

1200 Penn Avenue  
Pittsburgh, PA 15222

A photograph of a backhoe loader parked on a street, with a blue semi-transparent overlay across the middle. The backhoe is yellow and black, with a license plate that reads '87501-MG'. A person is visible in the operator's cab. The background shows green trees and a residential street.

# DEVELOPER'S MANUAL

Revised April 23, 2021

## **PWSA Developer's Manual**

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## SECTION 1: PROCESS OVERVIEW

### Introduction

The Pittsburgh Water and Sewer Authority (PWSA) Developer's Manual outlines the regulations and procedures for developments connecting to public sewer or water facilities and constructing new facilities to be dedicated to PWSA. The purpose of this manual is to describe the permit application process, the requirements of the application materials, and the developer's responsibilities. To ensure timely review and approval of tap-in plans, this manual is to be used in conjunction with an open dialogue with PWSA.

More than one section of the manual may be applicable dependent upon the type of development and scope of work proposed by the applicant. In instances where the manual does not address a specific or unique site condition of a proposed development, the applicant should contact PWSA to determine if additional information is required.

PWSA is regulated by the Pennsylvania Public Utility Commission (PUC). Any standards set forth in this manual are subject to PUC review.

At minimum, this manual will be updated annually. More frequent updates may occur as procedures or regulations change.

### Development Permit Process

The following steps are a general overview of the development permit process. For more detailed information, please refer to the specific sections referenced throughout the manual. Single-family homes without fire service are not subject to the following steps and should review [Section One: Single-family Residential Developments](#) for more information. All other projects must follow this process. All submissions outlined below may occur simultaneously or in succession based on the scope and timeline of the proposed development.

PWSA requires electronic submission of all applications and drawings for development projects using e-Builder. After the pre-development meeting described below, PWSA staff will provide a unique e-Builder email address which will be utilized for all submissions and reviews associated with the development. Applications and documents are not considered submitted unless sent to the e-Builder folder.

All applications must include required documentation outlined in this manual or on our website. Failure to provide will result in a delayed approval.



**Step One: Pre-Development Meeting**

Prior to submittal of the permit application, the applicant is required to request a pre-development meeting. A meeting request may be submitted early in the planning process or after preliminary tap-in plans have been designed. If you have engaged an engineer, it is highly recommended that they attend the meeting.

To request a meeting, submit the pre-development meeting request form [found on our website](#) to [inbox@workflow.e-Builder.net](mailto:inbox@workflow.e-Builder.net). Please attach any site plans, drawings, flow calculations or other relevant documents to this email.

**Step Two: Water and Sewer Availability Letter Request**

All applications must include a Water and Sewer Availability Letter Request. Complete and submit the form to [permitinfo@pgh2o.com](mailto:permitinfo@pgh2o.com). PWSA staff will review and return a Water and Sewer Availability Letter Packet that includes the completed letter request form detailing infrastructure near the site, a will-serve letter, and infrastructure maps. The letter provided is required to be submitted with any final Pennsylvania Department of Environmental Protection (DEP) applications. Some lenders may also require a will-serve letter.

The water and sewer availability letter is not a permit and all procedures set forth in this document must be completed to obtain approval.

**Step Three: Water and Sewer Use Application**

A PWSA Water and Sewer Use Application must be completed by an applicant for public water and sewer facilities planning. This form and its attachments are precursors to any sewage facilities planning modules required separately by the DEP.

PWSA requires that the form be completed and submitted for the following scenarios:

1. Any development located on a lot that was created after May 15, 1972
2. Any residential development larger than one (1) single-family residential dwelling
3. Any development that contains commercial, industrial, and/or institutional uses
4. Any development that is repurposing an existing structure

Detailed instructions are covered in the [Water and Sewer Use Application section](#) of this manual.

**Step Four: DEP Sewage Facilities Planning Module**

Any development within the PWSA service area that meets the DEP's criteria will be required to complete sewage planning. The requirement for sewage planning depends on a variety of factors, including but not limited to, the Existing Flows, Project Flows, Net Flows, date of lot creation, previous planning module approvals, etc.



Detailed instructions are covered in the [DEP Sewage Facilities Planning Module section](#).

### **Step Five: Tap-in Plans**

Most development projects will require water and/or sewer tap-in plans to be reviewed and approved by PWSA staff. No work on existing or new taps, including terminations, is to begin prior to obtaining this approval.

Detailed drawing requirements are covered in the [Tap-in Procedures section](#).

### **Construction and/or Relocation of PWSA Facilities**

A development may require an extension, relocation, or construction of PWSA facilities to provide water or sewer service. A development agreement and construction drawings will be required.

Requirements are detailed in the [Private Construction of Public Facilities section](#).

### **Review Procedures and Fees**

PWSA will review applications in the order received. Baseline review times are 30 days per review. Review times may vary depending on volume and complexity.

Revisions to issued permits will not be expedited and will be reviewed in the order received. Exceptions to this policy may be permitted at the discretion of PWSA.

If tap-in plans require more than 2 reviews, \$250 will be required for each additional review. No additional reviews will be conducted without additional fee payments being made.

If a permit is issued, an additional \$250 fee will be required for any revisions to plans.

Additional fees may be required including but not limited to:

- [waterline shut permit fee](#)
- [hydrant flow test permit fee](#)
- [tapping fees](#)
- [tap and meter costs](#)
- sewage facilities planning module review fee (DEP)
- street closure and traffic obstruction permits (DOMI)
- building permit fees (PLI)
- plumbing permit fee (ACHD)





To see a complete list of PWSA fees, review our [fee schedule](#) on our website. An explanation of fees can be found in the [Tapping Fees section](#) of this manual. PWSA does not provide a preliminary cost estimation prior to issuing the official tap-in fees.

**Permit Expiration**

Approved permit refers to an application that has met all the requirements as outlined in this manual and has received a final invoice. Approved permits are valid for six (6) months from date of approval. If the final invoice is not paid within six (6) months, the permit becomes invalid, and the application may be required to restart the application process.

Issued permit refers to an approved permit that has paid the final invoice and received a permit from PWSA. Issued permits are valid for a period of five (5) years from date of issuance.

**Millvale Water Service Area**

Developments within the Millvale PWSA water service area must meet the minimum requirements described herein for water service. Sewer service and the DEP Sewage Facilities Planning Module shall be completed according to the rules and regulations of Millvale Borough and Girty's Run Joint Sewer Authority.



## SECTION 2: SINGLE-FAMILY RESIDENTIAL DEVELOPMENTS

### Overview

Single-family residential developments are equal to one single-family residential unit. Single family residential units with fire service or developments on land that has been subdivided to include multiple single-family homes are not considered a single-family residential development and shall fall under the regulations set forth in the remaining sections of this manual.

Single-family residential developments are not required to submit tap-in drawings to obtain water and sewer service, but they must obtain a Residential Permit from PWSA prior to completing any water or sewer work.

### Submission Requirements

To obtain a Residential Permit, the applicant is to complete and submit the residential permit application form (FORM RES). All fields must be completed and signed by owner.

All fees are to be paid at the time of permit issuance and prior to start of work. Current fees are outlined in our [Tapping Fees section](#).

Although not subject to tap-in plan review, all water and sewer work for single-family homes are required to meet PWSA minimum standards for tap installation outlined in the [Tap-in Procedure section](#).

Any work will also require approval from the Allegheny County Health Department. Contact information can be found on our website.



## SECTION 3: WATER AND SEWER USE APPLICATION

### Overview

The Water and Sewer (W/S) Use Application is to establish the water and sewer flows associated with a proposed development. The flows shall represent the peak daily flow, which is defined as the maximum volume of water/wastewater during a continuous 24-hour period, expressed in gallons per day (gpd). The approved flows shall be utilized by the PWSA for the calculation of the Tapping Fees, if required.

In addition, the approved flows shall be utilized by the Pennsylvania Department of Environmental Protection (DEP) to determine if sewage planning is required. For additional information on sewage planning, please refer to the section titled “Pennsylvania Department of Environmental Protection Sewage Facilities Planning Module”. The Applicant must receive the W/S Use Approval prior to submitting the Sewage Facilities Planning Module, if required.

A W/S Use Approval shall be required for the following situations:

1. Any development located on a lot that was created after May 15, 1972
2. Any residential development larger than one (1) single-family residential dwelling
3. Any development that contains commercial, industrial, and/or institutional uses
4. Any development that is repurposing an existing structure

### Submission Requirements

[The Water and Sewer Use Application](#) is to be completed and submitted electronically through e-Builder. To obtain an e-Builder folder, the applicant must have attended a pre-development meeting.

All supplemental documentation must be submitted with the W/S Use application.

### Supplemental Documentation

#### Site Plan

The site plan shall contain the following information:

- Existing structures located within the project site and nearby vicinity
- Property lines
- Entire property, including any residual tract
- Connection to any PWSA facilities (i.e. water, sanitary and storm)
- Plan orientation



- Existing and proposed rights-of-way and easements
- Existing and proposed improvements (i.e. roadways, sidewalks, etc.)
- Waterways and wetlands

The applicant can submit the tap-in drawings in lieu of the site plan. Instructions for preparing tap-in drawings can be found in the [Tap-in Procedures section](#). Submitting the tap-in plans as part of the w/s use application does not preclude the applicant from submitting a separate tap-in plan PDF for review.

### **Floor Plans**

The PWSA requires floor plans to confirm the flow calculation methodology. The applicant shall provide a minimum size of 11-inch x 17-inch. The floor plans shall be drawn to scale and display the square footage of each floor, number of rooms and/or any special conditions or features.

### **Project Narrative**

The project narrative shall provide relevant background information on the project. The Applicant shall use the narrative to “tell the story” of the development. Typically, the narrative will include descriptions on the existing and proposed conditions and uses. In addition, the Applicant may provide the project location, construction timeline, ownership group, consultant information, relevant history, adjacent PWSA infrastructure, conclusions from the PWSA predevelopment meeting, permit requirements, etc.

### **Flow Calculations**

The flow calculations shall provide the means and methods for calculating the Existing Flows, Project Flows and Net Flows. In addition, the flow calculations shall be sealed by a Professional Engineer registered in the Commonwealth of Pennsylvania. As previously discussed, the flows shall represent the peak daily flow, which is defined as the maximum volume of water/wastewater during a continuous 24-hour period, expressed in gallons per day (gpd). As a result, the applicant shall assume full occupancy, maximum turnover, etc. We understand that the DEP flow estimates may appear much higher than anticipated usage due to the use of low-flow fixtures, etc. However, please note that the flow estimates are attempting to estimate the peak daily flow, not the average daily usage.

The PWSA may consider flow calculations based on alternative estimation methods. The applicant shall provide justification for the alternative calculation methodology. Please be advised that the flow estimates shall represent the peak daily flows.

The flow calculations shall be broken down into water demand and sanitary flows. In addition, flow calculations must be provided for each use within the development (i.e. retail, residential, office, etc.). The applicant shall include HVAC condensate in the sanitary flow calculations for any commercial, industrial and institutional uses.



### Existing Flow

The PWSA defines “existing flow” as the peak daily flow within the past five (5) years. The applicant can claim existing flows if the property contains a structure that has been occupied within the past five (5) years. The existing flows shall be calculated via flow estimates established by the DEP. The applicant shall support their calculations by providing floor plans of the existing structure, and any other documentation that will support the flow calculation methodology.

The PWSA reserves the right to require historical water usage data, in lieu of the flow estimate values, to establish the existing flows. In these instances, the PWSA will allow the use of a peaking factor of 2.5 to establish the peak daily flow. The applicant shall be responsible to provide historical water usage data requested by the PWSA. The applicant can contact PWSA’s Customer Service for historical water usage data for a fee of \$15.

### Project Flow

The PWSA defines “project flow” as the peak daily flow that will be generated by the project. The project flows shall be calculated via flow estimates established by the DEP and provided in Table 1 below. The applicant shall support their calculations by providing floor plans of the proposed structure and clearly indicating the applicable information (i.e. floor area, number of apartments, etc.). The PWSA is reviewing information supplied by others and is not responsible to conduct additional work beyond confirming the information that is submitted.

Please see below for a few common uses and the associated information that would be required for the flow calculations:

- Restaurant and/or Bar:
  - o Maximum occupancy
  - o Number of turnovers per day, typically three (3)
- Hotel:
  - o Number of hotel rooms
  - o Presence of any public retail or restaurant facilities
- Residential:
  - o Number of equivalent dwelling units from single-family residences, apartments, townhouses, duplexes, and condominiums
  - o Presence of public facilities, such as swimming pools, gyms, cafeterias, etc..
- Office:
  - o Maximum number of employees. The applicant shall assume 150 square feet of floor space per employee. The square footage can be limited to the office space, and does not need to include hallways, shared areas, etc.
  - o Number of any public restrooms, if any



## Net Flow

The PWSA defines “net flow” as the difference between the project flow and existing flow, as follows:

$$\text{Net Flow} = \text{Project Flow} - \text{Existing Flow}$$

As a result, please note that the net flow may be positive or negative, depending on if there is a net increase or decrease in usage. In addition, please note that tapping fees are based on the net flow.

**Table 3.1**  
**Water Use and Sanitary Sewage Flow Estimates**  
 (Flows are referenced from the PA Code Title 25 Chapter 73 Paragraph 73.17)

Type of Establishment	Projected Water Use and Sewage Flow (gallons per unit per day)
Single family dwelling (For units of 3 bedrooms or less. For each bedroom over 3, add 100 gallons.)	400
Multiple family dwellings, including townhouses, duplexes, and condominiums	400
Apartment:	
1 bedroom	150
2 bedrooms	300
Larger than 2 bedrooms	400
Efficiency Apartments	150
Hotels and motels (per unit)	100
Rooming houses (per unit)	200
Airline catering (per meal served)	3
Airports (per passenger—not including food)	5
Airports (per employee)	10
Beauty shops (per customer chair)	200
Bus service areas not including food (per patron and employee)	5
Country clubs not including food (per patron and employee)	30
Drive-in theaters (not including food—per space)	10
Factories and plants exclusive of industrial wastes (per employee)	35
Laundries, self-service (gallons/regular washer)	400
Laundries, self-service (gallons/front loading washer)	200
Mobile home parks, independent (per space)	400
Theaters (not including food, per auditorium seat)	5
Offices (per employee)	10
Restaurants (toilet and kitchen wastes per patron)	10
(Additional for bars and cocktail lounges)	2





Restaurants (kitchen and toilet wastes, single-service utensils/person)	8.5
Restaurant, fast food (kitchen and toilet wastes/patron)	6
Restaurants (kitchen waste only, single-service utensils/patron)	3
Stores (per public toilet)	400
Stores (per public urinal)	200
Stores (per public sink)	200
Warehouses (per employee)	35
Work or construction camps (semi-permanent) with flush toilets (per employee)	50
Work or construction camps (semi-permanent) without flush toilets (per employee)	35
Churches (per seat)	3
Churches (additional kitchen waste per meal served)	3
Churches (additional with paper service per meal served)	1.5
Hospitals (per bed space, with laundry)	300
Hospitals (per bed space, without laundry)	220
Institutional food service (per meal)	20
Institutions other than hospitals (per bed space)	125
Personal care home (per bed space)	125
Schools, boarding (per resident)	100
Schools, day (without cafeterias, gyms or showers per student and employee)	15
Schools, day (with cafeterias, but no gym or showers per student and employee)	20
Schools, day (with cafeterias, gym and showers per student and employee)	25
Camps, day (no meals served)	10
Camps, winter and summer residential (night and day) with limited plumbing including water-carried toilet wastes (per person)	50
Campgrounds, with individual sewer and water hookup (per space)	100
Campgrounds with water hookup only and/or central comfort station which includes water-carried toilet wastes (per space)	50
Fairgrounds and parks, picnic—with bathhouses, showers, and flush toilets (per person)	15
Fairgrounds and parks, picnic (toilet wastes only, per person)	5
Swimming pools and bathhouses (per person)	10
HVAC condensate from commercial, industrial & institutional facilities	Applicant to provide flow estimates that will be discharged to a PWSA sewer



## Revised Water and Sewer Use Application

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Applicants can request a refund for tap fees for an issued permit if actual project flows are less than the approved project flows. The applicant must resubmit a water and sewer use application and a \$250 review fee. Refunds may take 6-8 weeks to process. Refunds may be requested within 5 years of permit issuance date.

## Technical Checklist for Water and Sewer Use Application

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The following is a list of items that shall be included with the Water and Sewer Use application. Failure to provide the required information shall result in the rejection of the submittal package.

- Application Fee
- Water and Sewer Use Application Form
- Site Plan
- Floor Plans
- Project Narrative
- Flow Calculations

## SECTION 4: PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION SEWAGE FACILITIES PLANNING MODULE

### Overview

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[The Pennsylvania Sewage Facilities Act](#) (Act 537, as amended) requires each municipality in Pennsylvania to have an Official Sewage Facilities Plan (Official Plan) to address existing and future sewage disposal needs. Please note that the Pennsylvania Department of Environmental Protection (DEP) administers and oversees the Act 537 regulations. The Official Plan for the City of Pittsburgh was originally approved by the DEP on May 15, 1972. The Sewage Facilities Planning Module (SFPM) is the instrument for legally amending the Official Plan to account for flows from new/unforeseen subdivisions and land developments. The SFPM requires review/approval from each Facility Owner within the sewerage system, including Collection (PWSA), Conveyance (ALCOSAN) and Treatment (ALCOSAN). Please be advised that the PWSA review/approval shall be limited to the collection system portions of the SFPM. Each Facility Owner conducts a review to understand how the proposed development will impact available dry-weather capacity and whether the proposed flows will create a dry-weather hydraulic overload within the next five (5) years.

Amendments to Act 537 have created a process by which certain developments may be exempt from the planning module process. However, in accordance with 25 Pa. Code 71.51(2), the exemption process requires that the existing collection, conveyance and treatment facilities are in compliance with the Clean Streams Law. On March 2, 2011, the DEP issued a determination that, due to an ongoing consent order regarding the discharge of untreated wastewater, the PWSA and ALCOSAN do not comply with the Clean Streams Law. As a result, the DEP does not accept SFPM exemptions for any development located within the PWSA service area.

### General Requirements

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Any development within the PWSA service area that meets the DEP's criteria shall be required to complete sewage planning. The requirement for sewage planning depends on a variety of factors, including but not limited to, the Existing Flows, Project Flows, Net Flows, date of lot creation, previous planning module approvals, etc. Please refer to the [Planning Workflow Diagram](#) on the PWSA website for additional information.

Please note that the DEP is the governing authority that makes the final determination on whether sewage planning is required. After issuance of the Water and Sewer Use Approval Letter, the PWSA shall issue a Preliminary Determination on the Need for Sewage Planning (Preliminary Determination) to the DEP. The DEP will subsequently issue a Final Determination



on the Need for Sewage Planning (Final Determination), which will confirm or deny the findings in the Preliminary Determination.

## **Submission Requirements**

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Please note that SFPM approval requires approval from PWSA, ALCOSAN, City Planning, City Council and the DEP. As a result, the approval process, from start to finish, can take several months. PWSA aims to respond to each SFPM review within 30 days of receipt. The DEP, upon receipt of the completed SFPM, has up to 90 days to respond.

Please see below for the key steps:

1. Submit the Water and Sewer (W/S) Use Application to the PWSA. The PWSA shall provide the location of the most limited capacity sewer in the W/S Use Approval Letter. After issuance of the W/S Use Approval Letter, the PWSA shall issue the Preliminary Determination. The DEP will subsequently issue a Final Determination, which will confirm or deny the findings in the Preliminary Determination.
2. Submit the Sewage Facilities Planning Module Application Mailer to the DEP to receive the applicable SFPM forms and DEP Code Number. Forward the SFPM documentation, along with the required supporting documentation, to PWSA for review/approval. Refer to the sections that follow for detailed information on submittal requirements. Please be advised PWSA's review will be limited to the collection portion of the SFPM.
3. Submit the SFPM to ALCOSAN after receiving PWSA approval. Please coordinate with the ALCOSAN for additional information on their review process. ALCOSAN's review will be limited to the conveyance and treatment portions of the SFPM. Please refer to the PWSA website for contact information.
4. Submit the SFPM to the City Planning Department for approval after receiving ALCOSAN approval. Please coordinate with the City Planning Department for additional information on their review process. Please refer to the PWSA website for contact information.
5. The City Law Department, which receives the SFPM from the City Planning Department, will request a Resolution to be reviewed/approved by City Council.
6. Submit the completed SFPM to the DEP for final approval.



## Supplemental Guidance for the SFPM Component 3 Form

The SFPM Component 3 Form is for sewage collection and treatment facilities. Please be advised that these instructions are intended as a supplement to the DEP's instructions. In the event that there is a conflict between this supplemental guidance and DEP's instructions, the Applicant shall complete the Component 3 Form per DEP instructions. This supplemental guidance is not intended to cover each section on the Component 3 Form, but rather, only the sections that directly apply to PWSA. The supplemental instructions for the SFPM Component 3 Form are as follows:

- Section A No additional comments. Please refer to the DEP Instructions.
- Section B Please note that the City of Pittsburgh and PWSA are separate and distinct entities. This section shall not be populated with PWSA information.
- Section C No additional comments. Please refer to the DEP Instructions.
- Section D No additional comments. Please refer to the DEP Instructions.
- Section E Submit a Water and Sewer Availability Letter Request Form to confirm that PWSA can provide service to the proposed development. Please refer to the Process Overview for additional information.
- Section F No additional comments. Please refer to the DEP Instructions.
- Section G The PWSA review is limited to Section G(1) – Collection System. Complete Section G(1b), as follows:
- Existing collection or conveyance system: [ROAD NAME – SEWER DIAM. AND MATERIAL]
- Owner: The Pittsburgh Water and Sewer Authority
- Existing Interceptor: [ALLEGHENY/MONONGAHELA/OHIO] River Interceptor
- Owner: The Allegheny County Sanitary Authority
- Section H No additional comments. Please refer to the DEP Instructions.
- Section I No additional comments. Please refer to the DEP Instructions.
- Section J For J(1), the Project Flows shall be identical to the Net Flows approved by the PWSA during the Water and Sewer Use Application review process. Please be advised that the Water and Sewer Use shall be approved prior to the SFPM



review. For J(2), the PWSA applicable portions of the table are limited to the “Collection” row. Refer to the sections that follow for detailed information on submittal requirements.

- Section K No additional comments. Please refer to the DEP Instructions.
- Section L No additional comments. Please refer to the DEP Instructions.
- Section M No additional comments. Please refer to the DEP Instructions.
- Section N No additional comments. Please refer to the DEP Instructions.
- Section O No additional comments. Please refer to the DEP Instructions.
- Section P No additional comments. Please refer to the DEP Instructions.
- Section Q No additional comments. Please refer to the DEP Instructions.
- Section R No additional comments. Please refer to the DEP Instructions.

## **Methodology to Determine the Present Flows**

The flows (i.e. Existing, Project and Net) shall be reviewed and approved by the PWSA during the Water and Sewer Use Application review process. As indicated in Section J - Chapter 94 Consistency Determination of the SFPM, the average and peak existing flows shall represent the most limited capacity sewer (MLCS). Please note that the MLCS is not typically the same sewer used for the tap-in. Therefore, the PWSA shall provide the location of the MLCS as part of the Water and Sewer Use Review process. The Present Flows shall be determined, as follows:

<b>Method No.</b>	<b>Project Flows, gpd</b>	<b>Methodology to Determine the Present Flows</b>
Method #1	Up to and Including 4,000 gpd	Peak Flow Depth Measurements
Method #2	Greater than 4,000 gpd	Flow Monitoring

### **Method #1: Peak Flow Measurement**

The Applicant shall take a minimum of five (5) flow depth measurements at the MLCS over a one-hour period between 6-8 AM or 6-8 PM. For example, an Applicant could take measurements at 7:00AM, 7:15AM, 7:30AM, 7:45AM and 8:00AM. The maximum of the five





flow measurements shall be utilized as the flow depth for the Manning equation calculations. All flow depths between zero and one inch shall be rounded to one-inch.

### **Method #2: Flow Monitoring**

The Applicant shall contract with a professional flow monitoring company to monitor the Present Flows at the MLCS. The flow monitoring shall take place for a minimum period of 30 days, unless otherwise approved by the PWSA. Data should be checked for quality and analyzed to provide the present maximum monthly dry weather average flows and peak flows in gallons per day. For peak flows in the PWSA's collection systems, indicate whether the flow is peak hourly flow or peak instantaneous flow.

## **Calculations for Design Capacity, Present Flows and Projected Flows**

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### **General Information**

The flow calculations shall be signed and sealed by a Professional Engineer licensed in the Commonwealth of Pennsylvania.

When available, the Applicant may utilize historical as-built information to determine the existing sewer slope, as indicated in the W/S Use approval. If historical as-built information is not available, the Applicant shall either utilize the minimum slope permitted per the DEP Wastewater Facilities Manual or survey the existing sewer to determine the actual sewer slope.

The Applicant shall utilize the following Manning's Roughness Coefficients (n):

Table 4.1  
Manning's Roughness Coefficient

Pipe Material	Manning's Roughness Coefficient, n
Brick	0.016
Concrete	0.013
Ductile Iron	0.012
Plastic	0.010
Vitrified Clay	0.015

The Applicant shall utilize the following Peaking Factors:

Table 4.2  
Peaking Factors

Type of Collection System	Peaking Factor
Combined	3.5



Separate	3.0
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### Flow Calculations

The Applicant shall calculate the Design and/or Permitted Capacity, Present Flows and Projected Flows in 5 Years, as follows:

Table 4.3  
Flow Calculation Methodology

Flow Type	Calculation Methodology
Peak Design Capacity	Use the Manning Equation for full-flow conditions
Average Design Capacity	= Peak Design Capacity ÷ Peaking Factor
Present Peak Flow	Method #1: Use the Manning Equation for partially filled pipes Method #2: Analyze the flow data
Present Average Flow	Method #1: = Present Peak Flow ÷ Peaking Factor Method #2: Analyze the flow data
Projected Peak Flow in 5 Years	= (Present Peak Flow + Project Flow) × 1.05
Project Average Flow in 5 Years	= Projected Peak Flow in 5 Years ÷ Peaking Factor

### Technical Checklist for SFPM Applications

The following is a list of items that shall be included with the SFPM application. Failure to provide the required information shall result in the rejection of the submittal package.

- Copy of the DEP Planning Module Components Letter (i.e. DEP's response to the Mailer)
- Copy of the PWSA Water and Sewer Use Approval Letter
- Copy of the Water and Sewer Availability Letter
- Project Narrative including the name of the project, location address, current and proposed use
- Plot Plan showing the existing/proposed structures and existing/proposed utilities
- Flow Calculations signed and sealed by a Professional Engineer
- Sewage Facilities Planning Module – Component 3 – Sewage Collection and Treatment Facilities



## SECTION 5: TAP TERMINATIONS

### Overview

All connections to PWSA public facilities which are abandoned, proposed to be abandoned, or otherwise not in use or service, must be terminated at the connection to the PWSA owned facilities per PWSA details, specifications, and/or standards at the property owner or developer's expense. All structures to be demolished must obtain a tap termination permit from PWSA. This includes but is not limited to restoration of public and private streets, sidewalks, utilities, or paving and landscaping or demolition of structures. For a water service that is active but not in use, the developer has the option of termination or to maintain a meter. If no tap termination permit is issued from PWSA, the property owner will continue to receive a monthly bill.

All tap terminations require a permit. If no new taps are proposed, a tap permit application and drawings must be submitted. Any tap terminations proposed as part of the development of a property shall be included and approved on the tap-in plans as described in the [Tap-in Procedures section](#).

### Submission Requirements

The applicable standard details must be shown on the applicant's drawings. All current standard details can be found on our website. The applicant should note on the drawing any existing account numbers and/or meter numbers associated with the tap to be terminated. Drawings are to be submitted via e-Builder. Instructions to obtain an e-Builder project folder are outlined in the [Process Overview](#) of this manual.

### Termination Procedure

PWSA must field verify the termination of the existing connections. The applicant shall notify PWSA by contacting the Field Supervisor provided with their permit at least three working days in advance of the proposed termination date. A PWSA inspector must be on site during the termination procedure and witness said terminations and pipe zone backfilling. Removal of existing private portions of abandoned or unused sewer laterals and/or abandoned or unused private water service lines is the responsibility of the property owner. Absent the written agreement of the PWSA to the contrary, should the PWSA be required to remove a property owner's abandoned sewer laterals and/or abandoned or unused water service lines, the total PWSA cost of that removal shall invoice and/or lien said property. In the case of water service lines for fire or domestic use, once the service is terminated, the applicant shall return the meter and remote reading device to PWSA and provide PWSA with said meter and account numbers and the service addresses. Failure to return meter and account number/service address will have developer subject to continued billing on accounts.



**Note:** Please be advised there could be ferrule charges billed for unremoved taps.

### **Trenchless Technology**

If the applicant proposes to terminate a sanitary or storm sewer connection using trenchless technology, then the applicant must submit shop drawings and calculations for method to be used and conduct NASSCO certified closed-circuit televised video (CCTV) inspections of the public sewer before and after the termination(s). Copies of the videos and related report information must be submitted to the PWSA. All CCTV inspection must be compatible with PWSA electronic media and adhere to current PWSA standards.



## SECTION 6: TAP-IN PROCEDURES

### Overview

All developments and/or redevelopments proposing new taps, increasing flow to existing taps, or increasing storm flow to a new or existing storm system must submit tap-in plans stamped by a Pennsylvania Certified Engineer for review by PWSA engineers. This section outlines general plan requirements and specific tapping procedures. A development may include all taps described in this section while others may only include one.

The following prerequisite conditions must be satisfied prior to the review of tap-in drawings:

- The applicant shall have submitted a [PWSA Water and Sewer Availability Letter Request](#).
- [The Water and Sewer Use Application](#) has been approved by PWSA. A fire service only tap is does not need a Water and Sewer Use application approval.
- If applicable, [DEP Sewage Facilities Planning Module](#) must be under review by PWSA.
- \$250 review fee has been submitted.

PWSA grants final approval of the tap-in drawing through an electronic review process in e-Builder. After the final review, PWSA will supply the applicant with a permit fee invoice ([See tapping fees section](#)). A digital copy of the approved drawings will be provided to the applicant when the permit is issued. A permit is not considered issued until all fees are paid.

### General Requirements

General tap-in guidelines are as follows:

- Form-DEV must be completed and submitted with the tap-in plans.
- Drawing size shall be 24 inches x 36 inches in landscape.
- Plan views shall be drawn to 1"=20' or 1"=30'.
- Plan view shall be set to City monumentation and City datum unless otherwise directed.



- Drawing shall be readable and drawn to scale with a north arrow pointing to the top or the right of said sheet.
- Drawing shall include a plan view of the entire site. All existing topographic information shall be shown either 50 percent screened or half-toned.
- Existing building footprint shall be displayed and shall show the address, parcel ID, type of building, number of floors, the square footage of each floor and the total square footage of the building. If an address or parcel ID has not yet been established, use proposed address.
- Existing meter and account numbers must be shown.
- CCTV is required for all sewer lines pre and post construction when new taps, concrete work, or foundation work are proposed.
- CCTV shall be in MPEG format and include a NASSCO/PACP export of CCTV database, PDF map showing the location of manhole IDs, PDF of all CCTV inspection logs.
- Existing manholes and wyes must be shown by survey stationing matching CCTV.
- All existing sewer, storm and water lines near project location shall be displayed. Each line shall be marked private or public.
- All existing water mains, sanitary or storm sewers that will be tapped shall be displayed. The size and material type shall be shown.
- Proposed location and size of the service line shall be shown and stationed. Stationing shall be established from a fixed location such as centerline, right-of-way line, or property line. Valves and manholes are not considered a fixed location unless otherwise directed by PWSA. Proposed sewer, storm and water lateral information is to be shown in bold line weight and text.
- The appropriate scalable plan view, profiles, and details shall be displayed. Examples of the PWSA standard details can be found on our website.
- All applicable standard tapping and termination details shall be displayed. Current details are available on our website.
- All existing private water and sewer lines connected to the existing building or servicing the site including abandoned facilities. Any existing service line that will not be reused by the proposed project must be terminated by the owner. The service line must be terminated at the main as per [PWSA Specifications and in a manner acceptable to the PWSA.](#)





- All existing easements must be displayed on the plans. Documentation of easements must be provided.
- The summary table titled “Water and Sewer Flow Data” must be completed by the applicant and shown on each drawing.
- Each tap-in drawing must also include an appropriate title block in the lower right-hand corner of the drawing.
- Current PWSA approval block must be shown on each drawing. This block is to be completed by PWSA.
- A Hydrant Flow Test Results table is required for all water and fire protection service tap-in drawings. See [Hydrant Flow Test procedures](#) for more information.
- All applicable tapping, termination, and trenching details shall be shown. Any modifications to PWSA details must be explicitly called out on the plans.
- Connection to PWSA sewer can be made through an existing wye or through a new approved connection into the PWSA sewer main. If private connection is proposed to be made through an existing wye, then the location of the existing wye must be shown and stationed to the nearest PWSA manhole on the sewer tap-in drawing(s). Certain existing wye stationing can be obtained from PWSA records/video location of taps. If a new connection is proposed using a new wye, then a detail of the connection must be shown and also stationed as stated above on the sewer tap drawing. New connections must follow current PWSA specifications and standards.
- Construction of private sanitary or storm sewer laterals to tap PWSA manholes and catch basins or storm inlets is not permitted.

### Sanitary and Storm Sewer Tap-in Specific Requirements

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- If an existing sanitary sewer line is present, then the applicant must propose connecting the sanitary flows from the proposed development to the existing sanitary sewer unless otherwise directed by PWSA.
- If only an existing combined sewer is present, then the applicant must propose connecting both the sanitary and storm flows from the proposed development to the combined sewer with two separate laterals connecting into one wye unless otherwise directed.



- If an existing storm sewer is present, the applicant must connect the flows from the proposed development to the appropriate sewers unless otherwise directed. This includes areas where existing combination sewers are intended to become designated storm in the future as directed by the PWSA.
- Any combination, sanitary sewer, storm sewer or water taps that are being terminated by the customer must be shown on the tap-in drawings (located and/or stationed as directed). Be advised that new tap(s) will not be provided until all site related abandoned existing services are terminated and witnessed by a PWSA representative. All costs associated with the termination of existing private service lines are the responsibility of the property owner.
- It is encouraged to use best management practices (BMPs) to achieve an approved method of surface/stormwater collection, conveyance, detention, and/or retention for stormwater which may minimize or even eliminate the use of PWSA sewer conveyance conduits. Stormwater facilities on private property are usually regulated by other agencies including, but not limited to City of Pittsburgh, Allegheny County Health Department (ACHD), and Pennsylvania Department of Environmental Protection (DEP). The Stormwater Management Officer, located at the Department of City Planning for the City of Pittsburgh, can provide more information on private property surface/stormwater detention and retention requirements. Contact information for the City Stormwater Management Officer can be found on our website. The applicant must also comply with all current county/state stormwater regulations.

## **Water Quality Requirements**

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The following regulations for private stormwater connections to PWSA sewers are designed to comply with the current Pennsylvania Department of Environmental Protection's suggested guidelines for stormwater quality as expressed in the current edition of the [Pennsylvania Stormwater Best Management Practices Manual](#) (BMP Manual) . Chapter 3, Section 3.5 of this manual states "Achieve an 85 percent reduction in post-development particulate associated pollutant load (as represented by Total Suspended Solids [TSS]), an 85 percent reduction in post-development total phosphorus loads, and a 50 percent reduction in post-development solute loads (as represented by NO<sub>3</sub>-N), all based on post-development land use." Any structural or nonstructural methods of achieving the stormwater quality guidelines above are acceptable, provided that appropriate documentation and worksheets from the BMP Manual are submitted to PWSA and found to verify the claimed performance after review. All surface drainage



areas except for unoccupied elevated roof space must be captured and treated. All structural and nonstructural water quality designs must meet the following requirements:

- Design must capture grit/silt, floatable debris and/or other pollutants as noted in these specifications or as directed.
- The device must be detailed on the plans and all certified pertinent sizing information, options, weirs, orifices, settings, flow capacity, etc. must be noted. PWSA reserves the right to request design certification from an engineer registered in Pennsylvania.
- Provide documentation of required approval(s) by other private and/or government agencies.
- The property(s) owner(s) must provide a signed statement outlining the maintenance requirements as stated by the manufacturer and/or designer and agreeing to accepting responsibility for this required private maintenance. PWSA reserves the right to request a recorded copy of this document.

Due to the congested nature of development within the City of Pittsburgh, many sites will be required to use water quality filters and/or hydrodynamic devices as standalone units. If the surface drainage area excluding unoccupied roof space is less than 5000 ft<sup>2</sup>, PWSA may grant approval to use inlet filter bags designed for permanent installation and/or maintenance. However, they must meet the same stormwater quality requirements. Water quality filters and/or hydrodynamic devices and/or inlet filter bags must meet the following minimum requirements:

- 85% total suspended solids (TSS) removal with a mean particle size distribution of 50 microns or smaller. It is assumed that removal of the smaller particles will result in the desired nitrogen and phosphorus removal.
- Design must not release previously captured pollutants during high flows or when in need of maintenance.
- Design must capture above noted grit/silt, floatable debris and/or other pollutants as directed.
- The device must be detailed on the plans and all certified pertinent sizing information, options, weirs, orifices, settings, flow capacity, etc. must be noted.
- The property owner(s) must provide a signed and/or legally recorded statement/agreement outlining the maintenance requirements as stated by an approved manufacturer and agrees to accepting responsibility for this required private maintenance.



- The stormwater quality device must be located where it is accessible for PWSA inspection and/or for maintenance by the owner.
- PWSA may request test results from an independent source.

Other private BMPs that work well in an urban environment are predominantly based on subsurface storage detention and/or retention, which are usually located beneath parking lots, landscaping, or other surface features. The surface feature may or may not be part of the BMP.

In its simplest form, subsurface storage consists of an excavated area filled with crushed stone which stormwater is directed to. The reservoiring water fills the void space between the individual stones. Perforated pipes and/or proprietary structures are often added to increase the storage capacity. The excavation is lined with geotextile to deter fine soils from entering the storage space.

Stormwater retention refers to runoff which is kept onsite and usually allowed to infiltrate into the existing earth. This is preferred over stormwater detention, but site conditions may limit the ability to infiltrate stormwater. Percolation testing should be done to verify the site conditions during design and the area protected from compaction damage during construction activities if stormwater retention is proposed.

Stormwater detention refers to the storage and slow release of stormwater. This minimizes the peak flow rate in the storm sewer and/or receiving body of water. Most BMPs are designed to retain a portion of the stormwater and detain the remainder.

The Pennsylvania DEP BMP Manual has many more specific BMPs based on the general concepts above, such as Pervious Pavement with Infiltration Bed, Infiltration Basin, Infiltration Trench, and Rain Garden. The BMP Manual also includes BMPs based on other concepts which are well adapted to an urban environment, such as Vegetated Roofs and Runoff Capture & Reuse. Many companies have developed proprietary versions of BMPs which may also be used, provided they are compliant with current local, state, and PWSA regulations. As long as sound design principals and methodologies are used, BMPs may be mixed, matched, modified, and linked together. Also refer to current municipal and Allegheny County guidance and regulations for additional information.

### **Water Tap-in Specific Requirements**

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- Plan view shall show all existing or proposed valves, thrust blocks, fire service, water service, meter and backflow location.
- Concrete blocking required for 4-inch taps and larger.



- The tap-in drawing shall show all existing water service lines connected to the existing building or servicing the site. Existing residential private service lines must be a minimum of 1-inch copper with a flow of 5 gallons per minute (GPM) to be reused. New commercial, industrial, or institutional developments may utilize existing service lines at the expense and maintenance of the owner if minimum flow requirements are met. All lines to be reused must have an Allegheny County Health Department approval in writing with application.
- It is the responsibility of the design consultants, engineers, and/or architects hired by the developer to determine the adequacy of the existing water systems to fulfill proposed needs at their time and expense. The presence of an existing PWSA water main or an existing water service line in no way implies that PWSA has adequate capacity or pressure for the proposed development.

### **Curb Stop Valves**

Approved curb stop valves shall be provided on all new domestic water service lines 12 inches towards the property from the face of curb or edge of pavement and oriented in a straight line perpendicular to the public street right of way unless otherwise directed. For mains located in the sidewalk, curb stop valves shall be located approximately 12" from property line to the street. New taps and domestic service lines shall also be located so as not to place the curb valve within the defined limits of a driveway unless otherwise directed. All private service line materials must also comply with all required ACHD Plumbing Division directions and approvals.

### **Water Meters**

A water meter is required for each customer service line. PWSA will supply, set and connect all water meters regardless of size to new and/or existing piping. PWSA's current policy is one meter per water service line/connection tap-in to the PWSA public water main. Each meter must be associated with a specific billing address and legally responsible individual or organization. Any private sub metering and/or division of the PWSA bill are solely the responsibility of the individual or organization mentioned above.

The water tap-in drawing shall include a schematic detail for each proposed meter and remote reading device servicing the development. This detail must show size, type, and model number of PWSA approved meter and remote reading device for each service line. The applicant must provide peak domestic water demand in gallons per minute (gpm) on the drawing. The peak domestic water demand will determine the size of the new water meter.



**Meter Pits/Vaults**

The PWSA recommends meter pits/vaults for all installations. PWSA requires meter pits for all residential units as directed. If the distance from the PWSA water main to the point of entry of the water service line at the building is greater than 50 feet, then the applicant is required to install a meter pit or vault. The meter pit or vault must be located at the property line no farther than 36 inches from the edge of the public right-of-way or property line that contains the PWSA water main. If the distance from the water main to the point of entry at the building is less than 50 feet, then the PWSA may permit the meter to be installed inside the building unless the building is constructed on a slab on grade. All properties constructed as slab on grade must install a meter pit.

Any meter installed inside a building must be located no more than 36 inches from the point of entry at the inside face of the exterior wall of the water service line inside the building. Where a meter is installed in a building, the remote reading device shall be installed on the outside wall of the structure or at any other location that in the PWSA's judgment is accessible under most conditions. It shall be securely attached to the building at a level between 3-1/2 and 4-1/2 feet above finished grade, outside of any fenced-in areas if possible, and clear of obstructions. It shall be located on the front of the building or on a side near the front. If two buildings are separated by a driveway, it shall be located on the sides of the buildings facing each other to facilitate reading. Exceptions to these requirements will be made only if approved by the PWSA in writing.

Service lines four inches and larger will require a vault. Vaults must meet the following requirements:

- All vaults must have two hinged doors capable of being locked open. Both doors must be large enough for human entry. One of the doors must be centered over the meter and large enough for the easy installation, removal, and maintenance of the meter. It is suggested that the second door be placed over the backflow prevention device.
- An aluminum ladder is required at each door of the vault for access.
- The property owner will own and is responsible for the vault and its maintenance.
- The vault must have a method of drainage. A drain line day lighting to open air is preferred, but a sump for pumping out the vault is the minimum requirement where a drain line is not possible (the drain line cannot be connected to the public sewer system).





- Vaults or pits located in roads, driveways, or other areas subject to traffic must be live load rated (H20). Be advised PWSA and/or ACHD do not recommend vaults/pits in street cart ways and/or driveways.
- Projects where domestic and fire lines are connected to the public main via a single tap as shown in PWSA Detail WSC-1 may use a single vault for both services. In this application, one door is required to be centered over the domestic meter and another is required to be centered over the double detector check backflow prevention device and by-pass meter used on the fire service.
- PWSA requires a cut sheet/shop drawing submittal(s) for all vaults prior to installation to ensure the above criteria is met.

### **Backflow Prevention**

A backflow prevention device is to be installed on every service line. When applying for a new or replacement water service tap, it is required that all active existing service lines be equipped with an approved backflow prevention device. In no case will a plan be approved until all existing and new service lines are appropriately protected against backflow. The following requirements apply to all backflow prevention devices.

- Backflow prevention devices must be installed immediately after the water meter and remote reading device and before any branch lines leading off of the water service line.
- Backflow prevention devices must be installed so as to be readily accessible and with adequate space for inspection, testing, maintenance, and disassembly.
- Backflow prevention devices must be mounted in a horizontal position except for two models which permit horizontal or vertical mounting.
- Backflow prevention devices such as a reduced pressure zone (RPZ) type with a drain must be protected from freezing by installation in a heated building. Pit or vault installation is also prohibited. Such pit or vault applications must have a dual check type backflow prevention device directly after the meter within the pit or vault in addition to the RPZ type within the building.
- PWSA requires reduced pressure zone (RPZ) type backflow prevention on all non-residential developments.



- Backflow prevention devices with drains must be installed so that the relief port is always readily visible and vented to drain.
- Preferably, the backflow prevention device should be located a minimum of 18 inches from the nearest wall and the center line of the pipe and should be located between 24 inches and 48 inches off the deck for horizontal installation.
- The property owner owns and is responsible for the proper maintenance and/or protection of all backflow prevention devices. Each device is to be tested annually and results submitted to PWSA.
- Each installation has specific design problems that must be considered. However, the above guidelines and manufacturers' recommendations will be emphasized when plans are submitted for approval.

### **Fire Protection Service Tap-In Specific Requirements**

Tap-in drawings for fire protection service are required by PWSA for all proposed developments and/or redevelopments that voluntarily install or are required to install a fire suppression system by the City of Pittsburgh Department of Permits, Licenses, and Inspections (PLI). This includes single-family homes with proposed fire service. It is the responsibility of the developer to determine if fire service is required. PWSA does not determine if fire service is required and will only review if fire service taps are included on the tap-in plans.

It is the responsibility of the design consultants, engineers, and/or architects hired by the developer to determine the adequacy of the existing water systems to fulfill proposed needs at their time and expense. The presence of an existing PWSA water main or an existing water service line in no way implies that PWSA has adequate capacity or pressure for the proposed development.

If adequate water pressure exists, fire protection systems are directed to have a separate tap from the PWSA water main. Domestic water service line(s) can be tapped onto said fire line but separated in the public right-of-way with shut-off valve, if deemed acceptable by PWSA. No irrigation or domestic lines may be tapped from a dedicated fireline.

All new shut off valves required for redundant fire service lines as determined by the City of Pittsburgh Department of Permits, Licenses, and Inspections shall be installed at the expense of the developer according to the procedures outlined in [Private](#)



[Construction of Public Facilities](#). It is PWSA's preference that redundant fire lines are tapped to two different water mains where available.

If applicant is applying for only a fire line tap, the Water & Sewer Flow Data Table is not required.

The applicant must include the following information on the Peak Operating Water Demands Table on each tap-in drawing:

- Fire System Peak Demand (in gpm)
- Domestic System Peak Demand (in gpm)

If a fire service line feeds a hydrant on private property, the line will require a water meter and remote reading device in a meter pit/vault. A  $\frac{5}{8}$ -inch x  $\frac{3}{4}$ -inch meter and remote reading device must be purchased from the PWSA where fireline is equipped with typical backflow assembly. PWSA will install to new and/or existing piping, and own and maintain all water meters and remote reading devices.

A backflow prevention device is to be installed on every service line. When applying for a new or replacement fire service protection service tap, it is required that all active existing service lines be equipped with an approved backflow prevention device. In no case will a plan be approved until all existing and new service lines are appropriately protected against backflow. For more information on backflow prevention requirements, review [Backflow Prevention](#).

### **Hydrant Flow Test**

Before any water tap-in drawings for developments including fire service or domestic service greater than one-inch can be submitted, the applicant must first apply for a hydrant permit to conduct the hydrant flow test.

The applicant should indicate the street name of the tap location on the application. PWSA will review and select two hydrants for the hydrant flow test. PWSA reserves the right to modify the hydrant selections before the hydrant flow test is completed.

If an accurate flow cannot be measured on a PWSA water main, no fireline taps will be permitted into that main unless no other options are available. The developer may install a fire hydrant as directed by PWSA at the expense of the developer according to the procedures outlined in [Private Construction of Public Facilities](#).

- The Operations Division of PWSA will operate all valves and hydrants during the hydrant flow tests. Information on how to schedule the hydrant flow test will be given with the permit.



- The applicant must conduct the hydrant flow tests using his own equipment and personnel.
  - Compliance with [NFPA 291](#) is required as determined by the City of Pittsburgh.
  - The pressure drop during the hydrant flow test must be 20 percent or greater as required by NFPA 291.

Ideal conditions for hydrant flow tests are when outside air temperatures are above 40°F. PWSA will typically not permit hydrant flow tests when the outside air temperature is below 40°F and falling. PWSA can authorize a hydrant flow test to be conducted only if additional safety measures are taken and permitted by the city (i.e. salt truck, etc.). Hydrant flow tests are also dependent upon the availability of the PWSA crew to operate the hydrants. Typically, results from a hydrant flow test are valid for a period of one year from the date of the test. In certain areas with heavy development, PWSA may determine that the test results are valid for only six months from the date of the test.

The applicant must complete the Hydrant Flow Test Results table with the data from the hydrant flow test and add to water tap-in drawings.

## Tap Installation Procedures

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### Waterline Taps

No water tap will be performed unless all water meters, remote reading devices, and backflow devices have been previously installed and subsequently inspected by PWSA. PWSA must perform the waterline tap, meter and remote reading device installation, and any valve shutdowns. Forty-eight hours advance notification from the owner is required before the tap can be performed.

Listed below are the required steps for water tap-in:

- The customer is to follow all steps outlined in previous sections of this manual to obtain a development permit.
- After permit approval and the fees paid, a permit will be issued at the permit counter.
- The customer / developer may begin site prep for service line, meter, and remote device installation.
- Customer / developer shall obtain street opening permit if necessary and begin excavation to open street and expose water main.



- Customer / developer shall use the contact information provided at permit issuance to schedule meter and tap installation.
- PWSA will inspect service line / meter installation.
- PWSA will inspect excavation for tap and any tap terminations, if necessary.
- Customer / developer shall make connection from the main to the meter set.

Construction personnel employed by the applicant are responsible for all permitting, excavation, backfill, trench restoration, and domestic water service line installations from the building to the point of the tap-in at the PWSA water main. The applicant's construction personnel must have proper trench shoring and equipment on site to conduct all required work and complete the job.

The responsibility of the work is as follows:

- For customer water service lines 1 inch and 1½ inches in size, only the PWSA drills and/or connects the ferrule (corporation cock) to the PWSA water main. For new connections, the customer is responsible for installing the service line from the ferrule to the building (including all associated trenching and surface restoration). For private water service lines 1 inch in diameter or less serving a single-family residential development, PWSA assumes the maintenance responsibility made for the curb stop, the curb box, and the portion of the water service line running from the curb stop to the water main after initial connection and installation. The property owner owns and is responsible for the maintenance of that portion of the water service line running from the premises being served with PWSA water to the curb stop, including the connection to the curb stop but not the curb stop itself. If the owner of a single family residential development installs or wishes to have installed a water service line greater than 1 inch in diameter, then ownership and maintenance responsibility for the entire water service line and related appurtenances, from the premises being served with PWSA water up to and including the connection of the water service line to the PWSA water main, including the curb stop and curb box, and the corporation stop or mechanical joint tee, lies with the property owner.
- If a 2- or 3-inch service line is required, a 4-inch cut in or mechanical tapping tee/sleeve will be required. After the tapping tee/sleeve, the service line size can be reduced.
- For domestic water service lines 2 inches and larger, where the customer desires to install a tapping sleeve, the customer is responsible for installing the tapping sleeve on the PWSA water main. Then, PWSA shall drill the PWSA water main to install the connection. The customer is also responsible for



installing the private PWSA approved gate valve, curb stop with curb box, service line and related appurtenances from the tapping sleeve to the building.

- When the customer is required to install a cut-in tee, a waterline shut permit is required as outlined below. The customer is responsible for installing the cut-in tee and the private gate valve, curb stop with curb box, and service line from the tee to the building.
- One-inch connections shall have a minimum distance of 5 feet between taps when the taps are made on the same side of the water main. One-inch connections made on opposite sides of the water main require a minimum distance of 30 inches. Connections larger than one inch require a minimum distance of 5 feet between taps unless otherwise directed.

#### **Waterline Shut Permit**

- When a water main shut down is required for a tap-in, the applicant's construction personnel must apply for a Waterline Shutoff Permit.
- The contractor shall submit the waterline shutoff application at least fifteen (15) days before the shutoff is required.
- The contractor must also submit a \$5000 deposit, payable by cashier's check with the completed application. The deposit payment must be separate from any other tap-in fee payments. If the contractor completes the work in the estimated timeframe, the Authority will refund \$4500 to the contractor after the work is completed. A waterline shutoff permit form can be found on our website.
- If work is to occur at night, the fee is double.

#### **Sewerline Taps**

No sewer taps are to occur prior to PWSA approval.

Listed below are the required steps for sewer tap-in:

- The customer is to follow all steps outlined in previous sections of this manual to obtain a development permit.
- After permit approval and the fees paid, a permit will be issued at the permit counter.
- The customer / developer may begin site prep for service line.
- Customer / developer shall obtain street opening permit if necessary and begin excavation to open street and expose water main.
- Customer / developer shall use the contact information provided at permit issuance to schedule meter and tap installation.



- PWSA will inspect service line tap installation.
- PWSA will inspect excavation for tap and any tap terminations, if necessary.

Construction personnel employed by the applicant are responsible for all permitting, excavation, backfill, trench restoration, and sewer lateral installations from the building to the point of the tap-in at the PWSA sewer main. The applicant's construction personnel must have proper trench shoring and equipment on site to conduct all required work and complete the job.

PWSA does not accept maintenance responsibility for any private sewer laterals including the connection to the main.

## SECTION 7: TAP FEES

PWSA will calculate the appropriate fees based upon the related project information submitted by the applicant in the Water and Sewer Use Application and tap-in plans. All fees are based on the amount of water demand and the sewer flows created by each development plus the cost of the taps, meters, and valve operations. The fees will be charged to new applicants of the PWSA systems to recover the cost of constructing the public water and sewer systems and related facilities. The fees support the construction and maintenance of infrastructure such as:

- Trunk and collector sewers
- Sewage pumping stations
- Water pumping stations
- Water filtration
- Water treatment
- Large diameter transmission mains
- Small diameter water mains
- Storage reservoirs
- Storage tanks

Tap fee calculations are based on Equivalent Dwelling Units (EDUs) and Gallons Per Day (GPD). One EDU is equal to 300 GPD and is representative of the peak flow of one single-family unit. To determine the EDUs for projects that are not single-family homes, the current calculation is Net Flow GPD/300 GPD.

As an example, a development creating 1500 GPD of water demand and 1500 of sewage flow will use 1500 GPD/300 which equals 5 water EDUs and 5 sewer EDUs.

It should be noted that the DEP currently defines one EDU as 400 GPD. The number of EDUs for a development will differ for DEP submittals and PWSA fees.

### Fee Schedule

All fees are established in the [PWSA Water and Wastewater Tariffs](#) and approved by the PUC. Fees are categorized by tapping, capacity, connection, and customer facilities (i.e. taps and meters). Collectively, the fees are referred to as tap fees.





Table 7.1 Fee Schedule	
Fee Type	Fee
Sewer	
Tapping	\$1277
Capacity	\$1701
Connection	\$0*
Total Sewer Fee	\$2,978/EDU
Water	
Capacity	\$1382
Distribution	\$842
Connection	See Tap Fee Schedule**
Customer Facilities	See Meter Fee Schedule***
Total Water Fee	\$2,224/EDU + cost of connection + cost of customer facilities

\* PWSA's current policy for sewer connections states that the customer is responsible for excavating and connecting the private sewer lateral at the PWSA main line as per current PWSA standards and specifications and installing the private service lateral from the PWSA main to the building to be served. Based on this policy, PWSA does not currently charge a sewer connection fee.

\*\*The Water Connection Fee includes the cost of taps and valve operations. PWSA shall install all taps and operate all valves on PWSA water mains. PWSA will install the corporation stop and coupling for water service lines 1.5 inch or less in diameter. The customer is responsible for excavation and installation of the water service line from the building to be serviced to the point of connection at the PWSA main. The Connection fee charged by PWSA varies based upon the size of the service line and the type of tap-in procedures required by the PWSA and/or ACHD regulations. See current fee schedule for costs.



\*\*\*The Customer Facilities Fee includes the cost water meters and remote reading devices. All meters and remote reading devices must be purchased from the PWSA. See current fee schedule for costs.

There are currently no tapping fees associated with storm connections.

PWSA will post a fee schedule on our website yearly.

## Fee Credits

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The tapping fees apply to all new developments and any renovations creating an increased demand for existing structures. PWSA will credit tapping fees to an existing structure or development at our discretion.

The following conditions must be met to receive fee credits:

- The existing structure has not been removed and has maintained an active connection to PWSA infrastructure as determined by the PWSA. Also, under certain conditions where the existing structure has been removed because of natural disaster such as fire, earth/foundation movement, etc. and is being replaced by the original owner with a building of the same size and footprint.
- Both existing and proposed usages and peak flows can be satisfactorily documented and calculated by the applicant. The PWSA reserves the right to determine whether said information is acceptable.
- No developments proposing subdivisions, consolidations, or any other significant modifications (as determined by the PWSA) to the legal boundaries of said existing parcel.

No credit will be granted to existing vacant lots unless determined by PWSA as meeting the criteria of a natural disaster.

If credit is granted for existing usage, the peak daily flow calculated for the existing structures is subtracted from the calculated peak daily flow for the proposed structure. The applicant will be required to pay for any additional new tapping fees.

No new accounts will be established prior to all fees being paid.



## SECTION 8: PRIVATE CONSTRUCTION OF PUBLIC FACILITIES

### Overview

This section is relevant to developments which require physical modifications to PWSA's existing water and sewer facilities. Please see below for a list of common examples:

- The Pittsburgh Bureau of Fire determined that there is not an existing fire hydrant within sufficient distance of a proposed development. Therefore, the developer is required to construct a new fire hydrant at a nearby intersection.
- The Department of Permits, Licenses, and Inspections of the City of Pittsburgh has determined that an upcoming development requires a dual/secondary/backup fire service. The PWSA only has a single distribution main within the project area. Therefore, the developer is required to construct a gate valve on the PWSA water main to separate the two fire connections.
- A development consists of a proposed public roadway to a residential subdivision. The developer is proposing new water and sewer facilities within the public roadway and intends to transfer ownership of the constructed facilities to PWSA.
- The PWSA is requiring a developer to terminate ten (10) unused, but open, sewer connections located on a sewer segment. The sewer is located beneath a busy street, and open-cut excavations would be difficult. The developer is proposing to terminate the connections via cured-in place pipe (CIPP).
- The PWSA has an existing sewer main that traverses the developer's property. The proposed structure is in direct conflict with the sewer main. The PWSA requires the developer to relocate the sewer main within the cartway of an adjacent street.

### General Requirements

The first step for developments which contain Private Construction of Public Facilities (PCoPF) work is to submit a pre-development meeting request, as described in [Section 1: Process Overview](#). The pre-development meeting is intended to address early-stage questions, such as:

- Is the PCoPF work required? Can the development be adequately serviced via existing infrastructure?



- What is PWSA's procedure for PCoPF Projects?
- What are the developer's next steps?
- Are there any immediate concerns with the proposed work?
- Are there better alternatives?

PWSA facilities in conflict with a proposed development shall be relocated at the developer's expense. If an existing structure conflicts with an existing PWSA facility, and the conflict cannot be eliminated, the PWSA shall require a Structures Over Facilities (SOF) Agreement. The SOF Agreement will include additional provisions, such as a recorded easement, and may require structural enhancements to the PWSA facilities in conflict. PWSA is to review and approve all plans and specifications prior to construction as described in this section.

### **Conditions of Acceptance**

The PWSA will only accept the dedication of conventional water and sewer facilities, including but not limited to water main, fire hydrants, gate valves, manholes, sewer main, drainage structures, etc.

The PWSA shall not accept any facilities located within private property or private right-of-way. In such circumstances, the constructed facilities would remain privately owned. For private water mains, the PWSA would require a master meter within 50-feet of the connection with the PWSA water main. If an existing private street is adopted by the City as a public street, and said street contains privately owned water or sewer facilities, the PWSA is under no obligation to accept said facilities.

PWSA will not accept dedication of facilities that have not followed the processes contained herein. Lack of inspection by the PWSA, as-built drawings, or other requested documentation to verify the proper construction of the proposed water and/or sewer facilities may result in PWSA using funds from the performance bond to complete construction to our standards. PWSA reserves the right to require the unearthing of any completed infrastructure to ensure proper inspections take place prior to acceptance.

In any instances that PWSA cannot verify the new or relocated facilities have been constructed according to minimum standards, the facilities will remain private, and the developer will be required to obtain additional permits from the Allegheny County Health Department (ACHD) or the City of Pittsburgh. The developer is also required to properly record with the City and the County Recorder of Deeds the ownership/maintenance agreement between all parties that share use of the private utilities. The PWSA will not



permit the connection of the proposed facilities to existing PWSA public facilities if the maintenance agreement is not recorded. Copies of the ACHD variance letter, recorded easement(s), and recorded maintenance agreement must be submitted to the PWSA.

Private shared infrastructure such as detention basins serving multiple properties will require recorded Maintenance Agreements and may also require easements, variances, and other documentation as described in greater detail below.

Past work not properly permitted and/or accepted via recorded agreement by the PWSA is the responsibility of the current property owner(s). This includes a wide range of structures ranging from unauthorized private sewer taps to storm culverts. Any past maintenance and/or repairs done to said private facilities by the PWSA for the sake of public health and safety does not imply ownership by the PWSA.

Common reasons why facilities may not be accepted by PWSA are as follows:

- The facilities only serve a single customer. In such a situation, the facilities would be considered private sewer lateral(s) or private water service line(s). Documentation must be provided to PWSA that the correct permits and variances are in place for these private structures/facilities. This may include encroachment permits for facilities in the right-of-way, variances from the City of Pittsburgh/ACHD, recorded easements/agreements for other properties crossed, and other requirements depending on the specific site.
- Newly constructed roads not accepted by the City of Pittsburgh.
- Facilities that cross private property when it is not required by site conditions as interpreted by PWSA.
- Facilities that do not have all the required recorded legal agreements, easements and/or permits. It is the developer's responsibility to research and acquire at their expense all permits and/or recorded easements prior to dedication of public water and sewer facilities to PWSA.
- Facilities built do not match materials, methods, or general locations on approved plan. Any departures from approved plans must be approved in writing by PWSA.

## **Development Agreement**

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The Development Agreement is a legally binding document that defines the process for constructed facilities to be accepted by the PWSA. Upon request, the PWSA will provide



a draft Development Agreement for the developer to review and comment. Please refer to the PWSA website for a Sample Development Agreement. The developer is encouraged to review the Development Agreement with legal counsel. All proposed revisions shall be made in track-change mode for PWSA's review and approval. Under no circumstances is the developer to change any items in the recital clauses, unless otherwise directed.

Once finalized, the Development Agreement may be subject to approval at the next available PWSA Board of Directors meeting. Please note that, to be placed on the agenda, the Development Agreement needs to be finalized approximately one month prior to the regularly scheduled Board meeting.

The Development Agreement, executed by the developer and the PWSA, shall be required prior to any subsequent approvals (e.g. construction drawings, performance bond, construction cost estimate, etc.). However, the absence of an executed Development Agreement does not preclude a developer from submitting documentation for review. The Checklist of Required Approvals summarizes the typical approvals contained within the Development Agreement, as further described below.

If the proposed scope of work requires an external inspection from an on-call consultant, the procurement process typically takes approximately six (6) weeks. The following approvals shall be required by the PWSA before a determination can be made on whom will perform the inspection services:

### **Construction Drawings**

The construction drawings must comply with the design standards contained within the latest version of the Checklist of Requirements for Construction Drawings. In addition, please see below for additional information:

- The PWSA aims to respond to each submission within 30 days of receipt. However, the actual length of time required to conduct the review is largely influenced by the quality of the submission and complexity of the project.
- The PWSA sewer collection system largely consists of combined sewers. A combined sewer conveys both stormwater (e.g. catch basins, roof leaders, storm water detention systems) and sanitary flows (e.g. toilets, showers, sinks). However, please be advised that the extension of combined sewers shall be prohibited. Sewer extensions shall require a dedicated storm sewer and sanitary sewer.
- Newly constructed facilities shall be adequately sized and positioned to account for future development.



- Typically, the PWSA Operations Department will install the proposed connections once a constructed water main is charged. However, please note that the developer's contractor is permitted to install connections per the following conditions:
  - Connections shall be contained within an approved PWSA Development Permit. Please refer to Section 6 – Tap-in Procedures for additional information.
  - Connections must be performed when the waterline is uncharged.
  - Each connection shall be connected to a PWSA meter via a service line. The developer shall remain responsible to install any corresponding meter crocks or vaults in accordance with the approved Development Permit.
  - Unmetered connections shall be prohibited. Connections for vacant properties shall require a meter, which will be set up for a developer-owned customer account.
  - The PWSA shall be responsible to set meters and remote reading devices. Taps for vacant properties must be metered and billed in the name of the contractor/developer/owner.

### **Construction Cost Estimate**

The construction cost estimate (CCE) shall be limited to the improvements contained within the Development Agreement. The PWSA will prepare the draft CCE and share with the developer for review and comment. The CCE is calculated with unit prices derived from the average winning bidder for PWSA's publicly bid projects. The value of the CCE may differ from the value of the contract between the developer and the developer's contractor. For representative unit prices, please refer to the Estimate Spreadsheets. The CCE will be used to determine the value of the required securities (e.g. bonds, irrevocable, cash, etc.) and escrow check (e.g. CM/CI services).

### **Escrow Check**

The developer shall fund an escrow account to compensate the PWSA for costs associated with the Development Agreement, including PWSA reviews (construction drawings, construction materials, etc.) and inspections. The initial escrow check shall be valued at 10% of the construction cost estimate, or \$5,000, whichever is greater. The check shall be made payable to the PWSA.

The escrow shall be drawn upon as the PWSA incurs inspection and engineering costs. If the outstanding work exceeds the value of the escrow account, the PWSA shall request additional funds. Failure to provide the additional funds shall result in the cessation of PWSA involvement. At project completion, the developer shall be provided an application for refund to claim any unused money still contained within the escrow account.



**Construction Schedule**

The developer shall provide a copy of the contractor's proposed construction schedule. The PWSA will utilize the schedule to determine if the inspections will be performed internally (i.e. PWSA staff) or externally (i.e. third-party on-call consultant).

**Construction Management and Construction Inspection**

The developer shall coordinate with the PWSA project manager to procure construction management and construction inspection (CM/CI) services for the work contained within the Development Agreement. The PWSA will either perform the CM/CI with internal resources (i.e. PWSA staff) or external resources (i.e. on-call consultants). There are many factors that will influence how the CM/CI will be performed, including but not limited to, the scope of the work, allocation of internal resources in relation to the proposed schedule, type of work, etc. There are no exceptions to this requirement: all work shall require CM/CI oversight. Changes to the construction start date shall require input and approval from the CM/CI team to ensure availability.

The following approvals shall also be required prior to construction start-up, but are not typically on the critical path:

**Performance Securities**

A performance security shall be required by the PWSA to ensure the developer constructs the work in accordance with the development agreement. The developer shall furnish a performance security in the amount equal to 100 percent of the construction cost estimate. The performance security may be in the form of a performance bond or other form acceptable to PWSA. The PWSA shall be the only named obligee on the security.

Please note that the City may impose separate bonding requirements for street or sidewalk restoration.

**Insurance**

The Developer shall provide a Certificate of Insurance, with PWSA listed as additionally insured, in accordance with the following coverage requirements:

Commercial General Liability: \$1 million per occurrence and in the aggregate

Automobile Liability: \$ 1 million per occurrence and in the aggregate

The Developer's policies shall also require thirty (30) days' prior written notice to the Authority of any cancellation, amendment, or non-renewal of the policies

**Executed Contract Between the Developer and Contractor**

The Developer shall submit an executed contract with the selected Contractor for the proposed work.





**Construction Specifications**

The PWSA Project Manager shall provide the Developer the relevant specifications per the approved construction drawings. The Developer shall ensure that their Contractor performs the work in accordance with the specifications. Please see below for a typical list of relevant PWSA specifications:

- 01510 – Sewer Bypass Pumping
- 01520 – Temporary Water Service
- 02060 – Aggregates for Earthwork
- 02082 – Public Manholes and Structures
- 02085 – Water Utility Distribution Valves
- 02086 – Water Utility Fire Hydrants
- 02281 – Manhole and Catch Basin Grade Adjustment
- 02332 – Service Line Verification
- 02324 – Trenching, Backfilling and Compaction
- 02513 – Public Water Distribution Piping
- 02515 – Water Service Connections
- 02516 – Disinfection of Water Distribution Systems
- 02539 – Public Sanitary and Storm Sewer Piping
- 02630 – Storm Drainage
- 02650 – Sewer and Manhole Cleaning
- 02721 – Aggregate Base Courses
- 02951 – TV Inspection of Sewer Pipelines
- 02952 – Sewer and Manhole Testing
- 02971 – Relining of Sewers – Cured-In Place
- 03300 – Cast-in Place Concrete
- 03600 – Grout

**Construction Materials**

The developer shall submit the proposed construction materials (i.e. shop drawings, cut sheets, submittals) for PWSA approval. The construction materials must comply with PWSA specifications. Please be advised that the usage of rejected or unapproved materials may result in the PWSA not accepting the constructed facilities.

**Third-Party Approvals**

The developer shall remain responsible to obtain all third-party approvals. Please refer to the PWSA's Agency Resource and Contact Information webpage for additional information on commonly involved agencies.



**Easements for Construction on Private Property**

The PWSA requires the construction of new facilities to be located within the public right-of-way. In the event that the aforementioned requirement is unfeasible, and the proposed facilities need to be located on private property, the PWSA shall require a recorded easement. The developer must show recorded proof that all easements and/or encroachments exist in the records of the City and/or County Recorder of Deeds. The minimum easement width is 20-feet centered on the facility. The construction of adjacent facilities would result in a wider easement. In addition, the PWSA may request additional width for reasons including, but not limited to, the following:

- Large diameter facilities, typically defined as greater than 24-inches
- Excessive depths
- Soil conditions
- Site obstructions

**Pre-Construction Meeting**

The PWSA shall require a pre-construction meeting on-site. The required attendees include the PWSA Project Manager, PWSA Inspector, developer, developer's design engineer and developer's contractor. The topics of discussion shall include introductions, roles and responsibilities, inspection protocols, close-out procedures, testing requirements, open discussion, etc.

**Acceptance of Privately Constructed Public Facilities**

The following approvals shall also be required prior to issuance of the Notice of Acceptability letter:

**As-Built Drawings**

The developer shall supply as-built drawings for review and approval at project completion. The PWSA will accept redline drawings, provided the plans are in neat condition, and free from dirt, tears, staining, etc. During construction, the Contractor shall meet with the construction inspector at regular intervals to exchange as-built information. The redlines shall include, but not be limited to, invert elevations, structure locations, slopes, fitting locations, etc. The PWSA shall be provided the opportunity to capture GPS coordinates during construction to update the GIS database.

**Maintenance Securities**

Upon completion of the work, the developer shall furnish a maintenance bond in the amount equal to 15 percent of the construction cost estimate for a period of 18



months. The PWSA shall be the only named obligee on each security. Please note that the City may impose separate bonding requirements for street or sidewalk restoration.

## Design Requirements

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The PWSA design standards are contained within the Checklist of Requirements for Construction Drawings. Please refer to the PWSA website for the latest version. Please see below for additional information:

### General Requirements

- The existing PWSA facilities shall be clearly indicated with the appropriate identification number, including but not limited to, sewer mains, water mains, gate valves, drainage structures, manholes, fire hydrants, etc.
- The subsurface utility engineering (SUE) performed to locate the existing utilities shall comply with a quality level C, which involves the gps surveying of visible utility facilities (e.g. manhole covers, valve boxes, drainage structure grates). This data shall be utilized to update the location of existing facilities. For example, water mains shall be shown through gate valves and sewer mains shall be shown through manholes.
- Work located within PennDOT right-of-way shall require a Highway Occupancy Permit. Please note that PennDOT shall require the PWSA to submit the permit application on behalf of the developer.
- The developer shall consider the proximity and depth of adjacent utilities to determine if the proposed work is feasible. Please note that the large majority of PWSA facilities rely upon the surrounding soil to maintain structural integrity. Close excavations, and removal of that support, often results in water main and sewer main breaks. The PWSA may require that facilities be shut down during construction. The developer would be responsible to provide temporary water services to any impacted customers.
- The private construction of public facilities shall be limited to situations where the existing infrastructure is incapable of providing the required level of service.
- The proposed facilities shall be designed and constructed in accordance with PWSA specifications.

### Sewer Requirements

- Sewers shall be constructed at a depth sufficient to serve nearby basements and future growth. The PWSA may require additional depth, as directed.
- Sewer mains shall be designed in accordance with the DEP's Wastewater Facilities Manual and PWSA standards, whichever is more stringent.
- Where possible, combined and storm sewer shall be designed with a minimum slope of 2.00% and sanitary sewers shall be designed with a minimum slope of 1.00%. Please note these requirements exceed the DEP's Wastewater Facilities Manual. Exceptions are made on a case-by-case basis.



- The pipe material required is dependent upon the depth and diameter. Per the design conditions, the PWSA accepts the following types of materials: PVC (SDR 26), PVC (PS115), RCP (Class IV), DIP (Class 52, epoxy lined).
- The design shall consider the need for bypass pumping, which may necessitate flow monitoring. The developer shall ensure that upstream and downstream manhole access is available. Discharge piping shall not interfere with roadway or pedestrian traffic.
- Connections to new sewer extensions shall be made at a pre-constructed wye fitting. The use of a cored connection (e.g. Inserta Tee) shall be prohibited.
- Storm sewers need to account for the future separation of combined sewer laterals. Typically, this separate would occur at the time of property owner transfer. The developer shall be responsible to extend a lateral stub to the curb line of the street and GPS locate the terminus.

### **Manhole Requirements**

- The barrel and cone sections of the manhole be constructed of pre-cast concrete. For vertical grade adjustments up to 3-inches, the developer shall use rubber adjustment rings. For vertical grade adjustments up to 12-inches, the developer shall use pre-cast concrete adjustment rings. Riser rings shall not extend more than 12-inches from the cone section.
- The PWSA will accept either a cast-in place base or a pre-cast concrete base. However, please be advised that cast-in place bases are strongly advised, as they offer greater construction flexibility. The PWSA only constructs cast-in place bases for our capital improvement projects.
- For situations where the inflowing sewer diameter is smaller than the outflowing sewer diameter, the manhole shall be constructed in such a way that the crown of the inflowing pipe is level with the crown of the outflowing sewer.

### **Drainage Structure Requirements**

- The construction of drainage structures in-series shall be prohibited. Each drainage structure shall have a separate connection to either a manhole or the sewer main. As such, if a drainage structure becomes clogged with debris, it will not impact the performance of any upstream drainage structures.
- The PWSA recognizes two types of drainage structures: inlets and catch basins. Please note that both inlets and catch basins require a 20-inch sump for the collection of debris. The principal difference is that a catch basin requires a stench plate to prevent malodors from permeating out the drainage structure. Inlets are typically required on storm sewer connections, and catch basins are required on combined sewer and sanitary sewer connections.

### **Cured-in Place Pipe (CIPP) Requirements**

- The PWSA accepts CIPP as a suitable method to terminate active lateral connections. Typically, this methodology is useful when PWSA sewers are located under highly trafficked streets.
- The use of point lining shall be prohibited.



- Please be advised that not all sewers are adequate candidates for CIPP. The developer shall provide CCTV of the host sewer to confirm eligibility.

### **Water Main Requirements**

- The proposed water main shall be looped; dead end mains shall be prohibited.
- The main material shall be ductile iron pipe, class 52, zinc coated. The minimum diameter shall be 8-inches.
- The water main shall require a pressure test and bacteriological test prior to acceptance by the PWSA. The proposed design shall include gate valves at strategic locations to isolate the main to perform these tests.
- For services up to and including 1-inches, the PWSA owns the service from the water main to the curb stop and curb box.
- The developer shall be prohibited from reconnecting a private lead service line to a newly constructed water main. As such, the developer shall be required to replace the lead service line at their cost. The PWSA can assist with notification procedures, etc.

### **Fire Hydrant Requirements**

- The developer may be required to construct fire hydrants, as directed by the PWSA or City, depending on the proximity of the nearest hydrant and the length of the proposed extension.
- The hydrant gate valve shall be directly mounted onto the swivel tee.

### **Profile Requirements**

- Profiles shall be required for sewer mains, drainage structure laterals and water mains.
- Profiles shall indicate the location of crossed utilities, which shall be drawn per the outside diameter. Please note that the outside diameter can be significantly different than the nominal diameter. For instance, a 24" reinforced concrete pipe has an internal diameter of 24-inches and an outside diameter of 30-inches. Crossed utilities shall have a minimum vertical clearance of 18-inches from outer surface to outer surface.
- For sewer, the profile shall include lateral design information including the minimum depth to serve customer connections via gravity flow.
- For water, the crown of the main shall be 4-feet from the ground surface

### **Tap-in Drawings**

Tap-in drawings **are** required when the development includes **all** the following:

- Development of lots,
- Construction of public storm sewer and/or sanitary sewer and/or waterline,
- Construction of building(s),



- Construction of laterals and service lines from building(s) to the new sewer and/or water lines, and
- Change in use of an existing facility (Redevelopment).

Tap-in drawings **are not** required when the development is **limited to** the following:

- Development of lots, and
- Construction of public storm sewer and/or sanitary sewer and/or waterline.

Under the second scenario where the developer only develops the lots and constructs the PWSA facilities, the responsibility of applying for sewer and water taps falls on the future property owner whenever that owner decides to connect to the PWSA facilities.

Tap-in drawings for storm sewers, sanitary sewers, and waterlines can be submitted at any time but cannot be approved until the private construction drawings have been approved by PWSA. Please refer to the [Tap-in Procedures](#) of this manual.