



Wastewater Facility & Collection System Class D Exam Description

Introduction:

The Minnesota Pollution Control Agency in conjunction with a Steering Team and Sounding Board has developed a Need to Know (N2K) document to identify the criteria for knowledge and skills which Wastewater Facility & Collection System Operators are expected to know. The N2K document was then cross-referenced the current MPCA operator exams in order to provide a comprehensive description of each exam. The percentages provided in this document are intended to serve solely as a study guide for operator exams and should not be used as a weight of the importance or complexity of each knowledge or skill. As the N2K continues to expand, the exams and their descriptions will also be updated.

How to use this document:

The exam questions are first split into two groups: questions testing your management skills (Table I) or questions testing your treatment process knowledge (Table II). Within these groups, questions are organized by learning objectives identified in the N2K. To provide further description, questions testing your treatment process knowledge are also sorted by the treatment process they reference (Table III).

Suggested Study Materials

- Manual of Practice No. 11, Operation of Wastewater Treatment Plants
- Operation of Wastewater Treatment Plants, Vol 1 & 2, Sacramento State University
- Advanced Waste Treatment, Sacramento State University
- Recommended Standards for Wastewater Facilities (10-State Standards)
- MPCA Wastewater Math Workbook
- MPCA Wastewater Treatment Technology Manual

If you have questions or comments on the Exam Description, please contact Jane Seaver, N2K Expert, at 651-296-6300 or jane.seaver@pca.state.mn.us.



Table 1: Management Skills Sorted by Learning Objectives

Address Emergency Situations	TOTAL: 4%
Coordinate mutual aid agreements	
Develop emergency plan	
Direct implementation of emergency plan	
Respond to auto dialers/alarms	
Notify regulatory agencies of public health issues (e.g., MPCA, local health department, DNR)	
Repair broken blocked gravity lines	
Repair broken blocked force mains	
Mitigate chlorine spill	
Coordinate emergency equipment repairs (e.g., generators, blowers, pumps)	
Participate in System Improvements	TOTAL: 0%
Address inflow/infiltration issues	
Plan upgrades to existing infrastructure	
Develop construction contract	
Participate in new construction design process	
Inspect new construction (e.g., mains, lift stations, plant)	
Inspect new service connections	
Test new installations (e.g., vacuum, mandrel, pressure)	
Perform Administrative Functions	TOTAL: 0%
Develop facility/collection system budget	
Address customer issues (e.g., backups, odor complaints)	
Address industry user issues (e.g., contributed load, shock loads)	
Manage resources	
Administer grants & loans	
Participate in employee selection and promotion process	
Maintain personnel timesheets	
Maintain personnel files	
Counsel employees	
Complete employee performance evaluations	
Train subordinates	
Participate in meetings (e.g., public, department)	
Maintain replacement parts inventory	
Maintain plant security	
Schedule contract maintenance	
Conduct plant tours	
Manage public relations	
Prepare expense reimbursement reports	
Purchase operational supplies (e.g., office, lab, chemicals)	
Assist in development of sewer use ordinance	
Assist in development of local wastewater rules & regulations	
Enforce local wastewater rules & regulations	
Enforce state wastewater rules & regulations	

Management Skills TOTAL: 4%



Table II: Treatment Process Knowledge Sorted by Learning Objectives

Understand Purpose of Treatment	13%
Understand Method of Treatment	12%
Identify Advantages and Disadvantages vs Other Treatment Options	1%
Describe Position of Treatment Unit in Treatment Process	0%
Identify Types of Treatment Units	1%
Describe Parts of Treatment Unit	2%
Identify Design Modifications of Treatment Unit	0%
Execute Process Control and Operation of Treatment Unit	9%
Employ Treatment Process Control Formulas	14%
Complete Recommended Maintenance Protocol for Treatment Unit	11%
Describe Flow Patterns of Treatment Process	4%
Analyze Factors which Influence Treatment Process	6%
Describe Biological Life and Processes as Part of Treatment	7%
Execute Sampling Methods, Lab Tests and Protocol of Treatment Process	9%
Identify Personal Health and Safety Hazards of Treatment Process	6%
Describe Methods and Purpose of Keeping Records of Treatment Process	1%
Identify Applicable Regulations of Treatment Process	2%
Treatment Process Knowledge TOTAL:	97%



Table III: Treatment Process Knowledge Sorted by Process

Preliminary Treatment TOTAL	8%
Chemical pretreatment	0%
Grinding & disposal	0%
Grit separation & removal	4%
Pre-Aeration	0%
Screening	2%
Primary Treatment TOTAL	1%
Primary clarification	1%
Secondary Treatment TOTAL	41%
Aerated pond stabilization	5%
Biological aerated filtration	1%
Oxidation ditch	1%
Pond stabilization	26%
Rapid infiltration basin	1%
Rotating biological contactors	1%
Secondary clarification	2%
Activated sludge	1%
Submerged batch reaction	1%
Subsurface disposal	1%
Trickling filtration	1%
Tertiary Treatment TOTAL	0%
Filtration	0%
Nutrient Removal TOTAL	0%
Nitrogen removal	0%
Phosphorus removal	0%
Disinfection TOTAL	8%
Chlorination / Dechlorination	6%
UV disinfection	2%
Biosolids Digestion & Handling TOTAL	0%
Aerobic sludge digestion	0%
Anaerobic sludge digestion	0%
Biosolids dewatering	0%
Biosolids removal	0%
Biosolids reuse	0%
Biosolids stabilization	0%
Collection System Pumps & Valves TOTAL	26%
SSTS TOTAL	8%
Spray Irrigation TOTAL	4%

Treatment Process Knowledge TOTAL: 97%