March 16, 2006

DRAFT GUIDELINES FOR WATER PLANT CLASSIFICATION

SIZE

Maximum population served including the population served by any consecutive systems in the case of Regional water systems (2 pt min, 1 pt per 10,000 served to a max of 20).

Points for flow are only assigned once based on design flow average day **or** peak month flow average day **whichever is larger**. Design average day would be the average day demand that the consultant based the design on. It would probably have to be obtained from the design reports related to the plant. In many cases these reports would not be available.

In light of the above, most plants will end up basing their flow on the Peak month's flow average day. In other words take an average day flow during your peak month (usually in the summer). Apply 1 pt per 4.5 megaliters (million liters) or 1million gallons or part.

WATER SUPPLY SOURCE

- Groundwater under the influence of surface water refers to waters obtained from a spring, an infiltration gallery or a well that:
  - Has predominantly sand or gravel overburden
  - Is within 200 m of a surface water body
  - Is an unconfined aquifer
  - Is part of an enhanced recharge or infiltration project
  - Is a horizontal collection well.

RAW WATER

- Raw water quality variability – Key is the effect that raw water quality has on treatment process changes (e.g chemical adjustments) required to optimize treatment (do not include disinfectant adjustments). Apply a minimum of 2 points for surface water sources.
  - Little or no variation (0 points)
  - Low variation - Raw water quality varies enough to require treatment changes at least one day out of 10 (2 points)
  - Moderate variation – chemical feeds must be made at least weekly (3 points), daily (4 points) or within an 8 hour shift (6 points).
  - High variation – requires frequent changes in treatment (several times daily) 8 points
  - Extreme variation – may be from periodic serious industrial, agricultural or municipal waste pollution (10 points)

Points for disinfection byproduct formation potential, and taste and odor will be applied at the regulator's discretion. Operators should not apply points to these items.

CHEMICAL TREATMENT OR ADDITION PROCESSES

Refers to chemicals added or adjustments made to alter water chemically or biologically.

- Ozonation point range is from 5 to 10. For simple small system units used for preoxidation purposes apply 5 points. For simple small system units used for primary disinfection apply 8 points. For large units used for preoxidation purposes add 7 points. For large complex units used for primary disinfection apply 10 points.
- pH adjustment by adding calcium carbonate, carbon dioxide, hydrochloric acid, calcium hydroxide, sodium hydroxide, etc.
- Stability or corrosion control by adding calcium oxide, calcium hydroxide, sodium carbonate, etc.
- Pre-oxidation with the addition of potassium permanganate or other oxidants

Be aware that some chemical additions may be included in the point allocation for unit processes such as greensand filtration and lime-soda ash softening. See Other Processes below.

CLARIFICATION, SEDIMENTATION, FILTRATION & OTHER PROCESSES

Points should be assigned only once for major unit processes

- Greensand filtration: count 10 points, no extra points for preoxidation or filtration.
- Lime soda-ash solids contact units: count 20 points, no extra points for coagulation, flocculation, sedimentation or pH/stability adjustments
- Algae control in raw water reservoirs with the addition of copper sulphate etc.
- Upflow clarifiers (upflow solid contact sedimentation): typically found on package plants with sludge blanket control, count 15 points no extra points for coagulation, flocculation and sedimentation.
- Ultraviolet irradiation: apply 7 points. The regulator may reduce point allocation to as low as 4 based on the purpose (e.g. primary or secondary treatment barrier) and complexity of the unit.
- Dissolved air floatation: count 30 points, no extra points for coagulation, skimming or filtration.
- Ballasted flocculation (Actiflo): count 15 points, no extra points for coagulation, flocculation or sedimentation.
- Membrane Filtration: count 12 points, no extra points for anti-scalant or cleaning agents added.

Special processes such as electrolysis and ozone-slow sand-BAC filtration units, points will be assigned by the regulator based on the complexity of the treatment.

RESIDUALS DISPOSAL

Zero points for discharge to sewer or the environment (if no environment license requirements).

FACILITY CHARACTERISTICS

SCADA

- Data with no process operation: refers to SCADA that only provides water system monitoring and there is no control, 0 pts.
- Data with limited process operation: refers to SCADA where there is some process adjustment capability such as feed pump control, 2 pts.
- Data with extensive or total process operation: refers to systems that offer enough control to operate the plant remotely, 6 pts.

Clearwell (treated reservoir) Size

- If clearwell size is less than 50% of the average daily demand, apply 5 points.
- If clearwell size is less than average daily demand, apply 3 points.

LABORATORY CONTROL BY IN-PLANT PERSONNEL

Bacteriological/biological. The key is to credit bacti/bio work done by on-site personnel. Point rating from 0 – 10 based on analysis complexity.

Lab work done outside the plant	0
Membrane filter procedures	3
Use of fermentation tubes or dilution method for fecal coliforms	5
Biological identification	7
Viral studies or similarly complex work done on-site	10

Chemical/physical. The key is to apply points to analysis completed by on site personnel. Point rating from 0 to 10. Apply only one of the following point ratings as each level includes the points from the previous level:

All lab work done outside the plant	0
Push button or colorimetric methods (includes color wheels) for simple test such as chlorine, pH and iron. Add one point for each test up to 3.	3
If any additional procedures/testing such as titration, jar tests, alkalinity, hardness	5
More advanced determinations such as numerous organics	7
Highly sophisticated instrumentation such as atomic absorption	10