

Section 12 Criteria for Non-Standard Experimental and Alternative OWTS Approval Process

12.1 General

- A. ~~Permit Authority and the North Coast and San Francisco Bay RWQCBs entered into Memoranda of Understanding (MOUs) in the early 1990s. The MOUs were for the evaluation of specific proposals for the installation and use of non-standard OWTS. The OWTS Policy Tier 2 requirements supersede those Agreements. The criteria for the design concepts of non-standard OWTS are to incorporate features for:~~
- ~~1. The prevention of transmission of disease;~~
 - ~~2. Dispersal of wastewater below the surface of the ground;~~
 - ~~3. The prevention of contamination of groundwater and other beneficial water by discharge from OWTS.~~
- B. ~~All Non-Standard Experimental OWTS shall be designed by a Qualified Consultant.~~
- C. There are two basic types of non-standard OWTS: Experimental and Alternative. Non-standard OWTS are used to overcome one or more adverse site or soil condition such as high groundwater, slowly permeable soils, or other limiting condition or where increased wastewater treatment is needed. Unlike conventional OWTS, non-standard OWTS vary in design and concept depending on the site and soil conditions. Experimental and Alternative OWTS are also subject to the Section 14 Operational Permit and Monitoring Program requirements.
- D. The Permit Authority monitors the operation and maintenance of all non-standard systems. Inspection frequency may vary but is dependent upon the level of monitoring compliance by the system owner/operator.
- E. ~~Permit Authority staff shall will submit results of the monitoring inspection to the RWQCB in the form of an annual report for each calendar year. The report may incorporate information provided in the self-monitoring reports.~~
- ~~1. The Annual Report will include the following:~~
 - ~~a. Status of staffing adequacy for the number of non-standard OWTS in the program~~
 - ~~b. Percentage of Owner Self-Monitoring completion for systems on 1-year, 2-year, and 3-year frequencies~~
 - ~~c. Percentage of Permit Authority staff monitoring completion for systems on 1-year, 2-year, and 3-year frequencies.~~

~~F. In addition to the requirements of this Article, Experimental and Alternative OWTS are also subject to the Section 13 Operational Permit and Monitoring Program requirements.~~

12.2 Restrictions

G. Because of evolving technology and problems that may be discovered through the monitoring program, the regulations for non-standard OWTS may change. Property owners are cautioned that regulations for non-standard OWTS may change by action of the RWQCB or the Permit Authority. Therefore, despite previously performed and accepted work by Permit Authority, any proposal for a non-standard OWTS must meet the regulations that are in effect at the time that the Permit Authority approves the OWTS permit application.

~~H. OWTS shall not be placed in areas that have been filled, excavated, ripped, plowed altered, modified, or in areas of flooding, drainage problems, or geologic instability.~~

~~1. Such areas that have been filled excavated, ripped, plowed, altered, and/or modified may be acceptable if the soil is stable and soil evaluation indicates characteristics acceptable for installation of an OWTS such as approved structure, texture, consistency, pore space, percolation rate.~~

~~2. The only exception or variance to this is for repairing malfunctioning OWTS for existing legal residences or businesses.~~

~~3. Exceptions or variances will not be granted to allow increases of existing wastewater discharges.~~

I. When a non-standard OWTS is proposed in order to increase the sewage discharge of an existing use, the existing system must be brought into compliance with all current regulatory requirements.

~~J. The Permit Authority's Liquid Waste Specialist shall review all technical and research information regarding proposed non-standard Experimental OWTS.~~

12.3 Experimental OWTS Criteria

A. A non-standard An Experimental OWTS is one that has been developed, researched, and monitored by a major land grant university or equivalent and shall meet National Science Foundation (NSF) criteria and shall be NSF certified certification. The Permit Authority's Liquid Waste Specialist reviews all technical and research information regarding proposed non-standard Experimental OWTS.

B. ~~A non-standard~~ An Experimental OWTS shall be capable of reliably performing settling or solids separation, nutrient and pathogen reduction comparable to a standard system consisting of a two-compartment septic tank with subsurface treatment of three feet of acceptable soil.

- ~~1. The Liquid Waste Specialist will present any promising non-standard Experimental OWTS to the Regional Water Quality Control Board (RWQCB) for technical review and approval. If both the Permit Authority and RWQCB staff approve the non-standard Experimental OWTS, design parameters, site and soil characteristics, a site specific monitoring program will be established.~~
- ~~2. Installation of a maximum of 10 systems per year shall be allowed for new construction within each Regional Board jurisdiction with similar site and soil conditions.~~
- ~~3. Intensive monitoring (two or more inspections per year) performed for at least two normal winters is required.~~
- ~~4. The Permit Authority may consider whether an additional period of monitoring or an additional number of systems shall be installed prior to Alternative non-standard OWTS status consideration.~~
- ~~5. The Liquid Waste Specialist may request the RWQCB permission to proceed to Alternative non-standard OWTS status if the intensive monitoring indicates satisfactory results.~~

~~C. All Non-Standard Experimental OWTS shall be designed by a Qualified Consultant.~~

D. ~~Non-standard~~ Experimental OWTS are not authorized for limitations include the following:

- ~~1. Repair of existing malfunctioning residential and commercial OWTS.~~
- ~~2. The Greater than 33% expansion of use for existing residential and commercial systems (limited to 33%) may be allowed by the Permit Authority.~~
- ~~3. Maximum peak loads are 600 gallons per day for new single family homes and maximum average flows of 1,000 gallons per day for new commercial establishments.~~
- ~~4. Flow rates of 600 gallons per day or more for new single family homes~~
- ~~5. Flow rates of 1,000 gallons per day or more for new commercial establishments.~~

6. ~~Not acceptable as justification for land division.~~ Subdivision of land.
7. ~~Not approved for use in~~ Properties within a sewer hookup area, septic tank ban area, or County identified Variance Prohibition Areas, except as a repair.

~~E. At this time, the bottomless sand filter OWTS is considered an approved Experimental OWTS.~~

12.4 Experimental OWTS Process

- A. A person or company shall make an application requesting a specific design be entered into the Experimental OWTS Program.
- B. The application contents shall include:
 1. Name and address of applicant
 2. Trade name and model number, if applicable.
 3. NSF Certification
 4. Technology description
 5. Number of units currently in operation
 6. Location of units currently in operation
 7. Effluent sampling results
 8. Estimated cost of units, installation, operation and maintenance
 9. Discussion of specific operational requirements and/or operational training needed to successfully operate the proposed unit
 10. Operation and maintenance manual
 11. The appropriate filing fee
- C. The Liquid Waste Specialist will review each application and present any promising non-standard Experimental OWTS to the Regional Water Quality Control Board (RWQCB) for technical review and approval. If both the Permit Authority and RWQCB staff approve the non-standard Experimental OWTS, design parameters, site and soil characteristics, a site specific monitoring program will be established. These provisions will be added to section 13 of this Manual.

- D. ~~Once approved, installation~~ Installation of a maximum of 10 systems per year shall be allowed for new construction within each Regional Board jurisdiction with similar site and soil conditions.
- E. Intensive monitoring (two or more inspections per year) performed for at least two normal winters is required.
- F. The Permit Authority may consider whether an additional period of monitoring or an additional number of systems shall be installed prior to Alternative non-standard OWTS status consideration.
- G. ~~The Liquid Waste Specialist may request the RWQCB permission to proceed to Alternative non-standard OWTS status if the intensive monitoring indicates satisfactory results.~~

12.5 Alternative OWTS Criteria

- A. An Alternative OWTS shall meet the following requirements:
 - 1. The standards for a non-standard Experimental OWTS.
 - 2. Enrollment in the Sonoma County Experimental Program or comparable municipality or jurisdiction.
 - 3. Fifty (50) installed units that are or have been in operation for at least two years.
 - 4. Supporting monitoring data demonstrating compliance and/or successful wastewater treatment for the fifty (50) units.

12.6 Alternative OWTS Approval Process

- A. A person or company shall make an application requesting a specific design be entered into the Alternative OWTS Program.
- B. The application contents shall include:
 - 1. The contents listed in Section 12.3.B.
- C. The Liquid Waste Specialist may request the RWQCB permission to proceed to Alternative non-standard OWTS status if the intensive monitoring indicates satisfactory results.

- D. The Liquid Waste Specialist will review each application and present any promising non-standard Alternative OWTS to the Regional Water Quality Control Board (RWQCB) for technical review and approval. If both the Permit Authority and RWQCB staff approve the non-standard Alternative OWTS, design parameters, site and soil characteristics, a site specific monitoring program will be established. These provisions will be added to section 13 of this Manual.

12.7 Approved Experimental and Alternative OWTS

- A. Appendix A contains a list of these approved systems as well as systems under review. Appendix A will be updated annually.

~~12.8 Bottomless Sand Filter OWTS (moved to section 13.8)~~

- ~~A. The Bottomless Sand Filter OWTS shall meet the site, design, construction and performance criteria of Section 12.6 Bottomless Sand Filter (Geographic Waiver) with the only exception is that the existing structure is not required to be located on the 100 year flood plain, but may be located outside the 100 year flood plain.~~
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~~12.9 Gravel-less Pressurized Dispersal Channel (GPDC) (moved to section 13.9)~~

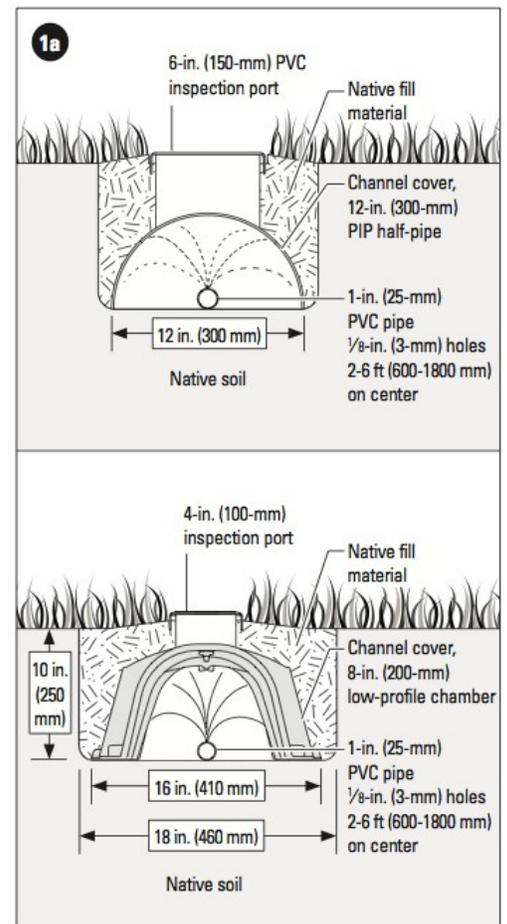
~~A. Gravel-less Pressurized Dispersal Channel (GPDCs) are designed for subsurface dispersal of high-quality effluent after secondary treatment. There are two typical configurations. One consists of perforated laterals laid in a 12-inch wide infiltration channel, covered with sections of plastic half-pipe and shallowly buried in native soil. The other uses an 18-inch infiltration channel and sections of 8-inch low-profile HDPE chamber material.~~

~~B. The site criteria for Gravel-less Pressurized Dispersal Channel OWTS includes the following:~~

- ~~1. Depth to a limiting condition and permeable soils (1-120 mpi) below the dispersal line shall be a minimum of 24 inches.~~
- ~~2. The soil above the PVC line proposed depth shall be permeable (1-120 mpi). This excludes massive or platy structured soils. Soils subject to flooding, excessive irrigation, farming practices, grading, ripping or rototilling are also not acceptable. The quality of acceptable soils above the line shall be equal to those below the line.~~
- ~~3. A minimum of 24 inches of permeable soil below dispersal depth shall extend a horizontal distance of no less than 25 feet down gradient from the edge of the last proposed line, including expansion areas.~~
- ~~4. GPDC sites shall not exceed thirty (30) percent slope without an approved waiver and a geotechnical study required for slope stability and suitability.~~
- ~~5. GPDC sites shall not exceed twenty-five (25) percent slope when fill is placed over the dispersal system.~~

~~C. The design criteria for GPDC OWTS includes the following:~~

- ~~1. Separation between laterals shall be a minimum of three (3) feet.~~



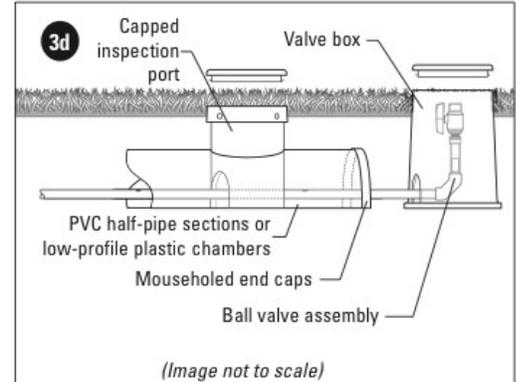
Cross sections of typical half-pipe and low-profile SPDS installations showing dimensions and materials

- ~~2. GPDC installations space orifice holes 24 inches min to 72 inches max on center.~~
- ~~3. A GPDC System is typically installed 10 inches into native soil. A minimum native soil depth of 6 inches may be allowed with disinfection. The minimum soil cover over the orifice shield is 2 inches. The maximum soil cover allowed is 18 inches. (See Figure 1a).~~
- ~~4. The designer shall also determine the number of zones, the number of doses, the quantity of the dose, the head losses, spacing of lines, spacing of orifices, diameter of the pipe (typically 1" PVC), and pump size.~~
- ~~5. The length of each dispersal line shall not exceed 75 feet to insure equal distribution to each orifice. If multiple zones are designed, dosing must be automatically alternated between each zone.~~
- ~~6. All GPDC Systems require an approved packed bed media filter supplemental treatment unit for treating septic effluent. The level of supplemental treatment must comply with NSF Standard 40 or to the satisfaction of the administrative authority.~~
- ~~7. Designer shall employ measures to prevent uneven distribution of the dispersal field due to drain down following a pump cycle. Per California Plumbing Code, spring check valves are not allowed for wastewater applications.~~
- ~~8. Provide 2 feet of solid pipe between the manifold and the first orifice.~~
- ~~9. At the end of each lateral, install a sweep ell (or two 45° elbows) and a ball valve with a threaded plug.~~
- ~~10. All system components shall be appropriately sized for the system dosing flow rates, and shall meet specifications of the manufacturer. All transport piping, supply and return manifolds and fittings must be Schedule 40 PVC or Schedule 80 PVC if threaded fittings are utilized. All filters must be sized to operate at a flow rate greater than or equal to the maximum design discharge rate of the system.~~
- ~~11. All GPDC System designs shall demonstrate that sufficient suitable area exists to construct two hundred (200) percent reserve area. Because GPDC Systems are experimental, in cases of split system designs, the GPDC System shall be installed as the primary system, and the other type of dispersal system shall be the 200 % expansion system.~~

12. ~~Totalizing flow meters (in gallons) are required on the supply line. Flow meters must be installed in a readily accessible location for reading and servicing.~~

13. ~~A controller capable of timed dosing is required.~~

14. ~~Disinfection of the treated wastewater shall be incorporated in cases of well-drained soils (<1 mpi or faster) or where dispersal systems only have a minimum of 6 inches of native soil cover above the shield (see Figure x). If 6 inches of approved fill is added above the 6 inches of native soil cover, disinfection will not be required.~~



15. ~~For aerobic treatment unit (ATU) systems that function with external blowers, a cutoff switch or interlock that disables the pump must be built into the control panel so the blower may not be disconnected.~~

D. ~~The following construction criteria for GPDC OWTS includes the following:~~

1. ~~Construct trenches with special attention to proper elevation and contour.~~

- a. ~~Shallow Trenches can be dug (by hand or with a trenching machine).~~
- b. ~~Trenches shall not be installed when the soils are wet or excessively damp state.~~
- c. ~~Sidewall of trenches shall be scarified to remove all smears.~~
- d. ~~Install perforated piping, placing orifices upwards for the hydraulic test.~~
- e. ~~Trenches can be straight, or they can be curved to fit terrain and complement vegetation, but they must be set on level grade.~~
- f. ~~Lay the half-pipe (or low-profile chamber) sections over the laterals, overlapping the section ends by a few inches. For covering curving laterals, half-pipe section ends can be cut at an angle and overlapped to match the curve of the lateral. Install one inspection port halfway along each lateral (See Figure 1a).~~

2. ~~Valves must be readily accessible for service and/or inspection. All valve boxes must be protected from gopher soil movement. A detail of the valve box must be included on the plans. Specify concrete, hardware wire or similar bottom.~~

3. ~~Perform hydraulic test after the distribution system has been completed.~~

- a. ~~Size of orifice shall be 1/8" – 3/16".~~
- b. ~~Pump must be adequate to deliver the required orifice discharge range of 24 inches (3/16" hole) and 60 inches (1/8" hole) for upward discharge to the lateral.~~

- ~~c. Distribution to all laterals shall be balanced.~~
- ~~d. This test shall be inspected by the designer/consultant and Permit Authority Environmental Health Specialist.~~
- ~~E. Establish the finished grade of the GPDC OWTS by track rolling and grooming by hand. Backfill the excavation with caution. Do not compact the soil around the half-pipe or chamber.~~
- ~~F. Fill material may only be placed above native soil for soil cover, and shall not be used to meet required soil depth minimums. The system designer shall describe the type of fill to be placed in terms of texture and structure, the depth and method of ripping before placement. No part of the GPDC dispersal field may be located where the site slope exceeds twenty-five (25) percent when fill is used.~~
 - ~~1. A ground cover (turf, fruit trees or other appropriate landscaping) must be planted over the dispersal field after installation to provide additional treatment, prevent erosion and increase wastewater reuse through plant evapotranspiration.~~
 - ~~2. Native material is acceptable if there are no large or sharp rocks that may damage the pipe walls. If native material is not usable, backfill with sand or pea gravel, or use an imported material that is approved by your local regulator.~~
 - ~~3. Install performance wells and complete all details as shown on the plans.~~
 - ~~4. After the #189 septic electrical inspection has been completed by the Building Inspector, a startup inspection must be scheduled with the system designer, installer, service provider and the Permit Authority.~~
 - ~~5. Prior to OWTS final approval, acceptable erosion control must be completed.~~
- ~~G. The performance wells criteria for GPDC OWTS includes the following. A minimum of five performance wells shall be installed within and around the system to a depth of 24 inches below proposed trench bottom.~~
 - ~~1. Two performance wells shall be installed between trenches in the middle of the leach field.~~
 - ~~2. Two performance wells shall be installed 25 feet down slope of the lowest trench line.~~
 - ~~3. One performance well shall be installed at 10 feet upslope of the highest trench line.~~
 - ~~4. Additional performance wells may be required for systems longer than 75 feet.~~
 - ~~5. Permit & Resource Management Department may require that performance well locations be changed in special situations.~~

~~6. Performance wells shall be properly installed to provide easy access.~~