OPERATOR NEED-TO-KNOW
WASTEWATER TREATMENT
CLASS 1

SKILL LEVEL REQUIREMENTS

A. Know the characteristics of sewage, its source and expected flows.
B. Know the health and safety aspects of sewage treatment operations including cross connections.
C. Know the diseases transmitted by sewage.
D. Know the general effects of discharging insufficiently treated sewage into a stream.
E. Know the physical features of an oxidation pond and the purpose of each.
F. Know the basic physical features of different types of treatment facilities and the purpose of each.
G. Know the basic maintenance procedures necessary for each type of treatment facility.
H. Know the reasons for treating sewage.
I. Know the difference between the various types of treatment to include ponds activated sludge and biofiltration.
J. Know the basic purpose, operation, control and maintenance of different methods of disinfection and the safety aspects of each.
K. Know the basic math associated with the class of systems.
L. Know the basic purpose, operation, control and maintenance of digesters.
M. Know the basic methods of sludge thickening and disposal, drying beds, sludge lagoons and mechanical methods.
N. Know basic control tests needed in operation of plants, to include pH, DO, MLSS and Chlorine Residual.
O. Know why records are dept and what reports should be submitted.
P. Know the basic mechanical and electrical principles as they relate to plants of this type and size.
Q. Know the various types of pumps and valves used in treatment works and their maintenance procedures.
R. Know the purpose and types of aeration uses in ponds.
S. Know the basic purpose, operation, control and maintenance of the various types of aeration equipment.
T. Know the basic principles of blowers.
U. Know the basic purpose, operation and maintenance of grit removal equipment, screens and grinding equipment.
V. Know the source of grit, and its effects on plant operation.
W. Know basic electrical principals.

OPERATOR NEED-TO-KNOW
WASTEWATER TREATMENT
CLASS 2

SKILL LEVEL REQUIREMENTS

A. Know all the skills required in the lower class.
B. Know the sampling methods required for each type facility, ponds, activated sludge, biofiltration.
C. Know how to run D.O., pH, and chlorine residual tests.
D. Know the design criteria for ponds.
E. Know the meaning of BOD, TSS, MLSS, MPN results, and the general methods used in these test.
F. Know how to calculate retention times for various type treatment systems.
G. Know the relationship of flow, chlorine demand, chlorine residual and be able to calculate them.
H. Know the community relations aspects of the use of sewage treatment.
I. Know how aeration equipment works, the merits of each type and maintenance features of each type.
J. Know the basic principles of electricity and its controls as related to facilities in this class.
K. Know and be able to identify the various types of activated sludge systems.
L. Know the effluent requirements of NPDES Permit, federal and state.
M. Know how to calculate the capacity of various size and shape tanks, impoundments, etc.
N. Know how to maintain electrical control systems associated with facilities in this class.
O. Know the math skills for this level.
P. Know and be able to identify the various types of biofiltration systems.

OPERATOR NEED-TO-KNOW
WASTEWATER TREATMENT
CLASS 3

SKILL LEVEL REQUIREMENTS

A. Know the requirements for lower classes.
B. Know the effects of physical, chemical and biological characteristics on treatment.
C. Know the indicators for normal and abnormal operation of treatment systems.
D. Know how to recognize and identify potential safety hazards.
E. Know emergency procedures for chlorine and sulfur dioxide leaks.
F. Know basic laboratory test procedures for process control.
G. Know how to read and interpret blue prints and other technical drawings.
H. Know how to calculate detention time, sludge volume index, sludge age, mean cell retention time and other formulae used at treatment facilities.
I. Know how to differentiate and perform periodic, preventive and corrective maintenance.
J. Know how to conduct public relations briefings.
K. Know proper reporting methods for permit violations.
L. Know principles of flow equalization.
M. Know how to deal with news media.
N. Know methods of dechlorination and calculate costs of each.
O. Know and understand various methods of sludge dewatering.
P. Know the principals of operation of the various innovative methods of wastewater treatment.
Q. Know the principals of advanced or tertiary wastewater treatment.
R. Know the various methods of electrical controls for treatment plants.
S. Know the methods of computer control used at plants, SCADA, etc.
T. Know how to read and interpret pump curves.
U. Know the math skills for this level.

OPERATOR NEED-TO-KNOW
WASTEWATER TREATMENT
CLASS 4

SKILL LEVEL REQUIREMENTS

A. Know all the requirements for lower classes.
B. Know the math skills for this level.
C. Know advanced odor control.
D. Know advanced activated sludge.
E. Know advanced solids handling and disposal.
F. Know advanced solids removal from secondary effluents.
G. Know advanced phosphorus removal.
H. Know advanced nitrogen removal.
I. Know advanced wastewater reclamation.
J. Know advanced instrumentation.