

Wastewater Treatment Plant Operator Certification Training



Module 23 Wastewater Collection Systems Part I

This course includes content developed by the Pennsylvania Department of Environmental Protection (Pa. DEP) in cooperation with the following contractors, subcontractors, or grantees:

The Pennsylvania State Association of Township Supervisors (PSATS)
Gannett Fleming, Inc.
Dering Consulting Group
Penn State Harrisburg Environmental Training Center

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Unit 1 – Overview of Wastewater Collection Systems

Learning Objectives

- List and describe three types of collection systems.
- Compare and contrast sanitary and combined collection systems.
- Explain the appurtenances associated with wastewater collection systems.
- Describe the regulatory requirements associated with wastewater collection systems.

Types of Collection Systems

Sanitary sewer collection systems are responsible for collecting and conveying wastewater that is generated at residential dwellings and commercial and industrial buildings to the wastewater treatment plant for treatment.

Gravity

- ☐ The primary type of public sanitary sewer collection system is a gravity system. A gravity system is so named because the wastewater flows down gradient in the sewer, driven by forces of gravity.
- ☐ Various sizes of sewers are generally laid at a minimum slope to ensure open channel flow through the pipe at a minimum velocity of 2.0 feet per second. The minimum velocity is required to ensure that solids do not settle out in the sewer.
- ☐ Gravity sewers are a minimum of 8-inch diameter pipes with manhole structures located at changes in horizontal alignment and vertical slope changes. The maximum distance between manholes is 400 feet.

Low Pressure

- ❑ Low pressure sewer systems are used in areas where the use of gravity sewers is impractical due to topography or economic reasons. Low pressure systems are often found around lakes and in rolling terrain.
- ❑ Wastewater is collected on-site and pumped from a small grinder pump into a small diameter force main. The private force main discharges into a larger public force main. A check valve is used near the end of the private line to prevent wastewater in the public force main from entering the private force main. In most cases, the low pressure public force main then discharges into a public gravity collection system.
- ❑ Private force main pipes are typically 1-½ to 2-inches in diameter. Public force mains typically vary in size from 2- to 6-inches in diameter. Force mains are designed to maintain minimum velocities of 2.0 feet per second. Low pressure force mains are also used for discharge from pumping stations. Force main pipe from pumping stations typically varies from 4- to 12-inches in diameter, depending on the size of the pumps in the pumping station.

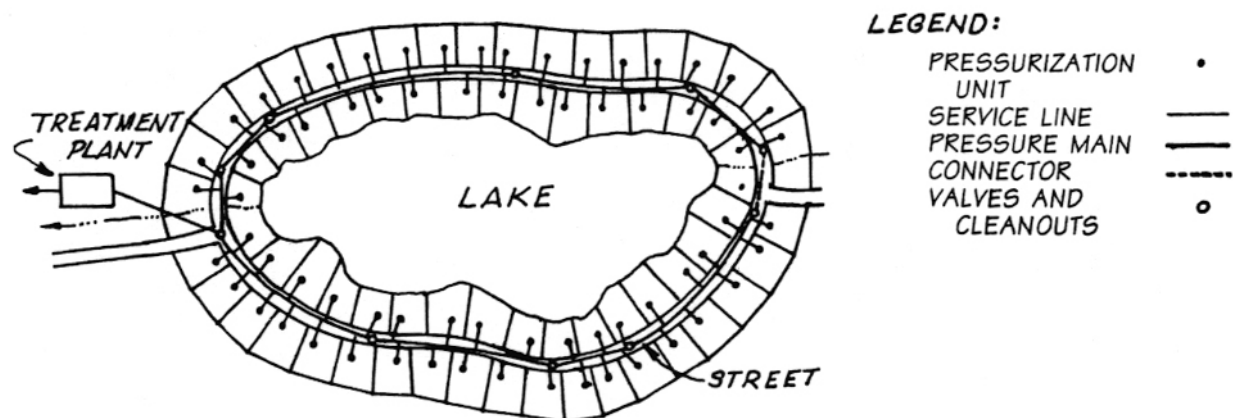


Figure 1.1 A Low Pressure Sewage System¹

Vacuum

- ❑ Vacuum collection systems are used for the same reason as low pressure systems. However, it is rare to find a vacuum collection system in use in Pennsylvania as this is a fairly new collection alternative in the United States, and operation and maintenance is more difficult than a low pressure system.
- ❑ Wastewater is collected on-site by a valve pit/sump, and a 4-inch vent is located on the service lateral between the residence and the valve pit/sump to provide air into the system. Piping connects the individual valve pit/sump and the collection tank. A vacuum station that includes vacuum pumps produces a vacuum, which transports the wastewater from the vacuum sewer lines to the treatment plant via a pressurized line.

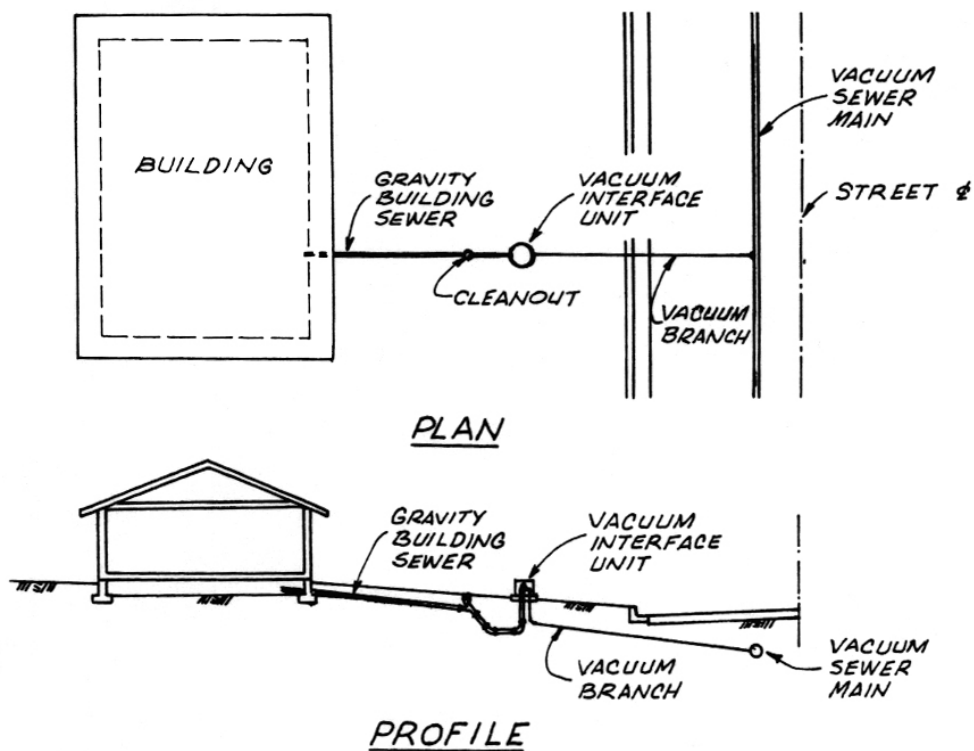


Figure 1.2 A Vacuum Collection System²

Sanitary vs. Combined Systems

- ☐ A sanitary system can be either a separate sewer system or a combined sewer system.
- ☐ A separate sewer system carries sanitary wastewater with minor quantities of ground, storm and surface waters that are not intentionally admitted.
- ☐ A combined sewer conveys both runoff and storm water from inlets along the streets and wastewater. The combined system is designed with overflows that discharge both storm water and wastewater to a receiving stream when the flow in the pipe exceeds the design capacity. Combined systems are not permitted in new developments.

Appurtenances



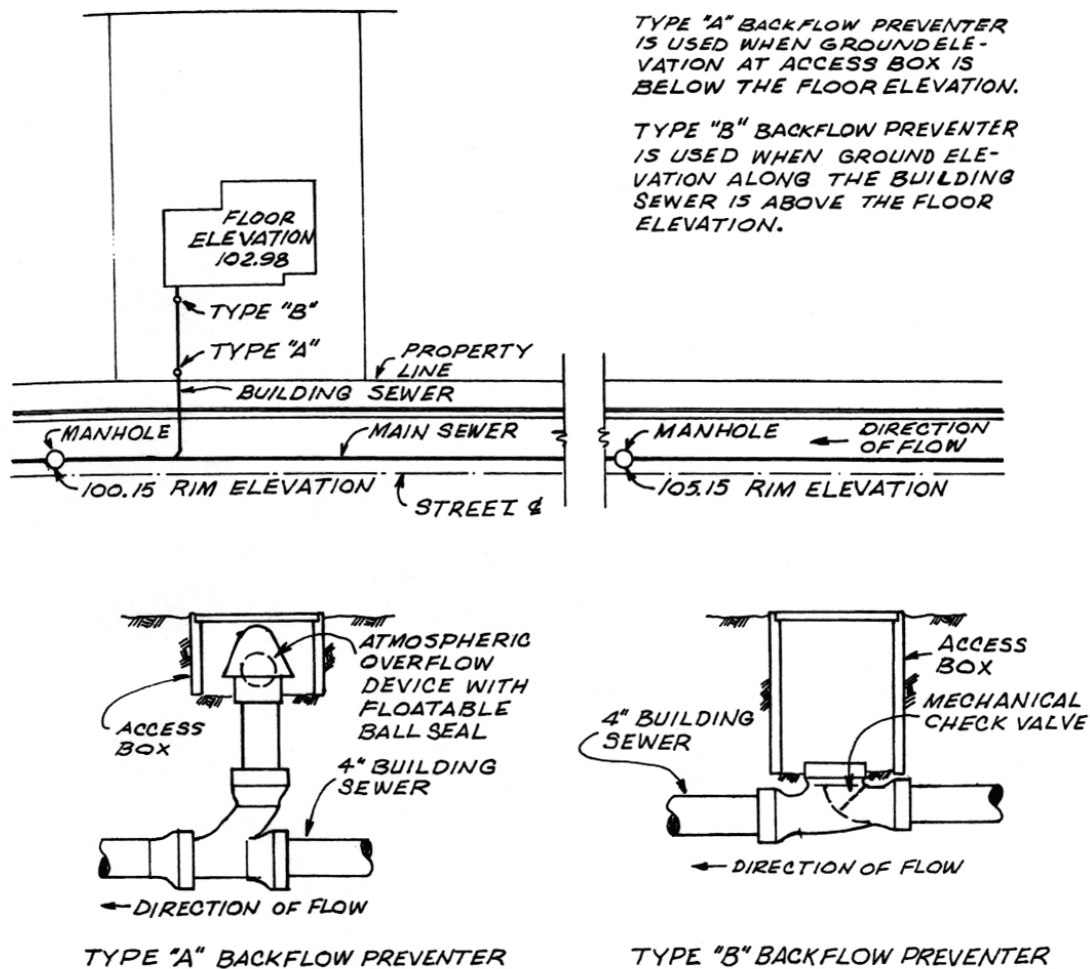
Appurtenances are machinery, appliances, structures and other parts of the main structure necessary to allow it to operate as intended, but are not considered to be a part of the main structure.³

Manholes

- ☐ Manholes are the key appurtenance included in a sanitary sewer system. The manholes are typically a round concrete structure, 4- to 5-feet in diameter. Older systems often contain brick manholes that can be a source of groundwater infiltration. Newer systems use precast concrete manholes. Manholes are typically 200 to 400 feet apart. Manholes are placed at changes in sewer line direction, slope, elevation, pipe sizes and junctions.
- ☐ Most manholes have a 2- to 3-foot diameter cover, which can be removed. Steps are usually cast into the manhole walls to facilitate entry. The manhole acts as the entry point to the sanitary sewer system. Maintenance personnel and investigation equipment can enter the sanitary system at these key locations.
- ☐ Drop manholes are used when the difference in the elevation of an incoming and outgoing sewer line cannot be accommodated by a drop in the manhole channel without creating excessive turbulence and splashing of wastewater.

Backflow Preventers

- Backflow preventers are used in a sanitary sewer lateral to prevent the accidental backflow of wastewater into buildings.

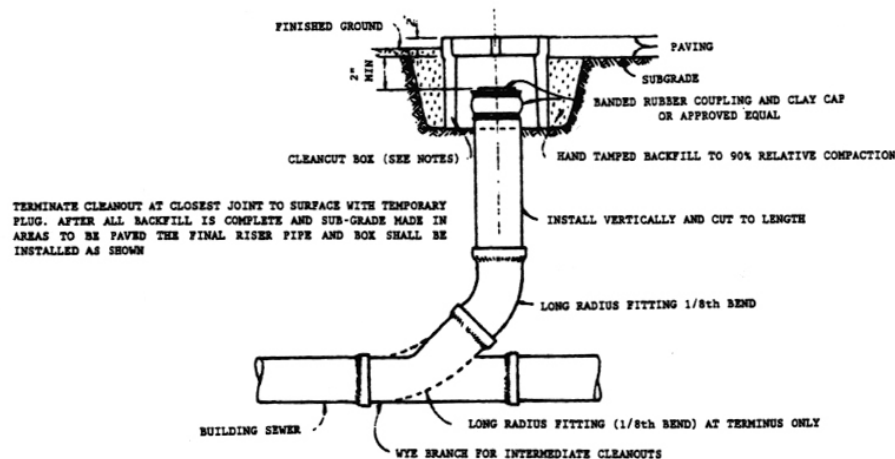


NOTE: There should be a written agreement between the property owner and the sewer district regarding who is responsible for the maintenance of backflow preventers. Grease deposits or rags can prevent their proper operation and they should be cleaned every six months.

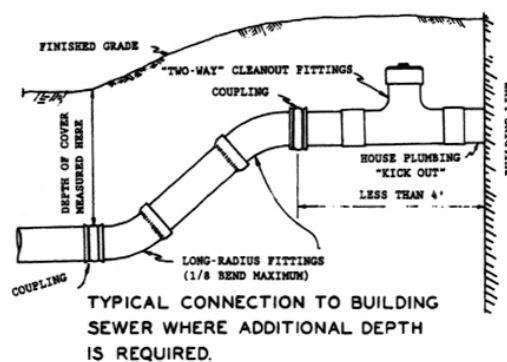
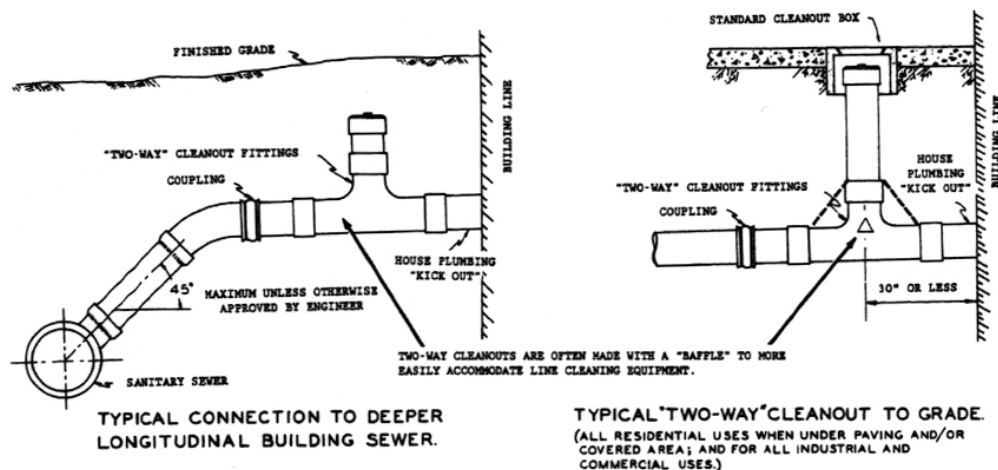
Figure 1.3 Backflow Preventers⁴

Cleanouts

- Cleanouts are used in a sanitary sewer lateral to permit access for the removal of solids that result in blockages. At least two cleanouts should be provided; one approximately 3 feet from the building foundation, and one at the property line.



CLEANOUT AT PROPERTY LINE



- NOTES:**
1. Cleanouts should be extended to surface so they are accessible without excavation in order to reduce maintenance costs and customer complaints regarding operators disturbing their yards.
 2. "Two-Way" cleanout fittings may be difficult to push equipment through because of the right-angle entrance instead of a gradual entrance.

Figure 1.4 Cleanouts⁵

Lateral

- ❑ The lateral is the piping that connects the public sewer to the building. The size of the lateral is typically 4 to 6 inches in diameter.

Inverted Siphon

- ❑ An inverted siphon is generally used in situations where there is a depressed obstruction, typically a watercourse, in the path of the gravity sewer. Wastewater is pushed up the downstream end of the siphon by the velocity of the wastewater. Additional maintenance is typically required to remove solids.

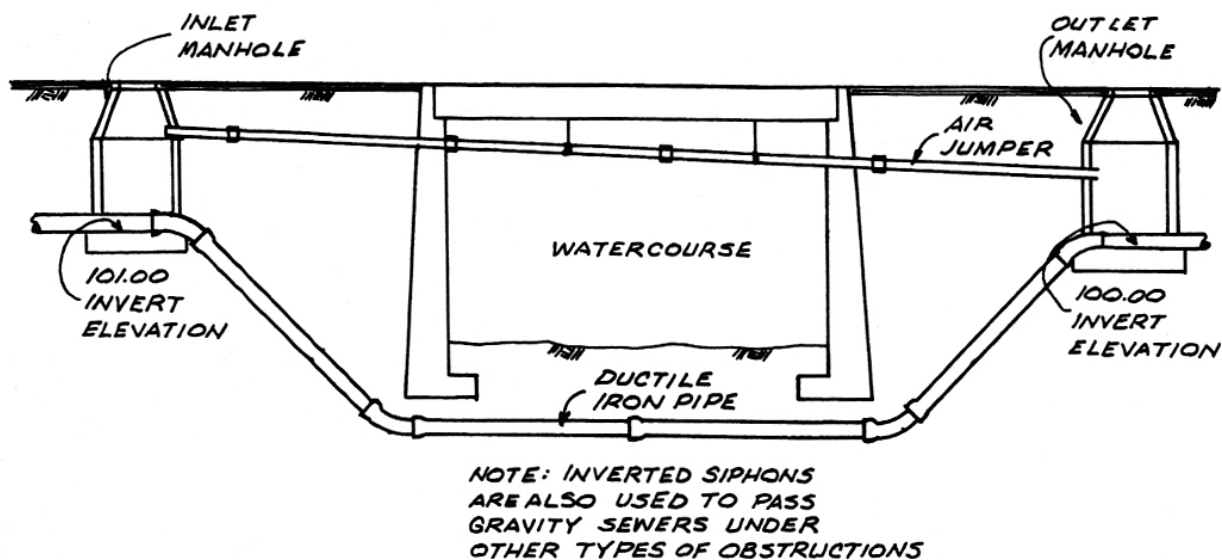
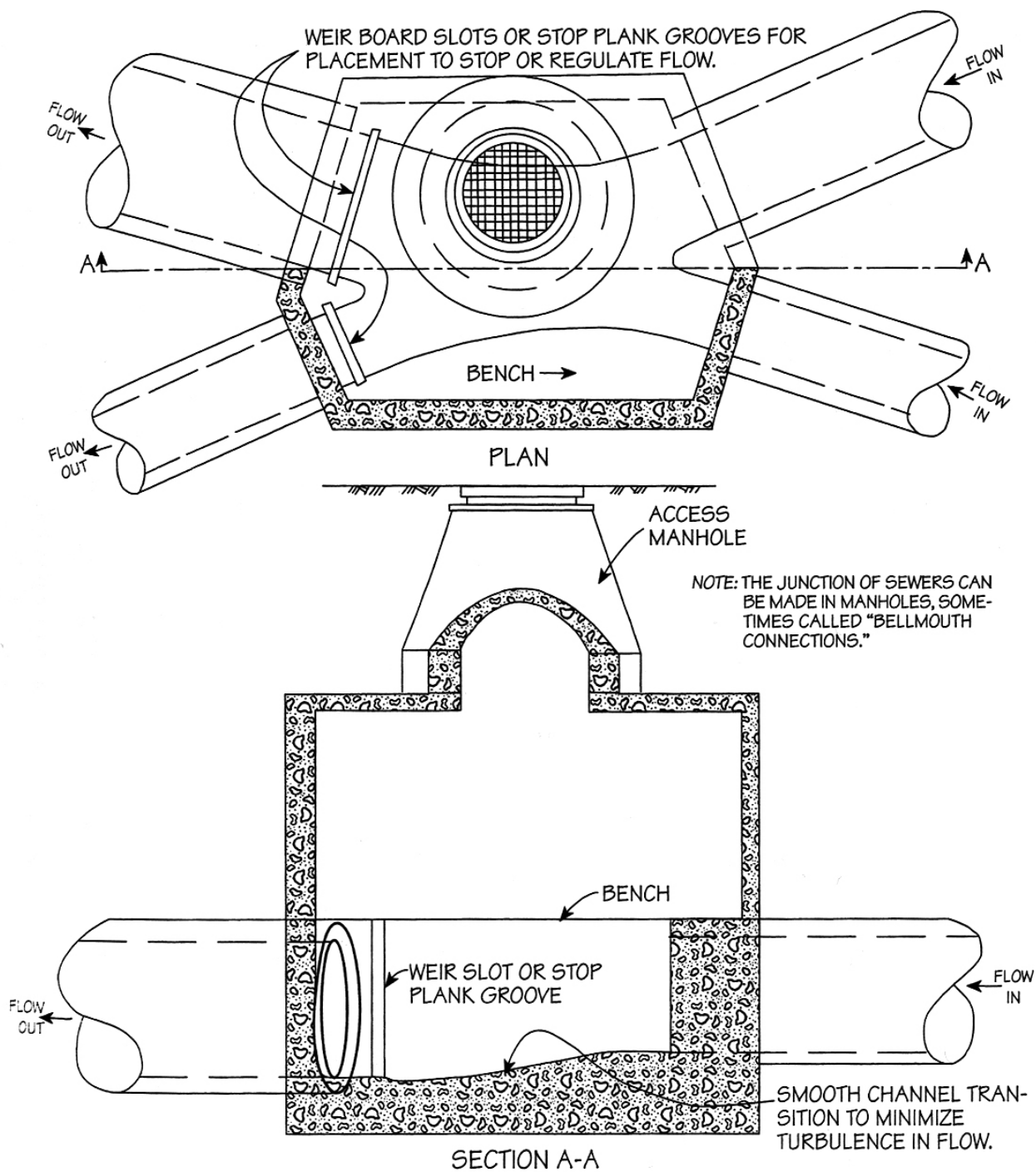


Figure 1.5 An Inverted Siphon⁶

Flow Regulators

- ❑ Flow regulators are used to divert flow from one sewer line to another to prevent overloading the system. An example of a flow regulator is a weir in a manhole.

Figure 1.6 Flow Regulator⁷

Sewage Facilities Act

- ☐ In order for a collection system to be permitted, the proposed development must comply with Act 537 (Sewage Facilities Act) Planning.
- ☐ The act states: “All proposed wastewater facilities must demonstrate consistency with local wastewater facilities plans and conform to state laws. This is accomplished in part by the municipality updating its official sewage plan or by the municipality, owner, subdivider, or agent of the proposed land completing *Planning Modules for Land Development*.”
- ☐ A copy of the *Planning Modules for Land Development* is shown in Appendix A.



Key Points for Unit 1 – Overview of Wastewater Collection Systems

- The three types of collection systems include gravity, low pressure and vacuum collection systems.
- A gravity sewer is a pipe or conduit intended to carry wastewater flowing with a minimum velocity of 2 ft/sec from a higher elevation to a lower elevation due to the force of gravity.
- Gravity sewers are a minimum of 8-inch diameter pipes with manhole structures located at changes in horizontal alignment and vertical slope changes.
- A force main is a pipe that carries wastewater under pressure from the discharge side of a pump to a point of gravity flow downstream.
- In vacuum sewers the wastewater is drawn or sucked by vacuum to the WWTP.
- A sanitary sewer system can be either a separate system or a combined system in that a separate sewer system is designed to carry only wastewater while a combined system is designed to carry both wastewater and storm or surface water runoff.
- Six types of appurtenances: manholes, backflow preventers, cleanouts, laterals, inverted siphons and flow regulators.
- Manholes are typically between 200 to a maximum of 400 feet apart and are required where the sewer changes direction, where pipe slope changes and where several sewer lines meet.
- The lateral is the piping that connects the public sewer to the building. The size of the lateral is typically 4 to 6 inches in diameter.
- Act 537, The Sewage Facilities Planning Act, requires proper planning of all types of sewage facilities, permitting of individual and community on-lot disposal systems (OLDS), as well as uniform standards for designing OLDS.

**Exercise for Unit 1 – Overview of Wastewater Collection Systems.**

1. List three types of collection systems and explain how they each operate.
 - a. _____

 - b. _____

 - c. _____

2. List six types of appurtenances used in collection systems.
 - a. _____
 - b. _____
 - c. _____
 - d. _____
 - e. _____
 - f. _____

3. A gravity sewer pipe or conduit is designed to carry wastewater flowing at 2 ft/sec.
 - a. True
 - b. False

4. Act _____ is commonly called the Sewage Facilities Planning Act.

5. Backflow preventers are used in a sanitary sewer lateral to prevent the accidental backflow of wastewater into buildings.
 - a. True
 - b. False

¹ Steve Goodman, "Wastewater Collection Systems (Purpose, Components and Design)," in *Operation and Maintenance of Wastewater Collection Systems: A Field Study Training Program*, Vol I, (Sacramento California: California State University, Sacramento Foundation, 1999), p. 48.

² Goodman, p. 48.

³ George Freeland, "Collection System Words," in *Operation and Maintenance of Wastewater Collection Systems: A Field Study Training Program*, Vol I, (Sacramento California: California State University, Sacramento Foundation, 1999), p. 505.

⁴ Goodman, p. 51.

⁵ Goodman, p. 54.

⁶ Goodman, p. 60.

⁷ Goodman, p. 59.

Additional Resources Used

Domestic Wastewater Facilities Manual from the Commonwealth of Pennsylvania Department of Environmental Protection, p. 6.

Gravity Sanitary Sewer Design and Construction.

American Society for Civil Engineers (ASCE) Manuals and Reports on Engineering Practice No. 60.

Water Pollution Control Federation (WPCF) Manual of Practice No. FD-5, Chapter 1, pp. 1-2.

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Unit 2 – Design and Construction

Learning Objectives

- List and explain three types of flows.
- Describe the regulatory requirements associated with the design and construction of a collection system.
- List and explain five factors that are important to the layout of a collection system.
- List three factors that should be considered when installing a wastewater collection system and explain the importance of each.
- Identify and explain two important construction factors.
- Identify and explain two important construction testing factors.

Residential Land Use

- Residential land use produces a relatively predictable volume of wastewater. The flows generated in a residential area are directly related to the type of residential property allowed in the area. The type of property permitted will determine the anticipated built-out population and wastewater flow in the area.

Table 2.1 Flow Rates from Residential Sources¹

Source	Unit	Flow, gal/unit · d	
		Range	Typical
Apartment:			
High-rise	Person	35–75	50
Low-rise	Person	50–80	65
Hotel	Guest	30–55	45
Individual residence:			
Typical home	Person	45–90	70
Better home	Person	60–100	80
Luxury home	Person	75–150	95
Older home	Person	30–60	45
Summer cottage	Person	25–50	40
Motel:			
With kitchen	Unit	90–180	100
Without kitchen	Unit	75–150	95
Trailer park	Person	30–50	40

^a Adapted in part from Ref. 7.

Note: gal × 3.7854 = L

- The flows from residential properties experience a diurnal flow pattern. The minimum wastewater flow occurs in the early morning when most residents are sleeping with the maximum amount of flow occurring in the morning and in the evening.
- The effect of the flow pattern is that the residential flow has a peaking factor that is calculated by dividing the maximum flow by the minimum flow. A typical peaking factor (maximum flow/average flow) for residential land is 2.5. The use of the peaking factor is important to ensure that the collection system is large enough to convey the flow.

Commercial Land Use

- ❑ Commercial land use can produce a wide variety of flows. Therefore, it is important for the designer to be informed of the proposed development.
- ❑ Flow estimates for commercial land use are typically based on gallons per acre. The following table shows typical flow values for various types of commercial establishments.

Table 2.2 Flow Rates From Commercial Sources²

Source	Unit	Flow, gal/unit · d	
		Range	Typical
Airport	Passenger	2–4	3
Automobile service station	Vehicle served	7–13	10
	Employee	9–15	12
Bar	Customer	1–5	3
	Employee	10–16	13
Department store	Toilet room	400–600	500
	Employee	8–12	10
Hotel	Guest	40–56	48
	Employee	7–13	10
Industrial building (sanitary waste only)	Employee	7–16	13
Laundry (self-service)	Machine	450–650	550
	Wash	45–55	50
Office	Employee	7–16	13
Restaurant	Meal	2–4	3
Shopping center	Employee	7–13	10
	Parking space	1–2	2

^a Adapted in part from Ref. 2.

Note: gal × 3.7854 = L

Industrial Land Use

- Industrial land use can also produce a wide variety of flow. The flow is typically based on historical data for the type of industry proposed.

Table 2.3 Sewer Capacity Allowances for Commercial and Industrial Areas³

City	Year Data Published Or Obtained	Commercial Allowances (GPD/acre)	Industrial Allowance (GPD/acre)
Cincinnati, OH	1980	Case-by-case determination after consultation with the Directors of Sewers.	
Dallas, TX	1960	30,000 added to domestic rate for downtown; 60,000 for tunnel relief sewers.	
Grand Rapids, MI	1980	Offices, 40 - 50 GPD/cap ^b ; hotels, 400 - 500 GPD/room; hospitals, 200 GPD/bed; schools, 200 - 300 GPD/room.	
Hagerstown, MD	—	Hotels, 180 - 250 GPD/room; hospitals, 150 GPD/bed; schools, 120 - 150 GPD/room.	
Houston, TX	1960	Peak flows: offices 0.36 GPD/sq ft; retail 0 - 20 GPD/sq ft; hotels 0.93 GPD/sq ft.	
Las Vegas, NV	—	Resort hotels, 310 - 525 GPD/room; schools, 15 GPD/cap.	
Los Angeles, CA	1980	Commercial, 100 GPD/1,000 sq ft gross floor area; hospitals, 500 GPD/bed (surgical), 85 GPD/bed (convalescent); schools, elementary or junior high schools, 10 GPD/student; high schools, 15 GPD/student; universities, 20 GPD/student. The above values give peak flow rates. Divide by 3.0 to obtain average flow rates.	15,500
Los Angeles Co. San. District, CA	1980	4,000 - 6,000	
Lincoln, NE	1962	7,000	
Milwaukee, WI	1980	240,000 (max); 25,800 (min)	
St. Joseph, MO	1962	64,000 (downtown) 25,800 (neighborhood)	
St. Louis, MO	1960	90,000 average, 165,000 peak	
Santa Monica, CA	1980	Commercial, 9,700; hotels, 7,750	13,600
Toronto, Ont., CANADA	1980	Analysis of actual water consumption in the commercial and industrial downtown area is approximately 20,000 GPD/acre.	

^a GRAVITY SANITARY SEWER DESIGN AND CONSTRUCTION, Water Environment Federation, Alexandria, VA.

^b Cap. Capita or person. Offices, 40 - 50 gallons/day per person.



Design Flow Calculation

A new subdivision that incorporates residential and commercial land is being proposed at the edge of town. Given the following, calculate the design flow:

Subdivision area: 175 acres.

Subdivision requirements: 150 acres shall be residential with better homes (per census data, assume 3 people per home) with 3 acre lots.

A shopping center is planned on the additional 25 acres with a flow of 4,000 gpd/acre (based on similar centers in the area).

Calculation:

Step 1: Calculate residential flow, using Table 2.2 to determine typical flow per person:

$$(150 \text{ acres})(1\text{home}/3\text{acre})(80 \text{ gal/person*day})(3 \text{ person/home}) = 12,000 \text{ gpd}$$

Step 2: Determine peak residential flow:

$$12,000 \times 2.5 = 30,000$$

Step 3: Determine commercial capacity:

$$(25 \text{ acre}) (4,000 \text{ gpd/acre}) = 100,000$$

Step 4: Determine total design flow

$$\text{Total Design Flow} = 30,000 + 100,000 = 130,000 \text{ gpd} = 0.13 \text{ MGD}$$

Standards

There are basic standards that must be met for the design of a sanitary sewer collection system in Pennsylvania.

- ☐ New systems that are designed as a combined system to carry both wastewater and storm water will generally not be allowed.
- ☐ Separate sanitary sewers shall exclude extraneous water (i.e., roof drains, street, foundation drains, etc.).
- ☐ Collection system shall be designed to serve the projected population in the area and the population in areas surrounding the project area that could connect to the system.
- ☐ The minimum size of a sanitary sewer shall typically be 8-inches in diameter.
- ☐ Sewers shall be deep enough to prevent freezing. A typical minimum depth for collection sewers is 4 feet.
- ☐ Sewers shall be laid in a uniform slope between manholes. The minimum slope for an 8-inch diameter sewer is 0.40%. Sewers on steep slopes, 20% or greater, should be anchored with concrete anchors.
- ☐ Manholes shall be pre-cast concrete, fiberglass, PVC or poured-in-place concrete.
- ☐ Inlet and outlet pipes from manholes shall have a watertight connection.
- ☐ Sanitary sewers should be 10 feet horizontally from existing or proposed water mains. If the sewer must cross under a water main, there should be 18-inches of vertical clearance.
- ☐ Three feet of cover should be provided over sanitary sewers that are crossing a stream. Sewers crossing streams should be constructed of cast or ductile iron.
- ☐ Testing shall be performed on the constructed sanitary sewer system. Deflection tests, joints and leakage tests shall be performed on installed sanitary sewers and an exfiltration test shall be performed on manholes.

Permitting

- ☐ An Erosion and Sedimentation (E and S) Control Plan is required for earth moving activity.
- ☐ A Department of Environmental Protection Part II Permit Sewer Extensions and Pumping Stations is required for public collection systems that have the potential to serve more than 250 Equivalent Dwelling Units. A copy of this document is included in Appendix B of this module.
- ☐ Additional submittal is required if the proposed collection system will be located underneath a waterway.

Slope and Size



The slope of a sanitary sewer is the ratio of the change in vertical distance to the change in horizontal distance. (Rise/Run)

- ☐ Providing adequate slope of the sewer is necessary to provide the necessary velocity in the sewer to ensure that solids do not settle out.
- ☐ The slope of the sanitary sewer should follow the grade of the land as much as possible for economic reasons. In certain cases the grade may not be able to be followed due to the sewer becoming too shallow or not meeting the required minimal slope.
- ☐ A sanitary sewer should be sized to be one-half full when conveying peak dry weather flow. The remaining one-half of the sanitary sewer permits a flow of air that may help decrease sulfide generation, which can lead to corrosion of the sewer.
- ☐ The sanitary sewer must also be large enough to allow cleaning. The standard minimum size of a gravity sanitary sewer in Pennsylvania is 8-inches in diameter. The required size of the sewer is dependent on the slope of the sewer and the contributing flow into the sewer.

Location, Alignment and Depth

- ☐ The sanitary sewer layout begins by determining the connection point to the existing sewer system and the area to be sewerred.
- ☐ The preliminary layout can be based on topographic maps with the proposed sewer following the grade of the land.
- ☐ Sewers are typically constructed in the middle of public streets to permit convenient access for maintenance. In addition, sewers will typically have a gradient in the same direction as the street or ground surface.
 - ▶ With sewers in streets, manholes are typically placed every 400 feet or at locations where the slope or alignment changes and at street intersections where separate sewer lines join.
- ☐ Sewers can also be placed in easements or rights-of-way in areas where the grade of road or the street alignment prohibits placement.
 - ▶ In easements or rights-of-way, manholes should not be located in low areas due to the possibility of surface water inflowing.
 - ▶ When manholes are placed in easements or rights-of-way, the rims should be above ground to allow the location to be more readily identified during future maintenance activities.
 - ▶ The placement of sewers in easements should be minimized due to the difficulty in gaining access to maintain the sewer system.
- ☐ A sanitary sewer is typically a minimum of 4-foot deep to avoid freezing. The actual depth of a proposed sewer line may be much deeper than the minimal depth. A sewer line should be of sufficient depth to permit proposed buildings to have basement sewer service and to be under other proposed underground utilities.

**Exercise for Unit 2 – Flows, Regulatory Standards, & Layout.**

1. It is important to use a peaking factor for residential flow volumes to ensure that the collection system is large enough to convey the flow.
 - a. True
 - b. False
2. Flow estimates for commercial land use are generally based on _____ per _____. The actual values used depend on the type and size of the business occupying the land in question.
3. Determine the peak residential flow for a subdivision of 75 acres with homes on 1 acre lots and assume 3 people per home.

4. The minimum size of a new sanitary sewer shall be
 - a. 6 inches
 - b. 8 inches
 - c. 10 inches
 - d. 12 inches
5. If a sanitary sewer must cross under a water main, there must be at least 18 inches of vertical clearance.
 - a. True
 - b. False
6. Which of the following statements are true?
 - a. An Erosion and Sedimentation (E&S) control plan is needed for earth moving activity.
 - b. Sanitary sewers should be 10 feet horizontally from existing or proposed water mains.
 - c. The slope of a sanitary sewer is often called Rise/Run.
 - d. All of the above.
7. The minimum depth of a sanitary sewer is ____ feet.
8. Sanitary sewers are often constructed to run in the middle of streets to provide easy access and manholes are typically placed about every _____ feet.

Pipe Strengths

There are two major types of pipes in use today for collection systems. When installing the selected piping, it is important to ensure that the loading does not exceed the limits of the piping material.

- ☐ Rigid pipe requires less support during installation; however, it is subject to cracking when subject to excessive loads. Three types of rigid pipes are Cast-Iron Pipe (CIP), Reinforced Concrete Pipe (RCP) and Vitreous Clay Pipe (VCP).
- ☐ Flexible pipe will not normally crack when excessive loads are applied however it will bend or bulge from a load if it is not adequately supported. Two common types of flexible pipe are Ductile Iron Pipe (DIP) and Polyvinyl Chloride (PVC).

Pipe Deflection

A common problem that occurs with flexible pipe is deflection.



Pipe deflection is when the pipe has changed direction, either up, down, right or left, from the direction it was originally laid.

- ☐ Deflection occurs when backfill compaction causes unequal pressures on various sides of the pipe. The pipe will deflect to the location where the pressure is the least. Therefore, it is important that backfill is compacted uniformly.

Bedding

Adequate bedding must be provided in the trench when installing sewer pipe. Bedding generally consists of well-graded crushed stone or well-graded gravel, and is located underneath the pipe in the trench. Specific types of bedding are required for rigid and flexible pipe.

Bedding Required for Rigid Pipe

- ☐ There are three typical classes of bedding that is used for rigid pipe. Please note in Figure 2.1 that Class D bedding is typically not permissible for use as pipe bedding.
- ☐ Each class of bedding has a load factor that determines the ability of the bedding to assist in supporting the rigid pipe. The standard strength of the pipe and the load factor are required to ensure that cracking of the pipe will not result from excessive loads.

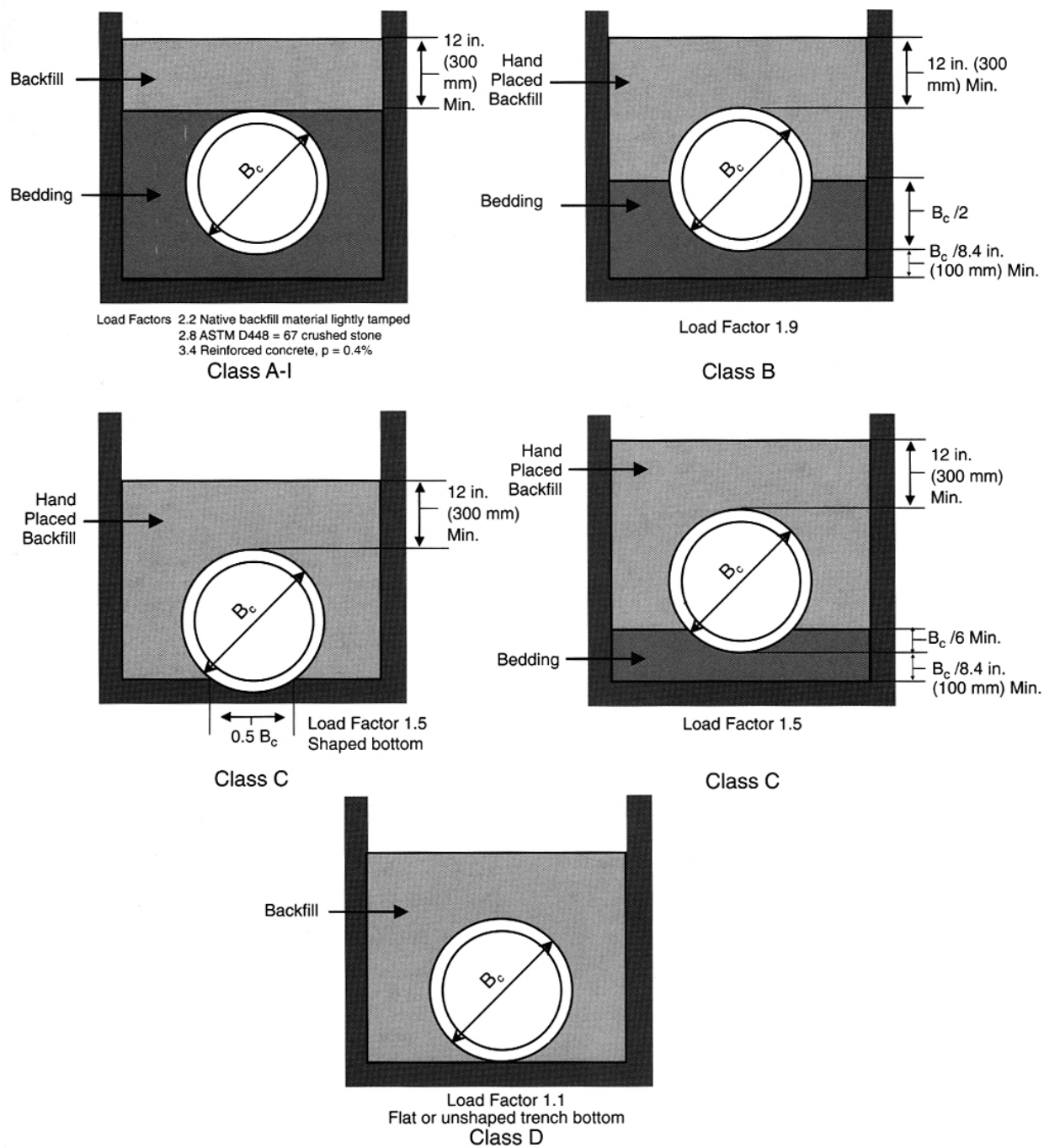


Figure 2.1 Classes of Bedding⁴



Bedding Calculation

An 8-inch diameter Vitrified Clay Pipe (VCP) has a standard strength of 2,000 pounds per foot, and is laid in a Class C trench. What is the total supporting strength?

Total supporting strength = standard strength x Bedding Class Load Factor (see Figure 2.1).

$(2,000 \text{ lbs/ft} \times 1.5) = 3,000 \text{ pounds per foot}$

Therefore, the pipe, theoretically, is able to handle a loading of 3,000 pounds per foot without cracking. When laying rigid pipe, it is important to ensure that the loading is not greater than the total supporting strength of the pipe and bedding.

Bedding Required for Flexible Pipe

- ☐ The bedding around a flexible pipe is important to ensure that the pipe does not deform outward from the load of the backfill.
- ☐ The classification for flexible pipe bedding is based on soil type. Classes I, II and III are allowable for use as bedding for flexible pipe.

Table 2.4 Soil Classifications⁵

Soil Class (1)	Group Symbol (2)	Typical Names (3)	Comments (4)
I		Crushed rock	angular, 6-40 mm
II	GW GP SW SP	Well graded gravels Poorly graded gravels Well graded sands Poorly graded sands	40 mm maximum
III	GM GC SM SC	Silty gravels Clayey gravels Silty sands Clayey sands	
IV	MH, ML CH, CL	Inorganic silts Inorganic clays	Not recommended for bedding, haunching or initial backfill
V	OL, OH PT	Organic silts and clays Peat	

- ☐ In addition to the appropriate bedding material, adequate compaction of the bedding and the backfill material surrounding the pipe is required to minimize pipe deflection.

Specifications

- Specification and contract drawings define the work that is to be performed. The contract drawings provide a graphical representation of the work.

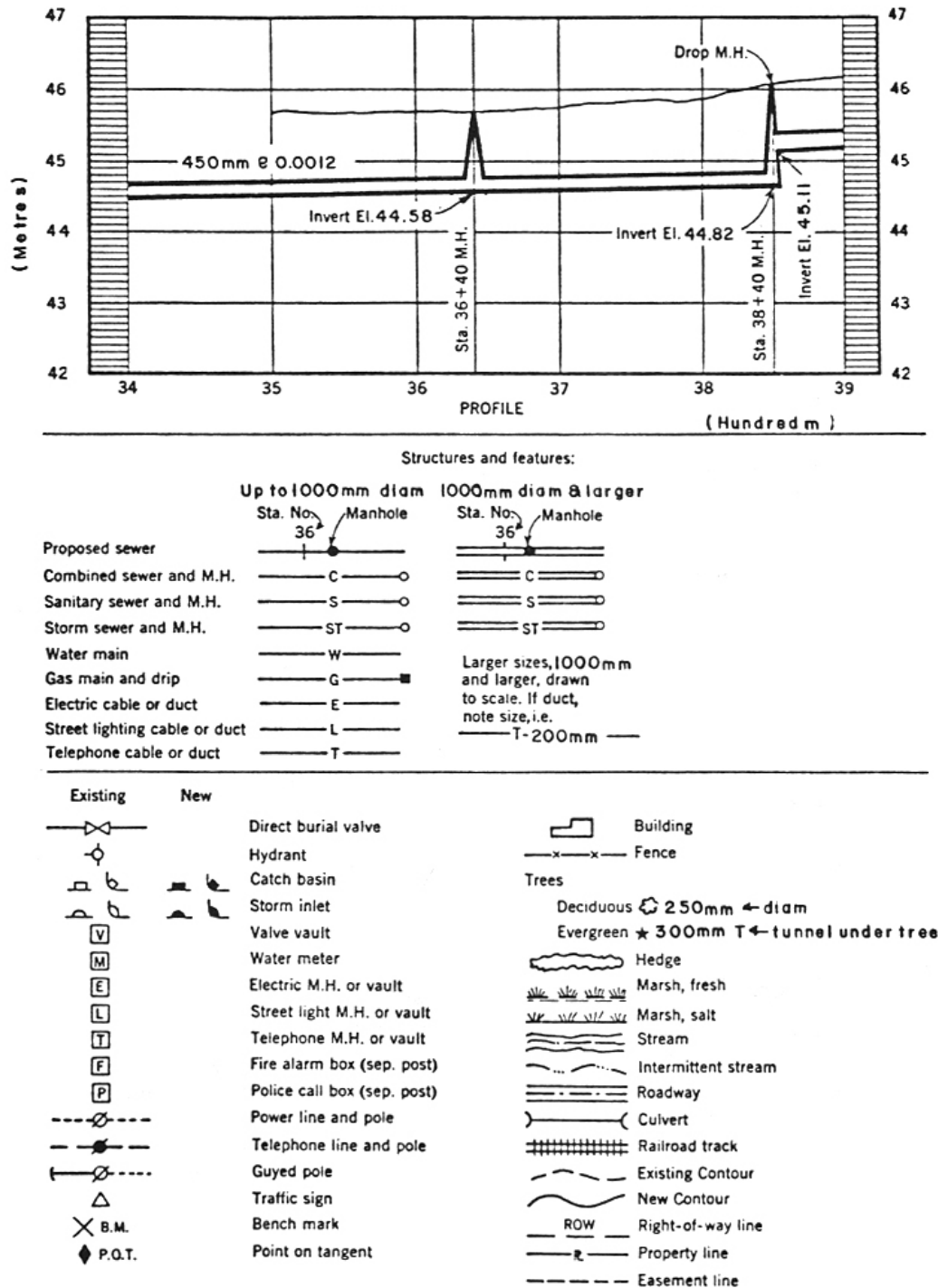


Figure 2.2 Sewer Plan Legend⁶

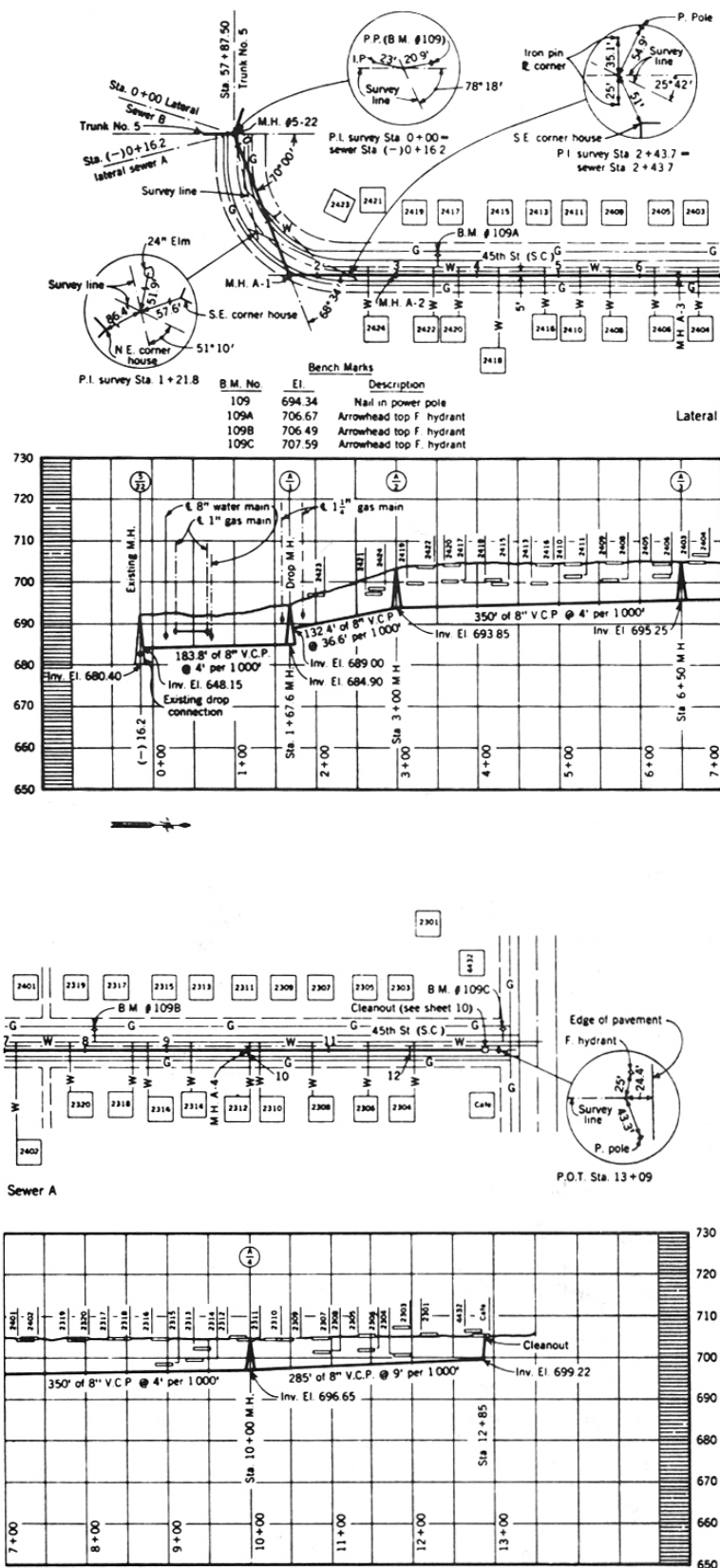


Figure 2.3 Gravity Sanitary Sewer Design and Construction⁷

Contract Drawings

Contract drawings typically consist of several sheets including:

- ☐ Title sheet stating the name of the project.
- ☐ Index of sheets.
- ☐ Legend.
- ☐ Location map.
- ☐ PA One Call information for underground utilities and survey control information.
- ☐ Additional sheets that include the plan and profile view of the proposed sewer system and specific notes relevant to the sections shown on each sheet. A plan view is a drawing showing the top view of sewers, manholes and streets. A profile view is a drawing showing the side view of sewers and manholes.
- ☐ An additional sheet that shows details such as bedding and backfill, stream crossing and manholes.

Specifications

- ☐ Specifications state the qualitative requirements for the projects. The requirements typically cover the material and the workmanship involved in the manufacturing and installation of the equipment.
- ☐ Specifications for sewer system typically follow the Construction Specifications Institute (CSI) format, which includes 16 divisions. Division 1 covers general requirements of the project, and Divisions 2 through 16 covers the material and workmanship requirements. The CSI Divisions that are typically utilized for a sewer system project include:
 - ▶ CSI Division 1 – General Requirements.
 - ▶ CSI Division 2 – Site Work.
 - ▶ CSI Division 3 – Concrete.
 - ▶ CSI Division 5 – Metals and CSI Division 9 – Finishes.

- ☐ The specifications contain language requiring that the contractor submit shop drawings to ensure the quality of the material being proposed by the contractor. Shop drawings are typically catalog cuts, which illustrate that the material proposed by the contractor is what was specified or is equivalent to what was specified. The engineer must approve the submitted shop drawings prior to construction of the project. A copy of the approved shop drawing is forwarded to the owner, construction inspector and contractor.

- ☐ During construction of the project, the specifications must be followed to ensure that the project is being constructed as designed. The shop drawings would be at the project site to ensure that the material being placed in the ground is what was approved.

Records

- ❑ During construction of a project, it is important that sufficient records are obtained to adequately represent the underground sewer.
- ❑ Daily reports -- An inspector at the project site monitors the daily activities of the contractor and maintains records. The inspector should prepare daily reports stating the progress of the work, work conditions and any problems encountered.

INSPECTOR'S DAILY REPORT					
Job _____		No. _____ Date _____			
Contractor _____		Weather _____			
	WORK	ITEM	LOCATION		QUAN
			STREET	STA. LIMITS/@STA. OR ST.	
1	Trench Exc. (1)			TO	
2	Laying 6" -- P.			TO	
3	" " -- P.			TO	
4	"4" -- P. Lots			TO	
5	B'fill, Longt. (2)			TO	
6	" , Lat. (2)			TO	
7	Manholes				
8	Compact, Longt. (3)				
9	Compact, Lat. (3)				
10	Testing				
11	Base Rock, Longt.				
12	Base Rock, Lat.				
13	Paving, Longt. (4)				
14	Paving Lat. (4)				
15	Pipe Cleaning				

(1) Type Soil Exc. _____ , (2) Type Soil B'fl _____

(3) Type of Compaction, Longt. _____ , Lat. _____

(4) Type Paving, Longt. _____ , Lat. _____

Safety Check: Working Conditions _____ ? Public _____ ?

Comments on work conduct, personnel, equipment, materials, incidents, final inspection notes,
acceptance recommendation, etc: _____

Time this job _____ Signed _____

Note: Use one sheet per job. Submit original to office daily. Retain duplicate copy for inspector's diary.

Figure 2.4 Inspector's Daily Report⁸

- ☐ Monthly reports -- The inspector should also maintain monthly reports that are not as detailed as the daily reports. These are used to determine the amount of material that was installed by the contractor in order to determine the amount the contractor should be paid.

REPORT OF QUANTITIES INSTALLED

As of (Date): _____

Job: _____

Final Report

Progress Report

☐
☐

Installer _____

Engineer _____

Contractor _____

STREET	4" B.S.	6" Main	8" Main	" Main	M.H.	F.I.	Extra Wyes	

Instructions to Inspector: _____

Make report in duplicate

Inspector

Report progress as of last day of month, when job not complete.

Submit final report when installation has been completed.

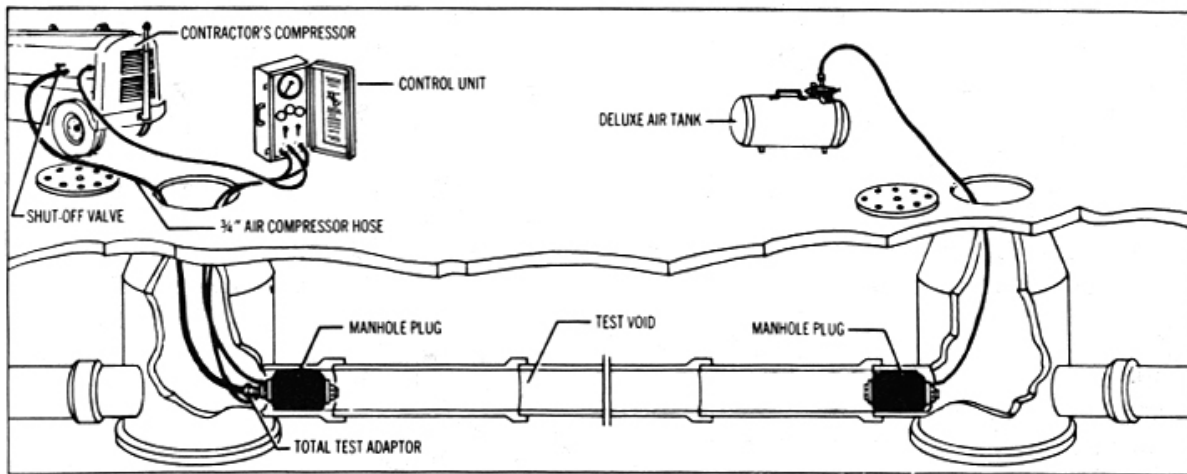
Make notes about unusual items.

Figure 2.5 Sample Monthly Report⁹

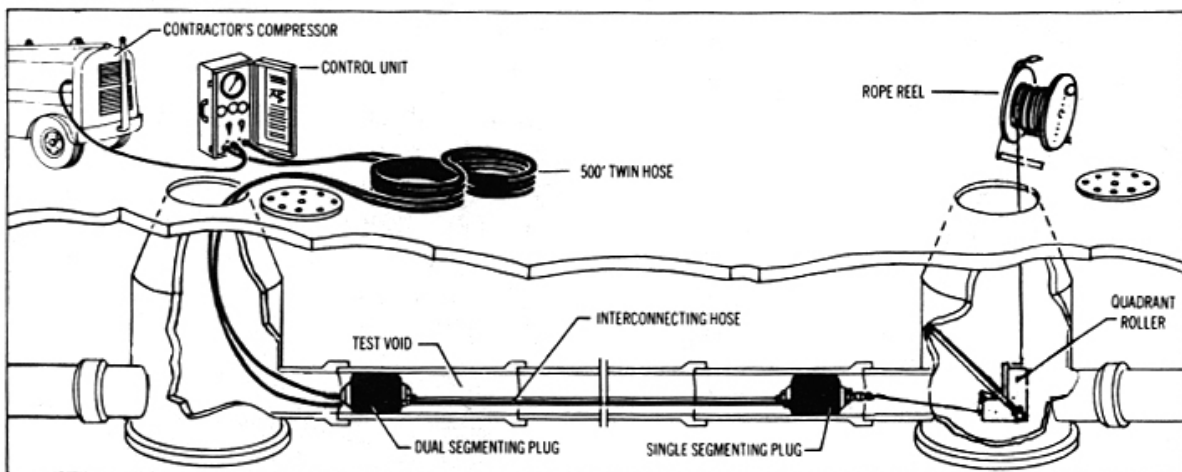
- ❑ At the beginning of construction, the inspector should have two copies of the project drawings that can be marked in the field.
 - ▶ One set of the drawings should be a working set to ensure that the contractor is following the plans.
 - ▶ The second set should be marked as “Record Drawing.” The inspector should mark any constructed changes (i.e., lower manhole invert, longer sewer run) on this set of plans with red pencil. In addition, the inspector should mark the location of laterals on this drawing.
- ❑ When the project is completed, the inspector gives the record drawing to a draftsman so that the marked changes can be inserted into the drawing. It is important that the changes are incorporated in order to have a realistic graphical representation of the underground sewer system. These drawings are known as “as built” drawings.

Leakage

- ❑ Low pressure air testing or water testing is used to test a sewer system for leakage. The tests are used to determine the amount of exfiltration or infiltration in the pipe.
- ❑ Air testing uses an air compressor, pressure gage and plugs to isolate the sewer section being tested. If the line is air tight then, of course, there will be no leakage.



Manhole to manhole air test



Segment of pipe air tests

Figure 2.6 Air Testing¹⁰

- ❑ The air test is conducting by supplying air into the sewer system until the internal pressure of the system reaches a set test pressure.
 - ▶ The air pressure is allowed to stabilize for 2 minutes.
 - ▶ Next, the air supply is disconnected and the amount of time required for the pressure to drop, first by 0.5 psi and then, by an additional 1.0 psi, is recorded.
 - ▶ The measured time is then compared to an allowable time for that section of sewer. The allowable time is based on the diameter of sewer, length of sewer and an allowable air loss per square foot of sewer.
 - ▶ If the measured time is less than the allowable time, the sewer passes the test. If the measured time is more than the allowable time, the sewer section should be searched for leaks.

- ❑ Water testing involves plugging the downstream manhole at the inlet and filling the upstream manhole with water up to the 4 foot.
 - ▶ The level is marked and a time is recorded.
 - ▶ The level is allowed to drop 2 feet and another time is recorded; or wait 120 minutes and measure the distance between the marked level and current water level.
 - ▶ The volume of water that was lost is determined by the diameter of the manhole. An acceptable exfiltration or infiltration test in Pennsylvania is 100 gallon per inch of pipe diameter per mile per day for any section of the system.



Calculation Rate of Exfiltration for Water Testing

Calculate the rate of exfiltration in gal/inch/mile from 400 feet of 8-inch pipe when the water level in the upstream 4-foot manhole drops 2 inch in 120 minutes.

Step 1: Calculate volume of water exfiltrated during test.

Note: Interior manhole surface area = $(0.785)(\text{Diameter})^2 = \text{ft}^2$

Volume, gal = Area of water in manhole, sq.ft x Water level drop, in.
= $(0.785)(4 \text{ ft})^2 (2 \text{ in})(\text{ft}/12 \text{ in})(7.48 \text{ gal}/\text{ft}^3) = 15.66 \text{ gal}.$

Step 2: Determine the water exfiltration rate during the test

Rate, gpd = Volume, gal/Test Time, min
= $(15.66 \text{ gal})(60 \text{ min}/\text{hr})(24 \text{ hr}/\text{day})/(120 \text{ min})$
= 187.92
= 188 gpd

Step 3: Calculate the exfiltration for the section tested.

Exfiltration, gpd/in/mi = Exfiltration rate, gpd / (Diameter, in)(Length, mi)
= $(188 \text{ gpd})/(8 \text{ in})(400 \text{ feet})(\text{mi}/5,280 \text{ ft}) = 310 \text{ gpd}/\text{in}/\text{mi}$



This is an example of an unacceptable section because the exfiltration rate was greater than 100 gpd/in/mi. Therefore, the sewer line should be evaluated to determine the location(s) of exfiltration.

Deflection

- ❑ Deflection tests need to be performed on the constructed sewer within 30 days after final backfill has been placed.
- ❑ The tests consist of using a rigid ball or mandrel to measure the deflection and joint offsets.
 - ▶ The mandrel test is performed by pulling the device through the sewer from manhole to manhole.
 - ▶ The mandrel device will not pass through the sewer if the flexible type pipe has been deflected beyond five percent of the pipe diameter, if the rigid pipe has been crushed or if a building lateral is protruding into the sewer line.
 - ▶ If there is a problem, the pipe must be excavated and corrected.

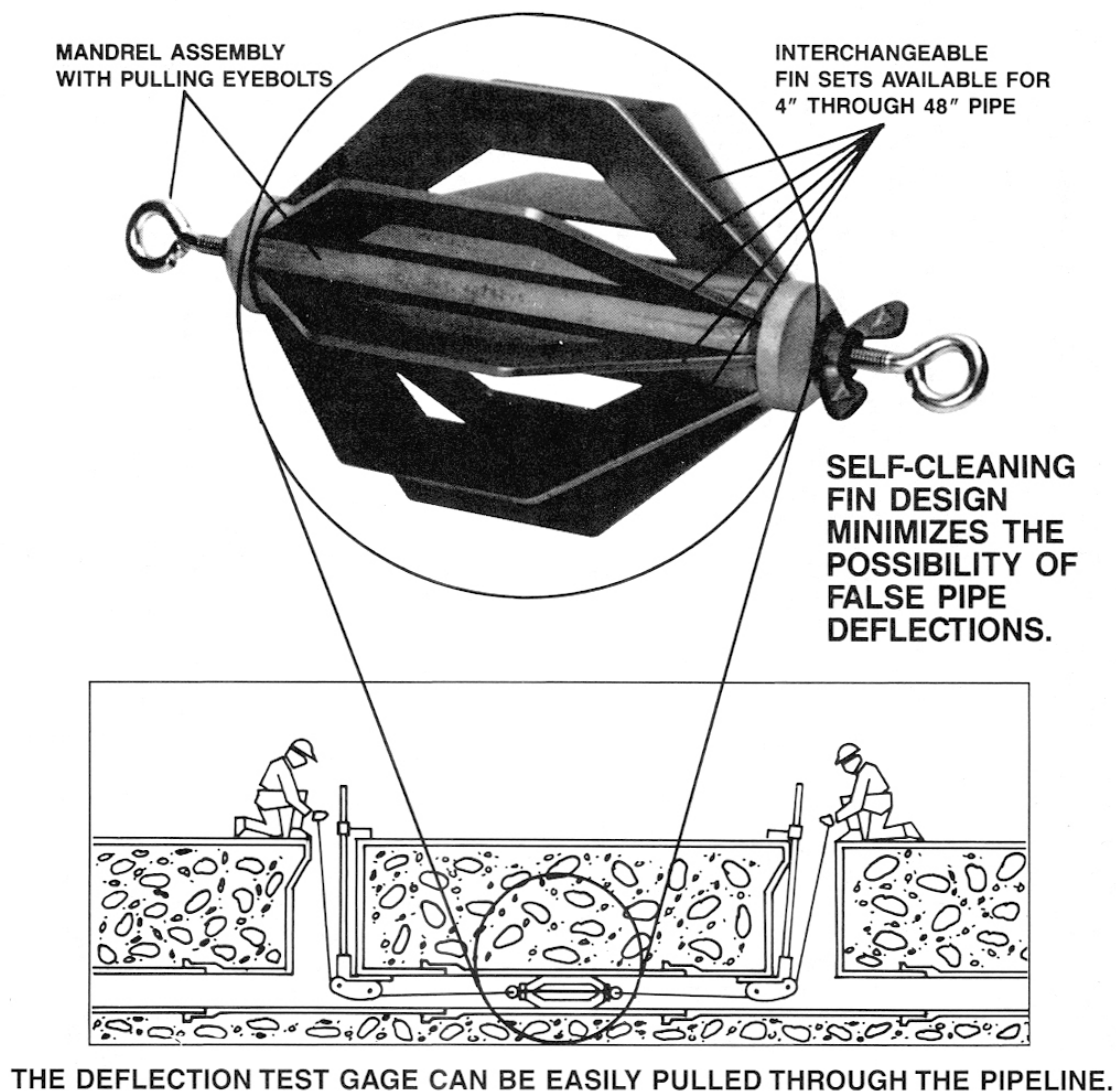


Figure 2.7 Deflection Test Gage¹¹

**Key Points for Unit 2 – Design and Construction of Collection Systems**

- Flow is defined as the continuous movement of a liquid from one place to another with there being three types of flows, residential, commercial and industrial which contribute flows to a wastewater collection systems.
- Wastewater generated in a typical home averages 70 gal/day/person.
- The residential flow has a peaking factor, used in design to ensure that the collection system is large enough to convey the flow, which is calculated by dividing the maximum flow by the average flow. A typical peaking factor (maximum flow/average flow) for residential land is 2.5.
- Commercial land use can provide a wide variety of flows ranging from a restaurant providing a typical flow of 3 gal/meal to a self service laundry mat providing average flows of 550 gal/machine.
- Industrial land use can also produce a wide variety of flow and is typically based on historical data for the type of industry proposed.
- Sewers shall be deep enough to prevent freezing. A typical minimum depth for collection sewers is 4 feet.
- Sewers shall be laid in a uniform slope between manholes. The minimum slope for an 8-inch diameter sewer is 0.40%. Sewers on steep slopes, 20% or greater, should be anchored with concrete anchors.
- Sanitary sewers should be 10 feet horizontally from existing or proposed water mains. If the sewer must cross under a water main, there should be 18-inches of vertical clearance.
- The required size of the sewer is dependent on the slope of the sewer and the contributing flow into the sewer.
- A sanitary sewer should be sized to be one-half full when conveying peak dry weather flow with the remaining one-half of the sanitary sewer permits a flow of air that may help decrease sulfide generation, which can lead to corrosion of the sewer.
- Pipe deflection means the pipe has changed direction from the direction it was laid.
- Bedding material must be appropriate for the type of pipe used.
- Specification and contract drawings define the work that is to be performed. The contract drawings provide a graphical representation of the work.
- During construction air testing or water testing is done to ensure the system does not leak and mandrel testing is done to ensure the pipe is in its proper alignment.

**Exercise for Unit 2 – Installation, Construction Inspection & Testing.**

1. The two major types of pipes used in collection systems today are _____ pipe and _____ pipe.
2. Pipe _____ is when the pipe has changed direction, either up, down, right or left from the direction it was originally laid.
3. When using rigid pipe, which class of bedding is typically not permissible?
 - a. Class A
 - b. Class B
 - c. Class C
 - d. Class D
4. An 8-inch diameter Vitrified Clay Pipe (VCP) has a standard strength of 2,000 pounds per foot, and is laid in a Class B trench. What is the total supporting strength?
5. The contract drawings provide a _____ representation of the work to be done.
6. The qualitative requirements for a project covering topics like the material and workmanship involved in the manufacturing and installation of equipment can be found in the:
 - a. Legend
 - b. Index
 - c. Specifications
 - d. PA One Call
7. Name the two types of reports that an inspector would normally write to keep track of progress and problems at a work site.
 - a. _____
 - b. _____
8. Liquid leaking out of a collection pipe is called _____ .
9. Liquid leaking into a collection pipe from the surrounding bedding material is called _____ .
10. A deflection test gage ball or mandrel can not be pulled through a sewer pipe if the pipe is deflected more than five percent of the pipe diameter.
 - a. True
 - b. False

¹ George Tchobanoglous and Frank Burton, *Wastewater Engineering: Treatment, Disposal, Reuse*, 3rd Edition, (New York, NY: Irwin/McGraw-Hill, 1991), p.27.

² Tchobanoglous, p. 28.

³ Tchobanoglous, p. 29.

⁴ Steve Goodman, "Wastewater Collection Systems (Purpose, Components and Design)," in *Operation and Maintenance of Wastewater Collection Systems: A Field Study Training Program*, Vol I, (Sacramento California: California State University, Sacramento Foundation, 1999), p. 99.

⁵ "Gravity Sanitary Sewer Design and Construction," from *ASCE-Manuals and Reports on Engineering Practice-NO- 60 WPCF-Manual of Practice-NO, FD-5*, (New York, NY: American Society of Civil Engineers, 1982), p. 193.

⁶ "Gravity Sanitary Sewer Design and Construction," p. 195.

⁷ "Gravity Sanitary Sewer Design and Construction," p. 195.

⁸ Goodman, p. 120.

⁹ Goodman, p. 121.

¹⁰ Goodman, p. 110.

¹¹ Goodman, p. 118.

Additional Resources Used

Link to DEP Domestic Wastewater Facilities Manual: www.dep.state.pa.us/eps/docs.

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Unit 3 – Management and Operations

Learning Objectives

- List and describe the policies and requirements associated with the management and operations of a collection system.
- List and explain three cleaning methods and five inspection methods.
- Define infiltration and inflow and explain how to determine their sources.
- List and explain three rehabilitation methods.
- Describe how manholes and appurtenances are rehabilitated.

Permit Requirements

- ☐ Currently, there are no permitting requirements for a community that only has a collection system.
- ☐ A National Pollutant Discharge Elimination System (NPDES) permit may be required in the future.
- ☐ Currently, only communities with a treatment facility must have a NPDES permit. The permit must be renewed every five years.

Annual Reporting – Chapter 94

Annual reporting requirements are described in the Pennsylvania Code Title 25 Environmental Protection § 94.12 Annual Report.

- ☐ The treatment plant permittee needs to submit a complete and accurate wasteload management report to the Pennsylvania Department of Environmental Protection by March 31 of each year.
- ☐ The report requires:
 - ▶ Information about the sewer system, such as a map showing all sewer extensions constructed and all extensions approved or exempted in the last year, and all known proposed projects that will require public sewers.
 - ▶ A list that summarizes each extension and the population to be served by the extension.
 - ▶ Discussion on the inspection, maintenance and repair of the sewer system and the condition of the sewer system.
 - ▶ A proposed plan for reducing the overload conditions if any part of the sewer system is overloaded or is projected to be overloaded in the next 5 years.

Capacity, Maintenance, Operations and Management (CMOM)

Combined Sewer Overflows Policy

The United States Environmental Protection Agency's Combined Sewer Overflows (CSO) Policy provides guidance for the control of CSO under the NPDES permitting program. The CSO Policy includes nine minimum controls to reduce the prevalence and impacts of CSO.

The nine minimum controls are as follows:

- ☐ Proper operation and regular maintenance programs for the sewer system and the CSO outfalls.
- ☐ Maximum use of the collection system for storage.
- ☐ Review and modification of pretreatment requirements to ensure that CSO impacts are minimized.
- ☐ Maximization of flow to the POTW for treatment.
- ☐ Elimination of CSO during dry weather.
- ☐ Control of solid and floatable materials in CSO.
- ☐ Pollution prevention programs to reduce contaminants in CSO.
- ☐ Public notification to ensure that the public receives adequate notification of CSO occurrences and CSO impacts.
- ☐ Monitoring to effectively characterize CSO impacts and the efficacy of CSO controls.

For additional information of the nine minimum controls, see EPA's "Combined Sewer Overflows Guidance for Nine Minimum Controls" document, which can be found at EPA's website. The EPA document number is EPA 832-B-95-003, and the web address is: www.epa.gov/npdes/pubs.

Long Term Control Plan

The CSO Control Policy also lists nine elements that should be addressed in a municipality's Long Term Control Plan (LTCP). The LTCP is the plan that a municipality will follow to ultimately obtain full compliance with the Clean Water Act.

The nine elements of the LTCP are as follows:

- ☐ Characterization, monitoring, and modeling activities as the basis for selection and design of effective CSO controls.
- ☐ A public participation process that actively involves the affected public in the decision-making to select long-term CSO controls.
- ☐ Consideration of sensitive areas as the highest priority for controlling overflows.
- ☐ Evaluation of alternatives that will enable the permittee, in consultation with the NPDES permitting authority, WQS authority, and the public, to select CSO controls that will meet CWA requirements.
- ☐ Cost/performance considerations to demonstrate the relationships among a comprehensive set of reasonable control alternatives.
- ☐ Operational plan revisions to include agreed-upon long-term CSO controls.
- ☐ Maximization of treatment at the existing POTW treatment plant for wet weather flows.
- ☐ An implementation schedule for CSO controls.
- ☐ A post-construction compliance monitoring program adequate to verify compliance with water quality-based CWA requirements and ascertain the effectiveness of CSO controls.

For additional information of the nine minimum controls see EPA's "Guidance for Long-Term Control Plan" document, which can be found at EPA's website. The EPA document number is EPA 832-B-95-002, and the web address is: www.epa.gov/npdes/pubs.

Cleaning Methods

Mechanical

- ❑ Power bucket machines are used to remove large amounts of debris in larger sewer lines. The bucket machine is either truck- or trailer-mounted, and two machines are required to clean a sewer line. One machine is used to thread a “bucket” type cleaning device into the sewer line, and the other machine is used to remove the collected material.

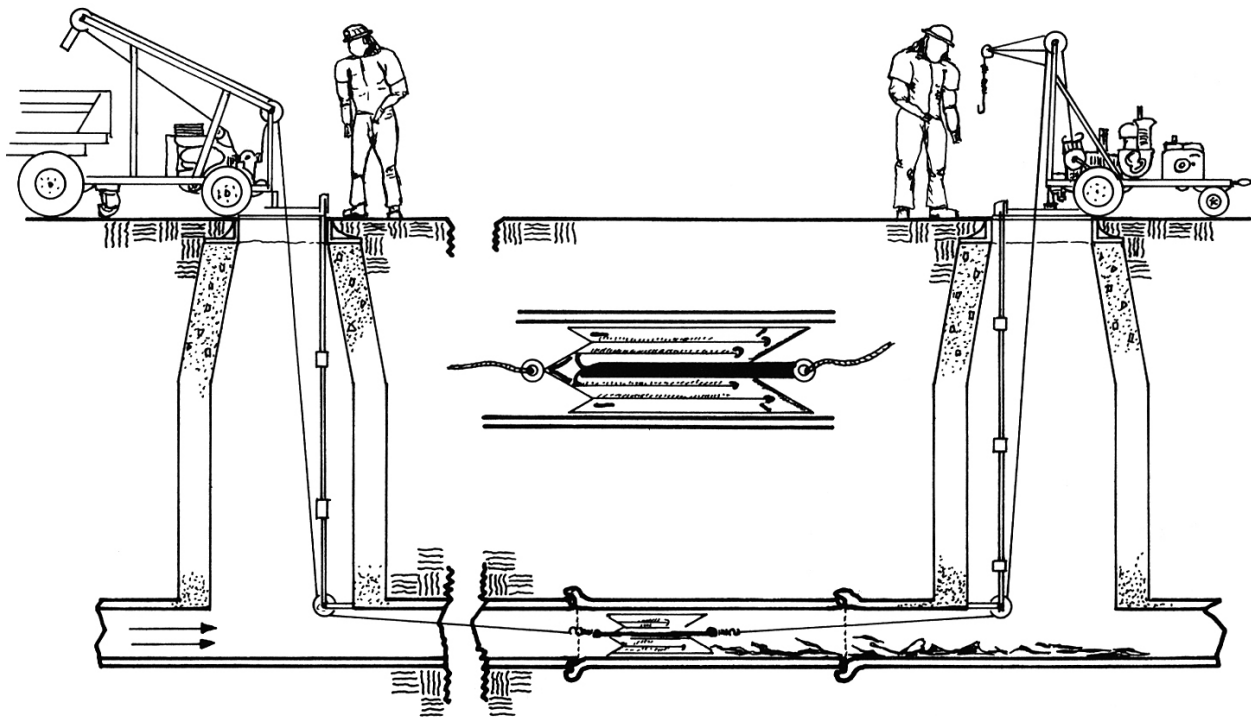


Figure 3.1 Power Bucket Cleaning¹

- ❑ Power rodders are used to handle stubborn stoppages of roots, grease and debris. The power rodding machine consists of a steel rod to push or pull clearing tools through the sewer. The machines are either truck- or trailer-mounted, and they use either gas or a diesel engine and a hydraulic system for power. The machine is effective on stubborn stoppages in lines up to 15-inches in diameter.

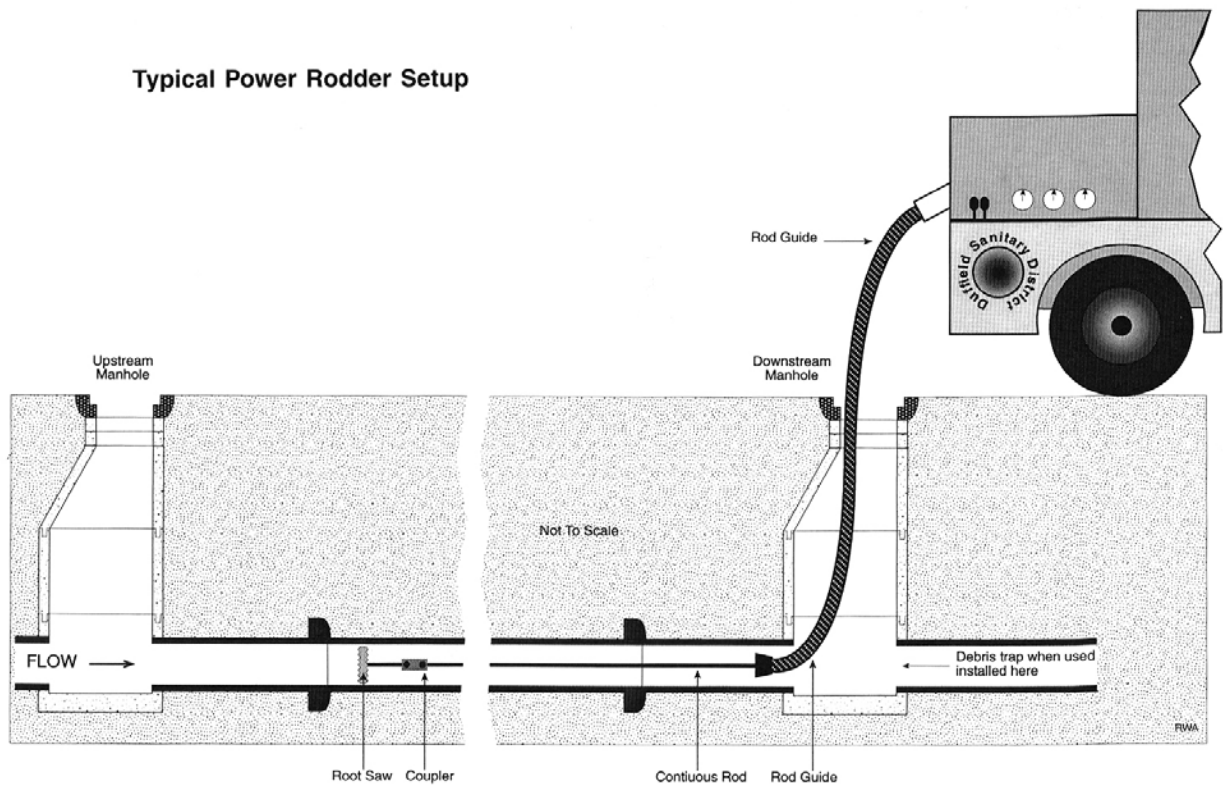


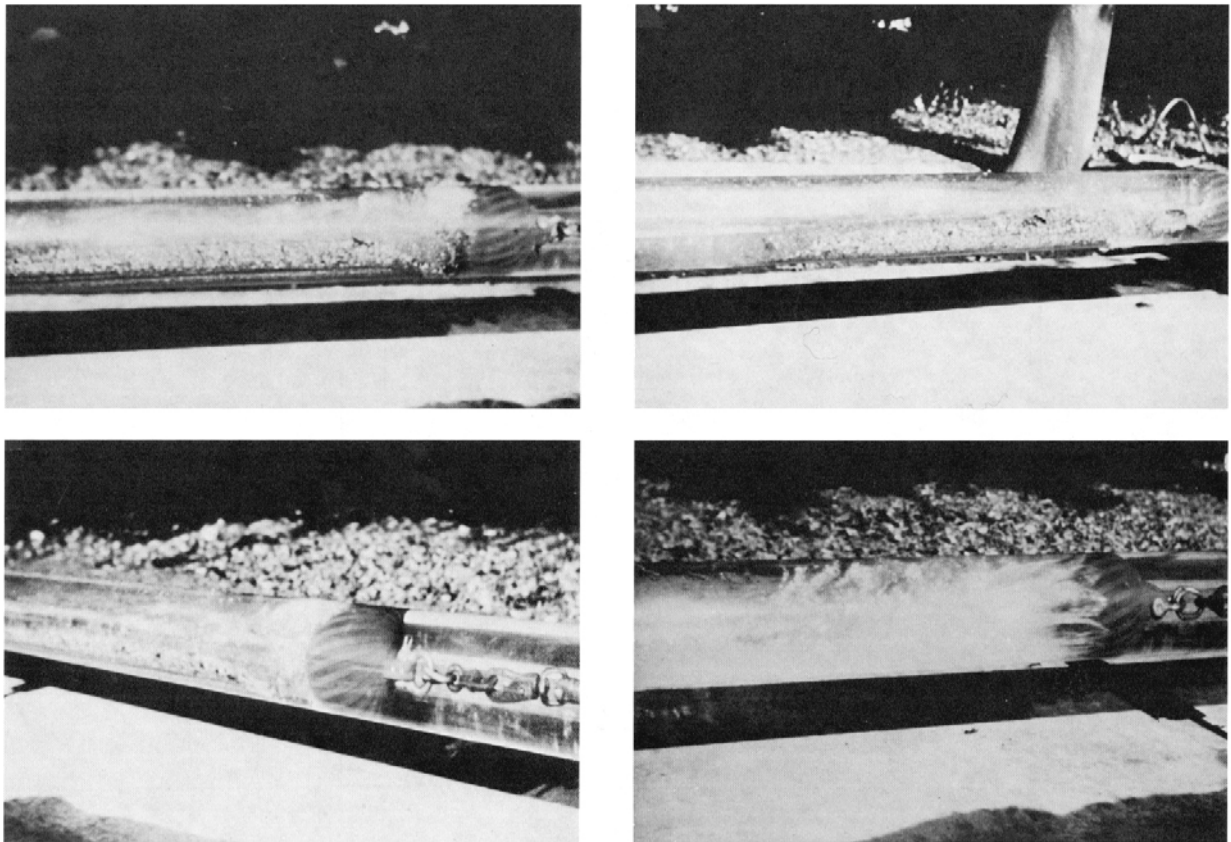
Figure 3.2 Power Rodder²

- ❑ Hand rods are typically used for emergency stoppages. Hand rods are sectional rods that are typically 36 inches in length and stored on a shallow reel that is equipped with a removable tripod. When the reel is set up on the tripod, the rod can be manually pulled off or on to the reel, allowing the reel to turn freely.

Hydraulic

This type of cleaning uses high velocity water to clean the sewers. Hydraulic cleaning consists of the following methods: balling, high-velocity cleaners, flushing, sewer scooters, and the use of kites, bags and poly pigs.

- ❑ Balling is an economical method for cleaning debris from sewers. This method consists of using a ball, which ranges in size from 6 inches up to 48 inches and water. The ball is designed with diagonal grooves and ridges. As water builds up behind the ball, the water will flow through the grooves and the ball will rotate. Based on the use of the ball and water pressure, this method typically removes only grit material on the bottom of the line and grease buildup inside the line.



(Courtesy of Sacramento County, Water Quality Division)

Figure 3.3 Sewer Cleaning with a Ball³

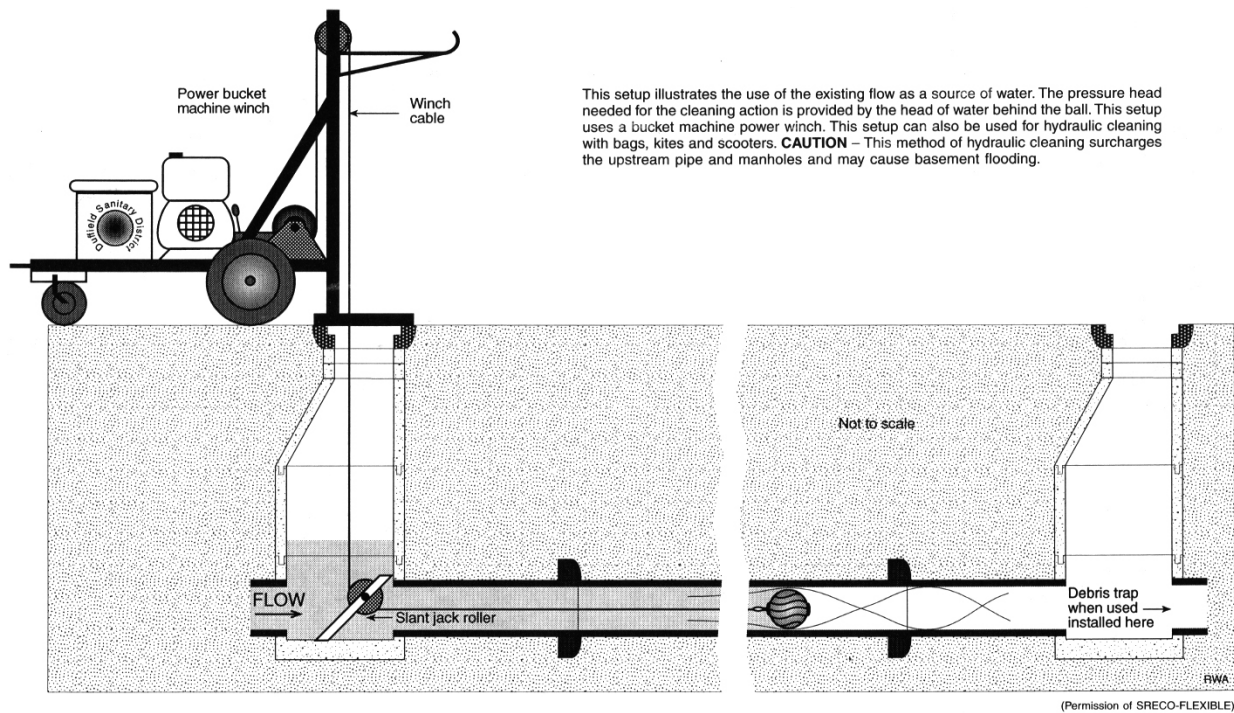


Figure 3.4 Set Up for Hydraulic Cleaning⁴

- High velocity cleaners are effective at removing loose debris in sewers. High velocity cleaning equipment comes in a variety of sizes and can be mounted on a truck or trailer. The main components of high-velocity water cleaners are the water supply tank, high-pressure water pump, and 500 or more feet of hose attached to a hose reel.

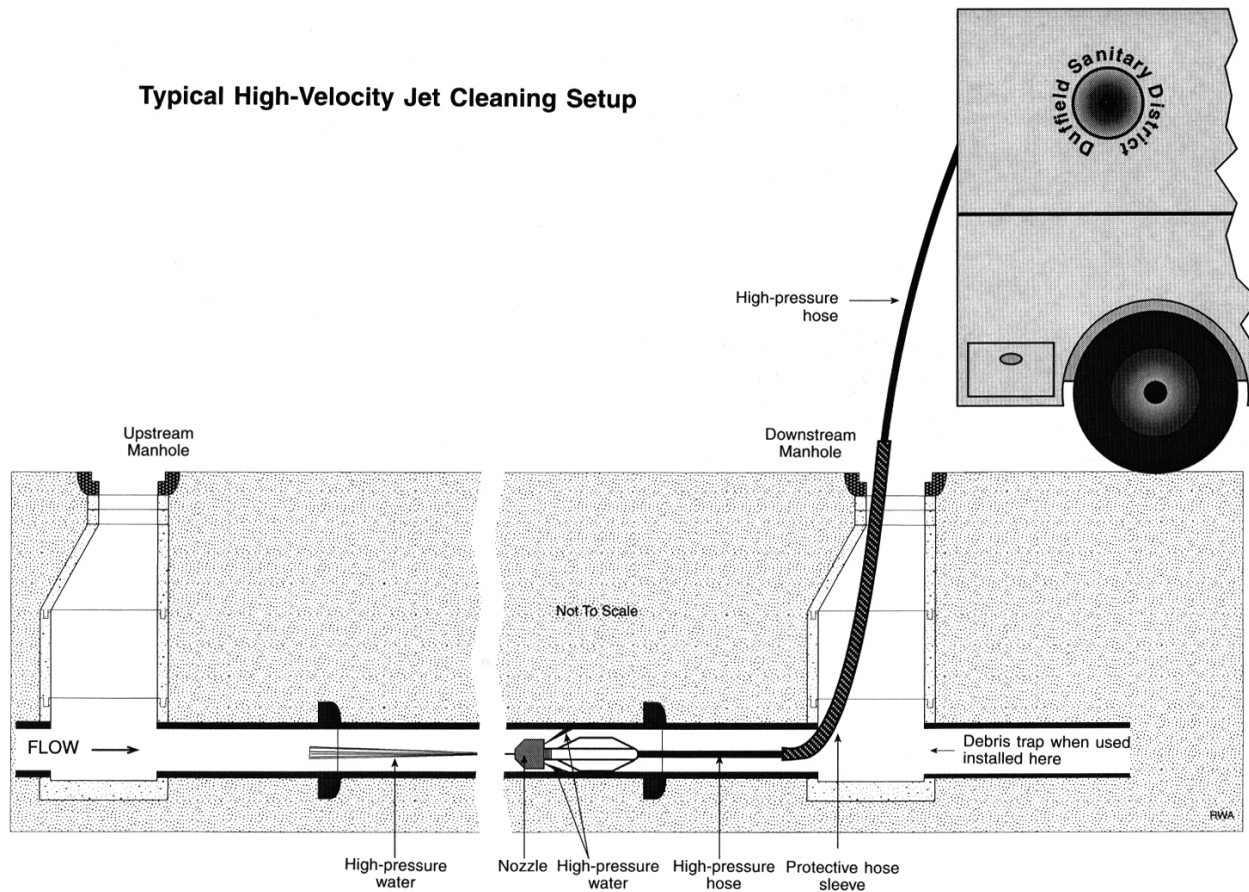


Figure 3.5 High-Velocity Cleaner⁵

- ❑ Flushing is an effective method of removing floatable solids. This method uses either a tanker truck or hydrant to provide sufficient water pressure to flush the line clean. During flushing operations, the downstream manholes must be observed for flow. If flow is lower than expected, this indicates that the upstream sewer requires additional cleaning.

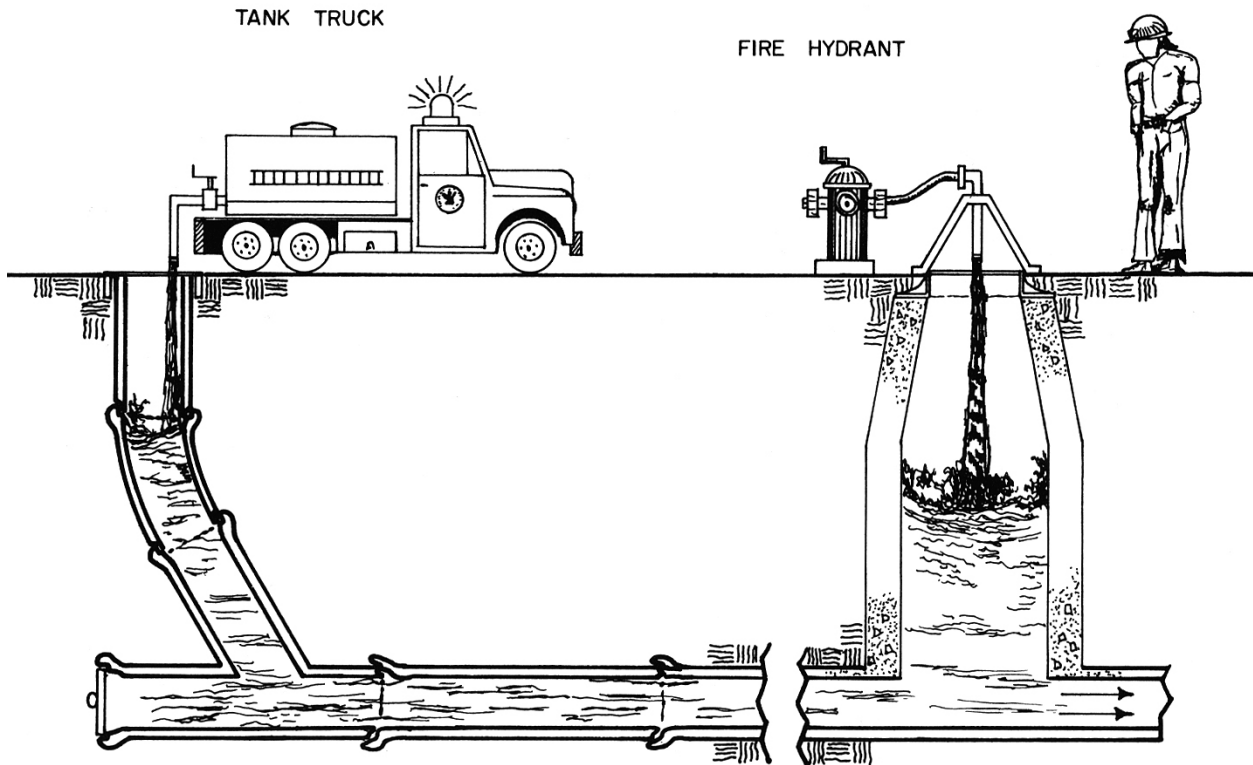


Figure 3.6 Flushing Operation⁶

- ❑ The sewer scooter is an effective method of removing large objects from the sewer. The scooter consists of a carriage frame attached to wheels. The frame consists of a circular metal shield that is hinged at the top half and attached to the frame by the lower half. The scooter is propelled through the sewer by water pressure. Scooters range in size from 6 to 96 inches, and can, therefore, be used in a wide variety of sewers.

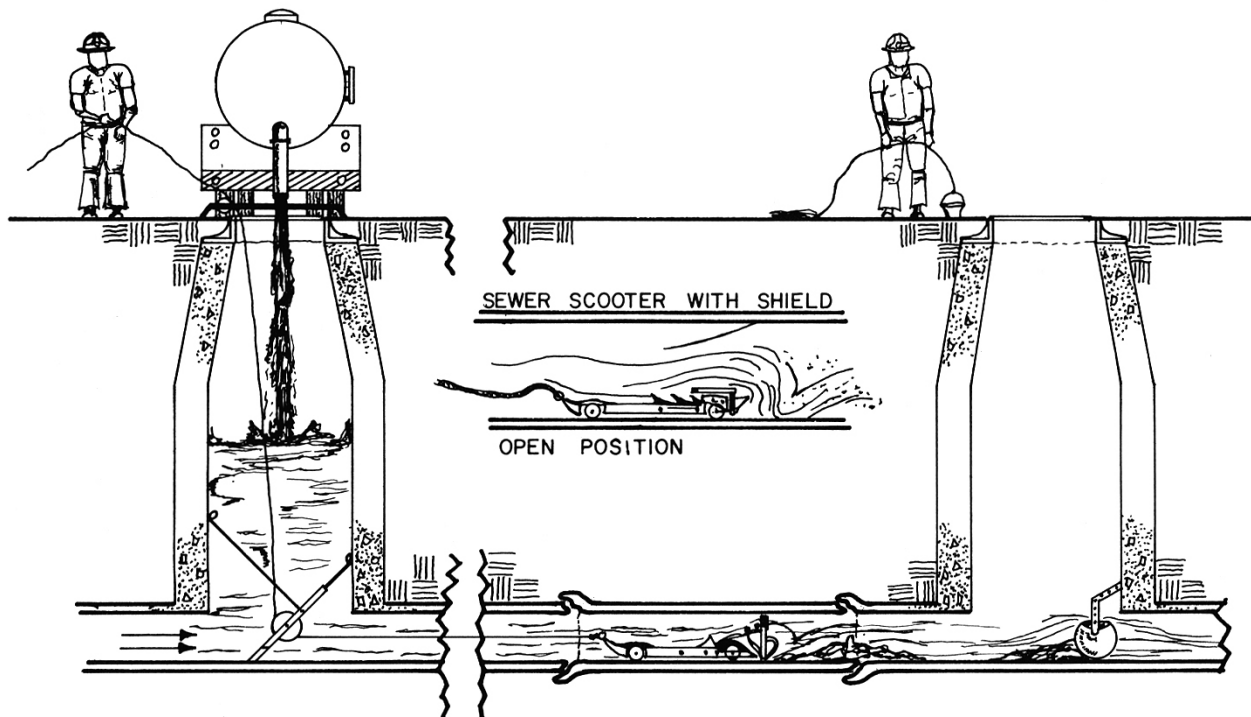
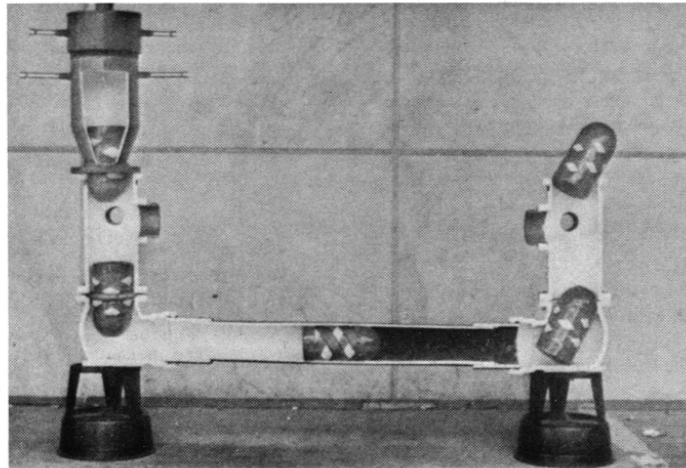


Figure 3.7 Sewer Scooter⁷

- ❑ Kites, bags and poly pigs are used to clean larger diameter sewers such as force mains. The most common method is with the use of poly pig, which is a type of polyurethane swab. The poly pig is inserted and then the force main is pressurized behind the poly pig. The poly pig travels by the pressure and scours the inside of the force main.



Use of poly pig in force main

AQUA SWAB 2 LBS./CU. FT. DENSITY Can Be Hand Launched.		AS (Aqua Swab) — Proving direction of flow, sealing behind undersized cleaning units, sweeping loose debris ACCS (Aqua Criss-Cross Swab) — Light cleaning
AQUA COAT 5 LBS./CU. FT. DENSITY		AB (Aqua Bare) — Gauging, light cleaning ACC (Aqua Criss-Cross) — Cleaning ACCWB (Aqua Criss-Cross Wire Brush) — Scraping

Figure 3.8 Poly Pigs and Swabs⁸

Chemical

Chemicals may be added to a sewer line to control roots, grease and odor.

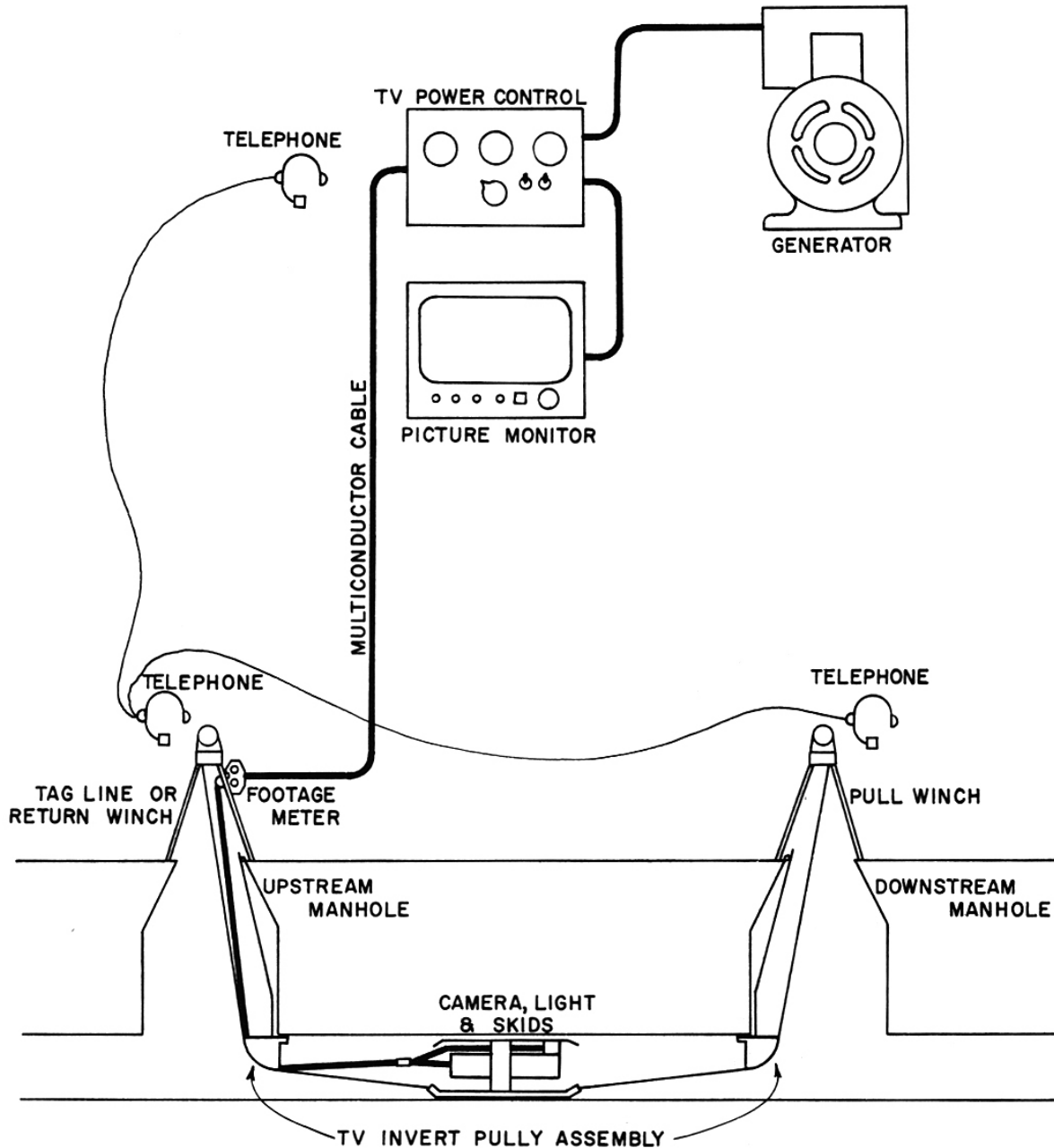
- ☐ No type of chemical should be added to the sewer line before reviewing favorable chemical analysis results from a respectable lab. The chemical needs to be tested to prove that it produces appropriate actual results, rather than relying on expected (or advertised) results.
- ☐ Government agencies and private laboratories conduct impartial testing of new chemicals before they are sold. If assistance is required to determine if a chemical should be used, the Environmental Protection Agency or DEP should be contacted for recommendations.
- ☐ Material Safety Data Sheets (MSDS) should be reviewed to determine the type of chemical, reactions that will occur, safety equipment that should be worn when handling the chemical, first aid that treatment to be given should the chemical get spilled or splashed, and proper clean-up of the chemical.
- ☐ The effect the chemical might have on the treatment plant should be evaluated.

Inspection

Inspection techniques are used to gather information about the condition of the sewer system. The inspection can be used to identify potential or existing problems, and can provide insight into selecting the most appropriate method of avoiding or correcting the problem.

Closed Circuit Television (CCTV)

- ☐ Television inspections are the most effective method of determining the internal condition of a sewer.
- ☐ A CCTV consists of a television that is capable of traveling through sewer pipe and sending the signal to a monitor to observe the picture. In addition, video recording equipment is also used to maintain a record of the televising and televising report logs are filled out.



NOTE: There are three ways to control the far manhole winch pull:

1. Worker/sound-powered telephone,
2. Worker/walkie-talkie, or
3. No worker/remote control power winch.

NOTE: If a camera-carrying crawler tractor unit is used, no equipment is needed in the downstream manhole.

Figure 3.9 Closed Circuit Television⁹

Smoke Testing

- ☐ Smoke testing is used to determine sources of extraneous flow into the sewer system.
- ☐ The extraneous flow can be from illegal connection from homes including sump pumps and roof leaders, cracks in piping and surface water entering from holes in manhole lids and from storm sewers connected to the sanitary sewer system.
- ☐ Smoke testing a segment of sewer requires the use of a smoke blower unit, pipe plugs and smoke bombs. Prior to conducting smoke testing, residents in the area and local police and the fire department should be notified. During smoke testing pictures should be taken showing the locations of the smoke and a smoke test report should be completed.

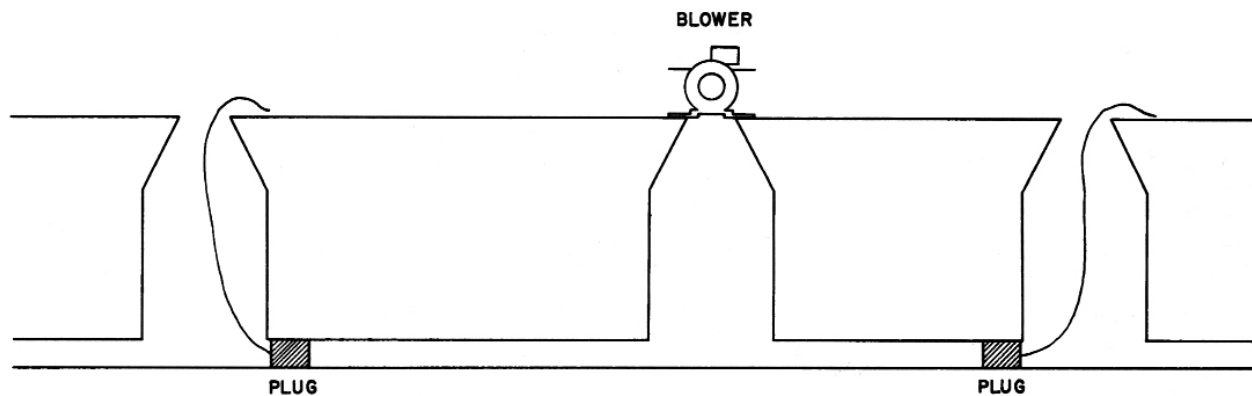


Figure 3.10 Smoke Testing¹⁰

SEWAGE COLLECTION DIVISION
I/E/I/ SUPPORT UNIT
SMOKE TEST REPORT

M.H. _____

M.H. _____

DATE _____ TIME _____ P.S. _____ SEWER LENGTH _____ DIA. _____

ATLAS PAGE _____ TEST# _____

WEATHER _____ BY _____

NAME _____

SMOKE INTENSITY

LIGHT ☐ MEDIUM ☐ HEAVY ☐

RESULTS

☐ 01: POS. CATCH BASIN CONN.

☐ 02: REPLACED C.O. CAP

☐ 03: DEFECTIVE C.O. RISER

☐ 04: DEFECTIVE SANITARY

☐ 05: DEFECTIVE HOUSE PIPING

ADDRESS _____

COMMENTS _____

--	--

Figure 3.11 Smoke Testing Report¹¹

Dye Testing

- ☐ Can be used to determine connections of extraneous flow to the sanitary sewer, and to determine if wastewater is overflowing into a water body.
- ☐ Is performed by one person applying dye at the suspect location and another person watching for the dye at the downstream manhole. The person watching for the dye should record the results of the test. Prior to dye testing, residents in the area should be notified. The notification is very important if the dye is going to be applied at private properties.

Lamping

- ☐ Is used on sewers to determine if a section of pipe is open.
- ☐ Involves a bright source of light and a mirror. One person goes into a manhole and reflects sunlight or shines a bright lamp beam down the sewer line. A second person goes into the next manhole to see if the light can be seen. If the light can be seen, the line is considered to be straight and open. If not, the line is either not straight or it is obstructed.

Manholes

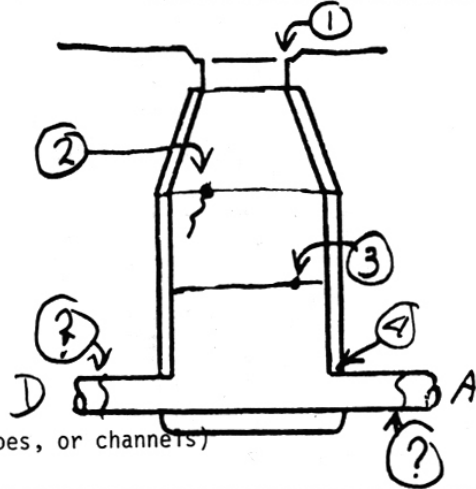
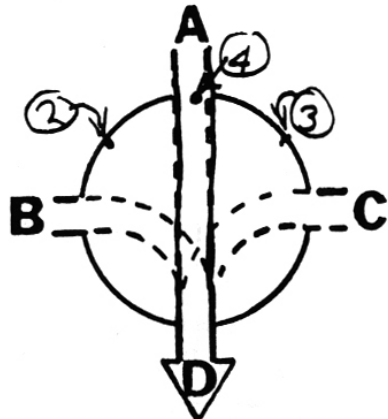
Manholes should be physically inspected to determine their condition and the general condition of the sewer lines based on the amount of flow entering the manhole.

Manhole inspection generally consists of the following five steps:

- ☐ Locate the manhole.
- ☐ Insert gas detection probe through opening in manhole cover to determine the conditions in the manhole.
- ☐ Remove the manhole lid, inspect all surfaces and joints inside manhole and record findings. The following defects should be recorded: cracks or breaks in the walls or bottom; infiltration into the manhole; offsets or misalignment; roots or debris accumulation in the invert, on shelf, steps or rungs; grease accumulation; concrete or grout in the invert resulting in flow turbulence, deterioration of the grout of frame, condition of the steps or rungs; wastewater backing up into manhole; and corrosion.
- ☐ Use wire brush to clean ledge of manhole ring and record and cracks.
- ☐ Replace manhole lid and check to ensure lid fits properly. This is important because an improperly seated manhole lid could be flipped off by a vehicle driving over it.

MANHOLE INSPECTION REPORT

MH NO. 6822 DATE 7-20-98 TIME 10:15AM INSPECTOR J.S.
 ELEVATION _____ DEPTH TO INVERT 9'7" CLEANLINESS OK
 TYPE CONSTRUCTION CONC-CAST STREET REFERENCES 34 AVE & AITKIN



DEFECTS:
 (Cover, frame, grout, walls, steps, shelf, pipes, or channels)

1. MH RING DEPRESSED 1 1/4"
2. DIAGONAL CRACK IN BARREL
3. SEAL FAILURE AT JOINT - 1-GPM LEAK
4. SEAL FAILURE & PIPE CRACK - 2-GPM LEAK
5. _____
6. _____
7. _____
8. _____

(USE REVERSE SIDE FOR ADDITIONAL DEFECTS TO BE NOTED.)

	PIPE SIZE	LENGTH	TO MH#	EST. FLOW	TYPE FLOW
A-	<u>8</u>	<u>275</u>	<u>6823</u>	<u>2"</u>	<u>SOAPY</u>
B-	_____	_____	_____	_____	_____
C-	_____	_____	_____	_____	_____
D-	<u>8</u>	<u>320</u>	<u>6821</u>	<u>2"</u>	_____

REMARKS:
 (Include need for repairs)

AUDIBLE LEAK(S) IN PIPES NEAR MANHOLE. DEPRESSED
RING MAY INDICATE DROP JOINTS OR BREAKS IN LINE.

Figure 3.12 Manhole Inspection Form¹²

Definitions



Infiltration is groundwater entering into the sewer system through faults in the sewer line, lateral or manhole.



Inflow is the direct discharge of non-sanitary water into the sewer system.



Infiltration and Inflow (I/I) is the total quantity of flow from both infiltration and inflow sources.

Sources



What are some of the typical sources of infiltration?



What are some of the typical sources of inflow?

Investigations

Investigations should be performed to determine the sources of the infiltration and/or inflow.

- ☐ Physical investigations are often performed at night to estimate the quantity of I/I present in the sewer system. Nighttime flows should be minimal because the water usage should be negligible since the majority of residents are asleep.
- ☐ Flow estimates are made at the manholes.
- ☐ Once the lines that have excessive flow (and, therefore, may have infiltration) have been determined, additional work is needed to identify the source.

Inspections

Visual Inspection

- ☐ Visual inspection televising equipment is used to identify sources of infiltration and inflow.
- ☐ The defects in the line where groundwater is entering can be seen, and clear water entering the system from direct discharges can be noted for further inflow investigations.

Smoke Testing

- ☐ Smoke testing is typically used to determine sources of inflow. This is a good investigative tool, because smoke testing can pinpoint the exact location(s) of the inflow source.
- ☐ Following smoke testing, dye testing can be used to verify the source location.

Building Inspections

- ☐ Building inspections may also be used to determine sources of inflow. The inspection would include inspecting every structure that may be connected to the sewer system such as roof leaders, foundation drains, area drains or sump pumps.
- ☐ If there appears to be nowhere for the water to go, the sewer line can be smoke tested and/or the structure dye tested.

System Evaluation and Problems

Sewer systems need to be evaluated to determine the major areas of a municipality's system and to determine where problems exist. High levels of I/I in a system and structural deterioration lead to expensive treatment costs, building relief sewers, backing up sewage into residences and overflowing sewage into waterways.

Flow Metering and Analysis

- ☐ Flow metering is used to determine the amount of I/I present in the system and is the first step in performing a hydraulic analysis. Flow metering consists of temporary and permanent meters. Temporary meters are located at areas of interest and typically provide most of the metering data. Permanent meters, located at pumping stations and the treatment plant, provide backup data.
- ☐ The following factors should be considered when choosing sites for the temporary meters:
 - ▶ Flow depth.
 - ▶ Sediment load.
 - ▶ Pipe size and shape.
 - ▶ Accessibility.
 - ▶ Manhole location.
 - ▶ Surge potential.
- ☐ The use of weirs and flumes may increase the accuracy of flow metering; however, additional maintenance is required to ensure that debris does not affect the reading.
- ☐ Flow data evaluation involves processing the information obtained from each meter. The data is analyzed on preset intervals, typically 15 minutes, 30 minutes or 60 minutes. The flow rates for each interval are determined and then a total daily value is calculated. Hydrographs are constructed with the intervals to provide a graphical representation.
- ☐ In order to have a realistic evaluation of what is occurring, precipitation and groundwater levels should be measured during the metering period. This data will help in evaluating the causes of high flow.

Condition Assessment

- ☐ The condition of the system should be assessed. The system should be mapped, and the map should be kept up-to-date with new extensions added when constructed.
- ☐ The system should be assessed by surface inspection and internal inspections.
 - ▶ Surface inspections involve walking the pipeline length and recording any sunken areas, areas of ponded water and water leakage from the soil, which are indicators of sewer defects. In addition, stream crossing conditions and manhole conditions should be recorded.
 - ▶ Suspect areas found during flow metering and surface inspections should be internally inspected. Typically CCTV is used to determine the condition. Reports and videotape should be produced during televising to maintain a record of defects encountered.

Prioritizing Rehabilitation

- ☐ Based on the findings, a list of needed repairs should be prepared. The list should be based on the physical and operational conditions of the system.
- ☐ The listing should include all problems by general groupings such as:
 - ▶ Near Collapse.
 - ▶ Frequent Failures.
 - ▶ Troublesome.
- ☐ The next step would involve a cost analysis to determine what course of action should be taken for each problem. There are typically four courses of action: maintain, rehabilitate, relieve and replace.
- ☐ The process for setting priorities may involve evaluation of the following factors: sewer performance, capacity, consequence of failure and condition and costs. All of these factors should be considered when prioritizing rehabilitation.

Rehabilitation Methods

There are several methods of rehabilitation that can be used on sewer lines. The method is often based on the problem involved and/or cost of the rehabilitation.

Excavate/Replace

- ☐ This is the oldest and most common method of rehabilitation. It is used when there is severe structural deterioration or severe misalignment of the sewer.
- ☐ This method should not be considered when excavation disruption is considered unacceptable.

Chemical Grouting

- ☐ Chemical grouting is used to seal pipe joint and circumferential cracks. Two types of chemical grouts are gels and foams.
- ☐ For grouting to be successful, joints must be clean, free of roots and not significantly deteriorated.
- ☐ The service life of grout is questionable when attempting to seal joints and cracks that are actively leaking during the grouting process.

Trenchless Technology

Several methods have been developed that allow sewers to be rehabilitated without excavation.

Sliplining

- ❑ Sliplining involves pulling or pushing a new flexible liner pipe of a slightly smaller diameter into the existing pipeline. The lateral connections to the sewer line are reconnected by excavation.
- ❑ The method can only be used on pipe that is not excessively deteriorated. An additional limitation is that this method results in a substantial loss of cross-sectional area of pipe.

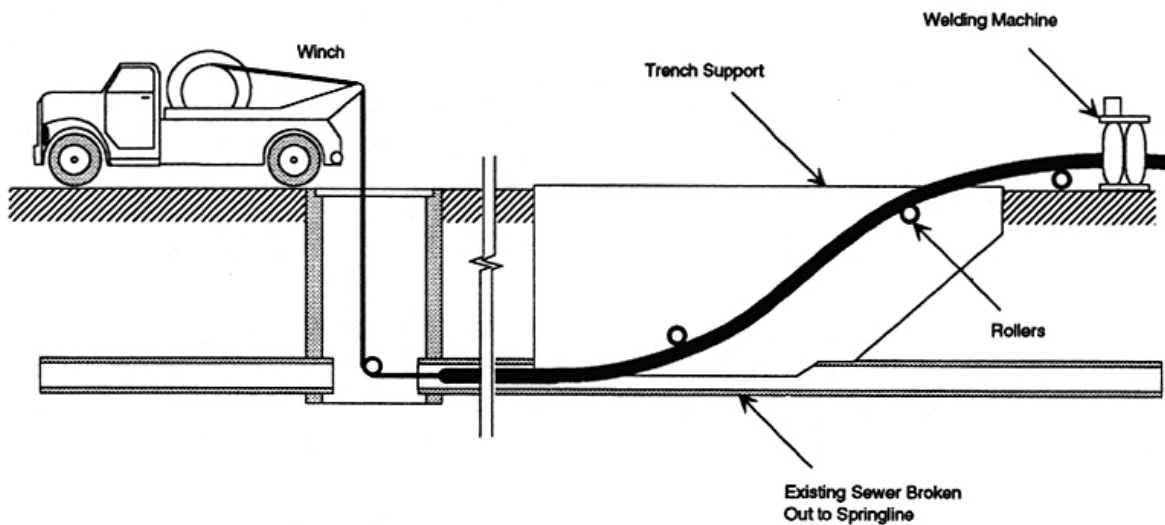


Figure 3.13 Sliplining¹³

Cured-in-Place

- ❑ Cured-in-place involves the installation and curing of a resin-saturated flexible fabric liner inside the existing pipe. The line must be televised with lateral locations recorded, and cleaned; and have roots removed and cracks grouted prior to beginning work.
- ❑ Once the preparation work is completed, the flexible tube is impregnated with resin (a hardening material) and is typically inserted through a manhole. The tube is installed in the existing sewer by pulling it or inverting it under air or water pressure. The tube is then pressed against the wall of the existing sewer, and the resin cures and forms a hard liner against the existing sewer. The force used to press the liner against the wall forms dimples where the laterals are located. Once the resin sets, the downstream end is cut and the remaining tube is removed. A cutting device attached to a CCTV is pulled through the line and the lateral connections are cut open.
- ❑ This method requires no excavation but does require a trained crew with specialized equipment. It is expensive and cannot be used on a sewer that has severe structural deterioration.

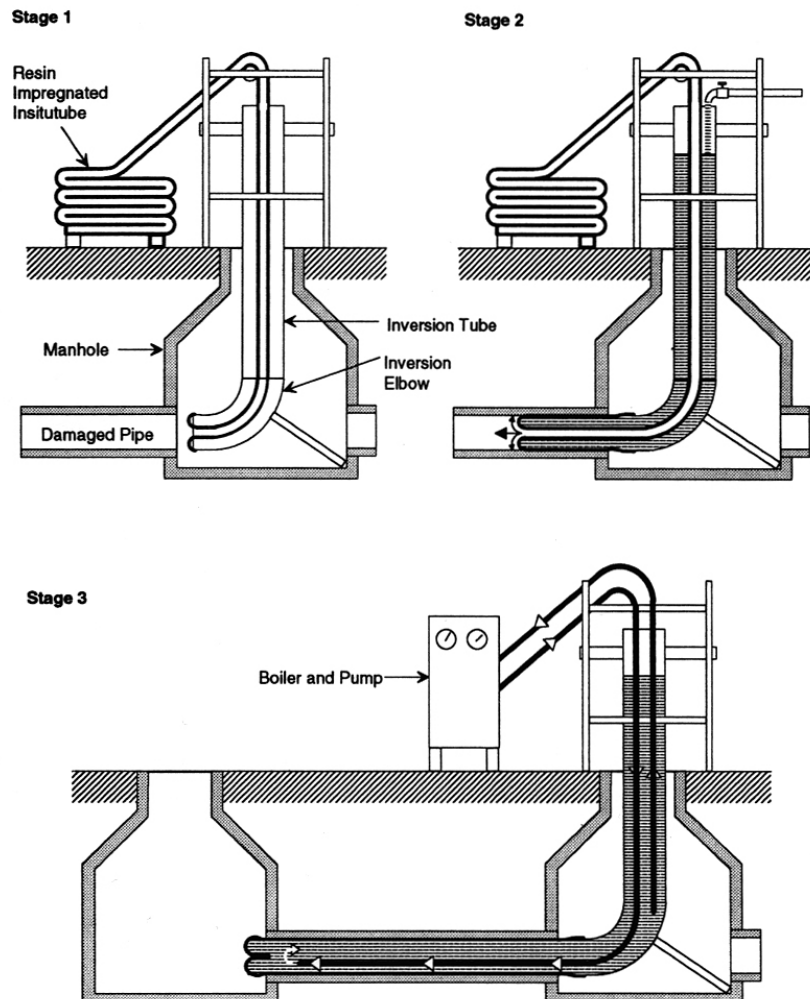


Figure 3.14 Cured-in-Place¹⁴

Deformed and Reshaped

- ☐ This method involves inserting a pipe that has been reduced in size into the existing sewer line at manholes or insertion pits. Once the deformed pipe is inserted, it is restored to its original size by the use of heat or pressure. The laterals are reconnected to the pipe with the use of a cutter. The reduced pipeline capacity is minimal, and no grouting is required.
- ☐ This method requires a trained crew with specialized equipment. Sewer lines with severe structural deterioration can cause problems.

Pipe Bursting

- ☐ Pipe bursting involves inserting a Pipeline Insertion Machine (PIM) that breaks out the existing sewer line and pulls a new pipe through the bore formed by the PIM. The method may result in an increase in line capacity by allowing the new pipe to be a size bigger than the existing sewer line.
- ☐ The method requires excavation for laterals, disconnection and reconnection. In addition, nearby underground utilities may be damaged, and a trained crew with specialized equipment is required.

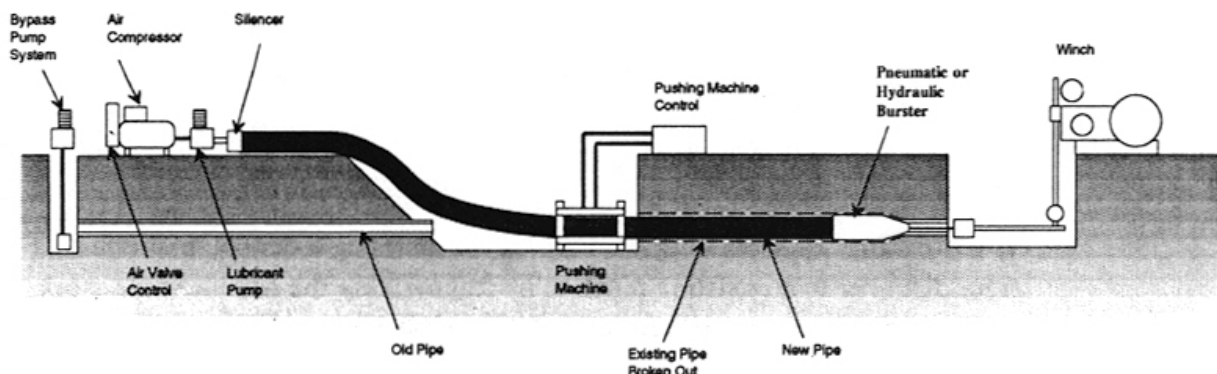


Figure 3.15 Pipe Bursting¹⁵

Rehabilitation of Manholes

Manholes are necessary to a sewer system to permit access locations for maintenance and repair. Manhole rehabilitation is required to eliminate I/I and repair structural defects to ensure that the sewer is a safe access point.

Grouting

- ☐ Grouting is used to repair leaks in the manhole walls.
- ☐ Grouting of manholes is performed by drilling holes through the manhole wall and pumping grout into the soil outside the manhole to fill the cracks.
- ☐ It is important to note that grouting does not add to the structural integrity of the manhole and should not be used to rehabilitate manholes with severe structural deterioration.

Coating

- ☐ The application of coating can rehabilitate a deteriorated manhole structure for several years.
- ☐ The coating is comprised of a cementitious material containing Portland cement, finely graded mineral fillers and chemical additives. The walls of the manhole should be cleaned, and then the coating applied in one or more coats.

Lining

- ☐ Lining is used to structurally rehabilitate a manhole. A cast-in-place protective plastic lining can be installed inside a manhole.
- ☐ Lining is typically not cost competitive with grouting and coating based on initial cost; however, it is less costly than excavation and replacement.

Rehabilitation of Appurtenances

Laterals are appurtenances that require rehabilitation. Typically, rehabilitation of laterals is complicated because the portion from the building to the right-of-way line is privately owned. However, laterals can be a significant source of I/I to the system and can cause backups if structurally deteriorated.

- ❑ Many of the rehabilitation methods that are used for sewer lines can also be used on laterals; however, rehabilitation is often more difficult based on the limited space available, root problems and landscaping over the lateral.



Key Points for Unit 3 – Management and Operations

- A community which has only a sewer system is not required to have a permit but those with a WWTP must have an NPDES permit which is renewed every 5 years.
- A Chapter 94 report to include a variety of collection system information is required annually to be submitted to the DEP.
- The proposed EPA CMOM regulations directs collection system owners to take a proactive position to correct existing problems and prevent future problems and includes a combined sewer overflows policy and a long term control plan that a municipality will follow to ultimately obtain full compliance with the Clean Water Act.
- There are three (3) mechanical cleaning methods: power bucket cleaning, power rodding and hand rod cleaning.
- There are five (5) hydraulic (involve the use of water) cleaning methods: balling, high-velocity cleaning, flushing, sewer scooters, and the use of kites, bags and poly pig.
- There are 5 inspection techniques: closed circuit televisions, smoke testing, dye testing, lamping and manholes.
- Infiltration and Inflow (I/I) is the total quantity of flow from both infiltration (groundwater entering the sewer system through faults in the sewer line, lateral or manhole) and inflow (the direct discharge of non-sanitary water into the sewer system) water sources.
- There are three (3) rehabilitation methods of collection systems including excavate/replace, chemical grouting and a variety of trenchless technologies.
- Manhole rehabilitation methods include grouting, coating and lining.

**Exercise**

1. List the three types of collection system cleaning methods.
 - a. _____
 - b. _____
 - c. _____
2. What are the three methods of mechanical cleaning?
 - a. _____
 - b. _____
 - c. _____
3. List three of the six types of hydraulic cleaning and explain when each method is appropriate for use.
 - a. _____
 - b. _____
 - c. _____
4. List three rehabilitation methods.
 - a. _____
 - b. _____
 - c. _____
5. Smoke testing can be useful in detecting:
 - a. illegal sump pump connections
 - b. cracks in sewer piping
 - c. storm sewers connected to sanitary sewers
 - d. all of the above
6. Lamping can be used to determine if a sewer is not straight or blocked.
 - a. True
 - b. False
7. Grouting is an excellent way to repair the structural integrity of a deteriorated manhole.
 - a. True
 - b. False

¹ Dallas Hughes, "Pipeline Cleaning and Maintenance Methods" in *Operation and Maintenance of Wastewater Collection Systems: A Field Study Training Program*, Vol I, (Sacramento California: California State University, Sacramento Foundation, 1999), p. 370.

² Hughes, p. 377.

³ Hughes, p. 339.

⁴ Hughes, p. 340.

⁵ Hughes, p. 347.

⁶ Hughes, p. 355.

⁷ Hughes, p. 358.

⁸ Hughes, p. 363.

⁹ George Freeland, "Inspecting and Testing Collection Systems" in *Operation and Maintenance of Wastewater Collection Systems: A Field Study Training Program*, Vol I, (Sacramento California: California State University, Sacramento Foundation, 1999), p. 244.

¹⁰ Freeland, p. 274.

¹¹ Freeland, p. 282

¹² Freeland, p. 240.

¹³ Joint Task Force of the Water Environment Federation and the American Society of Civil Engineers, "Pipeline Rehabilitation Methods" in *Existing Sewer Evaluation and Rehabilitation WEF Manual of Practice FD-6 ASCE Manuals and Reports on Engineering Practice*, No. 62, 2nd Edition, (NY, NY: Water Environment Federation, American Society of Civil Engineers, 1994), p. 153.

¹⁴ Joint Task Force, p. 157.

¹⁵ Joint Task Force, p. 166.

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– Sewage Collection and Treatment Facilities	A-15
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SEWAGE FACILITIES PLANNING MODULE APPLICATION MAILER

COMMONWEALTH OF PENNSYLVANIA Department of Environmental Protection

Edward G. Rendell, Governor • Kathleen A. McGinty, Acting Secretary

For more information, visit us through the PA PowerPort
at www.state.pa.us or visit DEP directly at www.dep.state.pa.us

INSTRUCTIONS FOR COMPLETING SEWAGE FACILITIES PLANNING MODULE APPLICATION MAILER

(remove before sending mailer to the approving agency (DEP or delegated local agency))

Read the following instructions carefully before completing the application mailer. This information will be used to determine if sewage facilities planning is necessary for your project, and, if it is, which forms are appropriate.

Unless your project qualifies for one of the planning exemptions in Section 7, a package of **sewage facilities planning module** forms appropriate for the project will be sent to the return address indicated on the mailer or instructions for obtaining the appropriate forms from the DEP website (www.dep.state.pa.us) will be issued. Each form includes a detailed instructions which explain the use of the form and how to complete it. The package of completed forms and its supporting documentation is called a **sewage facilities planning module**, or "planning module". Once the planning module is complete, it must be given to the municipality in which the project is located for review. While most planning modules are also reviewed by DEP following the municipal review, some municipalities (or groups of municipalities working together) have requested and received DEP approval to complete review of planning modules themselves. These are known as **delegated local agencies**. To find out if your project is located in an area served by a delegated local agency, contact the municipality or the DEP regional office serving your area.

Please note that both DEP and delegated local agencies are required by law to charge fees for the review of planning modules. The fees DEP must charge are set by law in Act 537, while delegated local agencies may set fees which can be the same or different from those in Act 537. For more information on review fees for your particular project, see the planning module guidance documents or contact the approving agency (DEP or delegated local agency) serving the area of your project.

NOTE: If your project is a **minor subdivision** (defined as a subdivision of 10 lots or less, intended for single family residential homes served by individual onlot sewage disposal systems) you may complete this application mailer if you are seeking an exemption from sewage facilities planning. If you are not seeking an exemption for a minor subdivision, ask the municipality in which your project is located for a "Component 1" minor subdivision planning module form.

INSTRUCTIONS (Numbered items on the mailer correspond to the instruction numbers below)

1. Print the name of the proposed development and name, address, and telephone number of the person who is proposing the project. If planning module components are to be sent to a different person or address, include this information on the front of the mailer in the return address block.
2.
 - a. Enter the county in which the project is located.
 - b. Enter the municipality in which the project is located.
 - c. Enter the road or street coordinates (example - west side of T-235, 1 mile south of intersection of Rt 15 and T-235).
 - d. Enter the name of the USGS 7.5 minute quadrangle map which contains the project area, and the location of the project area on that map in inches up and over from the lower right corner of the map to the approximate center of the project. (Example - Centerville West quad, 7 inches up and 2.5 inches over from lower right corner of map). Alternatively, include an original or a copy of the USGS quad map with the project area outlined on it.
3. Check the box that best describes the intended use of the proposed land development project. **Residential** refers to single-family lots. **Multi-residential** includes apartments, condos, etc. **Commercial** includes retail centers, office parks, industrial development, etc. **Institutional** refers to schools, hospitals and the like. Some developments will involve more than one type of use, or will not fit comfortably into any of the classifications given. If this is the case, choose more than one category or explain under **Other**.
4.
 - a. Enter the number of single family residential lots or Equivalent Dwelling Units (EDUs) proposed. An EDU is defined as that part of a multifamily dwelling or nonresidential project with flows equal to 400 gallons per day (the assumed flow, for planning purposes, of a single family residential lot). To determine the number of EDUs, divide the proposed sewage flow of the project by 400 gpd.
 - b. Enter the total number of lots created from this parcel of land since May 15, 1972, including the lots being proposed at this time. (Onlot disposal proposals only.)
 - c. Enter the total project acreage and the acreage of any remaining land (land not proposed for development but under the same ownership and adjacent to the project area).

5. Enter the proposed sewage flow from the project in gallons per day (gpd). See Title 25 of the Pennsylvania Code, Chapter 73, Section 73.17, (www.pacode.com), or DEP's *Domestic Wastewater Facilities Manual* (www.dep.state.pa.us directLINK "wastewater").

6. Choose the category (a, b, c, or d) that describes the method of sewage disposal planned to serve the project and enter the information requested. Since this information could have an effect on the planning requirements for your project, be as accurate as possible. If more than one method of sewage disposal is planned, or if an interim method is planned, indicate it here.

a. Sewerage System

If an existing system is being extended to serve the proposed project, or if lots are to connect directly to an existing sewage collection system, write in the name of the existing collection system that will be used. Indicate whether it is public or private. Also, write in the name of the interceptor sewer which will be used for conveyance, and the name of the treatment facility where the sewage flows will be treated. If pump stations or force mains will be required to serve the project, check the box labeled "Pump Station(s)/Force Main."

b. Construction of Sewage Treatment Facility (with stream discharge or with spray irrigation as final disposal option)

Check the box corresponding to the chosen final disposal option (stream discharge or spray irrigation field). This category does **NOT** include individual residence spray irrigation systems (IRSIS) which are considered onlot sewage disposal systems ((c), below). For stream discharges, name the receiving water body. If the proposed facility is intended to replace an existing, malfunctioning onlot system, check the box marked "repair".

c. Onlot Sewage Disposal Systems (individual, community, or large-volume)

Check the box corresponding to the type of onlot sewage disposal systems proposed to serve the project. An **individual onlot sewage disposal system** is a system of piping, tanks or other facilities used for collecting, treating and disposing of sewage into a subsurface absorption area. This category also includes individual residence spray irrigation systems (IRSIS). A **community onlot system** is a facility either publicly or privately owned which will collect and dispose of sewage from two or more lots or EDUs into a subsurface absorption area. A **large volume onlot system** is an individual or community onlot system which is designed to treat flows in excess of 10,000 gpd.

The approving agency should be notified at least 10 days in advance of all soil testing activities (including those related to planning exemption requests - see 7(a)(2)), so that its staff have the option of observing the tests.

d. Retaining Tanks (holding tanks or privies)

If retaining tanks are proposed as the method of sewage disposal, enter the number of holding tanks or privies which are proposed to serve the project.

7. Requests for Planning Exemption under the Sewage Facilities Act

Amendments to Act 537 signed into law on December 14, 1994, and effective December 15, 1995, created certain classes of subdivisions that are no longer subject to the planning requirements of the Sewage Facilities Act. To help you and the approving agency determine if your project fits into one of these categories, a series of sign-off areas have been added to the Application for Sewage Facilities Planning Module Mailer. They are separated based upon the type of sewage disposal proposed.

a. Projects proposing use of onlot sewage disposal systems

(1) Information Required from the Municipality

The municipality in which the project is located (identified in Item 2.b. of the mailer) should determine if the municipality's Official Sewage Facilities Plan shows that the area planned for the project is to be served by onlot sewage disposal systems. If it is, the municipality should indicate this by having an authorized municipal official sign and date the form in the space provided. The official's name and title should be printed on the line below. In the absence of a municipal signature, the applicant should submit evidence that the approved mailer was submitted to the municipality for signature. Upon receipt of this evidence, the approving agency will make an independent determination based on the most recent Official Sewage Facilities Plan.

(2) Information Required from the municipal Sewage Enforcement Officer (SEO)

The municipality's SEO must conduct personally, observe or otherwise confirm in a manner approved by DEP site testing on each proposed lot in the subdivision (including any remaining land) to determine that separate sites are available for both a permitted primary onlot sewage disposal system and a replacement system (to be used if the original system fails in the future). If the SEO finds that each lot has been tested properly and fulfills these criteria, the SEO must indicate this by signing and dating the form in the space provided. His/her name and certification number should be printed on the line below.

(3) Information Required from the Applicant

The person proposing the subdivision, or his/her authorized agent, must determine if each lot in the subdivision (including the remaining land, if any) is at least one acre in size. If they are, the applicant or his/her agent must indicate this by signing and dating the form in the space provided.

(4) Determinations Made by the Approving Agency

When the above listed information is received, the approving agency will determine the following:

- (a) if the geology of the project area is conducive to nitrate-nitrogen contamination of groundwater (determined from the topographic map location information); or
- (b) if elevated levels of nitrate-nitrogen are known to exist within one quarter mile of the proposed development (determined from agency groundwater sampling records in existence at the time of the application); or
- (c) if the area proposed for development is within an identified High Quality (HQ) or Exceptional Value (EV) watershed (determined from the topographic map location).

Following this investigation, the approving agency will render a decision on the exemption request within 10 working days of receiving the request for exemption. Both the applicant and municipality will be notified of the decision. If the request cannot be granted, the person named in the return address block will receive the proper planning module component forms (or instructions to obtain them from the DEP website) along with the notification of the decision, including the reason(s) that the request cannot be granted.

b. Projects proposing use of public sewerage facilities (i.e., ownership by municipality or authority)

(1) Information Required from the Municipality

The municipality in which the proposed project is located (identified in Item 2.b. of the mailer) will determine the following from written documentation requested and obtained by the applicant from the facility permittee. ***This documentation MUST also be sent to the approving agency (DEP or delegated local agency) for evaluation.***

- (a) Certification from the permittees of the collection, conveyance and treatment facilities proposed for use that capacity is available in these facilities to receive and treat the sewage flows from the proposed project; and
- (b) that these added flows will not cause an overload or 5 year projected overload in the facilities.

If the facilities proposed for use are owned and operated by an authority, or authorities, then attach a letter from each to the mailer.

If this written certification has been submitted by the applicant, an authorized municipal official should sign and date the form and print his/her name and title and the municipality name in the spaces provided.

Note: Since planning is a municipal responsibility, sewer authorities involved should make required information available but should **NOT** sign the mailer as the authorized municipal official.

In the absence of a municipal signature, the applicant should submit evidence to the approving agency that the written certification described in b(1) was submitted to the appropriate municipal official. Upon receipt of the evidence and the written certification, the approving agency will make an independent determination of the available capacity to serve the proposed new land development.

(2) Determinations Made by The Approving Agency

When the above listed information is received by the approving agency, the approving agency will determine the following (from DEP records):

- (a) that the existing collection, conveyance and treatment facilities are in compliance;
- (b) that the existing facilities have no existing or 5-year projected overload;
- (c) that the municipality has a currently approved Official Sewage Facilities Plan which is being implemented; and
- (d) that the project does not propose service by facilities needing a new or modified permit from DEP under the Clean Streams Law.

Following this investigation, the approving agency will render a decision on the exemption request within 10 working days of receiving the request for exemption. Both the applicant and the municipality will be notified of the decision. If the request cannot be granted, the person named in the return address block will receive the proper planning module component forms (or instructions to obtain them from the DEP website) along with the notification of the decision, including the reason that the request cannot be granted.

If unsure of which local DEP office to contact the following DEP Regional Offices will assist you in determining the appropriate local DEP office that serves your specific municipality.

If you need more information or assistance, please contact your local DEP office.

DEP REGIONAL OFFICES

Southeast Region

Suite 6010, Lee Park
555 North Lane
Conshohocken, PA 19428
Water Supply: 610-832-6060
Wastewater: 610-832-6131

Counties: Bucks, Chester, Delaware, Montgomery and Philadelphia

Northwest Region

230 Chestnut St.
Meadville, PA 16335-3481
Water Supply: 814-332-6899
Wastewater: 814-332-6942

Counties: Butler, Clarion, Crawford, Elk, Erie, Forest, Jefferson, Lawrence, McKean, Mercer, Venango and Warren

Southwest Region

400 Waterfront Drive
Pittsburgh, PA 15222-4745
Water Supply: 412-442-4217
Wastewater: 412-442-4035

Counties: Allegheny, Armstrong, Beaver, Cambria, Fayette, Greene, Indiana, Somerset, Washington and Westmoreland

Northeast Region

2 Public Square
Wilkes-Barre, PA 18711-0790
Water Supply: 570-826-2511
Wastewater: 570-826-2553

Counties: Carbon, Lackawanna, Lehigh, Luzerne, Monroe, Northampton, Pike, Schuylkill, Susquehanna, Wayne and Wyoming

Southcentral Region

909 Elmerton Ave.
Harrisburg, PA 17110
Water Supply: 717-705-4708
Wastewater: 717-705-4707

Counties: Adams, Bedford, Berks, Blair, Cumberland, Dauphin, Franklin, Fulton, Huntingdon, Juniata, Lancaster, Lebanon, Mifflin, Perry and York

Northcentral Region

208 W. Third St., Suite 101
Williamsport, PA 17701
Water Supply: 570-327-3636
Wastewater: 570-327-3670

Counties: Bradford, Cameron, Clearfield, Centre, Clinton, Columbia, Lycoming, Montour, Northumberland, Potter, Snyder, Sullivan, Tioga and Union

1. **Development Information:**

Name of Development _____

Developer Name _____

Address _____

Telephone # _____

2. **Location of Development:**

a. County _____

b. Municipality _____

c. Road or Street Coordinates _____

d. USGS Quad Name _____

inches up _____ over _____

from bottom right corner of map.

3. **Type of Development Proposed:** ☐

(check appropriate box)

☐ Residential

☐ Multi-Residential

Describe _____

☐ Commercial

Describe _____

☐ Institutional

Describe _____

☐ Other (specify) _____

4. **Size**

a. # of lots _____ # of EDUs _____

b. # of lots since 5/15/72 _____

c. Development Acreage _____

d. Remaining Acreage _____

5. **Sewage Flows** _____ gpd.

6. **Proposed Sewage Disposal Method**

(check appropriate boxes):

a. ☐ Sewerage System

Name of existing system being extended

☐ Public ☐ Private

Interceptor Name _____

Treatment Facility Name _____

☐ Pump Station(s)/Force Main

b. ☐ Construction of Treatment Facility

☐ With Stream Discharge

☐ With Land Application (not including IRSIS)

☐ Other

☐ Repair?

Name of waterbody where point of discharge is proposed
(if stream discharge)

c. ☐ Onlot Sewage Disposal Systems

(check appropriate box)

☐ Individual Onlot system(s) (including IRSIS)

☐ Community Onlot system

☐ Large Volume Onlot system

d. ☐ Retaining Tanks

Number of Holding Tanks _____

Number of Privies _____

7. **Request for Planning Exemption**

a. Onlot Disposal Systems

(1) I certify that the Official Plan shows this area as an onlot service area.

_____/_____
(Signature of municipal official) Date

Telephone # _____

_____/_____
Name (Print) Title

Municipality (must be same as in 2.b.)

Telephone # _____

(2) I certify that each lot in this subdivision has been tested and is suitable for both a primary and replacement sewage disposal system.

_____/_____
(Signature of SEO) Date

_____/_____
Name (Print) Certification #

(3) I certify that each lot in this subdivision is at least 1 acre in size

_____/_____
(Signature of Project Applicant/Agent) Date

b. Public Sewerage Service (i.e., ownership by municipality or authority)

Based upon written documentation, I certify that the facilities proposed for use have capacity and that no overload exists or is projected within 5 years. (Attach Documents.)

_____/_____
(Signature of Municipal Official) Date

_____/_____
Name (Print) Title

Municipality (must be same as in 2.b.)

Telephone # _____

Return Correspondence/Forms to:

Place
First-Class
Postage
Here

DEPARTMENT OF ENVIRONMENTAL PROTECTION

DEP USE	
Components Sent	
Onlot Disposal	☐
Collection and Treatment	☐
Planning Agency Review	☐
Exempt from Planning	☐
Code _____	
Date _____	

"Fold Here"



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATER SUPPLY AND WASTEWATER MANAGEMENT

Code No.

SEWAGE FACILITIES PLANNING MODULE

Component 1. Exception to the Requirement to Revise the Official Plan

(Return completed module package to appropriate municipality)

DEP USE ONLY

DEP CODE #	CLIENT ID #	SITE ID #	APS ID #	AUTH ID #
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This planning module component is used to satisfy the sewage facilities planning requirements for subdivisions of 10 lots or less (*including residual lands*) intended as building sites for detached single family dwelling units served by individual onlot sewage disposal systems. The number of lots includes only those lots created after May 15, 1972. Refer to the instructions for help in completing this component.

NOTE: All soil testing must be field verified by the Sewage Enforcement Officer (SEO). The SEO must notify the approving agency verbally or in writing at least 10 days prior to testing. In some cases, a representative of the approving agency may wish to observe the soil testing.

REVIEW FEES: Amendments to the Sewage Facilities Act established fees to be paid by the developer for review of planning modules for land development. These fees may vary depending on the approving agency for the project (DEP or delegated local agency). Please see Section K and the attached instructions for more information on these fees.

A. PROJECT INFORMATION (See Section A of instructions)

1. Project Name _____

2. Brief Project Description _____

3. Total Number of Lots:

Number of Lots Being Proposed

+ Residual Land Parcel/Lot..... + _____

+ Number of Previous Lots Developed from Present Tract As it Appeared on May 15, 1972 + _____

Total = _____ *

* If total exceeds 10, do not use this form. Contact DEP for correct forms.

B. CLIENT (MUNICIPALITY) INFORMATION (See Section B of instructions)

Municipality Name	County	City ☐	Boro ☐	Twp ☐
-------------------	--------	----------------------------------	----------------------------------	---------------------------------

Municipality Contact - Last Name	First Name	MI	Suffix	Title
----------------------------------	------------	----	--------	-------

Additional Individual Last Name	First Name	MI	Suffix	Title
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Municipality Mailing Address Line 1		Mailing Address Line 2	
Address Last Line -- City		State	ZIP+4
Phone + Ext. ()	FAX (optional) ()	Email (optional)	

C. SITE INFORMATION (See Section C of instructions)

Site (Land Development Project) Name

Site Location Line 1

Site Location Line 2

Site Location Last Line -- City

State

ZIP+4

Latitude

Longitude

Detailed Written Directions to Site

Description of Site (Project)

Site Contact (Developer) -- Last Name

First Name

MI

Suffix

Phone

Ext.

()

Site Contact Title

Site Contact Firm (if none, leave blank)

FAX

Email

()

Mailing Address Line 1

Mailing Address Line 2

Mailing Address Last Line -- City

State

ZIP+4

D. PROJECT CONSULTANT INFORMATION (See Section D of instructions)

Last Name

First Name

MI

Suffix

Title

Consulting Firm

Mailing Address Line 1

Mailing Address Line 2

Address Last Line -- City

State

ZIP+4

Country

Email

Phone

Ext.

FAX

()

()

E. AVAILABILITY OF DRINKING WATER SUPPLY

This project will be provided with drinking water from the following source: (Check appropriate box)

- ☐ Individual wells or cisterns.
- ☐ A proposed public water supply.
- ☐ An existing public water supply.

If existing public water supply is to be used, provide the name of the water company and attach documentation from the water company stating that it will serve the project.

Name of water company: _____

F. PROJECT NARRATIVE (See Section F of instructions)

- ☐ A narrative has been prepared as described in Section F of the instructions.

The applicant may choose to include additional information beyond that required by Section F of the instructions.

G. GENERAL SITE SUITABILITY (See Section G of instructions)**1. PLOT PLAN**

Attach an original or copy of a 7½ minute USGS topographic map with the area of the proposed land development plotted and labeled. Attach a copy of the plot plan of the proposed subdivision showing the following information:

- | | |
|--|--|
| a. Location of all soils profiles and percolation tests. | j. Wetlands from National Wetland Inventory Mapping and USDA Hydric Soils Mapping. |
| b. Slope at each test area. | k. Floodplain and floodways (Federal Flood Insurance Mapping). |
| c. Soil types and boundaries. | l. Designated open space areas. |
| d. Existing and proposed streets, roadways, access roads, etc. | m. Remaining acreage under the same ownership and adjoining lots. |
| e. Lot lines and lot sizes. | n. Existing onlot or sewerage systems; pipelines, transmission lines, etc. |
| f. Existing and proposed rights-of-way. | o. Prime agricultural land. |
| g. Existing and proposed drinking water supplies for proposed and contiguous lots. | p. Orientation to North. |
| h. Existing buildings. | |
| i. Surface waters. | |

2. RESIDUAL TRACT PLANNING WAIVER REQUEST

A waiver from sewage facilities planning ☐ is, ☐ is not requested for the residual land tract associated with this project. (See Section H, I and J and instructions for additional information).

3. SOILS INFORMATION

- Attach copies of "Site Investigation and Percolation Test Report" (3800-FM-WSWM0290A) (formerly known as "Appendix A") form(s) for the proposed subdivision.
- Marginal conditions for long-term onlot sewage disposal ☐ are, ☐ are not present. See marginal conditions information in Sections H and J and in attached instructions.
- If one or more lots in this subdivision are planned to be served by Individual Residential Spray Irrigation Systems (IRSIS), please see the specific information on IRSIS in Section G of the instructions.

Both the soils description preparer and developer must sign below indicating acknowledgement of the false swearing statement.

I verify that the statements made in this component are true and correct to the best of my knowledge, information and belief. I understand that false statements are made subject to the penalties of 18 Pa. C.S.A. §4904 relating to unsworn falsification to authorities.

Soils Description Preparer Name (Print)

Developer Name (Print)

Signature

Date

Signature

Date

H. MUNICIPALITY'S CERTIFIED SEWAGE ENFORCEMENT OFFICER (See Section H of instructions)

1. I have confirmed the information relating to the general suitability for onlot sewage disposal contained in this component. Confirmation of this information was based upon on-site verification of soil tests, general site conditions and other generally available soils information. The proposed development site:

- ☐ Is generally suitable for onlot disposal. This module does not constitute individual permit approval.
- ☐ Is marginal for long-term onlot disposal. (See instructions for information on marginal conditions).
- ☐ Is not generally suitable for onlot disposal. (See my attached comments regarding this determination).
- ☐ Cannot be evaluated for general site suitability because of insufficient soils testing.

2. The proposed development site is considered "marginal for onlot disposal" or for long-term onlot system use because one or more of the following conditions exist. (Check all that apply).

- ☐ Soils profile examinations which document areas of suitable soil intermixed with areas of unsuitable soils.
- ☐ Site evaluation which documents soils generally suitable for elevated sand mounds with some potential lots with slopes over 12%.
- ☐ Site evaluation which documents soils generally suitable for in-ground systems with some potential lots with slopes in excess of 20%.
- ☐ Lot density of more than 1 EDU/acre.

3. Residual Tract Facilities (For use only when there is an existing septic system on the residual tract)

- ☐ I have inspected the lot on which the existing building and existing septic system is located and have concluded, based on soils mapping or soils evaluation, permit information or site inspection that the long-term sewage disposal needs of this site and the building currently served can be met.
- ☐ I further acknowledge that no violations of the Sewage Facilities Act are known to me or have become apparent as a result of my site inspection. No inferences regarding future performance of the existing septic system should be drawn from this acknowledgement.
- ☐ A brief description and sketch of the existing system and site is attached.

Signature of Certified Sewage Enforcement Officer with jurisdiction in municipality where development is proposed

Certification

Date

I. PLANNING AGENCY REVIEW (See Section I of instructions)

This planning module has been reviewed by the existing municipal planning agency and zoning officer and has been found to be ☐ consistent, ☐ inconsistent with municipal zoning ordinances or subdivision and land development ordinances. A waiver of the sewage facilities planning requirements for the residual tract of this subdivision ☐ has ☐ has not been requested. If requested, the proposed waiver ☐ is ☐ is not consistent with applicable ordinances administered by this agency.

Municipal Planning Agency Name

Zoning Officer Signature

Planning Agency Signature (Authorized Official)

☐ No municipal planning agency exists

☐ No municipal zoning ordinance exists

J. MUNICIPAL ACTION (See Section J of instructions)

The municipality must act within 60 days of receipt of a complete sewage facilities planning module package.

- ☐ This planning module has been reviewed by the municipal governing body and has been found to be **ACCEPTABLE**. Approval of this planning module does not constitute individual onlot system permit approval.
- ☐ This planning module is **NOT ACCEPTABLE** because:
Check appropriate reason(s)
- ☐ The subdivision does not comply with municipal zoning ordinances.
- ☐ The subdivision does not comply with municipal subdivision and land development ordinances.
- ☐ The subdivision is not suitable for the use of individual onlot subsurface absorption areas.
- ☐ The subdivision does not meet the requirements for use of this module or other provisions of Chapter 71 (Administration of Sewage Facilities Planning Program).
- ☐ Other (Explain) _____
- ☐ The proposed development has been identified in Section G and/or Section H as having marginal conditions or other concerns for the long-term use of onlot sewage systems. The municipality has selected the following method of providing long-term sewage disposal to this subdivision: (Check one)
- ☐ Provision of a sewage management program meeting the minimum requirements of Chapter 71, Section 71.73
- ☐ Replacement area testing
- ☐ Scheduled replacement with sewerage facilities
- ☐ Reduction of the density of onlot systems

The justification required in Section J of the instructions is attached.

- ☐ A waiver of the planning requirements for the residual tract of this subdivision has been requested.

The municipality acknowledges acceptance of this proposal and requests a waiver of the sewage facilities planning requirements for the residual tract designated on the subdivision plot plan. Our municipal officials accept full responsibility now and in the future to identify any violation of this waiver and to submit to the approving agency any required sewage facilities planning for the designated residual tract should a violation occur or construction of a new sewage-generating structure on the residual tract of the subdivision be proposed. We understand that such planning information may require municipal officials to be responsible for soil testing and other environmental assessments for the residual tract in the future.

Chairperson/Secretary of Governing Body

Signature

Date

Municipality Name

Address

(Area Code) Telephone No. (____) _____

K. REVIEW FEE (See Section K of instructions)

The Sewage Facilities Act establishes a fee for the DEP planning module review. DEP will calculate the review fee for the project and invoice the project sponsor **OR** the project sponsor may attach a self-calculated fee payment to the planning module prior to submission of the planning package to DEP. (Since the fee and fee collection procedures may vary if a "delegated local agency" is conducting the review, the project sponsor should contact the "delegated local agency" to determine these details.) Check the appropriate box.

- ☐ I request DEP calculate the review fee for my project and send me an invoice for the correct amount. I understand the Department's review of my project will not begin until DEP receives the correct review fee from me for the project.
- ☐ I have calculated the review fee for my project using the formula found below and the review fee guidance in the instructions. I have attached a check or money order in the amount of \$_____ payable to "**Commonwealth of Pennsylvania DEP**". **Include DEP code number and/or project name on check.** I understand DEP will not begin review of my project unless it receives the fee and determines the fee is correct. If the fee is incorrect, DEP will return my check or money order and send me an invoice for the correct amount. I understand the DEP review will **NOT** begin until I have submitted the correct fee.
- ☐ I request to be exempt from the DEP planning module review fee because this planning module creates **only** one new lot and is the **only** lot subdivided from a parcel of land as that land existed on December 14, 1995. I realize that subdivision of a second lot from this parcel of land shall disqualify me from this review fee exemption. I am furnishing the following deed reference information in support of my fee exemption.

County Recorder of Deeds for _____ County, Pennsylvania

Deed Volume _____ Book Number _____

Page Number _____ Date Recorded _____

Formula:

_____ Lots X \$35.00 = _____

- Note: (1) To calculate the review fee for any project, use the number of lots created in the above formula.
- (2) When using the number of lots, include only the number of lots being proposed when calculating the review fee. Do not include any "Residual Land Parcel/Lot".

Developer Name (Print)

Signature Date



COMMONWEALTH OF PENNSYLVANIA

Code No.

DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATER SUPPLY AND WASTEWATER MANAGEMENT

SEWAGE FACILITIES PLANNING MODULE

Component 3. Sewage Collection and Treatment Facilities

(Return completed module package to appropriate municipality)

DEP USE ONLY				
DEP CODE #	CLIENT ID #	SITE ID #	APS ID #	AUTH ID #

This planning module component is used to fulfill the planning requirements of Act 537 for the following types of projects: (1) a subdivision to be served by sewage collection, conveyance or treatment facilities, (2) a tap-in to an existing collection system with flows on a lot of 2 EDU's or more, or (3) the construction of, or modification to, wastewater collection, conveyance or treatment facilities that will require DEP to issue or modify a Clean Streams Law permit. Planning for any project that will require DEP to issue or modify a permit cannot be processed by a delegated agency. Delegated agencies must send their projects to DEP for final planning approval.

This component, along with any other documents specified in the cover letter, must be completed and submitted to the municipality with jurisdiction over the project site for review and approval. All required documentation must be attached for the Sewage Facilities Planning Module to be complete. Refer to the instructions for help in completing this component.

REVIEW FEES: Amendments to the Sewage Facilities Act established fees to be paid by the developer for review of planning modules for land development. These fees may vary depending on the approving agency for the project (DEP or delegated local agency). Please see section R and the instructions for more information on these fees.

NOTE: All projects must complete Sections A through H, and Sections O through R. Complete Sections I, J, K, L, M and/or N if applicable or marked ☒.

A. PROJECT INFORMATION (See Section A of instructions)

1. Project Name

2. Brief Project Description

B. CLIENT (MUNICIPALITY) INFORMATION (See Section B of instructions)

Municipality Name	County	City	Boro	Twp
		☐	☐	☐

Municipality Contact Individual - Last Name	First Name	MI	Suffix	Title
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Additional Individual Last Name	First Name	MI	Suffix	Title
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Municipality Mailing Address Line 1	Mailing Address Line 2
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Address Last Line -- City	State	ZIP+4
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Phone + Ext.	FAX (optional)	Email (optional)
--------------	----------------	------------------

C. SITE INFORMATION (See Section C of instructions)**Site (Land Development or Project) Name**

Site Location Line 1

Site Location Line 2

Site Location Last Line -- City

State

ZIP+4

Latitude

Longitude

Detailed Written Directions to Site

Description of Site

Site Contact (Developer/Owner)

Last Name

First Name

MI

Suffix

Phone

Ext.

Site Contact Title

Site Contact Firm (if none, leave blank)

FAX

Email

Mailing Address Line 1

Mailing Address Line 2

Mailing Address Last Line -- City

State

ZIP+4

D. PROJECT CONSULTANT INFORMATION (See Section D of instructions)

Last Name

First Name

MI

Suffix

Title

Consulting Firm Name

Mailing Address Line 1

Mailing Address Line 2

Address Last Line -- City

State

ZIP+4

Country

Email

Phone

Ext.

FAX

E. AVAILABILITY OF DRINKING WATER SUPPLY

The project will be provided with drinking water from the following source: (Check appropriate box)

- ☐ Individual wells or cisterns.
- ☐ A proposed public water supply.
- ☐ An existing public water supply.

If existing public water supply is to be used, provide the name of the water company and attach documentation from the water company stating that it will serve the project.

Name of water company: _____

F. PROJECT NARRATIVE (See Section F of instructions)

- ☐ A narrative has been prepared as described in Section F of the instructions and is attached.

The applicant may choose to include additional information beyond that required by Section F of the instructions.

G. PROPOSED WASTEWATER DISPOSAL FACILITIES (See Section G of instructions)

Check all boxes that apply, and provide information on collection, conveyance and treatment facilities and EDU's served. This information will be used to determine consistency with Chapter 93 (relating to wastewater treatment requirements).

1. COLLECTION SYSTEM

- a. Check appropriate box concerning collection system

☐ New collection system ☐ Pump Station ☐ Force Main
☐ Grinder pump(s) ☐ Extension to existing collection system ☐ Expansion of existing facility

Clean Streams Law Permit Number _____

- b. Answer questions below on collection system

Number of EDU's and proposed connections to be served by collection system. EDU's _____

Connections _____

Name of:

existing collection or conveyance system _____

owner _____

existing interceptor _____

owner _____

2. WASTEWATER TREATMENT FACILITY

Check appropriate box and provide requested information concerning the treatment facility

☐ New facility ☐ Existing facility ☐ Upgrade of existing facility ☐ Expansion of existing facility

Name of existing facility _____

NPDES Permit Number for existing facility _____

Clean Streams Law Permit Number _____

Location of discharge point for a new facility. Latitude _____ Longitude _____

3. SOCIAL ECONOMIC JUSTIFICATION

Yes No

- ☐ ☐ Will the proposed project result in a new or increased discharge into special protection waters as identified in Title 25, Pennsylvania Code, Chapter 93? If yes, attach the Social or Economic Justification (SEJ) required by Section 93.4c.

G. PROPOSED WASTEWATER DISPOSAL FACILITIES (Continued)**4. PLOT PLAN**

The following information is to be submitted on a plot plan of the proposed subdivision.

- | | |
|---|--|
| a. Existing and proposed buildings. | j. Any designated recreational or open space area. |
| b. Lot lines and lot sizes. | k. Wetlands - from National Wetland Inventory Mapping and USGS Hydric Soils Mapping. |
| c. Adjacent lots. | l. Flood plains or Floodprone areas, floodways, (Federal Flood Insurance Mapping) |
| d. Remainder of tract. | m. Prime Agricultural Land. |
| e. Existing and proposed sewerage facilities. Plot location of discharge point, land application field, spray field, COLDS, or LVCOLDS if a new facility is proposed. | n. Any other facilities (pipelines, power lines, etc.) |
| f. Show tap-in or extension to the point of connection to existing collection system (if applicable). | o. Orientation to north. |
| g. Existing and proposed water supplies and surface water (wells, springs, ponds, streams, etc.) | p. Locations of all site testing activities (soil profile test pits, slope measurements, permeability test sites, background sampling, etc. (if applicable). |
| h. Existing and proposed rights-of-way. | q. Soils types and boundaries when a land based system is proposed. |
| i. Existing and proposed buildings, streets, roadways, access roads, etc. | r. Topographic lines with elevations when a land based system is proposed |

5. WETLAND PROTECTION

YES NO

- a. ☐ ☐ Are there wetlands in the project area? If yes, ensure these areas appear on the plot plan as shown in the mapping or through on-site delineation.
- b. ☐ ☐ Are there any construction activities (encroachments, or obstructions) proposed in, along, or through the wetlands? If yes, Identify any proposed encroachments on wetlands and identify whether a General Permit or a full encroachment permit will be required. If a full permit is required, address time and cost impacts on the project. Note that wetland encroachments should be avoided where feasible. Also note that a feasible alternative **MUST BE SELECTED** to an identified encroachment on an exceptional value wetland as defined in Chapter 105. Identify any project impacts on streams classified as HQ or EV and address impacts of the permitting requirements of said encroachments on the project.

6. PRIMARY AGRICULTURAL LAND PROTECTION

YES NO

- ☐ ☐ Will the project involve the disturbance of prime agricultural lands?
If yes, coordinate with local officials to resolve any conflicts with the local prime agricultural land protection program. The project must be consistent with such municipal programs before the sewage facilities planning module package may be submitted to DEP.
If no, prime agricultural land protection is not a factor to this project.
- ☐ ☐ Have prime agricultural land protection issues been settled?

7. HISTORIC PRESERVATION ACT

YES NO

- ☐ ☐ Sufficient documentation is attached to confirm that this project is consistent with DEP Technical Guidance 012-0700-001 Implementation of the PA State History Code (available online at the DEP website at www.dep.state.pa.us, select "subject" then select "technical guidance"). As a minimum this includes copies of the completed Cultural Resources Notice (CRN), a return receipt for its submission to the PHMC and the PHMC review letter.

H. ALTERNATIVE SEWAGE FACILITIES ANALYSIS (See Section H of instructions)

- ☐ An alternative sewage facilities analysis has been prepared as described in Section H of the attached instructions and is attached to this component.
- The applicant may choose to include additional information beyond that required by Section H of the attached instructions.

I. PROTECTION OF RARE, ENDANGERED OR THREATENED SPECIES (See Section I of instructions)

The Pennsylvania Natural Diversity Inventory (PNDI) has identified a protected plant or animal species in the vicinity of the project area. Contact the appropriate protective agency for this specie(s) to determine what options are available to resolve the conflict.

- ☐ Documentation supporting contact with the appropriate agency having jurisdiction over the rare, threatened, or endangered species of concern and resolution of all potential conflicts is attached.

J. CHAPTER 94 CONSISTENCY DETERMINATION (See Section J of instructions)

Projects that propose the use of existing municipal collection, conveyance or wastewater treatment facilities, or the construction of collection and conveyance facilities to be served by existing municipal wastewater treatment facilities must be consistent with the requirements of Title 25, Chapter 94 (relating to Municipal Wasteload Management). If not previously included in Section F, include a general map showing the path of the sewage to the treatment facility. If more than one municipality or authority will be affected by the project, please obtain the information required in this section for each. Additional sheets may be attached for this purpose.

- Project Flows _____ gpd
- Total Sewage Flows to Facilities (pathway from point of origin through treatment plant)

When providing "treatment facilities" sewage flows, use Annual Average Flow for "average" and Maximum Monthly Average Flow for "peak" in all cases. For "peak flows" in "collection" and "conveyance" facilities, indicate whether these flows are "peak hourly flow" or "peak instantaneous flow" and how this figure was derived (i.e., metered, measured, estimated, etc.).

- Enter average and peak sewage flows for each proposed or existing facility as designed or permitted.
- Enter the average and peak sewage flows for the most restrictive sections of the existing sewage facilities.
- Enter the average and peak sewage flows, projected for 5 years (2 years for pump stations) through the most restrictive sections of the existing sewage facilities. Include existing, proposed (this project) and future project (other approved projects) flows.

To complete the table, refer to the instructions, Section J.

	a. Design and/or Permitted Capacity (gpd)		b. Present Flows (gpd)		c. Projected Flows in 5 years (gpd) (2 years for P.S.)	
	Average	Peak	Average	Peak	Average	Peak
Collection						
Conveyance						
Treatment						

- Collection and Conveyance Facilities

The questions below are to be answered by the sewer authority, municipality, or agency responsible for completing the Chapter 94 report for the collection and conveyance facilities. These questions should be answered in coordination with the latest Chapter 94 annual report and the above table. The individual(s) signing below must be legally authorized to make representation for the organization.

YES NO

- a. ☐ ☐ This project proposes sewer extensions or tap-ins. Will these actions create a hydraulic overload within five years on any existing collection or conveyance facilities that are part of the system?

☐ J. CHAPTER 94 CONSISTENCY DETERMINATION (Continued)

If yes, this sewage facilities planning module will not be accepted for review by the municipality, delegated local agency and/or DEP until all inconsistencies with Chapter 94 are resolved or unless there is an approved Corrective Action Plan (CAP) granting an allocation for this project. A letter granting allocations to this project under the CAP must be attached to the module package.

If no, a representative of the sewer authority, municipality, or agency responsible for completing the Chapter 94 report for the collection and conveyance facilities must sign below to indicate that the collection and conveyance facilities have adequate capacity and are able to provide service to the proposed development in accordance with both §71.53(d)(3) and Chapter 94 requirements and that this proposal will not affect that status.

b. Collection System

Name of Agency, Authority, Municipality _____

Name of Responsible Agent _____

Agent Signature _____

Date _____

c. Conveyance System

Name of Agency, Authority, Municipality _____

Name of Responsible Agent _____

Agent Signature _____

Date _____

4. Treatment Facility

The questions below are to be answered by a representative of the facility permittee in coordination with the information in the table and the latest Chapter 94 report. The individual signing below must be legally authorized to make representation for the organization.

Yes No

- a. ☐ ☐ This project proposes the use of an existing wastewater treatment plant for the disposal of sewage. Will this action create a hydraulic or organic overload within 5 years at that facility?

If yes, this planning module for sewage facilities will not be reviewed by the municipality, delegated local agency and/or DEP until this inconsistency with Chapter 94 is resolved or unless there is an approved CAP granting an allocation for this project. A letter granting allocations to this project under the CAP must be attached to the planning module.

If no, the treatment facility permittee must sign below to indicate that this facility has adequate treatment capacity and is able to provide wastewater treatment services for the proposed development in accordance with both §71.53(d)(3) and Chapter 94 requirements and that this proposal will not impact that status.

b. Name of Agency, Authority, Municipality _____

Name of Responsible Agent _____

Agent Signature _____

Date _____

☐ K. TREATMENT AND DISPOSAL OPTIONS (See Section K of instructions)

This section is for land development projects that propose construction of wastewater treatment facilities. Please note that, since these projects require permits issued by DEP, these projects may **NOT** receive final planning approval from a delegated local agency. Delegated local agencies must send these projects to DEP for final planning approval.

☐ K. TREATMENT AND DISPOSAL OPTIONS (continued)

Check the appropriate box indicating the selected treatment and disposal option.

- ☐ 1. Spray irrigation or other land application is proposed, and the information requested in Section K.1. of the planning module instructions are attached.
- ☐ 2. A discharge to a dry stream channel is proposed, and the information requested in Section K.2. of the planning module instructions are attached.
- ☐ 3. A discharge to a perennial surface water body is proposed, and the information requested in Section K.3. of the planning module instructions are attached.

☐ L. PERMEABILITY TESTING (See Section L of instructions)

- ☐ The information required in Section L of the instructions is attached.

☐ M. PRELIMINARY HYDROGEOLOGIC STUDY (See Section M of instructions)

- ☐ The information required in Section M of the instructions is attached.

☐ N. DETAILED HYDROGEOLOGIC STUDY (See Section N of instructions)

- ☐ The detailed hydrogeologic information required in Section N. of the instructions is attached.

O. SEWAGE MANAGEMENT (See Section O of instructions)

(1-2 for completion by the developer, 3-4 for completion by the non-municipal facility agent and 5 for completion by the municipality)

Yes No

- 1. ☐ ☐ Connection to, or construction of, a DEP permitted, non-municipal sewage facility or a local agency permitted, community onlot sewage facility is proposed.

If Yes, respond to the following questions, attach the supporting analysis, and an evaluation of the options available to assure long-term proper operation and maintenance of the proposed non-municipal facilities. If No, skip the remainder of Section O.

- 2. Project Flows _____ gpd

(For completion by non-municipal facility agent)

- 3. Collection and Conveyance Facilities

The questions below are to be answered by the organization/individual responsible for the non-municipal collection and conveyance facilities. The individual(s) signing below must be legally authorized to make representation for the organization.

Yes No

- a. ☐ ☐ If this project proposes sewer extensions or tap-ins, will these actions create a hydraulic overload on any existing collection or conveyance facilities that are part of the system?

If yes, this sewage facilities planning module will not be accepted for review by the municipality, delegated local agency and/or DEP until this issue is resolved.

If no, a representative of the organization responsible for the collection and conveyance facilities must sign below to indicate that the collection and conveyance facilities have adequate capacity and are able to provide service to the proposed development in accordance with Chapter 71 §71.53(d)(3) and that this proposal will not affect that status.

- b. Collection System

Name of Responsible Organization _____

Name of Responsible Agent _____

Agent Signature _____

Date _____

c. Conveyance System

Name of Responsible Organization _____

Name of Responsible Agent _____

Agent Signature _____

Date _____

4. Treatment Facility

The questions below are to be answered by a representative of the facility permittee. The individual signing below must be legally authorized to make representation for the organization.

Yes No

- a. ☐ ☐ If this project proposes the use of an existing non-municipal wastewater treatment plant for the disposal of sewage, will this action create a hydraulic or organic overload at that facility?

If yes, this planning module for sewage facilities will not be reviewed by the municipality, delegated local agency and/or DEP until this issue is resolved.

If no, the treatment facility permittee must sign below to indicate that this facility has adequate treatment capacity and is able to provide wastewater treatment services for the proposed development in accordance with §71.53(d)(3) and that this proposal will not impact that status.

- b. Name of Facility _____

Name of Responsible Agent _____

Agent Signature _____

Date _____

(For completion by the municipality)

5. ☐ The **SELECTED OPTION** necessary to assure long-term proper operation and maintenance of the proposed non-municipal facilities is clearly identified with documentation attached in the planning module package.

P. PUBLIC NOTIFICATION REQUIREMENT (See Section P of instructions)

This section must be completed to determine if the applicant will be required to publish facts about the project in a newspaper of general circulation to provide a chance for the general public to comment on proposed new land development projects. This notice may be provided by the applicant or the applicant's agent, the municipality or the local agency by publication in a newspaper of general circulation within the municipality affected. Where an applicant or an applicant's agent provides the required notice for publication, the applicant or applicant's agent shall notify the municipality or local agency and the municipality and local agency will be relieved of the obligation to publish. The required content of the publication notice is found in Section P of the instructions.

To complete this section, each of the following questions must be answered with a "yes" or "no". Newspaper publication is required if any of the following are answered "yes".

Yes No

1. ☐ ☐ Does the project propose the construction of a sewage treatment facility ?
2. ☐ ☐ Will the project change the flow at an existing sewage treatment facility by more than 50,000 gallons per day?
3. ☐ ☐ Will the project result in a public expenditure for the sewage facilities portion of the project in excess of \$100,000?
4. ☐ ☐ Will the project lead to a major modification of the existing municipal administrative organizations within the municipal government?
5. ☐ ☐ Will the project require the establishment of *new* municipal administrative organizations within the municipal government?
6. ☐ ☐ Will the project result in a subdivision of 50 lots or more? (onlot sewage disposal only)

P. PUBLIC NOTIFICATION REQUIREMENT cont'd. (See Section P of instructions)

7. ☐ ☐ Does the project involve a major change in established growth projections?
8. ☐ ☐ Does the project involve a different land use pattern than that established in the municipality's Official Sewage Plan?
9. ☐ ☐ Does the project involve the use of large volume onlot sewage disposal systems (Flow > 10,000 gpd)?
10. ☐ ☐ Does the project require resolution of a conflict between the proposed alternative and consistency requirements contained in §71.21(a)(5)(i), (ii), (iii)?
11. ☐ ☐ Will sewage facilities discharge into high quality or exceptional value waters?
- ☐ Attached is a copy of:
- ☐ the public notice,
- ☐ all comments received as a result of the notice,
- ☐ the municipal response to these comments.
- ☐ No comments were received. A copy of the public notice is attached.

Q. FALSE SWEARING STATEMENT (See Section Q of instructions)

I verify that the statements made in this component are true and correct to the best of my knowledge, information and belief. I understand that false statements in this component are made subject to the penalties of 18 PA C.S.A. §4904 relating to unsworn falsification to authorities.

Name (Print)

Signature

Title

Date

Address

Telephone Number

R. REVIEW FEE (See Section R of instructions)

The Sewage Facilities Act establishes a fee for the DEP planning module review. DEP will calculate the review fee for the project and invoice the project sponsor **OR** the project sponsor may attach a self-calculated fee payment to the planning module prior to submission of the planning package to DEP. (Since the fee and fee collection procedures may vary if a "delegated local agency" is conducting the review, the project sponsor should contact the "delegated local agency" to determine these details.) Check the appropriate box.

- ☐ I request DEP calculate the review fee for my project and send me an invoice for the correct amount. I understand DEP's review of my project will not begin until DEP receives the correct review fee from me for the project.
- ☐ I have calculated the review fee for my project using the formula found below and the review fee guidance in the instructions. I have attached a check or money order in the amount of \$_____ payable to "Commonwealth of PA, DEP". Include DEP code number on check. I understand DEP will not begin review of my project unless it receives the fee and determines the fee is correct. If the fee is incorrect, DEP will return my check or money order, send me an invoice for the correct amount. I understand DEP review will NOT begin until I have submitted the correct fee.
- ☐ I request to be exempt from the DEP planning module review fee because this planning module creates **only** one new lot and is the **only** lot subdivided from a parcel of land as that land existed on December 14, 1995. I realize that subdivision of a second lot from this parcel of land shall disqualify me from this review fee exemption. I am furnishing the following deed reference information in support of my fee exemption.

County Recorder of Deeds for _____ County, Pennsylvania

Deed Volume _____ Book Number _____

Page Number _____ Date Recorded _____

R. REVIEW FEE (continued)

Formula:

1. For a new collection system (with or without a Clean Streams Law Permit), a collection system extension, or individual tap-ins to an existing collection system use this formula.

$$\# \underline{\hspace{2cm}} \quad \text{Lots (or EDUs)} \times \$50.00 = \$ \underline{\hspace{2cm}}$$

The fee is based upon:

- The number of lots created or number of EDUs whichever is higher.
- For community sewer system projects, one EDU is equal to a sewage flow of 400 gallons per day.

2. For a surface or subsurface discharge system, use the appropriate one of these formulae.

- A. A new surface discharge greater than 2000 gpd will use a flat fee:

\$ 1,500 per submittal (non-municipal)
\$ 500 per submittal (municipal)

- B. An increase in an existing surface discharge will use:

$$\# \underline{\hspace{2cm}} \quad \text{Lots (or EDUs)} \times \$35.00 = \$ \underline{\hspace{2cm}}$$

to a maximum of \$ 1,500 per submittal (non-municipal) or \$ 500 per submittal (municipal)

The fee is based upon:

- The number of lots created or number of EDUs whichever is higher.
- For community sewage system projects one EDU is equal to a sewage flow of 400 gallons per day.
- For non-single family residential projects, EDUs are calculated using projected population figures

- C. A sub-surface discharge system that requires a permit under The Clean Streams Law will use a flat fee:

\$ 1,500 per submittal (non-municipal)
\$ 500 per submittal (municipal)



Code No.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATER SUPPLY AND WASTEWATER MANAGEMENT
SEWAGE FACILITIES PLANNING MODULE
FOR
MINOR ACT 537 UPDATE REVISION

Component 3m. Municipal or Authority Sponsored Minor Sewage Collection Project
(Return completed module package to appropriate municipality)

DEP USE ONLY				
DEP CODE #	CLIENT ID #	SITE ID #	APS ID #	AUTH ID #

This document provides a simplified planning format for municipalities and municipal authorities proposing the construction of a sewer extension primarily serving existing development. Typically, this format would be used for projects involving the extension of sewer service to no more than 100 equivalent dwelling units (EDUs) and where the majority of the project serves existing development. For projects where more than 50 percent of the proposed customers will result from new land development, a Component 3 Sewage Facilities Planning Module would typically be used. For larger projects or if the project would involve the construction or modification of a wastewater treatment facility, then a general Act 537 Update Revision, meeting all of the requirements of Title 25 Pennsylvania Code, Chapter 71 § 72.21, is appropriate.

DEP staff will make a final determination as to the appropriate type of planning for a given project based on the review of a plan of study. Eligibility for a grant to offset the cost of planning will be determined by DEP staff based upon review of a *Task/Activity Report* (3800-FM-WSWM0005). The project sponsor submits both documents. **DO NOT** use this form without coordinating with your local DEP staff. Refer to the instructions.

This planning document, along with any other documents specified in the cover letter, must be completed and submitted to the municipality with jurisdiction over the project site for review and approval. All required documentation must be attached for the Sewage Facilities Planning Module to be complete. Refer to the instructions for help in completing this component.

A. PROJECT INFORMATION (See Section A of instructions)

1. Project Name

2. Brief Project Description

B. CLIENT (MUNICIPALITY) INFORMATION (See Section B of instructions)

Municipality Name	County	City	Boro	Twp
		☐	☐	☐
Municipality Contact - Last Name	First Name	MI	Suffix	Title
Additional Individual - Last Name	First Name	MI	Suffix	Title
Municipality Mailing Address Line 1	Mailing Address Line 2			
Address Last Line - City	State	ZIP+4		
Phone + Ext.	FAX (optional)	Email (optional)		

C. SITE INFORMATION (See Section C of instructions)

Site Name

Site Location Line 1

Site Location Line 2

Site Location Last Line - City

State

ZIP+4

Latitude

Longitude

Detailed Written Directions to Site

Description of Site

Site Contact - Last Name

First Name

MI

Suffix

Phone

Ext.

Site Contact Title

Site Contact Firm (if none, leave blank)

FAX

Email

Mailing Address Line 1

Mailing Address Line 2

Mailing Address Last Line – City

State

ZIP+4

D. PROJECT CONSULTANT INFORMATION (See Section D of instructions)

Last Name

First Name

MI

Suffix

Title

Consulting Firm Name

Mailing Address Line 1

Mailing Address Line 2

Address Last Line - City

State

ZIP+4

Country

Email

Phone

Ext.

FAX

E. AVAILABILITY OF DRINKING WATER SUPPLY (See Section E of instructions)

The project will be provided with drinking water from the following source: (Check appropriate box)

- ☐ Individual wells or cisterns.
- ☐ A proposed public water supply.
- ☐ An existing public water supply.

If existing public water supply is to be used, provide the name of the water company and attach documentation from the water company stating that it will serve the project.

Name of water company: _____

F. PROJECT NARRATIVE (See Section F of instructions)

- ☐ A narrative has been prepared as described in Section E of the instructions and is attached.
The applicant may choose to include additional information beyond that required by Section E of the instructions.

☐ **G. SEWAGE DISPOSAL NEEDS IDENTIFICATION** (See Section G of instructions)

Conduct sanitary and water supply surveys per DEP's publication entitled *Sewage Disposal Needs Identification*. This is highly recommended for all projects. It is required if PENNVEST funding is to be sought for the project, or if required by DEP as indicated by the checked box opposite this item.

H. EXISTING WASTEWATER FACILITIES (See Section H of instructions)**1. COLLECTION SYSTEM**

Provide requested information concerning the existing treatment facility.

- a. Name of existing collection system _____
Clean Streams Law Permit Number _____
- b. Name of interceptor _____
Clean Streams Law Permit Number _____

2. WASTEWATER TREATMENT FACILITY

Provide requested information concerning the existing treatment facility.

- Name of existing facility _____
NPDES Permit Number for existing facility _____

I. PROPOSED WASTEWATER FACILITIES (See Section I of instructions)

1. Provide an estimate of the immediate and five year projected flow from the proposed sewer extension. Address the capacity for this flow in the existing conveyance and treatment facilities in terms of the most recent wasteload management annual report for these facilities.

2. PLOT PLAN

The following information is to be submitted on a plot plan or map of the proposed project that clearly reflects the relationship between the proposed facilities and the identified features.

- | | |
|--|--|
| a. Existing and proposed buildings. | h. Existing and proposed streets, roadways, access roads, etc. |
| b. Lot lines and lot sizes. | i. Any designated recreational or open space area |
| c. Adjacent lots. | j. Wetlands - from National Wetland Inventory Mapping and USGS Hydric Soils Mapping. |
| d. Existing and proposed sewerage facilities. | k. Flood plains or Floodprone area soils, floodways, watercourses, water bodies (from Federal Flood Insurance Mapping) |
| e. Show tap-in or sewer extension to the point of connection to existing collection system. | l. Prime Agricultural Land. |
| f. Existing and proposed water supplies and surface water (wells, springs, ponds, streams, etc.) | m. Any other facilities (pipelines, power lines, etc.) |
| g. Existing and proposed rights-of-way. | n. Orientation to north. |

I. PROPOSED WASTEWATER FACILITIES (continued)**3. WETLAND PROTECTION**

YES NO

- a. ☐ ☐ Are there wetlands in the project area? If yes, indicate these areas on the plot plan as shown in the mapping or through on-site delineation.
- b. ☐ ☐ Are there any construction activities (encroachments, or obstructions) proposed in, along, or through the wetlands? If yes, identify any proposed encroachments on wetlands and identify whether a General Permit or a full encroachment permit will be required. If a full permit is required, address time and cost impacts on the project. Note that wetland encroachments should be avoided where feasible. Also note that a feasible alternative **MUST BE SELECTED** to an identified encroachment on an exceptional value wetland as defined in Chapter 105. Identify any project impacts on HQ or EV streams and address impacts of the permitting requirements of said encroachments on the project.

4. PRIMARY AGRICULTURAL LAND PROTECTION

- a. ☐ ☐ Will your project involve the disturbance of any prime agricultural lands? If "yes" indicate any alternatives to this disturbance that were considered and the reasons they were not deemed feasible. Identify any primary or secondary impacts of the project on the Commonwealth's prime agricultural lands. Evaluate alternatives to avoid or mitigate undesirable impacts. The selected sewage facilities plan must be consistent with local measures in place to protect prime agricultural lands.

5. STORMWATER MANAGEMENT IMPACTS:

- a. ☐ ☐ Will the project impact an area covered by a DEP approved County Stormwater Management Plan? If yes show that the proposed facilities are consistent with that plan.

☐ **6. PENNSYLVANIA NATURAL DIVERSITY INDEX (PNDI) CONSISTENCY:**

If the box is checked, then contact the agency with jurisdiction over the identified rare, endangered or threatened species and document that the agency has concurred with measures to protect said species. If the box is not checked, then include documentation that a PNDI search was requested and a response received.

- ☐ The required PNDI material is attached.

7. COMPREHENSIVE PLAN CONSISTENCY:

- ☐ A narrative and mapping to show that the proposed project is consistent with any comprehensive plan developed under the Pennsylvania Municipalities Planning Code (Act 247) is attached. Document that the proposed project is consistent with land use and all other requirements stated in the comprehensive plan.

8. COOPERATION WITH PA. HISTORICAL AND MUSEUM COMMISSION (PHMC):

- ☐ A copy of DEP's "Cultural Resource Notice" and map which were sent to the Commission and a copy of the Commission's response are attached. Note that the Commission may require archeological surveys if federal funds, including PENNVEST, will be used in the project. If PENNVEST funds are to be used, DEP cannot recommend the project to PENNVEST for consideration until any required surveys have been done and the project has been "cleared" by the Commission.

9. ADDITIONAL REQUIREMENTS FOR PENNVEST PROJECTS:

- ☐ A copy of the additional information is attached. If PENNVEST funding is to be sought for the project, address these additional items in terms of any project impacts and measures to avoid or mitigate same.
- Cost Effectiveness
 - Air quality
 - Floodplains
 - Wild and scenic rivers
 - Coastal zone management
 - Socio-economic impacts
 - Water supplies
 - Other environmentally sensitive areas

J. ALTERNATIVE SEWAGE FACILITIES ANALYSIS (See Section J of instructions)

- ☐ An alternative sewage facilities analysis has been prepared as described in Section J of the instructions and is attached.

The applicant may choose to include additional information beyond that required by Section J of the instructions.

K. CHAPTER 94 CONSISTENCY DETERMINATION (See Section K of instructions)

- ☐ Projects that propose the use of existing municipal collection, conveyance or wastewater treatment facilities, or the construction of collection and conveyance facilities to be served by existing municipal wastewater treatment facilities must be consistent with the requirements of Chapter 94 of DEP's rules and regulations (relating to Municipal Wasteload Management). If more than one municipality or authority will be affected by the project, please obtain the information required in this section for each. Additional sheets may be attached for this purpose.

1. Project Flows _____ gpd

2. Total Sewage Flows to Facilities

- Enter average and peak sewage flows for each proposed or existing facility as designed or permitted.
- Enter the present average and peak sewage flows for the critical sections of existing facilities.
- Enter the average and peak sewage flows projected for 5 years through the critical sections of existing facilities which includes existing, proposed, or future projects.

To complete the table, refer to Section K of instructions.

	a. Design and/or Permitted Capacity (gpd)		b. Present Flows (gpd)		c. Projected Flows in 5 years (gpd)	
	Average	Peak	Average	Peak	Average	Peak
Collection						
Conveyance						
Treatment						

3. Collection and Conveyance Facilities

The questions below are to be answered by the sewer authority, municipality, or agency responsible for completing the Chapter 94 report for the collection and conveyance facilities. These questions should be answered in coordination with the latest Chapter 94 annual report and the above table.

This project proposes sewer extensions or tap-ins. Will these actions create a hydraulic overload within five years on any existing collection or conveyance facilities that are part of the system? ☐ Yes ☐ No

- If yes, this sewage facilities planning module will not be accepted for review by the municipality, delegated local agency and/or DEP until all inconsistencies with Chapter 94 are resolved or unless there is an approved plan and schedule granting an allocation for this project. A letter granting allocations to this project under the plan and schedule must be attached to the module package.
- If no, the sewer authority, municipality, or agency responsible for completing the Chapter 94 report for the collection and conveyance facilities must sign below to indicate that the collection and conveyance facilities have adequate capacity and are able to provide service to the proposed development in accordance with Chapter 94 requirements and that this proposal will not affect this status.

c. Collection System

Name of Agency, Authority, Municipality _____

Name of Responsible Agent _____

Agent Signature _____

Date _____

d. Conveyance System

Name of Agency, Authority, Municipality _____

Name of Responsible Agent _____

Agent Signature _____

Date _____

K. CHAPTER 94 CONSISTENCY DETERMINATION (continued)**4. Treatment Facility**

The questions below are to be answered by the facility permittee in coordination with the information in the table and the latest Chapter 94 report.

This project proposes the use of an existing wastewater treatment plant for the disposal of sewage. Will this action create a hydraulic or organic overload within 5 years at that facility? ☐ Yes ☐ No

- a. If yes, this planning module for sewage facilities will not be reviewed by the municipality, delegated local agency and/or DEP until this inconsistency with Chapter 94 is resolved or unless there is an approved plan and schedule granting an allocation for this project. A letter granting allocations to this project under the plan and schedule must be attached to the planning module.
- b. If no, the treatment facility permittee must sign below to indicate that this facility has adequate treatment capacity and is able to provide wastewater treatment services for the proposed development in accordance with Chapter 94 requirements and that this proposal will not impact this status

c. Name of Agency, Authority, Municipality _____

Name of Responsible Agent _____

Agent Signature _____

Date _____

L. INSTITUTIONAL EVALUATION (See Section L of instructions)

- ☐ An institutional evaluation is attached. Identify the entity which will design, obtain necessary permits, construct, own and operate the proposed facilities. If a low pressure vacuum or effluent sewer are proposed, discuss purchase, installation, operation and maintenance responsibilities for the individual pumping, valves, tanks, etc.

M. PROJECT COST AND FUNDING ANALYSIS (See Section M of instructions)

- ☐ A detailed cost estimate and present worth analysis for the project is attached. Provide a financing plan for the project, identifying the funding source(s) and identifying estimated tap fees and user rates. For projects proposing the use of PENNVEST funds, see Section I. 9. **ADDITIONAL REQUIREMENTS FOR PENNVEST PROJECTS.** Complete the following table:

Cost and Funding Information (Estimated)	
COST	
Construction cost	\$
Administrative, legal, engineering cost	\$
Total project cost	\$
Annual O/M cost	\$
FUNDING	
Tap-in fees (\$ per EDU X no. EDUs)	\$
Proceeds from primary funding source	\$
Proceeds from other funding sources	\$
USER COSTS	
Initial user base	EDUs
Monthly debt service per EDU	\$
Monthly O/M cost per EDU	\$
Total estimated monthly user cost per EDU	\$

N. PROJECT IMPLEMENTATION SCHEDULE (See Section N of instructions)

- ☐ A project implementation schedule showing milestone dates for submission of DEP permit applications, initiation and completion of construction and any other milestones significant to this particular project is attached to this component

O. PUBLIC NOTIFICATION REQUIREMENT (See Section O of instructions)

- ☐ Attached is a copy of the public notice. All comments received as a result of the notice are attached.
- ☐ Municipal response to these comments is attached.
- ☐ No comments were received. A copy of the public notice is attached.

☐ **P. ADDITIONAL CHAPTER 71 PLANNING ELEMENTS** (See Section P of instructions)

a. Additional planning elements are required by DEP.

- _____
- _____
- _____
- _____
- _____

Q. PLANNING AGENCY REVIEW (See Section Q of instructions)

- ☐ Local Planning Commission comments or Component 4a are attached.
- ☐ County, Area, Or Region Planning Commission comments or Component 4b are attached.
- ☐ County or Joint County Health Department comments (if appropriate) or Component 4c are attached.

R. RESOLUTION OF ADOPTION (See Section R of instructions)

- ☐ An original, signed, and sealed Resolution of Adoption is attached.



INSTRUCTIONS FOR COMPLETING COMPONENT 4A MUNICIPAL PLANNING AGENCY REVIEW

Remove and recycle these instructions prior to mailing component to the approving agency (DEP or delegated local agency).

Background

This component, Component 4, is used to obtain the comments of planning agencies and/or health departments having jurisdiction over the project area. It is used in conjunction with other planning module components appropriate to the characteristics of the project proposed.

Who Should Complete the Component?

The component should be completed by any existing municipal planning agency, county planning agency, planning agency with areawide jurisdiction, and/or health department having jurisdiction over the project site. It is divided into sections to allow for convenient use by the appropriate agencies.

The project sponsor must forward copies of this component, along with supporting components and data, to the appropriate planning agency or agencies and health department(s) (if any) having jurisdiction over the development site. These agencies are responsible for responding to the questions in their respective sections of Component 4, as well as providing whatever additional comments they may wish to provide on the project plan. After the agencies have completed their review, the component will be returned to the applicant. The agencies have 60 days in which to provide comments to the applicant. If the agencies fail to comment within this 60 day period, the applicant may proceed to the next stage of the review without the comments. The use of registered mail or certified mail (return receipt requested) by the applicant when forwarding the module package to the agencies will document a date of receipt.

After receipt of the completed Component 4 from the planning agencies, or following expiration of the 60 day period without comments, the applicant must submit the entire component package to the municipality having jurisdiction over the project area for review and action. If approved by the municipality, the proposed plan, along with the municipal action, will be forwarded to the approving agency (DEP or delegated local agency). The approving agency, in turn, will either approve the proposed plan, return it as incomplete, or disapprove the plan, based upon the information provided.

Instructions for Completing Planning Agency and/or Health Department Review Component

Section A. Project Name

Enter the project name as it appears on the accompanying sewage facilities planning module component (Component 2, 3, 3s or 3m).

Section B. Review Schedule

Enter the date the package was received by the reviewing agency, and the date that the review was completed.

Section C. Agency Review

1. Answer the yes/no questions and provide any descriptive information necessary on the lines provided. Attach additional sheets, if necessary.
2. Complete the name, title, and signature block.

Section D. Additional Comments

The Agency may provide whatever additional comment it deems necessary, as described in the form. Attach additional sheets, if necessary.



SEWAGE FACILITIES PLANNING MODULE

COMPONENT 4A - MUNICIPAL PLANNING AGENCY REVIEW

Note to Project Sponsor: To expedite the review of your proposal, one copy of your completed planning module package and one copy of this **Planning Agency Review Component** should be sent to the existing local municipal planning agency for their comments.

SECTION A. PROJECT NAME (See Section A of instructions)

Project Name _____

SECTION B. REVIEW SCHEDULE (See Section B of instructions)

1. Date plan received by municipal planning agency. _____
2. Date review completed by agency. _____

SECTION C. AGENCY REVIEW (See Section C of instructions)

Yes

No

- | | | |
|--------------------------|--------------------------|---|
| ☐ | ☐ | 1. Is there a municipal comprehensive plan adopted under the Municipalities Planning Code (53 P.S. 10101, <i>et seq.</i>)? |
| ☐ | ☐ | 2. Is this proposal consistent with the comprehensive plan for land use?
If no, describe the inconsistencies _____ |
| ☐ | ☐ | 3. Is this proposal consistent with the use, development, and protection of water resources?
If no, describe the inconsistencies _____ |
| ☐ | ☐ | 4. Is this proposal consistent with municipal land use planning relative to Prime Agricultural Land Preservation? |
| ☐ | ☐ | 5. Does this project propose encroachments, obstructions, or dams that will affect wetlands?
If yes, describe impacts _____ |
| ☐ | ☐ | 6. Will any known historical or archaeological resources be impacted by this project?
If yes, describe impacts _____ |
| ☐ | ☐ | 7. Will any known endangered or threatened species of plant or animal be impacted by this project?
If yes, describe impacts _____ |
| ☐ | ☐ | 8. Is there a municipal zoning ordinance? |
| ☐ | ☐ | 9. Is this proposal consistent with the ordinance?
If no, describe the inconsistencies _____ |
| ☐ | ☐ | 10. Does the proposal require a change or variance to an existing comprehensive plan or zoning ordinance? |
| ☐ | ☐ | 11. Have all applicable zoning approvals been obtained? |

☐☐

12. Is there a municipal subdivision and land development ordinance?

SECTION C. AGENCY REVIEW (continued)**Yes****No**

- ☐ ☐ 13. Is this proposal consistent with the ordinance?
If no, describe the inconsistencies _____
- ☐ ☐ 14. Is this plan consistent with the municipal Act 537 Official Sewage Facilities Plan?
If no, describe the inconsistencies _____
- ☐ ☐ 15. Are there any wastewater disposal needs in the area adjacent to this proposal that should be considered by the municipality?
If yes, describe _____
- ☐ ☐ 16. Has a waiver of the sewage facilities planning requirements been requested for the residual tract of this subdivision?
☐ ☐ If yes, is the proposed waiver consistent with applicable ordinances?
17. Name, title and signature of planning agency staff member completing this section:
Name: _____
Title: _____
Signature: _____
Date: _____
Name of Municipal Planning Agency: _____
Address _____
Telephone Number: _____

SECTION D. ADDITIONAL COMMENTS (See Section D of instructions)

This Component does not limit municipal planning agencies from making additional comments concerning the relevancy of the proposed plan to other plans or ordinances. If additional comments are desired, attach additional sheets.

The planning agency must complete this Component within 60 days.

This component and any additional comments are to be returned to the project sponsor.



INSTRUCTIONS FOR COMPLETING COMPONENT 4B COUNTY PLANNING AGENCY REVIEW (or Planning Agency with Areawide Jurisdiction)

Remove and recycle these instructions prior to mailing component to the approving agency (DEP or delegated local agency).

Background

This component, Component 4, is used to obtain the comments of planning agencies and/or health departments having jurisdiction over the project area. It is used in conjunction with other planning module components appropriate to the characteristics of the project proposed.

Who Should Complete the Component?

The component should be completed by any existing municipal planning agency, county planning agency, planning agency with areawide jurisdiction, and/or health department having jurisdiction over the project site. It is divided into sections to allow for convenient use by the appropriate agencies.

The project sponsor must forward copies of this component, along with supporting components and data, to the appropriate planning agency or agencies and health department(s) (if any) having jurisdiction over the development site. These agencies are responsible for responding to the questions in their respective sections of Component 4, as well as providing whatever additional comments they may wish to provide on the project plan. After the agencies have completed their review, the component will be returned to the applicant. The agencies have 60 days in which to provide comments to the applicant. If the agencies fail to comment within this 60 day period, the applicant may proceed to the next stage of the review without the comments. The use of registered mail or certified mail (return receipt requested) by the applicant when forwarding the module package to the agencies will document a date of receipt.

After receipt of the completed Component 4 from the planning agencies, or following expiration of the 60 day period without comments, the applicant must submit the entire component package to the municipality having jurisdiction over the project area for review and action. If approved by the municipality, the proposed plan, along with the municipal action, will be forwarded to the approving agency (DEP or delegated local agency). The approving agency, in turn, will either approve the proposed plan, return it as incomplete, or disapprove the plan, based upon the information provided.

Instructions for Completing Planning Agency and/or Health Department Review Component

Section A. Project Name

Enter the project name as it appears on the accompanying sewage facilities planning module component (Component 2, 3, 3s or 3m).

Section B. Review Schedule

Enter the date the package was received by the reviewing agency, and the date that the review was completed.

Section C. Agency Review

1. Answer the yes/no questions and provide any descriptive information necessary on the lines provided. Attach additional sheets, if necessary.
2. Complete the name, title, and signature block.

Section D. Additional Comments

The Agency may provide whatever additional comment it deems necessary, as described in the form. Attach additional sheets, if necessary.



SEWAGE FACILITIES PLANNING MODULE
COMPONENT 4B - COUNTY PLANNING AGENCY REVIEW
(or Planning Agency with Areawide Jurisdiction)

Note to Project Sponsor: To expedite the review of your proposal, one copy of your completed planning package and one copy of this **Planning Agency Review Component** should be sent to the existing county planning agency or planning agency with areawide jurisdiction for their comments.

SECTION A. PROJECT NAME (See Section A of instructions)

Project Name _____

SECTION B. REVIEW SCHEDULE (See Section B of instructions)

1. Date plan received by county planning agency. _____
2. Date plan received by planning agency with areawide jurisdiction _____
Agency name _____
3. Date review completed by agency _____

SECTION C. AGENCY REVIEW (See Section C of instructions)

- | Yes | No | |
|--------------------------|--------------------------|--|
| ☐ | ☐ | 1. Is there a county or areawide comprehensive plan adopted under the Municipalities Planning Code (53 P.S. 10101 <i>et seq.</i>)? |
| ☐ | ☐ | 2. Is this proposal consistent with the comprehensive plan for land use? |
| ☐ | ☐ | 3. Does this proposal meet the goals and objectives of the plan?
If no, describe goals and objectives that are not met _____ |
| ☐ | ☐ | 4. Is this proposal consistent with the use, development, and protection of water resources?
If no, describe inconsistency _____ |
| ☐ | ☐ | 5. Is this proposal consistent with the county or areawide comprehensive land use planning relative to Prime Agricultural Land Preservation?
If no, describe inconsistencies: _____ |
| ☐ | ☐ | 6. Does this project propose encroachments, obstructions, or dams that will affect wetlands?
If yes, describe impact _____ |
| ☐ | ☐ | 7. Will any known historical or archeological resources be impacted by this project?
If yes, describe impacts _____ |
| ☐ | ☐ | 8. Will any known endangered or threatened species of plant or animal be impacted by the development project? |
| ☐ | ☐ | 9. Is there a county or areawide zoning ordinance? |
| ☐ | ☐ | 10. Does this proposal meet the zoning requirements of the ordinance? |

If no, describe inconsistencies _____

Yes	No	SECTION C. AGENCY REVIEW (continued)
☐	☐	11. Have all applicable zoning approvals been obtained?
☐	☐	12. Is there a county or areawide subdivision and land development ordinance?
☐	☐	13. Does this proposal meet the requirements of the ordinance? If no, describe which requirements are not met _____
☐	☐	14. Is this proposal consistent with the municipal Act 537 Official Sewage Facilities Plan? If no, describe inconsistency _____
☐	☐	15. Are there any wastewater disposal needs in the area adjacent to this proposal that should be considered by the municipality? If yes, describe _____
☐	☐	16. Has a waiver of the sewage facilities planning requirements been requested for the residual tract of this subdivision?
☐	☐	If yes, is the proposed waiver consistent with applicable ordinances. If no, describe the inconsistencies _____
☐	☐	17. Does the county have a stormwater management plan as required by the Stormwater Management Act?
☐	☐	If yes, will this project plan require the implementation of storm water management measures?
		18. Name, Title and signature of person completing this section: Name: _____ Title: _____ Signature: _____ Date: _____ Name of County or Areawide Planning Agency: _____ Address: _____ Telephone Number: _____
SECTION D. ADDITIONAL COMMENTS (See Section D of instructions)		
This Component does not limit county planning agencies from making additional comments concerning the relevancy of the proposed plan to other plans or ordinances. If additional comments are needed, attach additional sheets.		
The county planning agency must complete this Component within 60 days. This Component and any additional comments are to be returned to the applicant.		



APPLICATION FOR WATER QUALITY MANAGEMENT PART II PERMIT SEWER EXTENSIONS AND PUMPING STATIONS

**PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION
WATER MANAGEMENT PROGRAM
<http://dep.state.pa.us>**

**Commonwealth of Pennsylvania
Tom Ridge, Governor**

**Department of Environmental Protection
James M. Seif, Secretary**



SEWER EXTENSIONS AND PUMPING STATIONS PERMIT APPLICATION

General Information

1. Application Description

The WQM Part II permit provides for the approval of plans and specifications for construction and operation of sanitary sewer extensions and/or pumping stations.

This abbreviated application can be used only when applying for a Water Quality Management Part II permit for sewer extensions and/or pumping stations.

2. Who May Use this Form to Obtain a Water Quality Management Part II Permit for a Sanitary Sewer Extension and/or Pumping Station.

The following sewer extension projects may use this form to obtain a WQM Part II permit:

FOR PUBLIC OWNED SANITARY SEWER SYSTEMS:

1. Any pump station and force main except individual grinder pump connections serving five or less EDUs.
2. Any sewer extension serving over 250 EDUs or having the potential to serve over 250 EDUs.
3. Any alternative, unusual, or experimental designs (i.e. not built in accordance with Domestic Wastewater Facilities Manual (362-0300-001)).
4. Sewers >8" in diameter, generally.

FOR PRIVATE OWNED SANITARY SEWER SYSTEMS:

1. Pumping station and force main serving more than 250 EDUs.
2. Extensions serving greater than 250 EDUs, i.e. not associated with a pumping station.
3. Alternative, unusual or experimental designs (i.e. not built in accordance with Domestic Wastewater Facilities Manual (362-0300-001)).

The following sewer extension projects do not need to obtain a WQM Part II permit:

PUBLIC OWNED SANITARY SEWER SYSTEMS:

1. Sewer extensions serving 250 EDUs or less. The definition of "sewer extension" does not include pump stations and force mains.
2. Sewer extensions that do not have the potential to serve more than 250 EDUs.

PRIVATE OWNED SANITARY SEWER SYSTEMS:

1. Pumping stations serving 250 EDUs or less.
2. Collection systems serving 250 EDUs or less.

3. Individual pumping stations and force mains, both privately owned, collectively not serving over 250 EDUs.

DEFINITIONS:

1. Publicly owned sanitary sewer system - a treatment works and connecting sewers owned by a state or municipality.
2. Sewer system - pipelines or conduits, pumping stations and force mains, and other appurtenant construction devices and facilities used for conveying sewage to a plant.
3. Extension - an addition to sanitary sewer system to accommodate more than one connection.
4. Connection - the connecting of a structure which generates or could generate hydraulic or organic loads to a sewer system.
5. An EDU is defined as contributing 262.5 GPD of flow per day.
6. Privately owned sanitary sewer system - treatment works and connecting sewers owned by other than a state or municipality.

NOTES:

1. Downstream existing sewers need not be permitted unless they will receive flow >65,600 GPD (existing + proposed).
2. These rules apply for capped sewers.
3. 250 EDUs = 65,600 GPD (75 GPCD x 3.5 persons per EDU).

If treatment facilities are involved in the project, use Application for Water Quality Management Part II Permit - Sewage (Form No. 3620-PM-0007). If a stream crossing or other encroachment is involved, contact the Bureau of Waterways Engineering for an application.

3. Design Engineers Seal

The application form, cover page of the design engineer's report, and the front cover of each set of drawings and specifications must bear the name, signature, and seal of the registered professional engineer authorized to practice in Pennsylvania responsible for preparing the application. Each drawing must also bear the imprint, or reasonable facsimile, of this seal.

4. Required Number of Copies and Where to Submit

Three (3) copies of the application forms, DESIGN ENGINEER'S REPORT, and supplemental information shall be submitted to the Water Management Program's Regional Office having jurisdiction over the county in which the sewerage facility is located (see attached listing).

5. Application Fee

A filing fee of \$100.00 will be required for sewer extension. A filing fee of \$500.00 will be required for all other type of facilities. This fee must be submitted with the application in the form of a check made payable to "Commonwealth of Pennsylvania." This fee is **not** required of State agencies.

6. Proof of Public Notice

The application must include proof of Act 14 notification of the county and municipality in which the project is located.

7. Supplemental Information to Accompany the Application

The application must include:

- 1) Design Engineers Report (including design calculations) and accompanying plans and drawings and specifications.
- 2) USGS Topographic Map - A 7½ minute series USGS topographic map showing the location of the waste treatment facilities and discharge points. If only a portion of the topographic map is used, the quadrangle identification and date should be indicated.
- 3) For sewage pumping stations include detailed construction plans and design modules.
- 4) Module 11 for stream crossings (Not Attached. Contact appropriate Regional Office).
- 5) County Conservation approval for projects involving disturbance of greater than 5 acres but less than 25 acres.
- 6) Act 537 approval letter.

8. Application Submittal Checklist

Page 5 of the application includes a checklist that should be completed and submitted with your application.

Please attach a drawing which clearly shows the boundaries of the proposed service area, the properties to be served, the location of the sewerage facilities, the slope of proposed sewers on the plan with inverts of manhole, point of connection to existing sewers, and all streets, streams or other important site features. Also, include specifications for the facilities and an erosion and sedimentation control plan.

SECTION C. BASIS OF DESIGN

Enter the design year of the project and corresponding design population.

SECTION D. CERTIFICATION AND SIGNATURE

Include both the applicant's name and address and notarized signature, and the design engineer's name, address and seal.

DESIGN MODULES

Enter the basis of design for the facilities being proposed.

For any deviations from the Domestic Wastewater Facilities Manual (362-0300-001), please note clearly and fully justify.

INSTRUCTIONS FOR COMPLETING THE FORM

SECTION A. APPLICANT IDENTIFIER

Enter the legal name and address of the entity which will own the sewerage facilities following completion and/or dedication.

SECTION B. PROJECT INFORMATION

Enter the name and type of the development being served by the facility. Please include the number of units being served, the total project acreage, and the Water Quality Management Part II permit number of the receiving sewer(s).

FIELD OPERATIONS REGIONAL OFFICES

<u>Office</u>	<i>County Responsibility</i>
Southeast Office - (610) 832-6000 Permit Coordinator Lee Park, Suite 6010 555 North Lane Conshohocken, PA 19428-2233	Bucks, Chester, Delaware, Montgomery and Philadelphia
Northeast Region - (570) 826-2511 2 Public Square Wilkes-Barre, PA 18711-0790	Carbon, Lackawanna, Lehigh, Luzerne, Monroe, Northampton, Pike, Schuylkill, Susquehanna, Wayne & Wyoming
Southcentral Office - (717) 705-4700 909 Elmerton Avenue Harrisburg, PA 17110	Adams, Bedford, Berks, Blair, Cumberland, Dauphin, Franklin, Fulton, Huntingdon, Juniata, Lancaster, Lebanon, Mifflin, Perry and York
Northcentral Office - (570) 321-6525 208 W. Third Street, Suite 101 Williamsport, PA 17701	Bradford, Cameron, Clearfield, Centre, Clinton, Columbia, Lycoming, Montour, Northumberland, Potter, Snyder, Sullivan, Tioga and Union
Southwest Region - (412) 442-4000 400 Waterfront Drive Pittsburgh, PA 15222-4745	Allegheny, Armstrong, Beaver, Cambria, Fayette, Greene, Indiana, Somerset, Washington and Westmoreland
Northwest Region - (814) 332-6945 230 Chestnut Street Meadville, PA 16335-3481	Butler, Clarion, Crawford, Elk, Erie, Forest, Jefferson, Lawrence, McKean, Mercer, Venango and Warren



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
WATER MANAGEMENT PROGRAM

DEP USE ONLY

Date Received

SEWER EXTENSIONS AND PUMPING STATIONS PERMIT APPLICATION

Before completing this form, read the step-by-step instructions provided with this form.

SECTION A. APPLICANT IDENTIFIER

Applicant Name: _____

SECTION B. PROJECT INFORMATION

If the project is associated with existing or proposed residential or industrial development, complete the following:

Name of Development _____

Type of Development _____

Number of Units _____ Project Acreage _____

WQM Part II Permit No. of Receiving Sewers _____

SECTION C. BASIS OF DESIGN

Design Year: _____

Design Population: _____

SECTION D. CERTIFICATION AND SIGNATURE

I hereby apply for approval on (Date) _____ to construct and operate [_____] Sewers and Appurtenances

[_____] Sewage pumping station(s) which ☐ does ☐ does not include stream crossing(s)/100 year floodplain location.

Applicant:

Affidavit: I hereby certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and based on my inquiry of those individuals immediately responsible for obtaining the information I believe the submitted information is true, accurate and complete.

APPLICANT'S SIGNATURE: _____

NAME: _____

TITLE: _____

NOTARY SEAL

ADDRESS: _____

SWORN and subscribed to before me this _____ day of _____, 19_____

_____, NOTARY

Designer:

I, _____, do hereby certify that the information contained in the accompanying plans, specifications, and reports has been prepared in accordance with accepted engineering practice, is true and correct, and is in conformance with the standards, guidelines and requirements of the Department of Environmental Protection.

DESIGNER'S NAME: _____

NAME OF FIRM: _____

ADDRESS, ZIP: _____

TELEPHONE NUMBER: _____

DESIGNER'S SEAL AND SIGNATURE

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
WATER MANAGEMENT PROGRAM

WATER POLLUTION CONTROL DESIGN MODULE

TABLE 1 -- SEWER SYSTEM

1. CLASS OF CONSTRUCTION	☐ NEW SYSTEM	☐ REPLACEMENT OF EXISTING SYSTEMS	☐ SANITARY	☐ COMBINED
2. INITIAL POPULATION _____	DESIGN YEAR POPULATION _____			
3. DESIGN FLOW DATA				
(a) Laterals and Submain Sewers	(GPCD)	_____		
(b) Interceptors	(GPCD)	_____		
(c) Average Daily Flow	(MGD)	_____		
(d) Infiltration/Inflow	(MGD)	_____		
(e) Industrial Waste Flow	(MGD)	_____		
(f) Total Average Design Flow	(MGD)	_____		
(g) Maximum Expected Flow Rate				
(Peak Instantaneous)	(MGD)	_____		
4. GENERAL INFORMATION:				
(a) Describe measures taken to reduce I/I in the system including leakage test and reference applicable portion of the specifications.				
(b) Describe any overflows or bypasses within the system.				
(c) If applicable, describe capacity of receiving sewers and pumping station and submit two copies of the executed intermunicipal agreement.				

TABLE 2 -- PUMP STATION (Submit separate table for each pump station)

1. PUMP STATION NAME:		
2. LOCATION (street name, etc.):		
3. TYPE (e.g. Conventional, suction lift, ejector or submersible) _____		
4. INITIAL POPULATION TO BE SERVED: _____, FUTURE POPULATION TO BE SERVED: _____.		
DESIGN YEAR _____		
5. DESIGN INFORMATION:		
	AVG (MGD)	MAX (Peak Instantaneous) (MGD)
(a) Domestic Flow Rate (based on Design population to be served)	_____	_____
(b) Industrial Flow Rate	_____	_____
(c) Infiltration/Inflow Rate	_____	_____
(d) Design Flow Rate	_____	_____
(e) Effective Wet Well Capacity	(Gal) _____	
(f) Detention Time	(Min) _____	
(g) Design Average Velocity in Force Main	(Fps) _____	
(h) Total Dynamic (Head Pump Station + Force Main)	Static Head _____	Ft.
	Friction Loss _____	Ft.
	TDH _____	Ft.

(continued)

WATER POLLUTION CONTROL DESIGN MODULE

6. GENERAL INFORMATION

(a) Describe the proposed project with respect to the 100 year flood elevation, ventilation, emergency power provision and alarm system.

TABLE 3 -- PUMPING FACILITIES

LIST ALL THE PUMPS IN THE PUMPING FACILITY

N U M B E R O F I D E N T I C A L P U M P S	Describe Pump Use	Make Model and Type of Pump (Please attach pump performance curve(s))	Check Columns That Apply To Each Pump								Pump Capacity	
			E X I S T I N G	P R O P O S E D	V A R I A B L E S P E E D	C O N S T A N T S P E E D	A U T O M A T I C C O N T R O L	M A N U A L C O N T R O L	P N E U M A T I C I N J E C T O R	S T A N D B Y O P E R A T I O N	(GPM)	TDH (FT.)



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
WATER MANAGEMENT PROGRAM

SEWER EXTENSIONS AND PUMPING STATIONS PERMIT APPLICATION CHECKLIST

APPLICANT'S ✓ CHECKLIST

Please check the following list to make sure that you have included all the required information. Place a checkmark in the column provided for all items completed and/or provided.

Failure to provide all of the requested information will delay the processing of the application and may result in the application being placed on hold with no action, or will be considered withdrawn and the application file closed.

ENCLOSE THIS CHECKLIST WITH YOUR APPLICATION FORM.

	Requirement	Check ✓ If Included	* DEP * Use Only
	Accompanying materials and documentation (See General Instructions)	☐	
1.	Appropriate application fee	☐	
2.	Three (3) copies of application, design engineer's report, and accompanying drawings and plans.	☐	
	Additional copies for ECHD, ACHD, and DRBC.	☐	
	a. Affidavit and proper signatures	☐	
	b. Engineer's professional seal	☐	
	c. Properly notarized	☐	
3.	Supplemental Information:	☐	
	-General Layout Diagram	☐	
	-Sizes, capacities, & Dimensions Diagram	☐	
4.	Topographic map with appropriate details	☐	
5.	Completed Design Modules	☐	
6.	Act 14 Notification	☐	
7.	Other (specify):	☐	
		☐	
		☐	
		☐	