Designing and analyzing Water Networks, Pumping Stations Training program

Course Description

The Course provides a snap-shot of current research in the field of on-line monitoring and control of clean and untreated water systems. The latest techniques in modelling drinking water quality and river quality are presented alongside techniques for the analysis and control of very large scale systems. Techniques range from mathematical programming to artifical neural network algorithms and genetic algorithms. The very important topic of data integration is also addressed by several authors in recognition of the fact that data - from the disparate areas of geographical information systems, asset databases and even global positioning satellite systems - are becoming available for operational modelling and control, This course provides general guidance and principles for the design and layout of flood control pumping stations. The general principles for pumping station design and layout for sumps, types of discharge and arrangements, types of pumps, sump types along with environmental, power and access considerations are discussed. Detailed design for pump stations and layout is presented in manuals as referenced.

Who Should Attend ?

Professionals in the water industry,Planning and design engineers and technical managers. Regulators and government officials

Course Outline:

- Theory and principles (Hydraulic Review)
- Physical &chemical properties of water
- Supplying with underground water
- Drinking water&uses
- Applying water network models
- Network models (Basic Components)
- Hard &soft water ion exchange installation of wells &types, contamination, maintenance of wells
- Supplying with surface water (intake, low lift pumps tanks)
- Network models (other Components)
- Extended period simulation
- Sedimentation process (detention time,PH,coagulants,gentle&flash mixing)

- Filtration &design
- Model calibration
- Disinfecting of water
- System improvement
- Water quality modeling
- Water distribution,
- Clear water tanks
- Water distribution system
- Design
- Elevated tanks
- Boot stares
- operation
- Cause study.
- provide the basic understanding of the principles for the design and layout of pumping stations. Among the factors that must be considered and evaluated for the design and layout of a pumping station are:
- Hydraulic and hydrologic designs. b. Existing foundation conditions, water table, presence of rock, soils tests for corrosiveness of soil. c. Utility requirements and availability of power and water lines. d. Existing underground utilities; water lines, sanitary sewers, storm drains, gas mains and electric conduits. e. Access for personnel and equipment and O & M. f. Topography, natural boundaries like waterways and streams. g. Property lines, Federal, state and local and political boundaries. h. Inflow and discharge facilities and channels. I. Planned development in the service area. The pumping station could be designed with space for additional or new pumps, motors etc