

## Basic Designer Task Analysis

I.	Become Certified as a Basic Designer
I.A	Complete Training
I.B	Pass Certification Exam
I.C	Apply for Certification
I.D	Complete Experience with Mentor
I.E	Complete Continuing Education
II.	Obtain Basic Design Business License
III.	Complete Preliminary Site Evaluation
III.A	Communicate with Client
III.B	Contact Local Unit of Government
III.C	Contact SSTS Advisory Committee Representative
III.D	Determine Dwelling Flow
III.E	Determine Flow for Other Establishment < 2,500 gpd
III.F	Complete Preliminary Site Report
III.G	Assess Risk Based on Preliminary Site Report
III.H	Determine if Pretreatment is Required Due to High Waste Strength
III.I	Determine if a Variance is Needed
IV.	Complete Field Evaluation
IV.A	Locate Utilities
IV.B	Investigate Property
IV.C	Investigate Soil for each Site
IV.D	Protect Site from Compaction & Disturbance
IV.E	Complete Field Evaluation Report
V.	Design ISTS
V.A	Use Soils Analysis to Determine Basic Design Specifications
V.A.1	Use Depth to Restrictive Layer to Chose Treatment System
V.A.2	Use Texture and Structure or Percolation Rate to Determine Soil Sizing Factor
V.A.3	Use Texture and Structure or Percolation Rate to Determine Linear Loading Rate
V.A.4	Recognize Potential for Groundwater Mounding
V.A.5	Assess Risk Based on Field Evaluation Report
V.A.6	Determine if Pretreatment is Required Due to Soil Evaluation
V.B	Identify Special Design Parameters for Greywater, Type II & Type III systems
V.B.1	Identify Greywater System Parameters
V.B.2	Identify Rapidly Permeable System Parameters (Type II)
V.B.3	Identify System in Floodplain Parameters (Type II)
V.B.4	Identify System in Cut, Filled or Compacted Soil Parameters (Type III)

## Basic Designer Task Analysis (cont)

V.B.5	Identify Down-Sized System Parameters (Type III)
V.B.6	Identify System in Less than 12" Unsaturated Soil Parameters (Type III)
V.C	Design Privy (Type II)
V.D	Determine Design Specifications for Tank(s)
V.D.1	Design Septic Tank
V.D.2	Design Holding Tank (Type II)
V.D.3	Design Flammable Waste Trap
V.E	Determine Design Specifications for Treatment System
V.E.1	Design Trench Treatment System
V.E.2	Design Bed Treatment System
V.E.3	Design At-Grade Treatment System
V.E.4	Design Mound Treatment System
V.F	Determine Design Specifications for Building Sewer & Collection Systems
V.F.1	Design Building Sewer
V.F.2	Design Collection System
V.G	Determine Design Specifications for Pump & Distribution System
V.G.1	Design Supply Pipe to Distribution System
V.G.2	Design Gravity Distribution System
V.G.3	Design Pressure Distribution System
V.G.4	Design Pump Specifications
V.G.5	Size Dosing Chamber & Determine Dosing Volumes
V.H	Determine Site Layout
VI.	Write Management Plan
VII.	Complete Design Report



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# Subsurface Sewage Treatment System Professional Need-to-Know: Basic Designer

## A. Complete Training

<b>Subtasks</b>	List sequenced order of steps to complete the master task	<b>Knowledge</b>	Identify knowledge necessary to complete the subtasks	<b>Attitudes</b>	Describe how you must behave to complete the subtasks
	<ol style="list-style-type: none"> <li>1 Complete Introduction to Onsite Systems</li> <li>2 Complete Installing Onsite Systems</li> <li>3 Complete Designing Onsite Systems</li> <li>4 Complete Basic Soils</li> </ol>		<p style="text-align: center;"><b>MPCA Requirements</b></p> <ol style="list-style-type: none"> <li>1 7083.1020 Subp.2.A</li> <li>2 7083.1030 Subp.1.A</li> <li>3 7083.1030 Subp.1.B</li> <li>4 7083.1030 Subp.2</li> </ol> <p style="text-align: center;"><b>Learning Objectives</b></p>		<b>Interpersonal Skills</b>



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# Subsurface Sewage Treatment System Professional Need-to-Know: Basic Designer

## B. Pass Certification Exam

<b>Subtasks</b>	List sequenced order of steps to complete the master task	<b>Knowledge</b>	Identify knowledge necessary to complete the subtasks	<b>Attitudes</b>	Describe how you must behave to complete the subtasks
	<ol style="list-style-type: none"> <li>1 Pass Introduction to Onsite Systems Exam</li> <li>2 Pass Installing Onsite Systems Exam</li> <li>3 Pass Designing Onsite Systems Exam</li> <li>4 Pass Basic Soils Exam</li> </ol>		<p style="text-align: center;"><b>MPCA Requirements</b></p> <ol style="list-style-type: none"> <li>1 7083.1020 Subp.2.B</li> <li>2 7083.1040 Subp.1</li> <li>3 7083.1040 Subp.3</li> </ol> <p style="text-align: center;"><b>Learning Objectives</b></p>		<b>Interpersonal Skills</b>



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# Subsurface Sewage Treatment System Professional Need-to-Know: Basic Designer

## C. Apply for Certification

Skills	List sequenced order of steps to complete the master task	Identify knowledge necessary to complete the subtasks	Attitudes
	<ol style="list-style-type: none"> <li>1 Complete MPCA Form R</li> <li>2 Submit list of passed exams</li> <li>3 Submit list of completed training courses</li> <li>4 Submit experience plan               <ol style="list-style-type: none"> <li>a Proof of employment</li> <li>b Mentorship agreement with Restricted License</li> <li>c MPCA approved experience plan with Restricted License</li> </ol> </li> </ol>	<p><b>MPCA Requirements</b></p> <ol style="list-style-type: none"> <li>1 7080.1670</li> <li>2 7083.0730 Subp.A</li> <li>3 7083.0730 Subp.B</li> <li>4 7083.0730 Subp.C</li> <li>5 7083.0740 Subp.3</li> <li>6 7083.1010</li> <li>7 7083.1020 Subp.1.A</li> <li>8 7083.1020 Subp.2.A</li> <li>9 7083.1020 Subp.2.B</li> <li>10 7083.1020 Subp.2.C</li> <li>11 7083.1020 Subp.2.D</li> <li>12 7083.1020 Subp.3</li> <li>13 7083.1020 Subp.4</li> <li>14 7083.1040 Subp.2</li> <li>15 7083.1050 Subp.2.A</li> <li>16 7083.1050 Subp.2.B</li> <li>17 7083.1050 Subp.2.C</li> <li>18 7083.1050 Subp.2.D</li> <li>19 7083.1050 Subp.3.A</li> <li>20 7083.1050 Subp.3.B</li> <li>21 7083.1090 Subp.1.A(1)</li> <li>22 7083.1090 Subp.1.A(2)</li> <li>23 7083.1090 Subp.1.A(3)</li> <li>24 7083.1090 Subp.1.B</li> <li>25 7083.1090 Subp.2.A</li> <li>26 7083.1090 Subp.2.B</li> <li>27 7083.1090 Subp.2.C</li> </ol>	<p>Describe how you must behave to complete the subtasks</p> <hr/> <p>Identify the skills necessary for interacting with other people in order to complete the subtasks</p>

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## Subtas

## Knowle

- 28 7083.2020 Subp.2.A
- 29 7083.2020 Subp.2.B
- 30 7083.2020 Subp.2.C
- 31 7083.2020 Subp.2.D
- 32 7083.2020 Subp.2.E
- 33 7083.2020 Subp.3.A
- 34 7083.2020 Subp.3.B
- 35 7083.2020 Subp.3.C
- 36 7083.2020 Subp.3.D
- 37 7083.2020 Subp.4.A
- 38 7083.2020 Subp.4.B
- 39 7083.2020 Subp.4.C
- 40 7083.2020 Subp.6

### Learning Objectives

## Interpersonal Skills



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## Subsurface Sewage Treatment System Professional Need-to-Know: Basic Designer

### D. Complete Experience with Mentor

Subtasks	List sequenced order of steps to complete the master task	Identify knowledge necessary to complete the subtasks	Describe how you must behave to complete the subtasks
<b>Subtasks</b>	<p>1 Complete 15 ISTS site and soil evaluations, designs, and management plans with a minimum of one aboveground system design and a minimum of one belowground</p> <p>2 Observe five installations and five service or operational instances, with mentorship not required</p>	<p style="text-align: center;"><b>Identify knowledge necessary to complete the subtasks</b></p> <p style="text-align: center;"><b>MPCA Requirements</b></p> <ol style="list-style-type: none"> <li>1 7083.1020 Subp.2.C</li> <li>2 7083.1050 Subp.1.A</li> <li>3 7083.1050 Subp.1.B</li> <li>4 7083.1050 Subp.1.C</li> <li>5 7083.1050 Subp.1.D</li> <li>6 7083.1050 Subp.2.A</li> <li>7 7083.1050 Subp.2.B</li> <li>8 7083.1050 Subp.2.C</li> <li>9 7083.1050 Subp.2.D</li> <li>10 7083.1050 Subp.3.A</li> <li>11 7083.1050 Subp.3.B</li> <li>12 7083.1050 Subp.3.C(1)</li> <li>13 7083.1050 Subp.4.A</li> <li>14 7083.1050 Subp.4.B</li> <li>15 7083.1050 Subp.4.C</li> <li>16 7083.1050 Subp.4.D</li> <li>17 7083.1050 Subp.5.A</li> </ol> <p style="text-align: center;"><b>Learning Objectives</b></p>	<p style="text-align: center;"><b>Attitudes</b></p> <p>Describe how you must behave to complete the subtasks</p> <hr/> <p style="text-align: center;"><b>Interpersonal Skills</b></p> <p>Identify the skills necessary for interacting with other people in order to complete the subtasks</p>



E. Complete Continuing Education

Subtasks	List sequenced order of steps to complete the master task	Knowledge	Attitudes	Interpersonal Skills
	<p>1 Complete 18 hours of continuing education training related to SSTS every three years, with a minimum of six of those hours devoted to soils education with a field component.</p>	<p>Identify knowledge necessary to complete the subtasks</p> <p><b>MPCA Requirements</b></p> <ol style="list-style-type: none"> <li>1 7083.1020 Subp.2.D</li> <li>2 7083.1040 Subp.2</li> <li>3 7083.1060 Subp.1.A</li> <li>4 7083.1060 Subp.1.C</li> <li>5 7083.1060 Subp.1.D</li> <li>6 7083.1060 Subp.1.E</li> <li>7 7083.1060 Subp.2</li> </ol> <p><b>Learning Objectives</b></p>		<p>Describe how you must behave to complete the subtasks</p> <hr/> <p>Identify the skills necessary for interacting with other people in order to complete the subtasks</p>



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## Subsurface Sewage Treatment System Professional Need-to-Know: Basic Designer

### II. Obtain Basic Designer Business License

List sequenced order of steps to complete the master task	Identify knowledge necessary to complete the subtasks	Describe how you must behave to complete the subtasks
<p>A Complete Application</p> <p>1 Complete License Application Form</p> <p>2 Obtain Professional Surety Bond &amp; Surety Company Power of Attorney</p> <p>3 Obtain Certificate of General Liability Insurance</p> <p>4 Obtain Workers Compensation Insurance or Complete Letter of Exemption</p> <p>5 Submit License Fee</p> <p>6 Complete Certificate of Employment for Designated Certified Professional</p> <p>B Complete Renewal</p>	<p><b>MPCA Requirements</b></p> <p>1 7080.1670</p> <p>2 7083.0700 Subp.1.A</p> <p>3 7083.0700 Subp.1.B</p> <p>4 7083.0700 Subp.1.C</p> <p>5 7083.0700 Subp.1.D</p> <p>6 7083.0700 Subp.1.E</p> <p>7 7083.0700 Subp.1.F</p> <p>8 7083.0700 Subp.1.G</p> <p>9 7083.0700 Subp.1.H</p> <p>10 7083.0700 Subp.2</p> <p>11 7083.0710</p> <p>12 7083.0720 Subp.A</p> <p>13 7083.0720 Subp.B</p> <p>14 7083.0720 Subp.C</p> <p>15 7083.0720 Subp.D</p> <p>16 7083.0720 Subp.E</p> <p>17 7083.0720 Subp.F(1)</p> <p>18 7083.0720 Subp.F(2)</p> <p>19 7083.0720 Subp.F(3)</p> <p>20 7083.0720 Subp.G</p> <p>21 7083.0740 Subp.1.A</p> <p>22 7083.0740 Subp.2.A(1)</p> <p>23 7083.0740 Subp.2.A(2)</p>	<p style="writing-mode: vertical-rl; transform: rotate(180deg);"><b>Attitudes</b></p> <p>Identify the skills necessary for interacting with other people in order to complete the subtasks</p>

## Subtasks

## Knowledge

24	7083.0740	Subp.2.B(1)
25	7083.0740	Subp.2.B(2)
26	7083.0740	Subp.3
27	7083.0800	Subp.A
28	7083.0800	Subp.B
29	7083.0800	Subp.C
30	7083.0900	Subp.1.A
31	7083.0900	Subp.1.B
32	7083.0900	Subp.1.C
33	7083.0900	Subp.2
34	7083.0900	Subp.3
35	7083.0900	Subp.4
36	7083.0900	Subp.5
37	7083.0900	Subp.6
38	7083.1000	Subp.1.A
39	7083.1000	Subp.1.B
40	7083.1000	Subp.1.C
41	7083.1000	Subp.1.D
42	7083.1000	Subp.1.E
43	7083.1000	Subp.1.F
44	7083.1000	Subp.1.G
45	7083.1000	Subp.2.A
46	7083.1000	Subp.2.B
47	7083.1000	Subp.3
48	7083.1000	Subp.4
49	7083.1000	Subp.5
50	7083.2020	Subp.1.A
51	7083.2020	Subp.1.B
52	7083.2020	Subp.1.C
53	7083.2020	Subp.1.D
54	7083.2020	Subp.1.E
55	7083.2020	Subp.1.F
56	7083.2020	Subp.1.G
57	7083.2020	Subp.3.A
58	7083.2020	Subp.3.B
59	7083.2020	Subp.3.C
60	7083.2020	Subp.3.D

## Personal Skills

61 7083.2020 Subp.4.A  
62 7083.2020 Subp.4.B  
63 7083.2020 Subp.4.C  
64 7083.2020 Subp.6

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## Subsurface Sewage Treatment System Professional Need-to-Know: Basic Designer

### A. Communicate with Client

	List sequenced order of steps to complete the master task	Identify knowledge necessary to complete the subtasks		Describe how you must behave to complete the subtasks
1 a b c d e f g h i j k l m n o p s	Complete Part I of OSTP Site Evaluation Form Determine scope Record property owner contact information Record location Determine whether location is in shore land or wellhead protection area Determine facility type Determine future plans for house/site Determine whether system is new or replacement Determine number of existing or anticipated bedrooms If more than six bedrooms, determine total finished floor area Determine square feet per bedroom Determine number of residents in home Determine well casing depth Determine number and type of major water use appliances Determine discharge locations of major water use appliances Determine presence of sewage ejector or grinder pump Determine presence of water use concerns	<b>MPCA Requirements</b> 1 7080.1500 Subp.1 2 7080.1500 Subp.2 3 7080.1500 Subp.5 4 7080.1700  <b>Learning Objectives</b> 1 Describe types of facilities 2 Understand how type of facility affects design 3 Understand how client lifestyle affects design	<b>Attitudes</b>	Describe how you must behave to complete the subtasks
		<b>e</b>	1	Identify the skills necessary for interacting with other people in order to complete the subtasks  Conduct sensitive interview regarding client's personal habits

## Subtasks

- q Determine potential for industrial and/or hazardous waste to enter system
- r Determine estimated properties of waste strength

## Knowledge

## Interpersonal Skills

- 2 Listen effectively to client
- 3 Educate client



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# Subsurface Sewage Treatment System Professional Need-to-Know: Basic Designer

## B. Contact Local Unit of Government

<b>Subtasks</b>	List sequenced order of steps to complete the master task	<b>Knowledge</b>	Identify knowledge necessary to complete the subtasks	<b>Attitudes</b>	Describe how you must behave to complete the subtasks
	<ol style="list-style-type: none"> <li>1 Initialize Contact with Local Regulator</li> <li>2 Obtain local ordinances &amp; resources</li> <li>3 Obtain local records &amp; past permits</li> <li>4 Review Compliance Inspection to Identify Design Needs</li> <li>5 Maintain Contact with Local Regulator</li> </ol>		<p><b>MPCA Requirements</b></p> <ol style="list-style-type: none"> <li>1 7080.1050</li> <li>2 7080.1200 Subp.1</li> <li>3 7080.1500 Sub.5</li> <li>4 7080.1700</li> <li>5 7080.2150 Subp.1</li> <li>6 7080.2150 Subp.2.A</li> <li>7 7080.2150 Subp.2.E</li> </ol> <p><b>Learning Objectives</b></p> <ol style="list-style-type: none"> <li>1 Understand governing hierarchy</li> <li>2 Understand enforcement &amp; penalties</li> <li>3 List available resources</li> </ol>		Avail yourself of local advice
				<b>Interpersonal Skills</b>	Identify the skills necessary for interacting with other people in order to complete the subtasks



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# Subsurface Sewage Treatment System Professional Need-to-Know: Basic Designer

## C. Contact SSTS Advisory Committee Representative

<b>Subtasks</b>	List sequenced order of steps to complete the master task	<b>Knowledge</b>	Identify knowledge necessary to complete the subtasks	<b>Attitudes</b>	Describe how you must behave to complete the subtasks
			<p style="text-align: center;"><b>MPCA Requirements</b></p> <ol style="list-style-type: none"> <li>1 7080.1150 Subp.1</li> <li>2 7080.1150 Subp.2.A</li> <li>3 7080.1150 Subp.2.B</li> <li>4 7080.1150 Subp.2.C</li> <li>5 7080.1150 Subp.2.D</li> <li>6 7080.1150 Subp.2.E</li> <li>7 7080.1150 Subp.2.F</li> <li>8 7080.1150 Subp.2.G</li> <li>9 7080.1150 Subp.2.H</li> <li>10 7080.1150 Subp.3.A</li> <li>11 7080.1150 Subp.3.B</li> <li>12 7080.1150 Subp.3.C</li> <li>13 7080.1150 Subp.3.D</li> <li>14 7080.1150 Subp.3.E</li> <li>15 7080.1150 Subp.3.F</li> <li>16 7080.1150 Subp.3.G</li> <li>17 7080.1150 Subp.3.H</li> <li>18 7080.1150 Subp.3.I</li> <li>19 7080.1150 Subp.3.J</li> <li>20 7080.1150 Subp.4</li> </ol> <p style="text-align: center;"><b>Learning Objectives</b></p>		Avail yourself of local advice
				<b>Interpersonal Skills</b>	Identify the skills necessary for interacting with other people in order to complete the subtasks



# Subsurface Sewage Treatment System Professional Need-to-Know: Basic Designer

## D. Determine Dwelling Flow

<b>Subtasks</b>	List sequenced order of steps to complete the master task	<b>Knowledge</b>	Identify knowledge necessary to complete the subtasks	<b>Attitudes</b>	Describe how you must behave to complete the subtasks
	<ol style="list-style-type: none"> <li>1 Use 7080.1860 Table IV to determine average daily flow</li> <li>2 Use classification system formulas to determine average daily flow</li> </ol>		<p><b>MPCA Requirements</b></p> <ol style="list-style-type: none"> <li>1 7080.1550 Subp.1</li> <li>2 7080.1550 Subp.2</li> <li>3 7080.1700</li> <li>4 7080.1850 Subp.1</li> <li>5 7080.1850 Subp.2</li> <li>6 7080.1860</li> </ol> <p><b>Learning Objectives</b></p> <ol style="list-style-type: none"> <li>1 Define average daily flow</li> <li>2 Understand how average daily flow impacts design</li> </ol>		<b>Interpersonal Skills</b>



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# Subsurface Sewage Treatment System Professional Need-to-Know: Basic Designer

## E. Determine Other Establishment <2500 gpd Flow

<b>Subtasks</b>	List sequenced order of steps to complete the master task	<b>Knowledge</b>	Identify knowledge necessary to complete the subtasks	<b>Attitudes</b>	Describe how you must behave to complete the subtasks
	<ol style="list-style-type: none"> <li>1 Measure daily flow</li> <li>2 Calculate seven-day maximum average daily flow using safety factors</li> <li>3 Use 7081.0130 Table I to calculate estimated daily flow</li> </ol>		<p><b>MPCA Requirements</b></p> <ol style="list-style-type: none"> <li>1 7080.1200 Subp.2</li> <li>2 7080.1700</li> <li>3 7080.1880</li> </ol> <p><b>Learning Objectives</b></p> <ol style="list-style-type: none"> <li>1 Understand when safety factors are used when determining flow</li> <li>2 Understand which method to use to determine flow</li> <li>3 Identify range of possible results</li> <li>4 Define measured daily flow</li> <li>5 Define estimated daily flow</li> <li>6 Understand how flow affects design</li> <li>7 Understand how flow patterns over time</li> </ol>		<b>Interpersonal Skills</b>



F. Complete Preliminary Site Report

	List sequenced order of steps to complete the master task	Identify knowledge necessary to complete the subtasks	Describe how you must behave to complete the subtasks
S	1 Gather possible resources	<b>MPCA Requirements</b>	Attitudes
	a Consult	1 7080.1700	
	b Soil Survey	2 7080.1710 Subp.A	
	c Geographic map	3 7080.1710 Subp.B(1)	
	d Aerial photos	4 7080.1710 Subp.B(2)	
	e Parcel overlays	5 7080.1710 Subp.B(3)	
	f Plat map	6 7080.1710 Subp.B(4)	
	g Geologic atlas	7 7080.1710 Subp.B(5)	
	2 Locate proposed or existing wells	8 7080.1710 Subp.C	
	a Locate water supply wells within 100 ft of proposed ISTS	9 7080.1710 Subp.D	
	b Locate noncommunity transient public water supply wells within 200 ft of the proposed ISTS if alternative local standards are in effect	10 7080.1710 Subp.E	
	c Locate a community or noncommunity nontransient water supply in a drinking water supply management area if alternative local standards are in effect	11 7080.1710 Subp.F	
	3 Determine the presence of an inner wellhead management zone or wellhead protection area of a public water supply	12 7080.1710 Subp.G	
	4 Determine whether a wetland delineation has been conducted or whether a regulatory body will require a wetland delineation to be conducted on the lot	13 7080.1710 Subp.H	
5 Locate buried water supply pipes within 50 feet of the proposed system	14 7080.1710 Subp.I		

Subtasks		Knowledge		Interpersonal Skills	
6	Locate existing and proposed buildings or improvements on the lot	15	7080.1710 Subp.J		
7	Locate easements on the lot	16	7080.1710 Subp.K 7080.1710 Subp.L		
a	State		<b>Learning Objectives</b>		
b	County	1	Understand how nearby wells or water supplies impact design		Identify the skills necessary for interacting with other people in order to complete the subtasks
c	City	2	Understand how wetland delineation impacts design		
d	Subdivision	3	Understand how ordinary high water level of public waters impacts design		
8	Determine the ordinary high water level of public waters	4	Understand how floodplain designation impacts design		
9	Determine floodplain designation and flooding elevation from published data or data that is acceptable to and approved by the local unit of government or the Department of Natural Resources	5	Understand how setbacks and easements impact design		
	Identify determination of soil characteristics at the proposed soil treatment and dispersal areas as obtained from the soil survey report				
10	Obtain a legal description and lot dimensions				
11	Locate property lines				
12	Locate all required setbacks from the system				
13					



G. Assess Risk Based on Preliminary Site Report

<b>Subtasks</b>	List sequenced order of steps to complete the master task	<b>Knowledge</b>	Identify knowledge necessary to complete the subtasks	<b>Attitudes</b>	Describe how you must behave to complete the subtasks
	<ol style="list-style-type: none"> <li>1 Identify site factors which will expand system's ability to provide treatment</li> <li>2 Identify site factors which will limit system's ability to provide treatment</li> </ol>		<p><b>MPCA Requirements</b></p> <p><b>Learning Objectives</b></p> <ol style="list-style-type: none"> <li>1 Describe risks associated with waste strength</li> <li>2 Describe risks associated with high levels of chemicals in waste</li> <li>3 Understand how Type I - Type III systems treat Nitrogen, Phosphorus &amp; Pathogens</li> <li>4 Identify how septic system will affect sensitive site</li> </ol>		<ol style="list-style-type: none"> <li>1 Identify the skills necessary for interacting with other people in order to complete the subtasks</li> </ol>
				<b>Interpersonal Skill</b>	<ol style="list-style-type: none"> <li>1 Communicate risk with homeowner</li> </ol>



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# Subsurface Sewage Treatment System Professional Need-to-Know: Basic Designer

## H. Determine if Pretreatment is Required Due to High Waste Strength

<b>Subtasks</b>	List sequenced order of steps to complete the master task	<b>Knowledge</b>	Identify knowledge necessary to complete the subtasks	<b>Attitudes</b>	Describe how you must behave to complete the subtasks
	<ol style="list-style-type: none"> <li>1 Conduct field test</li> <li>2 Determine facility management</li> </ol>		<p><b>MPCA Requirements</b></p> <ol style="list-style-type: none"> <li>1 7080.2150 Subp.3.C</li> </ol> <p><b>Learning Objectives</b></p> <ol style="list-style-type: none"> <li>1 Understand how waste strength affects preliminary treatment needs</li> <li>2 Compare predicted versus measured strength</li> <li>3 Understand design limits based on basic designer certification</li> </ol>		<b>Interpersonal Skills</b>



# Subsurface Sewage Treatment System Professional Need-to-Know: Basic Designer

## I. Determine if a Variance is Needed

<b>Subtasks</b>	List sequenced order of steps to complete the master task	<b>Knowledge</b>	Identify knowledge necessary to complete the subtasks	<b>Attitudes</b>	Describe how you must behave to complete the subtasks
			<p><b>MPCA Requirements</b></p> <ol style="list-style-type: none"> <li>1 7080.1200 Subp.3</li> <li>2 7083.0040 Subp.2.A</li> <li>3 7083.0040 Subp.2.B(1)</li> <li>4 7083.0040 Subp.2.B(2)</li> <li>5 7083.0040 Subp.2.B(3)</li> <li>6 7083.0040 Subp.2.B(4)</li> <li>7 7083.0040 Subp.2.B(5)</li> <li>8 7083.0040 Subp.2.B(6)</li> <li>9 7083.0040 Subp.2.B(7)</li> <li>10 7083.0040 Subp.2.C</li> </ol> <p><b>Learning Objectives</b></p> <ol style="list-style-type: none"> <li>1 Define variance</li> <li>2 Understand statutory and rule requirements for a variance</li> </ol>		<b>Interpersonal Skills</b>



A. Locate Utilities

<b>Subtasks</b>	List sequenced order of steps to complete the master task	<b>Knowledge</b>	Identify knowledge necessary to complete the subtasks	<b>Attitudes</b>	Describe how you must behave to complete the subtasks
	<ol style="list-style-type: none"> <li>1 Call Gopher State One Call</li> <li>2 Locate Private Utilities</li> </ol>		<p><b>MPCA Requirements</b></p> <ol style="list-style-type: none"> <li>1 7080.1700</li> </ol> <p><b>Learning Objectives</b></p>		<b>Interpersonal Skills</b>



# Subsurface Sewage Treatment System Professional Need-to-Know: Basic Designer

## B. Investigate Property

	List sequenced order of steps to complete the master task	Identify knowledge necessary to complete the subtasks	Describe how you must behave to complete the subtasks	
<b>KS</b>	Complete Part II of OSTP Site Evaluation Form			
	1 Form	<b>MPCA Requirements</b>	<b>Attitudes</b>	
	a Locate Buildings	1 7080.1700		
	b Locate Improvements	2 7080.1720 Subp.2		
	c Locate Lot Lines	3 7080.1720 Subp.3.A		
	d Locate Easements	4 7080.1720 Subp.3.B		
	e Locate Setbacks	5 7080.1720 Subp.3.C		
	f Locate Cut, Filled, Disturbed or Compacted Soil	6 7080.1720 Subp.3.D		
	g Locate Significant Wet & Dry Vegetation & Organisms	7 7080.1720 Subp.3.E		
	h Determine Landscape Position, Percent Slope, & Slope Direction	8 7080.2150 Subp.3.E		
	i Identify Flooding & Run-On Potential			
	j Determine whether site is located in floodplain or floodway	<b>Learning Objectives</b>		
	k Describe site's geomorphology	1 Identify setbacks		
	2 Identify relative benchmarks & elevations	2 Identify easements		
				3 Identify significant vegetation & organisms
		4 Explain how significant vegetation & organisms impacts soil		
		5 Explain how presence of significant vegetation impacts design		
		6 Describe indicators which signal cut, filled, disturbed or compacted soil		
		7 Describe methods to locate cut, filled, disturbed or compacted soil		
		<b>E</b>		

**Subst**

**Knowled**

- 8 Explain how cut, filled, disturbed or compacted soil impacts design
- 9 Explain how landscape position, percent and direction impacts design
- 10 Explain how landscape position, percent and direction impacts soil
- 11 Explain how flooding & run-on potential impacts design
- 12 Explain how being located in a floodplain impacts design
- 13 Explain how site geomorphology impacts soil
- 14 Explain how site geomorphology impacts design
- 15 Understand factors & timeline of soil development
  - a Identify parent materials
  - b Define topography
  - c Define climate

**Interpersonal Skills**



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## Subsurface Sewage Treatment System Professional Need-to-Know: Basic Designer

### C. Investigate Soil for Each Site

	List sequenced order of steps to complete the master task	Identify knowledge necessary to complete the subtasks	Describe how you must behave to complete the subtasks
		<b>MPCA Requirements</b>	
1	Complete Part III of OSTP Site Evaluation Form	1 7080.1700	<b>Attitudes</b>
a	Sample soil & stake	2 7080.1720 Subp.4.A	
b	Record method of soil observation	3 7080.1720 Subp.4.B	
c	Describe soil horizon depth, texture, color, structure & consistency	4 7080.1720 Subp.4.C	
d	Identify parent material	5 7080.1720 Subp.4.D	
e	Identify soil texture classification	6 7080.1720 Subp.4.E	
f	Measure depth to restrictive layer	7 7080.1720 Subp.4.F	
g	Determine maximum depth of system	8 7080.1720 Subp.4.G	
h	Determine maximum elevation at system bottom	9 7080.1720 Subp.5.A	
2	Complete OSTP Percolation Test Data Sheet, as required	10 7080.1720 Subp.5.B	
a	Create test hole & stake	11 7080.1720 Subp.5.C	
b	Record method of scratching sidewall	12 7080.1720 Subp.5.D	
c	Measure depth at bottom of hole	13 7080.1720 Subp.5.E(1)(a)	
d	Measure depth of gravel at bottom of hole	14 7080.1720 Subp.5.E(1)(b)	
e	Record date and depth of presoak	15 7080.1720 Subp.5.E(1)(c)	
f	Record method to maintain 12 " of water depth for 4 hours	16 7080.1720 Subp.5.E(2)(a)	
g	Record date at end of presoak	17 7080.1720 Subp.5.E(2)(b)	
h	Saturate test hole	18 7080.1720 Subp.5.E(3)(a)	
i	Record maximum depth above hole bottom during test	19 7080.1720 Subp.5.E(3)(b)	
j	Record surface elevation	20 7080.1720 Subp.5.E(3)(c)	
k	Record elapsed time	21 7080.1720 Subp.5.E(3)(d)	
l	Record drop in water level	22 7080.1720 Subp.5.E(3)(e)	
3	Interpret soil survey		

## Subtasks

- 4 Compare soil survey to field evaluation
- 5 Record certified statement

## Knowledge

- 23 7080.1720 Subp.5.F
- 24 7080.1720 Subp.5.G
- 25 7080.1720 Subp.5.H
- 26 7080.1720 Subp.6.A
- 27 7080.1720 Subp.6.B
- 28 7080.1720 Subp.6.C
- 29 7080.1720 Subp.6.D
- 30 7080.1720 Subp.6.E
- 31 7080.1720 Subp.6.F
- 32 7080.1720 Subp.6.G
- 33 7080.1720 Subp.6.H

### Learning Objectives

- 1 Describe methods to investigate soil
- 2 Compare & Contrast methods to investigate soil
- 3 List necessary equipment for each method of investigating soil
- 4 Describe components of soil
- 5 Describe soil water movement
- 6 Define soil texture
- 7 Describe factors which influence soil texture
- 8 Describe how soil texture impacts water movement & acceptance
- 9 Explain how soil texture impacts sewage treatment
- 10 Explain how soil texture impacts design
- 11 Define soil color
- 12 Describe factors which influence soil color
- 13 Explain how soil color impacts design
- 14 Define redoxification
- 15 Describe redoximorphic features
- 16 Define mottling, stains, coatings, nodules, E horizon formation
- 17 Demonstrate use of soil color chart

Identify the skills necessary for interacting with other people in order to complete the subtasks

- 18 Define soil structure
- 19 Describe factors which influence soil structure
- 20 Describe how soil structure impacts water movement & acceptance
- 21 Explain how soil structure impacts sewage treatment
- 22 Explain how soil structure impacts design
- 23 Define soil consistency
- 24 Describe factors which influence soil consistency
- 25 Define restrictive layer
- 26 List types of restrictive layers
- 27 Describe how depth to restrictive layer impacts water movement & acceptance
- 28 Describe how depth to restrictive layer affects sewage treatment
- 29 Explain how depth to restrictive layer impacts design.
- 30 Define percolation
- 31 Describe how percolation rate impacts water movement & acceptance
- 32 Describe how percolation rate affects sewage treatment
- 33 Explain how percolation rate impacts design

**Interpersonal Skills**



D. Protect Site from Compaction & Disturbance

<b>Subtasks</b>	List sequenced order of steps to complete the master task	<b>Knowledge</b>	Identify knowledge necessary to complete the subtasks	<b>Attitudes</b>	Describe how you must behave to complete the subtasks
	<ol style="list-style-type: none"> <li>1 Stake site</li> <li>2 Fence site</li> <li>3 Post site</li> <li>4 Protect site by other effective method</li> </ol>		<p><b>MPCA Requirements</b></p> <ol style="list-style-type: none"> <li>1 7080.1700</li> <li>2 7080.1720 Subp.7</li> </ol> <p><b>Learning Objectives</b></p> <ol style="list-style-type: none"> <li>1 Explain how failed site protection impacts design</li> <li>2 Compare efficacy of various stake &amp; fence materials</li> </ol>		<b>Interpersonal Skills</b>



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## Subsurface Sewage Treatment System Professional Need-to-Know: Basic Designer

### E. Complete Field Evaluation Report

	List sequenced order of steps to complete the master task	Identify knowledge necessary to complete the subtasks	Describe how you must behave to complete the subtasks	
Tasks	1 Record preliminary field evaluation results		<b>Attitudes</b>	
	2 Record field evaluation results	<p><b>MPCA Requirements</b></p> <p>1 7080.1700</p> <p>2 7080.1730 Subp.A</p> <p>3 7080.1730 Subp.B</p> <p>4 7080.1730 Subp.C(1)</p> <p>5 7080.1730 Subp.C(2)</p> <p>6 7080.1730 Subp.C(3)</p> <p>7 7080.1730 Subp.D</p> <p>8 7080.1730 Subp.E</p> <p>9 7080.1730 Subp.F</p> <p>10 7080.1730 Subp.G</p> <p>11 7080.1730 Subp.H</p> <p>12 7080.1730 Subp.I</p> <p>13 7080.1730 Subp.J</p> <p>14 7080.1730 Subp.K</p> <p>15 7080.2150 Subp.2.G</p>		
	3 Record dates of preliminary and field evaluations			2 7080.1730 Subp.A
	4 Create Site plan to scale			3 7080.1730 Subp.B
	a Locate horizontal and vertical reference points of			4 7080.1730 Subp.C(1)
	i proposed soil treatment and dispersal areas			5 7080.1730 Subp.C(2)
	ii soil observations			6 7080.1730 Subp.C(3)
	iii percolation tests			7 7080.1730 Subp.D
	iv distance from proposed ISTS to required			8 7080.1730 Subp.E
	- setbacks			9 7080.1730 Subp.F
	- lot improvements			10 7080.1730 Subp.G
	- easements			11 7080.1730 Subp.H
	- ordinary high water mark of public waters			12 7080.1730 Subp.I
	- property lines			13 7080.1730 Subp.J
	- direction & percent slope			14 7080.1730 Subp.K
b Locate any unsuitable, disturbed or compacted areas	15 7080.2150 Subp.2.G			
c Locate the access route for system maintenance				
d Map Site Buildings				
e Map Lot Improvements				
f Map Lot Lines				
g Map Easements				
h Map Setbacks				
i Map Surface Features, Slope Shape & System Location on Slope				
j Map Contours				
		<b>Knowledge</b>	<p>Identify the skills necessary for interacting with other people in order to complete the subtasks</p>	

**Subtasks**

- k Map North Arrow
- 5 Record the estimated depth of seasonally saturated soil layer, bedrock, or flood elevation
- 6 Record the final soil sizing factor
- 7 Record anticipated construction related issues
- 8 Record the name, address, telephone number and certified statement of the individual conducting the site evaluation
- 9 Record assessment of how known or foreseeable land use changes may affect system performance
- 10 Record a narrative explaining any difficulties encountered during site evaluation
- 11 Record an explanation of any differences between observed soil characteristics and those identified in soil survey report
- 12 Record monitored flow rate
- 13 Record waste strength

**Knowledge**

**Interpersonal Skills**



## 1. Use Depth to Restrictive Layer to Choose Treatment System

<b>Subtasks</b>	List sequenced order of steps to complete the master task	<b>Knowledge</b>	Identify knowledge necessary to complete the subtasks	<b>Attitudes</b>	Describe how you must behave to complete the subtasks
			<p><b>MPCA Requirements</b></p> <ol style="list-style-type: none"> <li>1 7080.1500 Subp.3</li> <li>2 7080.1750 Subp.1</li> <li>3 7080.2150 Subp.2.B</li> <li>4 7080.2150 Subp.2.C</li> <li>5 7080.2150 Subp.2.D</li> <li>6 7080.2150 Subp.3.D(1)(a)</li> <li>7 7080.2150 Subp.3.D(1)(b)</li> <li>8 7080.2150 Subp.3.D(1)(c)</li> </ol> <p><b>Learning Objectives</b></p> <ol style="list-style-type: none"> <li>1 Define restrictive layer</li> <li>2 Describe types of restrictive layers</li> <li>3 Explain how depth to restrictive layer impacts design</li> </ol>		Identify the skills necessary for interacting with other people in order to complete the subtasks
		<b>Interpersonal Sk</b>			



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## Subsurface Sewage Treatment System Professional Need-to-Know: Basic Designer

### 2. Use Texture and Structure of Soil or Percolation Rate to Determine Soil Sizing Factor

<b>Subtasks</b>	<p>List sequenced order of steps to complete the master task</p> <p>Use 7080.2150 Table IX to determine soil sizing factor based on soil texture &amp; structure</p> <ol style="list-style-type: none"> <li>1 Use 7080.2150 Table IX to determine soil sizing factor based on soil texture &amp; structure</li> <li>2 Use 7080.2150 Table IX to determine soil sizing factor based on percolation rate</li> <li>3 Choose slowest rate</li> </ol>	<p>Identify knowledge necessary to complete the subtasks</p> <p><b>MPCA Requirements</b></p> <ol style="list-style-type: none"> <li>1 7080.1500 Subp.3</li> <li>2 7080.1750 Subp.1</li> <li>3 7080.2150 Subp.3.F</li> </ol> <p><b>Learning Objectives</b></p> <ol style="list-style-type: none"> <li>1 Define soil sizing factor</li> <li>2 Explain how soil sizing factor impacts design</li> </ol>	<b>Attitudes</b>

Describe how you must behave to complete the subtasks

Identify the skills necessary for interacting with other people in order to complete the subtasks



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## Subsurface Sewage Treatment System Professional Need-to-Know: Basic Designer

### 3. Use Texture and Structure or Percolation Rate to Determine Linear Loading Rate

Subtasks	List sequenced order of steps to complete the master task	Knowledge	Attitudes  Interpersonal Skills
	<p>1 Use OSTP Linear Loading Rate Chart</p>	<p>Identify knowledge necessary to complete the subtasks</p> <p><b>MPCA Requirements</b></p> <ol style="list-style-type: none"> <li>1 7080.1500 Subp.3</li> <li>2 7080.1750 Subp.1</li> </ol> <p><b>Learning Objectives</b></p> <ol style="list-style-type: none"> <li>1 Define linear loading rate</li> <li>2 Explain how linear loading rate impacts design</li> </ol>	<p>Describe how you must behave to complete the subtasks</p> <hr/> <p>Identify the skills necessary for interacting with other people in order to complete the subtasks</p>



4. Recognize Potential for Groundwater Mounding

<b>Subtasks</b>	List sequenced order of steps to complete the master task	Identify knowledge necessary to complete the subtasks  <b>MPCA Requirements</b>  <b>Learning Objectives</b> 1 Define groundwater mounding 2 Explain how groundwater mounding impacts design Describe how each system type uses 3 vertical separation to offset potential for groundwater mounding	<b>Attitudes</b>  Describe how you must behave to complete the subtasks
			<b>Interpersonal Skills</b>  Identify the skills necessary for interacting with other people in order to complete the subtasks



## 5. Assess Risk Based on Field Evaluation Report

<b>Subtasks</b>	List sequenced order of steps to complete the master task	Identify knowledge necessary to complete the subtasks	Describe how you must behave to complete the subtasks
	<ol style="list-style-type: none"> <li>1 Identify site factors which will expand system's ability to provide treatment</li> <li>2 Identify site factors which will limit system's ability to provide treatment</li> </ol>	<b>Knowledge</b>	<b>Attitudes</b>
		<b>Learning Objectives</b>	<b>Interpersonal Skills</b>
			<p style="text-align: center;">Identify the skills necessary for interacting with other people in order to complete the subtasks</p> <ol style="list-style-type: none"> <li>1 Communicate risk with homeowner</li> </ol>



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## Subsurface Sewage Treatment System Professional Need-to-Know: Basic Designer

### 6. Determine if Pretreatment is Necessary Due to Soil Evaluation

Subtasks	List sequenced order of steps to complete the master task	Knowledge	Attitudes  Interpersonal Skills
		<p>Identify knowledge necessary to complete the subtasks</p> <p><b>MPCA Requirements</b></p> <p><b>Learning Objectives</b></p> <p>1 Understand design limits based on basic designer certification</p>	<p>Describe how you must behave to complete the subtasks</p> <hr/> <p>Identify the skills necessary for interacting with other people in order to complete the subtasks</p>



# Subsurface Sewage Treatment System Professional Need-to-Know: Basic Designer

## 1. Identify Greywater System Parameters

<b>Subtasks</b>	List sequenced order of steps to complete the master task	<b>Knowledge</b>	Identify knowledge necessary to complete the subtasks	<b>Attitudes</b>	Describe how you must behave to complete the subtasks
			<p><b>MPCA Requirements</b></p> <ol style="list-style-type: none"> <li>1 7080.1750 Subp.1</li> <li>2 7080.2240 Subp.1(A)</li> <li>3 7080.2240 Subp.1(B)</li> <li>4 7080.2240 Subp.1(C)</li> <li>5 7080.2240 Subp.1(D)</li> <li>6 7080.2240 Subp.1(E)</li> <li>7 7080.2240 Subp.1(F)</li> <li>8 7080.2240 Subp.2</li> <li>9 7080.2240 Subp.3</li> </ol> <p><b>Learning Objectives</b></p> <ol style="list-style-type: none"> <li>1 Describe solutions to designing greywater systems</li> </ol>		Identify the skills necessary for interacting with other people in order to complete the subtasks
<b>Interpersonal Skills</b>				<b>Interpersonal Skills</b>	



# Subsurface Sewage Treatment System Professional Need-to-Know: Basic Designer

## 2. Identify Rapidly Permeable System Parameters

<b>Subtasks</b>	List sequenced order of steps to complete the master task	<b>Knowledge</b>	Identify knowledge necessary to complete the subtasks	<b>Attitudes</b>	Describe how you must behave to complete the subtasks
			<p><b>MPCA Requirements</b></p> <ol style="list-style-type: none"> <li>1 7080.1750 Subp.1</li> <li>2 7080.2250</li> <li>3 7080.2260 Subp.1.A</li> <li>4 7080.2260 Subp.1.B</li> <li>5 7080.2260 Subp.1.C</li> <li>6 7080.2260 Subp.1.D</li> <li>7 7080.2260 Subp.1.E</li> <li>8 7080.2260 Subp.1.F</li> <li>9 7080.2260 Subp.2</li> <li>10 7080.2260 Subp.3.A</li> <li>11 7080.2260 Subp.3.B</li> </ol> <p><b>Learning Objectives</b></p> <ol style="list-style-type: none"> <li>1 Describe solutions to designing systems in rapidly permeable soil</li> </ol>		Interpersonal Skills



# Subsurface Sewage Treatment System Professional Need-to-Know: Basic Designer

## 3. Identify System in Floodplain Parameters

Subtasks	List sequenced order of steps to complete the master task	Identify knowledge necessary to complete the subtasks	Attitudes
	<ol style="list-style-type: none"> <li>1 Ascertain 10 year flood elevation</li> <li>2 Design for ballasting of tanks</li> </ol>	<p><b>MPCA Requirements</b></p> <ol style="list-style-type: none"> <li>1 7080.1750 Subp.1</li> <li>2 7080.2150 Subp.2.F</li> <li>3 7080.2250</li> <li>4 7080.2270 Subp.1(A)</li> <li>5 7080.2270 Subp.1(B)</li> <li>6 7080.2270 Subp.1(C)</li> <li>7 7080.2270 Subp.1(D)</li> <li>8 7080.2270 Subp.1(E)</li> <li>9 7080.2270 Subp.1(F)</li> <li>10 7080.2270 Subp.2</li> <li>11 7080.2270 Subp.3</li> <li>12 7080.2270 Subp.4</li> <li>13 7080.2270 Subp.5</li> <li>14 7080.2270 Subp.6</li> <li>15 7080.2270 Subp.7.A</li> <li>16 7080.2270 Subp.7.B</li> <li>17 7080.2270 Subp.7.C</li> <li>18 7080.2270 Subp.9</li> <li>19 7080.2270 Subp.10</li> </ol> <p><b>Learning Objectives</b></p> <ol style="list-style-type: none"> <li>1 Describe solutions to designing in floodplains</li> </ol>	

Subtasks

Knowledge

Attitudes

Interpersonal Skills



# Subsurface Sewage Treatment System Professional Need-to-Know: Basic Designer

## 4. Identify System in Cut, Filled or Compacted Soil Parameters

<b>Subtasks</b>	List sequenced order of steps to complete the master task	<b>Knowledge</b>	Identify knowledge necessary to complete the subtasks	<b>Attitudes</b>	Describe how you must behave to complete the subtasks
			<p><b>MPCA Requirements</b></p> <ol style="list-style-type: none"> <li>1 7080.1750 Subp.1</li> <li>2 7080.2300 Subp.A</li> <li>3 7080.2300 Subp.B</li> <li>4 7080.2300 Subp.C</li> <li>5 7080.2300 Subp.D</li> <li>6 7080.2300 Subp.E</li> </ol> <p><b>Learning Objectives</b></p> <ol style="list-style-type: none"> <li>1 Describe solutions to designing systems in cut, filled or compacted soil</li> </ol>		<b>Interpersonal Skills</b>

5. Identify Down-Sized System Parameters

<b>Subtasks</b>	List sequenced order of steps to complete the master task	<b>Knowledge</b>	Identify knowledge necessary to complete the subtasks	<b>Attitudes</b>	Describe how you must behave to complete the subtasks
			<p><b>MPCA Requirements</b></p> <ol style="list-style-type: none"> <li>1 7080.1750 Subp.1</li> <li>2 7080.2300 Subp.A</li> <li>3 7080.2300 Subp.B</li> <li>4 7080.2300 Subp.C</li> <li>5 7080.2300 Subp.D</li> <li>6 7080.2300 Subp.E</li> </ol> <p><b>Learning Objectives</b></p> <ol style="list-style-type: none"> <li>1 Describe solutions to designing down-sized systems</li> </ol>		<b>Interpersonal Skills</b>



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# Subsurface Sewage Treatment System Professional Need-to-Know: Basic Designer

## 6. Identify System in Less than 12" of Unsaturated Soil Parameters

<b>Subtasks</b>	List sequenced order of steps to complete the master task	<b>Knowledge</b>	Identify knowledge necessary to complete the subtasks	<b>Attitudes</b>	Describe how you must behave to complete the subtasks
			<p><b>MPCA Requirements</b></p> <ol style="list-style-type: none"> <li>1 7080.1750 Subp.1</li> <li>2 7080.2260 Subp.1.A</li> <li>3 7080.2260 Subp.1.B</li> <li>4 7080.2260 Subp.1.C</li> <li>5 7080.2260 Subp.1.D</li> <li>6 7080.2260 Subp.1.E</li> <li>7 7080.2260 Subp.1.F</li> <li>8 7080.2260 Subp.2</li> <li>9 7080.2260 Subp.3.A</li> <li>10 7080.2260 Subp.3.B</li> </ol> <p><b>Learning Objectives</b></p> <ol style="list-style-type: none"> <li>1 Describe solutions to designing systems in less than 12" of unsaturated soil</li> </ol>		<b>Interpersonal Skills</b>



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## Subsurface Sewage Treatment System Professional Need-to-Know: Basic Designer

### C. Design Privy (Type II)

Subtasks	List sequenced order of steps to complete the master task	Knowledge	Attitudes	Interpersonal Skills
	<ol style="list-style-type: none"> <li>1 If holding tank, see design holding tanks</li> <li>a See "Design Holding Tanks"</li> <li>2 If soil treatment,               <ol style="list-style-type: none"> <li>a Position privy</li> <li>b Determine capacity</li> <li>c Determine depth &amp; shape of pit</li> </ol> </li> <li>3 Design exterior building</li> <li>4 Design venting</li> </ol>	<p>Identify knowledge necessary to complete the subtasks</p> <p><b>MPCA Requirements</b></p> <ol style="list-style-type: none"> <li>1 7080.1500 Subp.3</li> <li>2 7080.1750 Subp.1</li> <li>3 7080.2150 Subp.2.B</li> <li>4 7080.2150 Subp.2.C</li> <li>5 7080.2250</li> <li>6 7080.2280 Subp.A(1)</li> <li>7 7080.2280 Subp.A(2)</li> <li>8 7080.2280 Subp.A(3)</li> <li>9 7080.2280 Subp.B</li> <li>10 7080.2280 Subp.C</li> <li>11 7080.2280 Subp.D</li> <li>12 7080.2280 Subp.E</li> </ol> <p><b>Learning Objectives</b></p> <ol style="list-style-type: none"> <li>1 Describe special maintenance requirements for privies</li> </ol>		<p>Describe how you must behave to complete the subtasks</p> <hr/> <p>Identify the skills necessary for interacting with other people in order to complete the subtasks</p>



# Subsurface Sewage Treatment System Professional Need-to-Know: Basic Designer

## 1. Design Septic Tank

	List sequenced order of steps to complete the master task		Identify knowledge necessary to complete the subtasks		Describe how you must behave to complete the subtasks	
S	a Determine Whether Specific Tank Has Been Approved for Use in Minnesota, as necessary			Attitudes		
	b If dwelling, use 7080.1930 Table V to determine minimum septic tank capacity	1				
	c If other establishment, use estimated or measured average daily flow to determine minimum septic tank capacity	2				
	d If multiple tanks, calculate specifications	3				
	e If compartmentalized tank, calculate specifications	4				
	f Position baffles	5				
	g Position maintenance access	6				
	h Design effluent screen, as required	7				
	i Design alarm, as required	8				
	j Design insulation	9				
		10				
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
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	21					
	22					
	23					
	24					

### MPCA Requirements

Identify the skills necessary for interacting with other people in order to complete the subtasks

## Subtas

## Knowlec

- 25 7080.1970 Subp.B
- 26 7080.1970 Subp.C(1)
- 27 7080.1970 Subp.C(2)
- 28 7080.1970 Subp.C(3)
- 29 7080.1970 Subp.C(4)
- 30 7080.2000 Subp.E
- 31 7080.2000 Subp.K
- 32 7080.2000 Subp.M
- 33 7080.2150 Subp.2.B
- 34 7080.2150 Subp.2.C

### **Learning Objectives**

- 1 Describe treatment achieved on domestic septage by septic tank
- 2 Explain how effluent screen impacts design
- 3 Understand types & applications of effluent screens
- 4 Understand how tank sizing & effluent screens affect maintenance needs
- 5 List access point specifications
- 6 Describe benefits of tank insulation

## Interpersonal Skills



2. Design Holding Tank

<b>Subtasks</b>	List sequenced order of steps to complete the master task	<b>Knowledge</b>	Identify knowledge necessary to complete the subtasks	<b>Attitudes</b>	Describe how you must behave to complete the subtasks
	<ul style="list-style-type: none"> <li>a Determine capacity using safety factor</li> <li>b Position maintenance access</li> <li>c Design alarm</li> <li>d Design insulation</li> </ul>		<p><b>MPCA Requirements</b></p> <ul style="list-style-type: none"> <li>1 7080.1500 Subp.3</li> <li>2 7080.1750 Subp.1</li> <li>3 7080.2150 Subp.2.B</li> <li>4 7080.2150 Subp.2.C</li> <li>5 7080.2290 Subp.A(1)</li> <li>6 7080.2290 Subp.A(2)</li> <li>7 7080.2290 Subp.A(3)</li> <li>8 7080.2290 Subp.A(4)</li> <li>9 7080.2290 Subp.B</li> <li>10 7080.2290 Subp.C</li> <li>11 7080.2290 Subp.D</li> <li>12 7080.2290 Subp.E</li> <li>13 7080.2290 Subp.F</li> </ul> <p><b>Learning Objectives</b></p> <ul style="list-style-type: none"> <li>1 Understand proper application of a holding tank</li> <li>2 Understand holding tank maintenance requirements</li> </ul>		<b>Interpersonal Skills</b>

3. Design Flammable Waste Trap

<b>Subtasks</b>	List sequenced order of steps to complete the master task	<b>Knowledge</b>	Identify knowledge necessary to complete the subtasks	<b>Attitudes</b>	Describe how you must behave to complete the subtasks
			<b>MPCA Requirements</b>		
				<b>Interpersonal Skills</b>	

## 1. Design Trench Treatment System

	List sequenced order of steps to complete the master task	Identify knowledge necessary to complete the subtasks	Describe how you must behave to complete the subtasks	
Tasks	<ul style="list-style-type: none"> <li>a Determine Whether Selected Distribution Media is Registered for Use for Trenches in Minnesota If Not Registered, Apply for a Product Development Permit</li> <li>b Complete OSTP Trench and Bed Worksheet</li> <li>1 Record estimated flow</li> <li>2 Record minimum septic tank capacity</li> <li>3 Record Pump tank specifications</li> <li>4 Record soil evaluation data</li> <li>5 Record system type</li> <li>6 Record distribution media type</li> <li>7 Record method of distribution</li> <li>8 Calculate trench bottom area</li> <li>9 Calculate trench dimensions</li> <li>10 Calculate distribution media volume</li> <li>11 Record certified statement</li> <li>c Determine depth and material type for cover</li> <li>d Design inspection pipes</li> </ul>	<b>MPCA Requirements</b>	Attitudes	<p>Describe how you must behave to complete the subtasks</p> <hr/> <p>Identify the skills necessary for interacting with other people in order to complete the subtasks</p>
		<ul style="list-style-type: none"> <li>1 7080.1500 Subp.3</li> <li>2 7080.1645 Subp.4</li> <li>3 7080.1645 Subp.7</li> <li>4 7080.1645 Subp.8.A</li> <li>5 7080.1645 Subp.8.B</li> <li>6 7080.1645 Subp.8.C</li> <li>7 7080.1645 Subp.8.D</li> <li>8 7080.1645 Subp.8.E</li> <li>9 7080.1645 Subp.8.F</li> <li>10 7080.1655 Subp.1</li> <li>11 7080.1655 Subp.2.A</li> <li>12 7080.1655 Subp.2.B</li> <li>13 7080.1655 Subp.2.C</li> <li>14 7080.1655 Subp.2.D</li> <li>15 7080.1655 Subp.2.E</li> <li>16 7080.1655 Subp.2.F</li> <li>17 7080.1655 Subp.2.G</li> <li>18 7080.1655 Subp.3.A</li> <li>19 7080.1655 Subp.3.B</li> <li>20 7080.1655 Subp.3.C</li> <li>21 7080.1655 Subp.3.D</li> <li>22 7080.1655 Subp.4</li> <li>23 7080.1655 Subp.5</li> <li>24 7080.1655 Subp.6</li> <li>25 7080.1655 Subp.7</li> </ul>		

Knowledge

## Subtasks

## Knowledge

- 26 7080.1655 Subp.8.A
- 27 7080.1655 Subp.8.B
- 28 7080.1655 Subp.8.C
- 29 7080.1655 Subp.9
- 30 7080.1750 Subp.1
- 31 7080.2150 Subp.2.B
- 32 7080.2150 Subp.2.C
- 33 7080.2150 Subp.3.A
- 34 7080.2150 Subp.3.B
- 35 7080.2150 Subp.3.D(2)
- 36 7080.2150 Subp.3.G
- 37 7080.2150 Subp.3.J
- 38 7080.2150 Subp.3.K
- 39 7080.2200
- 40 7080.2210 Subp.1.A
- 41 7080.2210 Subp.1.B
- 42 7080.2210 Subp.1.C
- 43 7080.2210 Subp.1.D
- 44 7080.2210 Subp.1.E
- 45 7080.2210 Subp.3
- 46 7080.2210 Subp.4.A
- 47 7080.2210 Subp.4.B
- 48 7080.2210 Subp.4.C
- 49 7080.2210 Subp.4.D

### Learning Objectives

- 1 Understand how distribution media impacts trench design
- 2 Calculate bottom & sidewall area for various distribution media
- 3 Describe how amount of bottom & sidewall area affects treatment

## Interpersonal Skills



2. Design Bed Treatment System

	List sequenced order of steps to complete the master task	Identify knowledge necessary to complete the subtasks	Describe how you must behave to complete the subtasks
Tasks	Determine Whether Selected Distribution Media is Registered for Use for Beds in Minnesota If Not Registered, Apply for a Product Development Permit		Attitudes
	Complete OSTP Trench and Bed Worksheet		
	1 Record estimated flow	1 7080.1500 Subp.3	
	2 Record Minimum septic tank capacity	2 7080.1645 Subp.4	
	3 Record Pump tank specifications	3 7080.1645 Subp.7	
	4 Records soil evaluation data	4 7080.1645 Subp.8.A	
	5 Record system type	5 7080.1645 Subp.8.B	
	6 Record distribution media type	6 7080.1645 Subp.8.C	
	7 Record method of distribution	7 7080.1645 Subp.8.D	
	8 Calculate bed bottom area	8 7080.1645 Subp.8.E	
	9 Calculate bed dimensions	9 7080.1645 Subp.8.F	
	10 Calculate distribution media volume	10 7080.1655 Subp.1	
	11 Record certified statement	11 7080.1655 Subp.2.A	
		12 7080.1655 Subp.2.B	
		13 7080.1655 Subp.2.C	
	d Determine depth and material type for cover	14 7080.1655 Subp.2.D	
	e Design inspection pipes	15 7080.1655 Subp.2.E	
		16 7080.1655 Subp.2.F	
		17 7080.1655 Subp.2.G	
		18 7080.1655 Subp.3.A	
		19 7080.1655 Subp.3.B	
		20 7080.1655 Subp.3.C	
		21 7080.1655 Subp.3.D	
		22 7080.1655 Subp.4	
		23 7080.1655 Subp.5	
	24 7080.1655 Subp.6		
	25 7080.1655 Subp.7		

**MPCA Requirements**

## Subtasks

## Knowledge

- 26 7080.1655 Subp.8.A
- 27 7080.1655 Subp.8.B
- 28 7080.1655 Subp.8.C
- 29 7080.1655 Subp.9
- 30 7080.1750 Subp.1
- 31 7080.2150 Subp.2.B
- 32 7080.2150 Subp.2.C
- 33 7080.2150 Subp.3.A
- 34 7080.2150 Subp.3.B
- 35 7080.2150 Subp.3.D(2)
- 36 7080.2150 Subp.3.G
- 37 7080.2150 Subp.3.J
- 38 7080.2150 Subp.3.K
- 39 7080.2200
- 40 7080.2210 Subp.1.A
- 41 7080.2210 Subp.1.B
- 42 7080.2210 Subp.1.C
- 43 7080.2210 Subp.1.D
- 44 7080.2210 Subp.1.E
- 45 7080.2210 Subp.2
- 46 7080.2210 Subp.3.A
- 47 7080.2210 Subp.3.B
- 48 7080.2210 Subp.4.A
- 49 7080.2210 Subp.4.B
- 50 7080.2210 Subp.4.C
- 51 7080.2210 Subp.4.D

### Learning Objectives

## Interpersonal Skills

Identify the skills necessary for interacting with other people in order to complete the subtasks



# Subsurface Sewage Treatment System Professional Need-to-Know: Basic Designer

## 3. Design At-grade treatment system

List sequenced order of steps to complete the master task	Identify knowledge necessary to complete the subtasks	Describe how you must behave to complete the subtasks
<p>Determine Whether Selected Distribution Media is Registered for Use for At-grades in MN If Not Registered, Apply for a Product Development Permit</p> <p>Complete OSTP At-grade Design Worksheet</p> <p>Record average design flow</p> <p>Record minimum septic tank capacity</p> <p>Record soil evaluation data</p> <p>Calculate distribution media absorption width</p> <p>Design system size</p> <p>1 Establish height of system as 2 feet</p> <p>2 Calculate upslope berm width</p> <p>3 Calculate downslope berm width</p> <p>4 Calculate total system width</p> <p>5 Calculate distribution media length</p> <p>6 Calculate total system length</p> <p>Calculate estimated distribution media volume</p> <p>Record certified statement</p> <p>Determine depth and material type for cover</p> <p>Design inspection pipes</p>	<p><b>MPCA Requirements</b></p> <p>1 7080.1500 Subp.3</p> <p>2 7080.1645 Subp.4</p> <p>3 7080.1645 Subp.7</p> <p>4 7080.1645 Subp.8.A</p> <p>5 7080.1645 Subp.8.B</p> <p>6 7080.1645 Subp.8.C</p> <p>7 7080.1645 Subp.8.D</p> <p>8 7080.1645 Subp.8.E</p> <p>9 7080.1645 Subp.8.F</p> <p>10 7080.1655 Subp.1</p> <p>11 7080.1655 Subp.2.A</p> <p>12 7080.1655 Subp.2.B</p> <p>13 7080.1655 Subp.2.C</p> <p>14 7080.1655 Subp.2.D</p> <p>15 7080.1655 Subp.2.E</p> <p>16 7080.1655 Subp.2.F</p> <p>17 7080.1655 Subp.2.G</p> <p>18 7080.1655 Subp.3.A</p> <p>19 7080.1655 Subp.3.B</p> <p>20 7080.1655 Subp.3.C</p> <p>21 7080.1655 Subp.3.D</p> <p>22 7080.1655 Subp.4</p> <p>23 7080.1655 Subp.5</p>	<p style="writing-mode: vertical-rl; transform: rotate(180deg);"><b>Attitudes</b></p> <p>Describe how you must behave to complete the subtasks</p> <hr/> <p>Identify the skills necessary for interacting with other people in order to complete the subtasks</p>

## Subtasks

## Knowledge

- 24 7080.1655 Subp.6
- 25 7080.1655 Subp.7
- 26 7080.1655 Subp.8.A
- 27 7080.1655 Subp.8.B
- 28 7080.1655 Subp.8.C
- 29 7080.1655 Subp.9
- 30 7080.1750 Subp.1
- 31 7080.2150 Subp.2.B
- 32 7080.2150 Subp.2.C
- 33 7080.2150 Subp.3.A
- 34 7080.2150 Subp.3.B
- 35 7080.2150 Subp.3.D(2)
- 36 7080.2150 Subp.3.G
- 37 7080.2150 Subp.3.J
- 38 7080.2150 Subp.3.K
- 39 7080.2200
- 40 7080.2230 Subp.1.A
- 41 7080.2230 Subp.1.B
- 42 7080.2230 Subp.1.C
- 43 7080.2230 Subp.1.D
- 44 7080.2230 Subp.1.E
- 45 7080.2230 Subp.2.A
- 46 7080.2230 Subp.2.B
- 47 7080.2230 Subp.2.C
- 48 7080.2230 Subp.3.A
- 49 7080.2230 Subp.3.B
- 50 7080.2230 Subp.3.C
- 51 7080.2230 Subp.3.D
- 52 7080.2230 Subp.3.E
- 53 7080.2230 Subp.3.G
- 54 7080.2230 Subp.3.H

### Learning Objectives

- 1 Understand how linear loading rate affects design

## Interpersonal Skills

2 Describe the difference between distribution area, absorption area and finished landscaped area



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## Subsurface Sewage Treatment System Professional Need-to-Know: Basic Designer

### 4. Design Mound Treatment System

	List sequenced order of steps to complete the master task	Identify knowledge necessary to complete the subtasks <b>MPCA Requirements</b>	Attitudes	Describe how you must behave to complete the subtasks
a	Determine Whether Selected Distribution Media is Registered for Use for Mounds in MN	1 7080.1500 Subp.3		
b	If Not Registered, Apply for a Product Development Permit	2 7080.1645 Subp.4		
c	Complete OSTP Mound Design Worksheet	3 7080.1645 Subp.7		
i	Record estimated or measured flow	4 7080.1645 Subp.8.A		
ii	Record septic tank liquid volumes	5 7080.1645 Subp.8.B		
iii	Record soil evaluation data	6 7080.1645 Subp.8.C		
iv	Calculate distribution media layer dimensions	7 7080.1645 Subp.8.D		
1	Calculate required area of distribution media	8 7080.1645 Subp.8.E		
2	Calculate distribution media width	9 7080.1645 Subp.8.F		
3	Calculate distribution media length	10 7080.1655 Subp.1		
v	Calculate distribution media volume	11 7080.1655 Subp.2.A		
vi	Calculate absorption width	12 7080.1655 Subp.2.B		
vii	If landslope is >1%	13 7080.1655 Subp.2.C		
1	Calculate downslope absorption width	14 7080.1655 Subp.2.D		
2	Calculate mound size	15 7080.1655 Subp.2.E		
-	Calculate upslope dimensions	16 7080.1655 Subp.2.F		
-	Calculate downslope dimensions	17 7080.1655 Subp.2.G		
viii	If landslope is <= 1%	18 7080.1655 Subp.3.A		
1	Calculate absorption width	19 7080.1655 Subp.3.B		
2	Calculate minimum mound size	20 7080.1655 Subp.3.C		
viii	Record Certified Statement	21 7080.1655 Subp.3.D		
ix	Calculate estimated sand volume	22 7080.1655 Subp.4		
d	Determine depth and material type for cover	23 7080.1655 Subp.5		
e	Design inspection pipes	24 7080.1655 Subp.6		

## Subtasks

## Knowledge

- 25 7080.1655 Subp.7
- 26 7080.1655 Subp.8.A
- 27 7080.1655 Subp.8.B
- 28 7080.1655 Subp.8.C
- 29 7080.1655 Subp.9
- 30 7080.1750 Subp.1
- 31 7080.2150 Subp.2.B
- 32 7080.2150 Subp.2.C
- 33 7080.2150 Subp.3.A
- 34 7080.2150 Subp.3.B
- 35 7080.2150 Subp.3.D(2)
- 36 7080.2150 Subp.3.F
- 37 7080.2150 Subp.3.G
- 38 7080.2150 Subp.3.J
- 39 7080.2150 Subp.3.K
- 40 7080.2200
- 41 7080.2220 Subp.1.A
- 42 7080.2220 Subp.1.B
- 43 7080.2220 Subp.1.C
- 44 7080.2220 Subp.1.D
- 45 7080.2220 Subp.1.E
- 46 7080.2220 Subp.2.A
- 47 7080.2220 Subp.2.B
- 48 7080.2220 Subp.2.C
- 49 7080.2220 Subp.3.A
- 50 7080.2220 Subp.3.B(1)
- 51 7080.2220 Subp.3.B(2)
- 52 7080.2220 Subp.3.B(3)
- 53 7080.2220 Subp.3.C
- 54 7080.2220 Subp.3.D
- 55 7080.2220 Subp.3.E
- 56 7080.2220 Subp.3.F
- 57 7080.2220 Subp.3.G
- 58 7080.2220 Subp.3.M

Identify the skills necessary for interacting with other people in order to complete the subtasks

- 59 7080.2220 Subp.3.N
- 60 7080.2220 Subp.3.O
- 61 7080.2220 Subp.3.P
- 62 7080.2220 Subp.3.Q
- 63 7080.2220 Subp.3.R
- 64 7080.2220 Subp.3.S
- 65 7080.2220 Subp.3.U

**Learning Objectives**

- 1 Describe the difference between distribution area, absorption area, and finished landscape area

## 1. Design Building Sewer

<b>Subtasks</b>	List sequenced order of steps to complete the master task	<b>Knowledge</b>	Identify knowledge necessary to complete the subtasks	<b>Attitudes</b>	Describe how you must behave to complete the subtasks
	<ol style="list-style-type: none"> <li>1 Determine setbacks</li> <li>2 Determine slope</li> <li>3 Adjust design to prevent system freezing</li> <li>4 Perform air test</li> </ol>		<p><b>MPCA Requirements</b></p> <ol style="list-style-type: none"> <li>1 7080.1500 Subp.3</li> <li>2 7080.2000 Subp.L</li> <li>3 7080.2150 Subp.2.B</li> <li>4 7080.2150 Subp.2.C</li> <li>5 Minnesota Rules, Chapter 4715</li> </ol> <p><b>Learning Objectives</b></p> <ol style="list-style-type: none"> <li>1 Identify setbacks</li> <li>2 Describe causes for system freezing</li> <li>3 Describe procedures to prevent system freezing</li> </ol>		Identify the skills necessary for interacting with other people in order to complete the subtasks
<b>Interpersonal Skills</b>				<b>Attitudes</b>	

2. Design Collection System

<b>Subtasks</b>	List sequenced order of steps to complete the master task	<b>Knowledge</b>	Identify knowledge necessary to complete the subtasks	<b>Attitudes</b>	Describe how you must behave to complete the subtasks
			<p><b>MPCA Requirements</b></p> <ol style="list-style-type: none"> <li>1 7080.1500 Subp.3</li> <li>2 7080.2150 Subp.2.B</li> <li>3 7080.2150 Subp.2.C</li> <li>4 Minnesota Rules, Chapter 4715</li> </ol> <p><b>Learning Objectives</b></p>		<b>Interpersonal Skills</b>



# Subsurface Sewage Treatment System Professional Need-to-Know: Basic Designer

## 1. Design Supply Pipe to Distribution System

<b>Subtasks</b>	List sequenced order of steps to complete the master task	<b>Knowledge</b>	Identify knowledge necessary to complete the subtasks	<b>Attitudes</b>	Describe how you must behave to complete the subtasks
			<p><b>MPCA Requirements</b></p> <ol style="list-style-type: none"> <li>1 7080.1500 Subp.3</li> <li>2 7080.1750 Subp.1</li> <li>3 7080.2050 Subp.1</li> <li>4 7080.2050 Subp.2.A</li> <li>5 7080.2050 Subp.2.B(1)</li> <li>6 7080.2050 Subp.2.B(2)</li> <li>7 7080.2050 Subp.2.B(3)</li> <li>8 7080.2050 Subp.2.B(4)</li> <li>9 7080.2050 Subp.2.B(5)</li> <li>10 7080.2050 Subp.2.B(7)</li> <li>11 7080.2050 Subp.2.B(8)</li> <li>12 7080.2050 Subp.2.B(9)</li> <li>13 7080.2050 Subp.2.C</li> <li>14 7080.2050 Subp.2.D</li> <li>15 7080.2150 Subp.2.B</li> <li>16 7080.2150 Subp.2.C</li> </ol> <p><b>Learning Objectives</b></p> <ol style="list-style-type: none"> <li>1 Describe causes for system freezing</li> <li>2 Describe procedures to prevent system freezing</li> </ol>		<b>Interpersonal Skills</b>



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# Subsurface Sewage Treatment System Professional Need-to-Know: Basic Designer

## 2. Design Gravity Distribution System

<b>Subtasks</b>	List sequenced order of steps to complete the master task	<b>Knowledge</b>	Identify knowledge necessary to complete the subtasks	<b>Attitudes</b>	Describe how you must behave to complete the subtasks
			<p><b>MPCA Requirements</b></p> <ol style="list-style-type: none"> <li>1 7080.1500 Subp.3</li> <li>2 7080.1750 Subp.1</li> <li>3 7080.2050 Subp.3.A</li> <li>4 7080.2050 Subp.3.B(1)</li> <li>5 7080.2050 Subp.3.B(2)</li> <li>6 7080.2050 Subp.3.B(3)</li> <li>7 7080.2050 Subp.3.B(4)</li> <li>8 7080.2050 Subp.3.B(5)</li> <li>9 7080.2050 Subp.3.B(6)</li> <li>10 7080.2050 Subp.3.C</li> <li>11 7080.2050 Subp.3.D(1)</li> <li>12 7080.2050 Subp.3.D(2)</li> <li>13 7080.2050 Subp.3.D(3)</li> <li>14 7080.2050 Subp.3.D(4)</li> <li>15 7080.2050 Subp.3.D(5)</li> <li>16 7080.2050 Subp.3.D(6)</li> <li>17 7080.2050 Subp.3.E(1)</li> <li>18 7080.2050 Subp.3.E(2)</li> <li>19 7080.2050 Subp.3.E(3)</li> <li>20 7080.2050 Subp.3.E(4)</li> <li>21 7080.2150 Subp.2.B</li> <li>22 7080.2150 Subp.2.C</li> </ol> <p><b>Learning Objectives</b></p> <ol style="list-style-type: none"> <li>1 Describe how various distribution media affects design</li> <li>2 List components of gravity distribution system</li> </ol>		<b>Interpersonal Skills</b>



Minnesota Pollution Control Agency

# Subsurface Sewage Treatment System Professional Need-to-Know: Basic Designer

## 3. Design Pressure Distribution System

	List sequenced order of steps to complete the master task		Identify knowledge necessary to complete the subtasks		Describe how you must behave to complete the subtasks
	<p>If Level, Complete OSTP Pressure Distribution System Design Worksheet</p> <ol style="list-style-type: none"> <li>a Select number of perforated laterals</li> <li>b Select perforation spacing</li> <li>c Calculate pipe length</li> <li>d Calculate the number of spaces between perforations</li> <li>e Select perforation size</li> <li>f Calculate the number of perforations per lateral</li> <li>g Calculate the total number of perforations</li> <li>h Calculate area per perforation</li> <li>i Determine required flow rate</li> <li>j Determine minimum pipe size</li> <li>i Manifold on end</li> <li>ii Center manifold</li> <li>k Record Certified Statement</li> </ol> <p>2 If not level, Choose method for even distribution</p> <p>Complete OSTP Non-Level Pressure Distribution Worksheet</p> <ol style="list-style-type: none"> <li>i Order laterals by elevation</li> <li>ii Calculate change in elevation over the laterals</li> <li>iii Calculate the total head</li> <li>iv Calculate pressure head for each lateral</li> <li>v Determine flow rate per hold</li> <li>vi Calculate flow in gallons per minute for lateral at highest elevation</li> </ol>	<p>Identify knowledge necessary to complete the subtasks</p> <p><b>MPCA Requirements</b></p> <ol style="list-style-type: none"> <li>1 7080.1500 Subp.3</li> <li>2 7080.1750 Subp.1</li> <li>3 7080.2050 Subp.4.A(1)</li> <li>4 7080.2050 Subp.4.A(2)</li> <li>5 7080.2050 Subp.4.A(3)</li> <li>6 7080.2050 Subp.4.A(4)</li> <li>7 7080.2050 Subp.4.A(5)</li> <li>8 7080.2050 Subp.4.A(6)</li> <li>9 7080.2050 Subp.4.A(7)</li> <li>10 7080.2050 Subp.4.B</li> <li>11 7080.2050 Subp.4.C</li> <li>12 7080.2050 Subp.4.D</li> <li>13 7080.2050 Subp.4.E</li> <li>14 7080.2050 Subp.4.F</li> <li>15 7080.2050 Subp.4.G</li> <li>16 7080.2050 Subp.4.H</li> <li>17 7080.2050 Subp.4.I</li> <li>18 7080.2050 Subp.4.J</li> <li>19 7080.2150 Subp.2.B</li> <li>20 7080.2150 Subp.2.C</li> </ol>	<b>Attitudes</b>	Describe how you must behave to complete the subtasks	Identify the skills necessary for interacting with other people in order to complete the subtasks

## Subtasks

- vii Calculate the gallons per minute per foot for lateral at highest elevation
- viii Balance flows for other lengths, spacing or size
- ix Calculate total gpm for system
- x Summarize design
- xi Record Certified Statement
- b Design Split system
- c Design Valved system
- 3 Design Cleanouts
- 4 Contract licensed electrician to approve electrical wiring / control panel design

## Knowledge

- 1
- 2

### Learning Objectives

- Describe how various distribution media affects design
- List components of pressure distribution system

## Interpersonal Skills

4. Design Pump Specifications

Subtasks	List sequenced order of steps to complete the master task	Knowledge	Attitudes	Describe how you must behave to complete the subtasks
	<p>Complete OSTP Pump Selection Worksheet</p> <ol style="list-style-type: none"> <li>a Determine pump capacity</li> <li>b Determine total dynamic head               <ol style="list-style-type: none"> <li>i Determine elevation difference between pump and point of discharge</li> <li>ii Adjust for distribution type or special head requirement</li> <li>iii Calculate friction loss in plastic pipe</li> </ol> </li> <li>c Record Pump Specifications</li> <li>d Record Certified Statement</li> </ol>	<p>Identify knowledge necessary to complete the subtasks</p> <p><b>MPCA Requirements</b></p> <ol style="list-style-type: none"> <li>1 7080.1500 Subp.3</li> <li>2 7080.1750 Subp.1</li> <li>3 7080.2100 Subp.1</li> <li>4 7080.2100 Subp.3.A</li> <li>5 7080.2100 Subp.3.B</li> <li>6 7080.2100 Subp.3.C</li> <li>7 7080.2100 Subp.4.A</li> <li>8 7080.2100 Subp.4.B</li> <li>9 7080.2100 Subp.4.C</li> <li>10 7080.2100 Subp.4.D</li> </ol> <p><b>Learning Objectives</b></p> <ol style="list-style-type: none"> <li>1 Understand types &amp; applications of different kinds of pumps</li> <li>2 Interpret a pump curve</li> </ol>		
				<p>Describe how you must behave to complete the subtasks</p> <hr/> <p>Identify the skills necessary for interacting with other people in order to complete the subtasks</p>

Interpersonal Skills



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### 5. Size Dosing Chamber & Determine Dosing Volumes

	<p>List sequenced order of steps to complete the master task</p>	<p>Identify knowledge necessary to complete the subtasks</p>	<p>Describe how you must behave to complete the subtasks</p>	
tasks	<p>Complete OSTP Dosing Chamber Sizing without Timer Worksheet</p> <p>Record tank area provided by tank manufacturer</p> <p>Calculate gallons per inch</p> <p>Calculate total tank volume</p> <p>Calculate gallons to cover elevated pump with 2-3 inches of water</p> <p>Calculate total pumpout volume</p> <p>Adjust total pumpout volume for drainback</p> <p>Calculate float separation distance</p> <p>Calculate volume for alarm</p> <p>Calculate total gallons</p> <p>Calculate total tank depth</p> <p>Calculate reserve capacity</p> <p>Record certified statement</p>	<p><b>MPCA Requirements</b></p> <p>1 7080.1500 Subp.3</p> <p>2 7080.1750 Subp.1</p> <p>3 7080.2100 Subp.1</p> <p>4 7080.2100 Subp.2.A</p> <p>5 7080.2100 Subp.2.C</p> <p>6 7080.2100 Subp.2.D</p> <p>7 7080.2100 Subp.2.E</p> <p>8 7080.2100 Subp.2.F</p> <p><b>Learning Objectives</b></p> <p>1 Calculate total tank volume</p> <p>2 Calculate tank area</p> <p>3 Calculate pump rate</p> <p>4 Describe how surge volumes affect dosing chamber sizing</p>	Attitudes	
	<p>Complete OSTP Dosing Chamber Sizing with Timer Worksheet</p> <p>Record tank area provided by tank manufacturer</p> <p>Calculate gallons per inch</p> <p>Calculate recommended capacity</p> <p>Calculate total tank volume</p> <p>Calculate gallons to cover elevated pump with 2-3 inches of water</p> <p>Calculate total usable tank volume</p> <p>Calculate total pumpout volume</p> <p>Adjust total pumpout volume for drainback</p> <p>Record pump rate from design</p> <p>Calculate timer ON setting</p> <p>Calculate timer OFF setting</p>	ge		<p>Describe how you must behave to complete the subtasks</p> <hr/> <p>Identify the skills necessary for interacting with other people in order to complete the subtasks</p>

**Subtasks**

- f Record certified statement
- 3 Position maintenance access
- 4 Design effluent screen, as required
- 5 Design alarm, as required
- 6 Design insulation

**Knowledge**

**Interpersonal Skills**



H. Determine Site Layout

<b>Subtasks</b>	List sequenced order of steps to complete the master task	<b>Knowledge</b>	Identify knowledge necessary to complete the subtasks	<b>Attitudes</b>	Describe how you must behave to complete the subtasks
	<ol style="list-style-type: none"> <li>1 Position building sewer</li> <li>2 Position septic tank</li> <li>3 Position supply pipe</li> <li>4 Position distribution system</li> <li>5 Position soil treatment system</li> <li>6 Identify Elevations</li> <li>7 Identify Setbacks</li> <li>8 Describe System Flowline</li> <li>9 Design diversions for surface water</li> <li>10 Adjust layout for contour</li> <li>11 Identify access route for maintenance</li> </ol>		<p style="text-align: center;"><b>MPCA Requirements</b></p> <ol style="list-style-type: none"> <li>1 7080.1750 Subp.1</li> <li>2 7080.2000 Subp.A</li> <li>3 7080.2000 Subp.B</li> <li>4 7080.2000 Subp.C</li> <li>5 7080.2000 Subp.D</li> <li>6 7080.2000 Subp.E</li> <li>7 7080.2000 Subp.F</li> <li>8 7080.2000 Subp.J</li> <li>9 7080.2000 Subp.K</li> </ol>  <p>7080.2150 Subp.2.F 7080.2150 Subp.2.G</p> <p style="text-align: center;"><b>Learning Objectives</b></p> <ol style="list-style-type: none"> <li>1 Describe how surface water should be diverted for different system types</li> </ol>		<b>Interpersonal Skills</b>



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## VI. Write Management Plan

Subtasks	List sequenced order of steps to complete the master task	Knowledge	Attitudes Interpersonal Skills
	Complete OSTP Septic System Management Plan for In-Ground or Mound Systems Worksheet 1 a Record Property Owner Information b Record System Designer Information Record Permitting Authority & Permit Information c Record designer's recommended service interval d e Record Dwelling Type specifications f Record Well Construction specifications g Record Septic Tank specifications h Record Soil Treatment Area specifications i Obtain client signature j Record designer's signature k Obtain permitting authority's signature	Identify knowledge necessary to complete the subtasks  <b>MPCA Requirements</b> 1 7080.1750 Subp.1 2 7082.0600 Subp.1.A 3 7082.0600 Subp.1.B(1) 4 7082.0600 Subp.1.B(2) 5 7082.0600 Subp.1.B(3) 6 7082.0600 Subp.1.B(4) 7 7082.0600 Subp.1.B(5) 8 7082.0600 Subp.1.B(6) 9 7082.0600 Subp.1.C 10 7080.2450 Subp.2.A 11 7080.2450 Subp.2.B  <b>Learning Objectives</b>	Describe how you must behave to complete the subtasks  Identify the skills necessary for interacting with other people in order to complete the subtasks 1 Communicate management plan to owner



VII. Complete Design Report

<b>Subtasks</b>	List sequenced order of steps to complete the master task	<b>Knowledge</b>	Identify knowledge necessary to complete the subtasks	<b>Attitudes</b>	Describe how you must behave to complete the subtasks
	<ol style="list-style-type: none"> <li>1 Report drawings</li> <li>2 Report flows</li> <li>3 Report system component sizing and calculations</li> <li>4 Report hydraulic loading rates</li> <li>5 Report organic loading rates</li> <li>6 Report setbacks</li> <li>7 Report construction considerations</li> <li>8 Report management plans</li> <li>9 Compete certified statement</li> </ol>		<ol style="list-style-type: none"> <li>1 <b>MPCA Requirements</b></li> <li>1 7080.1750 Subp.1</li> <li>2 7080.1750 Subp.2</li> <li>3 7080.2430</li> </ol> <p><b>Learning Objectives</b></p>		<b>Interpersonal Skills</b>

