

Filtration Endorsement Need to Know

Coagulation/Flocculation

- Math – chemical dosage and solution strength calculations
- Chemistry – basic coagulation (pH, alkalinity, colloidal charge neutralization), seasonal changes
- Laboratory procedures – equipment, glassware, titrations, sampling protocol
- Jar testing – preparation of stock solutions, procedure, evaluation of results
- Coagulants/Flocculants – types (alum, polymers, activate silica, bentonite clay, etc.), chemical feed pump O & M, purpose, how to manipulate, health concerns of polymers
- Rapid mix/Flocculation – purpose of, process control, types of mixers/flocculators, chemical addition points, flash mix, paddle speeds
- Normal/Abnormal Process Conditions – procedures/response
- Enhanced Coagulation – goals, process optimization to achieve

Sedimentation

- Theory – process description, process performance considerations, short circuiting
- Basins – zones, types, layout, sludge handling/equipment
- *Math* – detention time, basin weir and surface overflow calculations
- Normal/Abnormal Process Conditions – procedure/response

Filtration

- Process description – mechanisms, types of filters, filter aid polymers, pilot filters, SCM, particle counters
- Process performance considerations – filter media, operation, control systems
- *Math* – calculations for filter & backwash flow, CTs
- Backwashing – head loss, media expansion (percent/rate of rise), procedure, filter to waste strategies
- Normal/Abnormal Process Conditions – procedures/response
- Filter start up and shutdown procedures, air relief valves
- Process and support equipment operation and maintenance – control valves, flow meters, rate of flow indicators, headloss gauges, turbidimeters/particle counters – interpretation of results
- Filter Media – inspection, preventive/corrective maintenance, surface wash, underdrains

Public Health and Regulatory

- Public Health and Compliance – why filter, Surface Water Treatment Rule requirements
- Sludge Handling – regulatory permit requirement