physical, chemical, and biological characteristics.

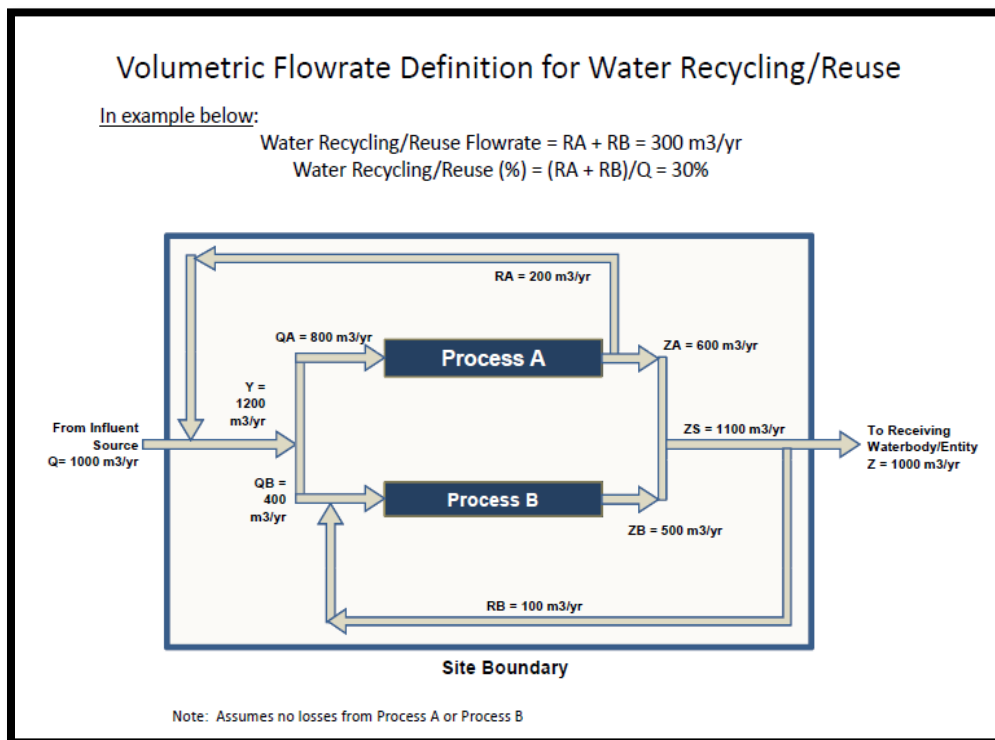
**Rainwater:** Rainwater volume should be entered under Module 1\_Influent if it is used onsite as a water source. If it just falls onsite and is not used, then it does not need to be entered.

**Receiving waterbody or entity:** Destination of water discharges.

**Recycled water:** The amount of used water/wastewater employed through another cycle back in the same process or in a higher use in the process cycle before discharge for final treatment and/or discharge to the environment.

**Recycled/Reused volumetric flowrate:** Recycled/reused water should be counted only once because water is extracted from its original source only once.

**Recycled/Reused water (%):** Total of Recycled and Reused Water as a percentage of Total Water Withdrawal.



**Reporting:** Disclosing relevant information and data to internal and external stakeholders such as management, employees, governments, regulators, shareholders, the general public, local communities or specific interest groups.

**Retail Operations:** The activities of a company to sell products and services at commercial stations.

**Reused water:** The amount of used water/wastewater employed in another function in a lower use in the process cycle before discharge for final treatment and/or discharge to the environment. Reuse includes wastewater used for irrigation within a facility boundary. Reuse includes harvesting of rainwater within a facility boundary.

**Risk:** A company's risk from using water from a particular water source is defined as potential business liabilities faced by the site as a result of impacts and external water-related drivers and constraints. "Risk" in this tool is not synonymous with a specific regulatory or financial reporting requirement such as that required by the U.S. Securities and Exchange Commission (SEC).

**Site:** A unique location of a business operation.

**Source:** Origin of water withdrawal.

**Stress:** The tension resulting from the imbalance of insufficient supply and strong demand.

**Subsurface Discharge:** Effluent discharge point below ground. The receiving entity may be disposal to a closed saline/non-freshwater body or it may be injected to a freshwater aquifer that is used by others.

**Surface water:** Water that flows over or is stored on the ground surface.

**Total Dissolved Solids (TDS):** Total weight of dissolved mineral constituents in water per unit volume of water in the sample. Measurement unit: mg/l.

**Turbidity:** Condition of a liquid due to fine, visible material in suspension, which impedes the passage of light through the liquid. The units of turbidity from a calibrated nephelometer are called Nephelometric Turbidity Units (NTU).

**Water consumption:** per Calculation Methodologies below, water consumption is the difference between water withdrawal and water discharge. Consumption removes water from a water system and makes it unavailable for further use.

**Water discharge:** Water effluents discharged outside a reporting organization boundary to subsurface waters, surface waters, sewers that lead to rivers, oceans, lakes, wetlands, treatment facilities, and groundwater.

**Water withdrawal (or use):** The sum of all water drawn into the boundaries of the reporting organization from external sources.

**Water intensity:** The ratio between water withdrawal or water consumption and a defined unit of production.

**Watershed:** Area having a common outlet for its surface runoff. Synonyms include: catchment, drainage area, and river basin.

## 2. Calculation Methodologies

### A) Freshwater Withdrawal and Consumption

#### 1) Total freshwater withdrawal (A1):

The sum of all freshwater drawn into the boundaries of the reporting organization from the following sources for any use over the course of the reporting periods:

- a) Surface water
- b) Groundwater
- c) Municipal supply (including potable water purchased from other industries)
- d) External wastewater
- e) Produced water from a company's own operations

- f) Rainwater and precipitation captured by the Site

## **2) Total Freshwater Consumed by Facility (A3):**

The quantity of freshwater:

- a) Evaporated for cooling purposes
- b) Evaporated from water storage facilities
- c) Lost via transmission
- d) Used directly in the organization's products
- e) Onsite uses, including irrigation and road maintenance

Freshwater consumption is the difference between freshwater intake and freshwater discharge. Consumption removes water from a water system and makes it unavailable for further use.

## **B) Non-Freshwater Withdrawal and Consumption**

### **1) Total Non-Freshwater Withdrawal (B1):**

The sum of all non-freshwater drawn into the boundaries of the reporting organization from the following sources for any use over the course of the reporting periods:

- a) Seawater
- b) Surface water – brackish or saline source
- c) Groundwater and produced water – brackish or saline source
- d) External wastewater – untreated or partially treated wastewater from municipal or other external industrial source

### **2) Total Non-Freshwater Consumed by Facility (B2):**

The quantity of non-freshwater:

- a) Evaporated for cooling purposes
- b) Evaporated from water storage facilities
- c) Lost via transmission
- d) Onsite uses, including irrigation and road maintenance

Non-Freshwater consumption is the difference between non-freshwater intake and non-freshwater discharge. Consumption removes water from a water system and makes it unavailable for further use.

## **C) Total Water Withdrawal and Consumption**

### **1) Total Water Withdrawal (Meets GRI EN8 Definition) (C1):**

The sum of Total Freshwater Withdrawal and Rainfall (A2) and Total Non-Freshwater Withdrawal (B1) for any use over the course of the reporting period.

### **2) Total Water Consumed by Facility (C2):**

The quantity of fresh (A3) and non-freshwater (B2):

- a) Evaporated for cooling purposes

- b) Evaporate from water storage facilities
- c) Lost via transmission
- d) Used directly in the organization's products
- e) Onsite uses, including irrigation and road maintenance

#### **D) Freshwater Discharge**

##### **1) Freshwater Discharge (D1):**

Water effluents from fresh sources (A3) discharged outside a reporting organization boundary over the course of the reporting period to subsurface waters, surface waters, sewers that lead to rivers, oceans, lakes, wetlands, treatment facilities, and groundwater through:

- A defined discharge point (point source discharge) – including sales of water to an external facility
- Over land in a dispersed or undefined manner (non-point source discharge)
- Wastewater removed from the reporting organization via truck

Discharge of collected rainwater and domestic sewage are regarded as wastewater discharge.

#### **E) Non-Freshwater Discharge**

##### **1) Total Water Discharge (relevant to GRI EN 21 – but Not Exactly Same) (E1):**

Water effluents from non-freshwater sources (B2) discharged outside a reporting organization boundary over the course of the reporting period to subsurface waters, surface waters, sewers that lead to rivers, oceans, lakes, wetlands, treatment facilities, and groundwater through: A defined discharge point (point source discharge) – including sales of water to an external facility

- Over land in a dispersed or undefined manner (non-point source discharge)
- Wastewater removed from the reporting organization via truck

Discharge of collected rainwater and domestic sewage are regarded as wastewater discharge.

#### **F) Total Water Discharge**

##### **1) Total Water Discharge (GRI EN 21) (F1):**

The sum of fresh (D1) and non-freshwater (E1) effluents discharged outside a reporting organization boundary over the course of the reporting period to subsurface waters, surface waters, sewers that lead to rivers, oceans, lakes, wetlands, treatment facilities, and groundwater through:

- A defined discharge point (point source discharge) – including sales of water to an external facility
- Over land in a dispersed or undefined manner (non-point source discharge)
- Wastewater removed from the reporting organization via truck

Discharge of collected rainwater and domestic sewage are regarded as wastewater discharge.

(Note: this definition includes rainwater and domestic sewage. GRI EN21 does not include these.)

## **G) Internal Recycling and Reuse**

### **1) Recycling (G1):**

The amount of used water/wastewater employed through another cycle back in the same process or in a higher use in the process cycle before discharge for final treatment and/or discharge to the environment.

### **2) Reuse (G2):**

The amount of used water/wastewater employed in another function in a lower use in the process cycle before discharge for final treatment and/or discharge to the environment. Reuse includes wastewater used for irrigation within a facility boundary. Reuse includes harvesting of rainwater within a facility boundary.

### **3) Total Recycled and Reused Water (Meets GRI EN10 with G4) (G3):**

The total amount of recycled (G1) and reused (G2) water/wastewater.

### **4) Percentage of Total Recycled and Reused Water (Meets GRI EN10 with G3) (G4):**

The Total Recycled and Reused water (G3) as a percentage of Total Water Withdrawal (C1).