

Advanced Designer and Inspector Task Analysis		
I.	Become certified as an Advanced Designer and/or Inspector	
	I.A	Complete training
	I.B	Pass certification exam
	I.C	Apply for certification
	I.D	Complete continuing education
II.	Obtain Advanced Design and/or Inspector business license	
III.	Complete preliminary site evaluation as a part of a site suitability assessment	
	III.A	Communicate with client about desires and preferences
	III.B	Contact local unit of government
	III.B.1	Obtain legal description of property, including Township, Range, and Section
	III.B.2	Determine property lines, easements, and proposed or existing improvements
	III.B.3	Determine location and status of proposed or existing water supply wells and pipes in vicinity
	III.B.4	Determine requirements and scope of preliminary and field evaluation activities and design report submittal and review process
	III.C	Determine SSTS flow
	III.C.1	Estimate flow for SSTS serving existing dwelling or group of dwellings
	III.C.2	Estimate flow for SSTS serving new developments
	III.C.3	Estimate flow for SSTS serving other establishments
	III.C.4	Determine flow for SSTS serving other establishments using measured flow
	III.D	Determine anticipated effluent concentrations of BOD, TSS, & FOG and characterize waste strength
	III.D.1	Assess waste suitability (domestic, non-domestic - suitable for discharge into soil, non-domestic - not suitable for discharge into soil, hazardous)
	III.D.2	Identify challenging waste streams (inhibitors to treatment)
	III.D.3	Determine necessity for source segregation due to waste characteristics
	III.E	Complete preliminary evaluation activities
	III.E.1	Determine applicable setbacks
	III.E.2	Locate the system(s) and the surrounding one-mile area on a USGS quadrangle map
	III.E.3	Assess risk due to aquifer sensitivity to Nitrogen
	III.E.4	Asses risk due to surface water impact from phosphorus
	III.E.5	Determine permit type based on flow and Class V requirements
	III.E.5.1	Confirm authorization to perform advanced design/inspection activities
	III.F	Assess total risk based on preliminary site report
IV.	Complete field evaluation as a part of site suitability assessment	
	IV.A	Contact Gopher One and locate utilities
	IV.B	Investigate property
	IV.B.1	Establish lot lines to satisfaction of owner or local unit of government
	IV.B.2	Identify, locate, and mark improvements, setbacks, & easements
	IV.B.3	Investigate site for initial soil treatment area and reserve land area
	IV.C	Identify surface features and soils characteristics for initial and reserve land area soil treatment area location, size, and depth
	IV.C.1	Provide general evaluation of soil dispersal area: geomorphic description, current and past land use
	IV.C.2	Identify the uniformity of the soil over the site
	IV.C.3	Conduct hydraulic conductivity tests for MSTs
	IV.C.3.1	Use double ring infiltrometer
	IV.C.3.2	Use permeameter
	IV.C.3.3	Use other acceptable and/or necessary testing protocol
	IV.C.4	Determine soil organic loading rate estimate
	IV.C.5	Determine loading rate & absorption area size based on the more conservative estimate of hydraulic or organic loading needs

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	IV.C.6	Assess site suitability	
		IV.C.6.1	Determine acceptable contour loading rate (CLR)
		IV.C.6.2	Identify possible system configurations
IV.D	Evaluate system(s) flow		
	IV.D.1	Install a method of measuring daily flow for at least 90 days for an other establishment	
IV.E	Assess waste strength		
	IV.E.1	Measure waste strength in acceptable manner	
V.	Conduct pre-design		
	V.A	Prepare and submit soil and site report to local unit of government	
		V.A.1	Prepare detailed site map with two-foot contours
			V.A.1.1 Define benchmark, location and elevations of all soil pits, borings, hydraulic tests, limiting condition, proposed system bottom depth, and system site boundaries
		V.A.2	Prepare and submit all preliminary and field evaluation documentation to local unit of government
		V.A.3	Document any difficulties encountered during site evaluation
		V.A.4	Assess risk (obstacles to effective treatment) based on preliminary and field evaluation report
			V.A.4.1 Document potential for groundwater mounding
			V.A.4.2 Document potential for surface water impact from phosphorus
			V.A.4.3 Document potential for groundwater impact from nitrogen
	V.B	Determine if a variance is necessary and warranted	
	V.C	Interpret site and soil information for suitability of MSTs siting, design, and construction	
	V.D	Communicate with client about suitable system options	
VI.	Create design report		
	VI.A	Use preliminary and site evaluation to determine advanced design specifications	
		VI.A.1	Use depth to limiting layer in conjunction with treatment level to choose treatment system
			VI.A.1.1 Account for rock fragments
			VI.A.1.2 Identify if reduced vertical separation is necessary and warranted
		VI.A.2	Use texture and structure or percolation rate in conjunction with treatment level to determine absorption area (hydraulic) loading rate for ISTS
			VI.A.2.1 Identify if increased hydraulic loading rate is necessary and warranted
		VI.A.3	Use texture and structure along with hydraulic tests in conjunction with treatment level to determine absorption area (hydraulic) loading rate for MSTs
			VI.A.3.1 Identify if increased hydraulic loading rate is necessary and warranted
		VI.A.4	Use texture and structure in addition to hydraulic conductivity test results to determine acceptable system geometry (Contour Loading Rate)
		VI.A.5	Determine final flow values for system(s) and components
		VI.A.6	Define SSTS classification and type
		VI.A.7	Determine appropriate application of design considerations to mitigate risks
			VI.A.7.1 Specify design requirements to mitigate non-domestic waste sources
			VI.A.7.2 Specify design requirements to mitigate high-strength waste
			VI.A.7.3 Specify design requirements to mitigate variation in flow
			VI.A.7.4 Specify design requirements to mitigate high risk site conditions
			VI.A.7.5 Specify design requirements to mitigate high risk soil conditions
			VI.A.7.6 Specify design requirements to mitigate small lot conditions
			VI.A.7.7 Specify design requirements to mitigate groundwater mounding that interferes with treatment
			VI.A.7.8 Specify design requirements to mitigate conditions that threaten surface water (P removal)
			VI.A.7.9 Specify design requirements to mitigate sensitive aquifers (N removal)
	VI.B	Identify special design parameters for graywater, Type II & Type III systems with use of registered Type IV products	
		VI.B.1	Identify how use of a graywater system will impact design
		VI.B.2	Identify how placing a system in floodplain will impact design (Type II)
		VI.B.3	Identify how placing a system in cut, filled or compacted soils will impact design (Type III)
		VI.B.4	Identify how down-sizing a system will impact design (Type III)
		VI.B.5	Identify how placing a system in less than 12" unsaturated soil will impact design (Type III)

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VI.C	Determine design specifications for collection system		
	VI.C.1	Design collection system ≤ 2500 gpd	
		VI.C.1.1	Design STEP - septic tank effluent pressure
		VI.C.1.2	Design grinder collection
	VI.C.2	Design collection system between 2501 - 10,000 gpd	
		VI.C.2.1	Design gravity collection
		VI.C.2.2	Design gravity collection with lift stations
		VI.C.2.3	Design STEG - septic tank effluent gravity collection system
		VI.C.2.4	Design STEP collection system
		VI.C.2.5	Design grinder collection system
	VI.C.3	Design for inflow and infiltration (I&I)	
VI.D	Determine design specifications for tank(s) using MN Rules Chapter 7080-7081, registered sewage tanks list, and design guidance documentation		
	VI.D.1	Design septic tank size and features per manufacturer recommendation and product registration guidance	
	VI.D.2	Specify septic tank and stilling tank design requirements for SSTs between 2501 and 10,000 gpd	
	VI.D.3	Specify storage capacity design requirements for SSTs between 2501 and 10,000 gpd using flow equalization	
	VI.D.4	Specify recirculation tank design requirements	
	VI.D.5	Specify grease trap design requirements	
	VI.D.6	Specify pump tank(s) design requirements for SSTs between 2501 and 10,000 gpd	
	VI.D.7	Calculate potential for tank flotation and specify restraint options when appropriate	
	VI.D.8	Specify tank testing and management requirements	
VI.E	Determine design specifications for treatment system		
	VI.E.1.	Choose registered pretreatment device most suited for the application	
		VI.E.1.1	Properly incorporate proprietary registered treatment product into treatment train based on understanding of design principles and applications
		VI.E.1.2	Design single pass sand filter between 2501 and 10,000 gpd per MPCA design guidance and RSG
		VI.E.1.3	Design recirculating sand filter between 2501 and 10,000 gpd per MPCA design guidance and RSG
		VI.E.1.4	Specify installation requirements per manufacturer and product registration guidance
		VI.E.1.5	Understand design principles and site conditions in which constructed wetlands are appropriate
	VI.E.2	Design trench treatment system with Type IV pretreatment between 2501 and 10,000 gpd using registered distribution media	
	VI.E.3	Design bed treatment system with Type IV pretreatment between 2501 and 10,000 gpd using registered distribution media	
	VI.E.4	Design at-grade treatment System with Type IV pretreatment between 2501 and 10,000 gpd using registered distribution media	
	VI.E.5	Design mound treatment system with Type IV pretreatment between 2501 and 10,000 gpd using registered distribution media	
	VI.E.6	Understand design principles and site conditions in which drip distribution is appropriate	
VI.F	Determine design specifications for groundwater mound height monitoring for MSTs		
VI.G	Determine design specifications for pump & distribution system		
	VI.G.1	Design supply pipe to registered treatment product and distribution system	
	VI.G.2	Design pump specifications & dosing volumes	
		VI.G.2.1	Design demand dosed distribution
		VI.G.2.2	Design timed dose distribution
		VI.G.2.3	Design for flow equalization
		VI.G.2.4	Design specifications for multiple pumps
	VI.G.3	Design uniform distribution system	
		VI.G.3.1	Design level pressure distribution
		VI.G.3.2	Design non-level pressure distribution
		VI.G.3.3	Design flow-splitting/zoned distribution system
		VI.G.3.4	Design loading and resting schedule for cells and zones within distribution system based on hydraulic and organic loading rates

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VI.H	Determine site layout		
	VI.H.1	Specify component elevations and locations on site map relative to defined benchmark	
	VI.H.2	Verify chosen contour loading rate and system geometry	
VI.I	Complete and submit design report		
	VI.I.1	Write and submit management plan for all systems	
	VI.I.2	Write and submit operation and maintenance manual for all MSTs	
	VI.I.3	Confirm applicable rules and regulation compliance with certified signature	
	VI.I.4	Submit all required design documents to local authority for review, revision, and approval	
	VI.I.5	Confirm operating permit requirements as written by permitting authority	
		VI.I.5.1	Ensure design specifications allow for the completion of required sampling
VI.J	Provide construction oversight		
	VI.J.1	Observe critical periods of MSTs construction	
	VI.J.2	Prepare and submit report of observed MSTs construction activities prior to final inspection	
	VI.J.3	Provide start-up oversight	
VII.	Conduct new and existing Advanced Inspector activities		
VII.A	Complete new system Inspector activities		
	VII.A.1	Review design report for accuracy and completeness	
		VII.A.1.1	Request changes prior to permit issuance
		VII.A.1.2	Approve report and issue construction permit
	VII.A.2	Conduct new system inspection	
		VII.A.2.1	Use locally developed or U of M New Inspection Report Form
		VII.A.2.2	Issue Certificate of Compliance or require changes to meet compliance
	VII.A.3	Develop operating permit required management activities and frequencies	
		VII.A.3.1	Define reporting requirements
		VII.A.3.2	Verify system meets operating permit requirements
		VII.A.3.3	Confirm permit holder is aware of responsibilities and renewal process
	VII.A.4	Maintain records with local unit of government in a manner that facilitates compliance management	
VII.B	Conduct existing system inspection		
	VII.B.1	Complete MPCA Existing SSTS Inspection Form	
	VII.B.2	Complete all local requirements	
	VII.B.3	Issue Certificate of Compliance or Notice of Noncompliance	
	VII.B.4	Resolve soil disputes per locally defined procedures	
	VII.B.5	Submit inspection report to local program and system owner within 15 days of inspection	
VII.C	Confirm applicable rules and regulation compliance with certified signature		