Common Omissions-Mistakes on Plans:

Ohio EPA Southeast District Office
Logan, Ohio 43138
November 22, 2005
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Site Plan:

- Inadequate site survey, e.g. no topographic contours
- Locations of buildings-parking- entrance, etc. not confirmed with owner
- Building location, elevations, building sewer elevations not properly established. (Can gravity service really be achieved without the septic tank and/or leach field being several feet deep?)
- Parking lots not shown-or not shown as large as planned by owner

- Water lines not shown on the plans
- Site property lines not shown- many other important details not shown
- Location of soil evaluation pits/borings not shown
- Plan does not show that site for the soil absorption system (SAS) has been disturbed or is in fill
- If site is undeveloped plans must show existing topographic contours and final contours - need to coordinate with site designer/architect
- Area for the SAS must be protected. This should be noted on the site development plan The design engineer need to communicate with the owner and his architect about this

General:

- No soil evaluation by soils professional- dependence on county soil survey
- No engineering report explaining basis for design: basis for design flows; basis for selection of treatment units; basis for sizing units; basis for selection of SAS to be used and basis for sizing it
- Inadequate site evaluation- SAS put in worst area or where drainage is bad or where slopes too steep, or land has been disturbed, etc.

- Site is on reclaimed mine land-or disturbed by mining
- No detailed hydraulic profile showing building sewer and all other components
- Storm water diversions to divert runoff from soil absorption system (SAS) are not shown
- Site drainage plan not shown to divert runoff from onsite units and the SAS
- Design flows based on average long term water use records- but no consideration for peak days-weeks or factor for safety

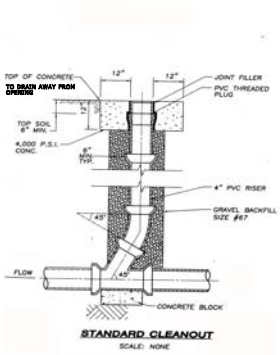
- Plans do not show any electrical service to dosing or pretreatment (plans need to show buried electrical service for future reference)
- Plans do not specify where electrical service will come from
- For replacement or expansion- existing treatment/disposal systems are not shown on plans

- Specifications for equipment and materials and installation, etc. not included and these should be on the plans instead of in a separate document or attached to the engineering report or the application
- Plans should not say use "OEPA Approved Sand or Septic Tanks, etc.". OEPA does not pre-approve any tanks or sand or any equipment or treatment system
- Designer does not take into consideration how system has to be installed, e.g. mounds.

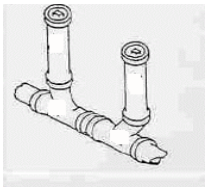
Building Sewer(s):

- No clean-out just outside building wall if one will not be provided just inside wall
- No protection of sewer if under area with traffic
- No cleanouts at change in direction
- No detail of cleanout - not protected with good support around top/cap and base

Example of Good Cleanout Detail



Two-Way Cleanout



- Cleanout not designed to allow proper-easy rodding of sewer to remove any blockage
- Bends in sewer not provided with 90 degree long sweep or two-45 degree bends
- No sewer bedding detail/specifications

Septic tank(s)/Grease Interceptors:

- Inlet and outlet piping not provided with watertight-flexible connections-preferably cast-in place watertight openings
- Two compartment septic tanks not used
- No bedding specifications for the tank
- No specifications for backfill
- No effluent filter

- No specifications for sealing tank at joints, openings, risers
- No buoyancy calculations if possibility of high water table
- Side entry into tank not used to avoid 90 degree bend in building sewer
- No specification/detail to have positive drainage away from tank-to account for settling of soil around unit

- No specifications for testing for water - tightness and structural integrity by filling the tank with water (or air test) before and after installation
- No external grease trap if business has a food service
- Use effluent filter on grease interceptors
- Cleanouts are not needed after the septic tank- but some designers provide them after any grease interceptor

Pretreatment Units (sand-media filters, ext. aeration,):

- Not sized to take into consideration high strength commercial wastewater
- For storage-flow equalization- timer controlled pump not used
- Sand filter not used after any aeration unit

Pumping/Dosing:

- Two pumps not used or if only one pump- extra pump not specified to be “on-hand”.
- No weep hole for drainback
- Not designed to allow easy-safe pump and valve removal
- No time of operation meters so flow can be measured

- Flexible-watertight connections at inlet and outlet piping not provided
- Bedding specifications
- Floatation calc. if water table may be high
- Dosing-Pumping station should have reserve storage above alarm-ideally 24 hr storage of design flow
- Details/specifications of pump station control panels not shown. Needs to rated at least NEMA 3R

- Dosing-pump stations should have redundant off float. Cost of float and added feature to control box is small compared to cost of new pump and problems created by a failed pump
- No enough detail to the necessary number of floats and float elevations in dosing chamber, e.g. the control panel should provide for high level override for pumps on timers

Flow Splitting/Distribution Box:

- Bull run type valve not used to avoid distribution box with large number of outlets
- No bedding support
- No specification for positive drainage control-to account for settling of soil around unit

Conventional Soil Absorption Systems:

- Pretreatment not provided for high strength sewage
- Inadequate isolation from limiting condition (seasonal water table or bedrock)
- No good specifications for installation- see recommended OEPA specifications
- .o specification for gravel

- Gravelless systems not used in very poor soils
- SAS trenches do not follow contours
- No specification to divert surface runoff away from SAS
- Serial distribution not used on sites with slope

- SAS trenches are too deep to get gravity flow from building (24 in. deep shown on plan-but site elevations show it must be much deeper)
- Dosing not used to avoid leach trenches too deep in poor soils
- No observation ports at end of each trench and port does not go down through gravel
- Curtain drain should only be installed up gradient of the SAS

- 24 inch wide trench not used for severe soils
- Loading rate of ½ gallon/lineal ft. not used for severe soil
- Dosing or pressure dist. not used if over 1000 lineal foot of leach
- Straw specified over gravel instead of geo-textile fabric

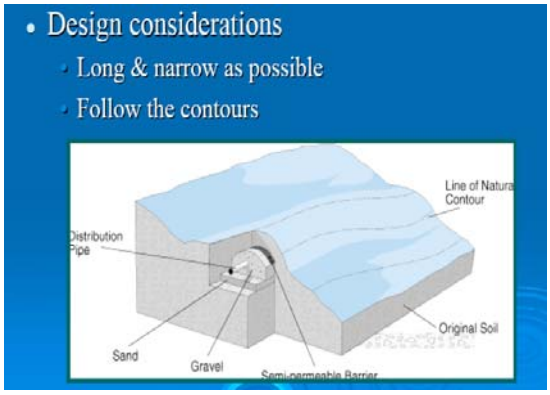
- No details of perimeter drain outlet. Can it outlet by gravity on the property?
- SAS should be designed for minimum of 400 gpd. If conv. leach lines are installed the system should be installed for a minimum or 400 gpd. If an alternative system is installed like a mound, we will not require it be sized for 400 gpd if design flows are less than 400 gpd, but room should be provided for future mounds as well as replacement. (We will consider situations where future alternative uses of the building is limited)

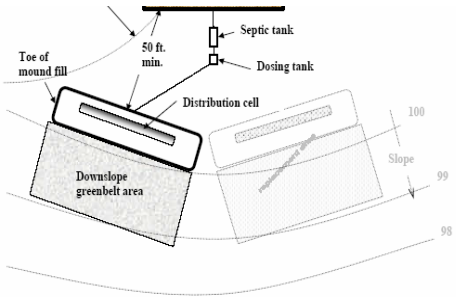
Alternative SAS (e.g. mound, LPP, drip):

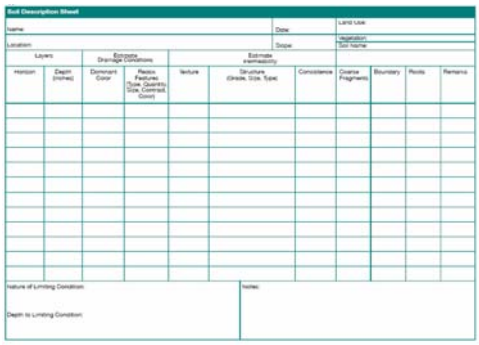
- Layout of drip lines do not take into account contours, isolation from distribution headers, spacing between zones, and other needed buffers
- Freezing problems not considered
- No specifications for good clean sand with proper specifications
- Location to obtain sand not on plans or specifications

- No engineering calculations for pressure distribution to document proper pump is specified
- No cleanouts at end of pressure dist. lines which are also used for pressure test.
- No installation specifications (installation of these systems have to be carefully specified and inspected)
- There is no evapotranspiration in Ohio- at least not during cool-wet periods when leach field is most apt to be under severe operating conditions. But shallow leach trenches generally work better than deeper trenches

- Drip and LLP systems need to have good stand of grass to reduce freezing potential. Need specs for grading, seed bed preparation, seeding, mulching to establish a good stand of grass







Soil Description Sheet

Name:					Date:			Land Use:		
Location:					Slope:			Vegetation: Soil Name:		
Layers		Estimate Drainage Conditions		Estimate Permeability						
Horizon	Depth (inches)	Dominant Color	Redox Features (Type, Quantity, Size, Contrast, Color)	Texture	Structure (Grade, Size, Type)	Consistence	Coarse Fragments	Boundary	Roots	Remarks

Instructions for Submittal of Plans

Handouts