



**Water In-Plant Training
Water Flow Diagram**

Company: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Location: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Facility Information

**For PWP Tab 1 Plant Info**

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| General Information |
| Corporation Name: |  | **Primary Product:** |  |
| Plant Name: |  | **NAICS 5-Digit Code:** |  |
| Location: |  | **Industry Subsector:** |  |
| Plant's Safety Protocol: |  | **Industry Type:** |  |
| Comments related to Plant's Water Use: |  |  |  |
| Facility’s Operating Schedule | **Annual Production Information** |
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| --- | --- | --- | --- |
| Department | Normal Operation[hours/year] | Downtime [hours/year] | Comments |
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|  |  | Comments |
| Year: |  |  |
| Product: |  |  |
| Annual Water Intake: |  |  |
| Annual Production Volume: |  |  |
| Annual Production Cost: |  |  |

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1. Plant’s Water Flow Diagram

Please review the Sample Water Flow Diagram on the next page and complete your plant’s Water Flow Diagram. Use the following guidance.

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| 1. **Define a plant boundary and system boundaries.**
2. **Plant boundary** may be a facility-wide boundary or include specific parts of the facility, depending on its size.
3. For **system boundaries**, list all water-using systems within your plant boundary that you wish to analyze separately. You may segregate or combine processes and systems into manageable groups such that you can quantify water flows across each system boundary.
	1. The PWP tool typically accommodates: Process (up to 3), Cooling Tower (up to 3), Boiler (up to 2), Kitchen and Restrooms, Landscaping and Irrigation, Other.
	2. Define cooling towers and boilers separate from the processes and facilities they serve.
	3. Combine all sanitary water use (i.e., kitchens, restrooms, laundry, etc.) as a single system.
4. **Populate the Master Table.**
5. **List all sources of water intake.** Options: Municipal Water, River or Lake, Ocean or Tide, Groundwater, Rainwater, Other.
6. **List all wastewater discharge outlets.** Options: Municipal Sewer, Third-party Disposal, River or Lake, Ocean or Tide, Groundwater, Onsite Disposal, Stormwater.
7. **List all water treatment processes and wastewater treatment processes**.
8. For each water-using system (A2), indicate which water intake source(s), wastewater discharge outlet(s), water treatment process(es), and wastewater treatment process(es) serve that system. Also, specify the **percent of water flow,** if a system is served by multiple items listed in B1–B3.
9. For each water-using system, mark [x] if the following exists:
	1. Water recirculation within a system (such as, in the cooling tower)
	2. Water recycled for use in other systems
	3. Water used in products
	4. Evaporative loss (such as, in the cooling tower)
	5. Consumptive loss (such as, in the kitchen for drinking or food preparation, for irrigation, etc.)
10. **Draw a water flow diagram showing all items listed in the Master Table.**
11. Draw **water intake sources** (B1) as boxes on the left.
12. Draw **wastewater discharge outlets** (B2) as boxes on the right.
13. Draw **water-using systems** (A2) as boxes in the middle.
14. Draw **water treatment processes** and **wastewater treatment processes** (B3) as boxes between sources and systems and between systems and wastewater discharge outlets, respectively.
15. Connect C1 through C4 using arrows to indicate water flows. Also, draw arrows to/from each system to indicate water flows identified under B5.
16. Mark annual water flow estimates for all arrows, where available, using:
	1. Data from meters and sub-meters,
	2. Calculations based on observations, operation records, rules of thumb, etc.,
	3. Estimates based on short-term monitoring prior to or spot measurements during Water INPLT.
17. **Refine the water flow diagram, as needed to simplify, by relocating or reordering the boxes and arrows.**
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Sample Water Flow Diagram

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| **[C3]****[C4]****[C4]****[C1]****[C2]** |

Master Table for the Plant

**For PWP Tabs:**

**1. Plant Info**

**4.** **System Water Balance**

**6. System Water Intake & Discharge**

**7.** **Water & Wastewater Treatment**

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| **For PWP Tab 1** | **For PWP Tab 6** | **For PWP Tab 7** | **For PWP Tab 4** |
| **Plant Boundary** **[A1]** | **Water Intake Source [B1]** | **Wastewater Discharge Outlets [B2]** | **Water Treatment Process** **[B3]** | **Wastewater Treatment Process [B3]** | **Water Recirculation within a System** | **Water Recycled for Use in Other Systems** | **Water Used in Products** | **Evaporative Loss** | **Other Consumptive Loss** |
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| **Water-Using System** **[A2]** |
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|  |  |  |  |  |  |  | **[B5]** |  |  |
| **Comments:****[B4]** |

Plant’s Water Flow Diagram

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