

# **Section 11 Criteria for Commercial, Industrial, and Institutional OWTS**

## **11.1 Commercial, Industrial, and Institutional OWTS**

- A. All commercial OWTS shall be designed by a Qualified Consultant.
- B. A typical commercial OWTS would service businesses such as, but not limited to food facilities, schools, care homes, childcare facilities, dog kennels, veterinary offices, wineries and wine-tasting rooms. Refer to Table 11.1.
- C. All commercial OWTS, including, pre-1971 created parcels shall provide 200 percent reserve replacement area. Dual dispersal fields consisting of a primary field and a secondary field (75 percent of design flow) with a diversion valve to alternate the field use are recommended but not required.
- D. Commercial OWTS that exceed the 1,500 gallons per day flow criteria of this section are subject to the requirements of Section 14, or Section 11.5.
- E. For commercial uses, the minimum size of the septic tank must be based on the formula  $V$  (net volume in gallons) equals 1,125 plus  $0.75Q$  (daily wastewater flow in gallons),
- F. Pretreatment is required when high strength commercial wastewater is proposed. Pretreatment components and/or pretreatment system shall reduce wastewater strength to levels below the defined levels for high strength wastewater.
- G. Any OWTS that receives high strength wastewater from a commercial food service building requires a properly sized and functioning oil/grease interceptor.

**Table 11.1 – Multiunit and Non-Residential Design Flow Rates**

TYPE OF OCCUPANCY	GALLONS PER DAY
Airports	5 per passenger
Campgrounds with central comfort station	35 per person
Campgrounds with flush toilet, no showers	25 per person
Day Camps (no meals)	15 per person
Luxury Camp, private bath	100 per person
Summer and seasonal	50 per person
Churches (sanctuary)	5 per seat
With kitchen wastes	7 per seat
Country Club	125 per person
Factories	35 per person per shift
Hospitals	250 per bed space
Kitchen waste only	25 per bed
Laundry waste only	40 per bed
Hotels/Motels with private bathroom (no kitchen waste)	60 per two-person room
Hotels/Motels without private bathroom (no kitchen waste)	50 per two-person room
Hotel/Motel with private bath and kitchen	75 gallons per person
Institutions other than hospitals	125 per bed space
Movie Theaters	5 per seat
Offices	20 per employee
Picnic parks with toilets and showers	10 per person
Picnic parks with toilet waste only	5 per person
Resort camps with limited plumbing	50 gallons per person
Restaurants with Kitchen waste (multi-use utensils)	5 per meal served
Restaurants with Kitchen waste (disposable utensils)	3 per meal served
And add the following for type of facility present:	
Conventional sit down	10 per person
Short Order	8 per person
Bar and Cocktail	3 per person
School (non-boarding)	20 per student
With gym and showers add	5 per student
With cafeteria using disposable utensils	3 per meal served
Self-service laundries	50 gallons per waste
Service station	10 gallons per vehicle served
Retail stores	20 per employee
For public restrooms add	1 per 10 square feet
Swimming pools and bathhouses	10 per person
Tourist camps or mobile home parks with individual bath units	100 per person
Tourist camps or trailer parks with central bathhouse	75 per person
Work or construction camps (semi-permanent)	50 per person
Wine tasting facility (no meals served)	3 per person
Employee	15 per employee

## 11.2 Winery OWTS

- A. The peak daily flows from wineries shall be determined by either the tons of grapes processed or cases of wine produced annually. The following shall be used in the determination of peak daily flows:

1 case of wine equals 2.4 gallons

1 ton of grapes equals 160 gallons

Peak wastewater flow equals 1.5 gallons for each gallon of wine

Production

Length of crush season varies by winery production –see formulas below

The following formulas are used to calculate winery wastewater flows:

### WINERY SIZE

### FORMULA

Up to 20,000 gallons per year

$$\frac{\text{Annual production}}{(\text{gal}) \times 1.5} \times 30\text{-day harvest period}$$

20,000-50,000 gallons per year

$$\frac{\text{Annual production}}{(\text{gal}) \times 1.5} \times 45\text{-day harvest period}$$

50,000 gallons per year and above

$$\frac{\text{Annual production}}{(\text{gal}) \times 1.5} \times 60\text{-day harvest period}$$

- B. Winery process wastewater and domestic sewage shall have separate tanks.
1. Domestic and process wastewater may share a common leachfield.
- C. Mounds are prohibited for winery wastewater dispersal systems unless supplemental treatment is provided to reduce BOD to less than 300 milligrams per liter
- D. A minimum 3-day hydraulic retention time for peak winery process wastewater flow is required.
- E. Pretreatment must be provided to treat the winery process wastewater to domestic wastewater levels (less than 300 BOD and TSS) for discharge to an approved OWTS.
- F. Coverage under waste discharge requirements or waiver therefore, from the appropriate Regional Water Board, shall be required prior to issuing a septic permit.

### 11.3 Special/Cultural Events

- A. The intent of this standard is to provide sizing criteria for onsite dispersal systems that are commensurate with the number and size of special events approved under the facility's permit. Generally, this standard requires larger dispersal systems as the number and size of permitted events increases.
- B. For purposes of implementation of Special Events granted in Use Permits and the use of Portable Toilets. The following definitions apply:
  - 1. "Event" means any special event authorized under a Use Permit or an "Occasional Cultural Event" as defined in the zoning ordinance and as interpreted by the Board of Zoning Adjustments. "Event" includes industry-wide events.
  - 2. "Visitors per day" means the peak number of visitors estimated for the entire busiest single day of 1 event, and not the combined number of visitors of both days of a week-end event, and not just the maximum number of visitors at 1 time during the busiest day.

**Table 11.3 – Special Events and OWTS Sizing Criteria**

Number of special events approved per year	Percent increase in the design and capacity of the facility's wastewater treatment system due to special event wastewater flows*
0 to 4	The additional special event wastewater flow may be accommodated by portable toilets. No increase in the facility wastewater system required.
5 to 10	The design and capacity of the facilities wastewater treatment system must be increased by 25 percent of the fifth largest single special event flow.
11 to 25	The design and capacity of the facilities wastewater treatment system must be increased by 50 percent of the fifth largest single special event flow.
26 or more	The design and capacity of the facilities wastewater treatment system must be increased by 100 percent of the fifth largest single special event flow.

- C. The wastewater system consultant shall justify the sizing of the OWTS for Special Events based upon the specific circumstances of the site and the proposed event.
  - 1. Special Events without food service shall size the on-site wastewater dispersal system as large as needed, but in no case at less than 2 ½ gallons per visitor per day.
  - 2. Special events with food service shall size the on-site wastewater dispersal system as large as needed, but in no case at less than 5 gallons per visitor per day.
- D. Sizing of the OWTS for Special Event wastewater flows shall comply with the following requirements when mitigation is provided by an adequate number of portable toilets as specified in Permit Sonoma Policy and Procedure 9-2-31 *Sizing of Onsite Wastewater Dispersal Systems for Special Events Authorized by Use Permits and the Use of Portable Toilets* Table 11.3. The Special Event Wastewater Flow is the additional sewage flow expected from the largest single special event that is in excess of the normal wastewater flow from the facility.

## 11.4 Flow Equalization

- A. Flow equalization is the process of controlling the rate of wastewater flow through an OWTS by providing surge capacity storage and timed-dosing of the incoming flow. Installed following the septic tank, it allows peak surges in wastewater flow (for example from a weekend event) to be temporarily stored and metered into the treatment system and/or dispersal field at a relatively even (average) rate over an extended number of days (for example during the subsequent week). This generally aids OWTS performance.
- B. Where flow equalization is proposed to be incorporated in an OWTS the following apply:
  - 1. The septic tank capacity shall be sized based on the peak daily flow for the facility;
  - 2. The design flow used for sizing supplemental treatment unit(s) and/or the dispersal field may be based on the equalized (average) flow rate rather than the peak daily flow rate for the facility;
  - 3. Engineering calculations and specifications must be submitted substantiating the proposed design and operation of the flow equalization system; and
  - 4. An operational permit (per Section 14) will be required.
- C. Flow equalization may be used for non-residential and mixed use facilities that experience significant, regular and predictable fluctuations in wastewater flows. Examples of applicable facilities include, but are not limited to:
  - 1. Churches;
  - 2. Schools;
  - 3. Special/Cultural event venues.

## 11.5 Package Treatment Plants

- A. Package Treatment Plants include systems that use wastewater in a manner subject to Title 22 wastewater reclamation standards and/or any treatment unit other than a septic tank which processes more than 10,000 gallons of wastewater per day. This does not include systems which process wastewater originating solely from agricultural uses, retail food facilities or storm water if these systems do not include any domestic wastewater component.
  - 1. Package treatment plants cannot serve multiple uses on separate parcels under separate ownership unless the Board of Supervisors approves specific findings for multiple ownership of sewage dispersal systems.
- B. The application request for a package treatment plant must be prepared by a RCE with documented experience in the design of sewage treatment plants and must include the following:
  - 1. A full description of the proposed collection and treatment method and process components.

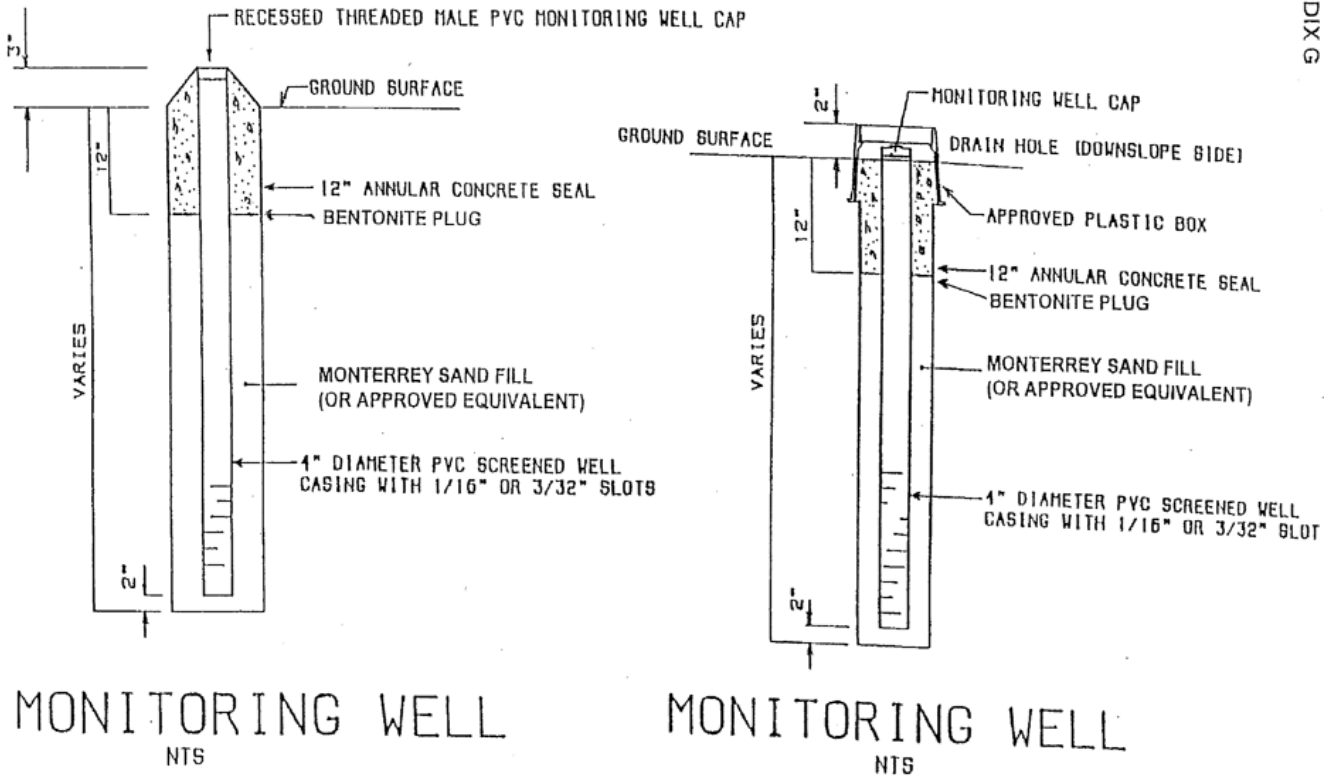
2. A full description of the proposed method for wastewater dispersal.
  3. Environmental review for California Environmental Quality Act (CEQA) compliance.
- C. The typical conditions of approval for a Package Treatment Plant include the following:
1. An independent engineering consultant acceptable to the Permit Authority shall perform peer review of the plans at the applicant's expense.
  2. A permit to construct the collection system shall be obtained from the Permit Authority prior to the start of any construction of the collection system.
  3. All applicable county permits shall be obtained for the treatment and dispersal facilities including grading, electrical, and plumbing permits.
  4. Prior to obtaining building permits for any portion of the project, Waste Discharge Requirements shall be obtained from the appropriate RWQCB.
  5. The long-term managerial and financial needs of the package treatment plant shall be fully documented.
    - a. Prior to the issuance of building permits, deed restrictions shall be recorded specifying the conditions under which the package treatment plant was approved.
  6. The package treatment plant shall be operated under a valid Sonoma County Operational Permit in accordance with an approved monitoring plan.
  7. Use of the facility shall cease if either the WDR or the County Operational Permit is revoked.
- D. For additional information and specific requirements refer to Permit Sonoma Policy and Procedure 1-4-3 *Package Treatment Plant Policy and Procedure*.

## **11.6 Performance Wells**

- A. All commercial systems and non-standard OWTS must be designed with a series of performance wells to monitor the performance of the system. In limited circumstances, performance wells may be required for standard OWTS that may present a threat to public health and/or the environment. Sampling of effluent in the wells may be required to evaluate the treatment of the system and ensure that groundwater degradation does not occur.
- B. The construction of the performance wells shall be constructed with 3 or 4 inch approved casing and screened with 1/16 or 3/32 inch slots, and a minimum 12 inch annular concrete seal. Monterey sand or equivalent shall be placed from the bottom of the well to the depth of the annular seal. The exception to the Monterey sand fill is for wells in the gravel bed of at-grade or mound systems. These wells shall be filled from the bottom of the well to the depth of the annular seal with pea gravel.
- C. All performance wells are designed to monitor the performance of the system by sampling groundwater to ensure degradation does not occur. Performance wells are strategically placed up-gradient, within, laterally, and down-gradient of the OWTS.

1. If damage is noted during monitoring or the performance well cannot be located, the well shall be replaced by a qualified contractor in the area shown on the original design.
- D. The performance wells shall be either augured or post holed or drilled by hand after the OWTS is completed. The construction of the performance wells shall be as mandated by the Permit Authority staff. The soil shall be scarified to remove compaction or smeared soil that may seal the performance well. A backhoe shall not be utilized to excavate for a performance well.
  - E. Performance well heads shall be protected and encased within plastic, concrete, or an approved type box to provide easy access.
    1. The performance well caps/lids shall be maintained for easy removal/access during monitoring and need to prevent surface water from entering the well.
  - F. The depth of the annular seal for the performance wells within the gravel bed shall not exceed beyond the depth of the gravel bed of the OWTS.
  - G. A concrete annular seal of a minimum 12 inches from the surface of native grade is required for all performance wells, between the earthen side-wall and the solid portion of the performance well pipe.
  - H. Refer to Sections 11, 12, 13 and Figure 11.6 for additional performance well information and specific requirements.

Figure 11.6 – Performance Well Detail



## 11.7 Grease Interceptors

- A. Grease interceptors are required when greater than 50 milligrams per liter of grease is introduced into a commercial OWTS.
- Plans and specifications for grease interceptors shall be submitted to the Permit Authority for approval. Permit Authority staff shall review the grease interceptor design in accordance with minimum design and construction criteria established by Sonoma County.
  - Waste from floor drains, floor sinks, dishwashers, pot sinks, and mop sinks shall be plumbed separately into the grease interceptor.
  - Effluent from grease interceptors shall be disposed of in a septic tank and not directly discharged to the dispersal field.
  - Grease interceptors shall be located, installed and constructed so that the temperature of the sewage will be reduced to permit congealing or separation of grease, and easy access for cleaning.



5. Commercial facilities generating up to 200 gallons per day of wastewater from the fixtures noted in Section 11.7.A.2 above, shall install an 810 gallon capacity minimum size grease interceptor or an interior pressure Uniform Plumbing Code (UPC) rated grease interceptor on the kitchen drain.
6. Commercial facilities generating 200 gallons per day or more from the fixtures noted in 11.7 A.2 above, shall install a grease interceptor sized in accordance with the Permit Authority requirements. The grease interceptor shall be a minimum size of 810 gallons capacity.
7. Each grease interceptor shall be so installed and connected that it shall be easily accessible for inspection, cleaning, and removal of the intercepted grease. Grease interceptors shall be located outside.

