

# WCTI Survey Information for Cooling Tower Treatment Assessment

Prospect or Company; \_\_\_\_\_

Facility Location (City, State): \_\_\_\_\_

Cooling Tower Name: \_\_\_\_\_

## Makeup Water Quality Information:

\*Total Hardness \_\_\_\_\_ Silica \_\_\_\_\_

\*TDS \_\_\_\_\_ (or) \*Conductivity \_\_\_\_\_

\*Turbidity or SS \_\_\_\_\_ Alkalinity \_\_\_\_\_

Source: City, Well, other? \_\_\_\_\_ Fe, Mn \_\_\_\_\_

## Cooling Tower Evaporation Loads, Operation, Water Costs:

Design Evaporation Capacity, GPM \_\_\_\_\_

(or) Design Evaporation Capacity, Tons \_\_\_\_\_

\*Peak Evaporation Load, GPM \_\_\_\_\_

(or) \*Peak Evaporation load, Tons \_\_\_\_\_

\*Average Evaporation Load, GPM \_\_\_\_\_ (or)

\*Average Evaporation Load, Tons \_\_\_\_\_

(best) \*Annual tower makeup & \*Annual blowdown, Gallons \_\_\_\_\_

\*Current Water Source Cost / 1000 Gallons \_\_\_\_\_

\*Sewer Discharge Cost / 1000 Gallons \_\_\_\_\_

Lower cost water source Cost / 1000 Gallons \_\_\_\_\_

Days/Year & Hours/Day Tower Operation \_\_\_\_\_

Cooling Tower material \_\_\_\_\_

## Current Tower Operation Control / Treatment:

\*Tower Concentrations (COC) \_\_\_\_\_

(or) \*Blowdown Conductivity Max Control Limit \_\_\_\_\_

Program Cost, Annual (All towers included) \_\_\_\_\_

Is acid / pH Control is used? \_\_\_\_\_

## Potential Issues / Problem History: (Check those applicable)

- Limitations / restrictions for water supply or discharge.
- High / increasing water and/or discharge water costs.
- Water quality issues due to high hardness, silica, TDS
- Want to use recycled / recovered wastewater in cooling tower.
- Corrosion issues with cooling water system metals.
- Scale formation issues and heat transfer efficiency losses.
- Biological fouling issues / heat transfer loss / pathogen issues.
- Desire to eliminate chemical handling and storage.
- Other Issues: \_\_\_\_\_

**System Type: (Check all that apply)**

	Y	N	How Many		Y	N	How Many
Cross-Flow Tower	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>	Shell & Tube	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
Counter-Flow Tower	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>	Plate & Frame	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
Evaporative Condenser	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>	Heat Exchanger Only	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
Fluid Cooler	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>	Chiller Compressor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
Other (Describe) _____							

**Equipment Manufacturer:**

	How Many		How Many		How Many
Marley	<input type="text"/>	Evapco	<input type="text"/>	BAC	<input type="text"/>
Other (Manuf's Name and How Many): _____					

**Equipment and Conditions (Scale, Corrosion, Biofouling, Missing, etc.):**

	Y	N	Efficiency <0.003%	Efficiency <0.001%	Other %Efficiency
Drift Eliminators	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Backflow Preventers on Pump Discharge	<input type="checkbox"/>	<input type="checkbox"/>			
Cooling Tower Basin Leaking Seams	<input type="checkbox"/>	<input type="checkbox"/>			
Heat Exchanger Tube Problem-Describe	<input type="checkbox"/>	<input type="checkbox"/>			
_____	<input type="checkbox"/>	<input type="checkbox"/>			
Circ. Water Piping Problem-Describe					
_____					
Side-Stream or Sweep Sys.-Describe	<input type="checkbox"/>	<input type="checkbox"/>			
Side-Stream or Sweep Sys. Return to CT	<input type="checkbox"/>	<input type="checkbox"/>			
Cooling Tower Construction (SS, Galv, Compos)					
Cooling Tower Basin Vol. (gallons) or Dimensions (LxWxD)					

**Scaled/Fouled Systems Issues to Consider:**

1. Scale on heat exchanger tubes or inside CT circulating water piping poses a significant efficiency loss for heat exchange rate and/or circulating water resistance.
2. Chemical and/or mechanical cleaning of scaled heat exchanger tubes, circulating piping and Cooling Towers will restore heat and electrical efficiency in the fastest way possible.
3. Circulating soft water through the system will slowly clean up the system, however, the dissolved hardness will require low-COC operation with continued water loss and need for chemical treatment. Further, delay in cleaning the tower can result in dislodged scale chips accumulating in the tower basins, blocking pump screens, and delaying recovery of heat exchange and power efficiencies.
4. Establishing and maintaining soft water make-up and soft water in the cooling systems, while concentrating the protective chemistry will most quickly provide prevention of corrosion, scale deposition, microbiological growth and pathogen risk.