Pilot Infiltration Test (PIT) Checklist

Call Before You Dig - Utility Locates 811

Work Sheet E2

For use on projects with 3000 sq-ft or more of hard surface

Permit Number: _____

Project Address: _____ Date: _____

This Infiltration Test was performed by:
Company Name: _____ Contact Name: _____
Phone Number: _____ Email Address: _____

☐ Include site map or stormwater site plan, with test locations clearly marked.

The intent of this checklist is to provide a summary of stormwater BMP infiltration testing requirements associated with the Pilot Infiltration Test (PIT). All projects and associated plans are also subject to the minimum requirements outlined in the City of Port Angeles Urban Service Standards and Guidelines Chapter 5 as well as the specific subsurface investigation and infiltration testing requirements outlined in the 2014 Stormwater Management Manual of Western Washington (SWMMWW).

This checklist does not preclude the use of professional judgment to evaluate and manage risk associated with design, construction, and operation of infiltration BMPs. Justification for testing procedures that deviate from the minimum investigation requirements described in the 2014 SWMMWW shall be documented in a stamped and signed letter from a State of Washington licensed professional (engineer, geologist) who has experiences in infiltration and groundwater testing and infiltration facility design.
See Worksheet C for site constraints that may preclude infiltration facility feasibility for some BMPs.

This checklist is for use on projects with 3000 sq-ft or more of hard surface area. This worksheet or equivalent must be completed by a qualified professional such as: on-site sewage designer, soil scientist, or engineer.

SMALL PILOT INFILTRATION TEST (SMALL PIT) AND LARGE PILOT INFILTRATION TEST (LARGE PIT): Note: The test methods outlined below may be modified due to site conditions if recommended by the licensed professional and the reasoning is documented in the testing report.

1. **Indicate type of test (See SWMMWW to determine which type of test is applicable):**

   ☐ **Small PIT**

   ☐ **Large PIT**

2. **Date and time of tests:** _____
3. **Is the infiltration test within the footprint of the proposed infiltration facility?** ☐ **Yes** ☐ **No**
4. **If "no," is testing being conducted within 50 feet of the proposed infiltration facility?** ☐ **Yes** ☐ **No**

   If not, explain why: _____

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5. What is the total proposed impervious area to be infiltrated on the site?_____ ft^2
6. ☐ Dig an infiltration test pit.
7. Test pit excavated to bottom elevation of the proposed infiltration facility ☐ Yes ☐ No
8. Test pit depth (ft): Depth: _____
9. Test pit bottom dimensions (ft): Length: _____ Width: _____
10. Test pit bottom area (ft^2): _____x 144 =_____in^2
11. Small PIT only: Is the surface area of the test pit bottom at least 12 ft^2? ☐ Yes ☐ No
12. Large PIT only: Is the surface area of the test pit bottom at least at least 32 ft^2? ☐ Yes ☐ No

    a. If "no," indicate why: _____

13. Large PIT only: The test pit bottom area should be as close to the bottom area of the proposed infiltration facility as is feasible.
    a. Bottom area of proposed infiltration facility: _____ ft^2
    b. Bottom area of test pit: _____ ft^2
14. Identify device used to measure water level in test pit:
    Pressure transducer (recommended for areas with slow draining soils),
    or Vertical rod (min 5 ft long, 1/2-inch increments, placed in center of pit)
15. Identify method of delivering water to the bottom of the test pit (e.g., rigid pipe with a splash plate):

    _____

    (The method of delivery must reduce erosion in the test pit that could cause clogging of the infiltration receptor)

16. **Testing Procedure:**
    a. **Pre-soak period**: Add water to maintain water level at least 6 to12 inches above the bottom of the test pit for at least 6 hours. Note water depth is not to exceed the maximum design depth of the facility. Record the time and depth of water hourly in the table below.

Time of Measurement (hh:mm)	Depth of Water (inches)

    b. **Steady-state period**: The steady-state data is used to establish the measured infiltration rate (see step 17)

    i. Add water to the test pit at a rate that will maintain a depth of 6 to 12 inches above the bottom of the test pit for 1 full hour. During this hour, record the time, depth of water, cumulative volume, and instantaneous flow rate every 15-minutes in the table below.

    ii. Calculate the infiltration rate for each 15-minute interval. First convert the flow rate to in^3/hr and the test pit bottom area (recorded in step 10) into in^2. Divide the flow rate by the bottom area and record the result in the table below.

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Time of Measurement (hh:mm)	Depth of Water (inches)	Cumulative Volume (gallons)	Flow Rate (gpm)	Infiltration Rate (in/hr)
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1 gallon = 231 in^3, 1 ft^2 = 144 in^2

c. **Falling head period**: The falling head data is used to confirm the measured infiltration rate calculated from the steady- state data.

i. At the end of the steady-state period, turn off the water and immediately record the time and depth of water in the table below. Record the time and depth of water every 15-minutes for a minimum of 1 hour, or until the pit is empty. (Note: in areas with slow draining soils, a pressure transducer is recommended to improve the accuracy of change in depth readings. In addition, users are encouraged to extend the testing period and use longer intervals to improve accuracy.)

ii. Calculate the infiltration rate for each 15-minute interval (change in depth at each interval x 4) and record the results in the table below. Alternatively, users may also record the total time for fixed intervals of changes in depth, and use those values to compute the infiltration rates.

Time of Measurement (15-minute minimum intervals)	Depth of Water (inches)	Infiltration Rate (in/hr)
		---

d. **Check for high groundwater / immediate groundwater mounding:**

1. ☐ Within 24 hours after the falling head period, excavate the bottom of the pit *(Minimum excavation depths are provided in the 2014 SWMMWW). Depth of excavation:*_____
2. Is standing water or seepage visible in the excavation hole?
   ☐ Yes ☐ No
3. If "yes," record depth to water:_____
   Note: Additional Groundwater Monitoring requirements may apply.

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17. Data Analysis/"Measured Infiltration Rate" Selection *(use the falling head data to confirm the measured infiltration rate calculated from the steady- state data)*:

a. Steady-state measured infiltration rate: Provide the lowest infiltration rate from steady-state table above:_____ in/hr

b. Selected "Measured Infiltration Rate" _____in/hr

(Include an explanation if the selected rate deviates from the steady-state rate in step 16b.)

_____

c. If the lowest measured infiltration rate is less than the minimum rate associated with an infiltration BMP, that BMP cannot be used.

d. If the measured infiltration rate is less than all minimum infiltration rates for infiltration BMPs (see Infeasibility Criteria - WorkSheet C), no further investigation is required.

18. Calculate "Design Infiltration Rate": The design infiltration rate shall be calculated by applying the appropriate correction factor to the above measured infiltration rate (see the *2014 SWMMWW).*

a. Select a correction factor.

b. Calculate the Design Infiltration Rate below.

Design infiltration rate = _____ x_____ =_____in/hr
Measured infiltration rate (in/hr) Correction Factor*

*A Correction Factor of 0.5 must be used for all projects unless a lower value is warranted by site conditions, as recommended and documented by a licensed professional, and shall not be less than 0.2.

19. Supporting Documents and Additional Analysis Required:

a. Include a report for the Small and Large PIT that includes documentation of the testing procedure (including this checklist and any supporting documentation), analysis, and results to assess infiltration feasibility, and an explanation of the correction factor used to determine the design infiltration rate.

SIGNATURES ARE REQUIRED

The Small and Large PIT report shall be prepared by a licensed professional.

I certify that I have followed the procedures outlined in this document to determine the infiltration BMP infiltration rate.

Infiltration Test Performed by:

Print
Name_____

Professional Stamp

Signature _____ Date_____