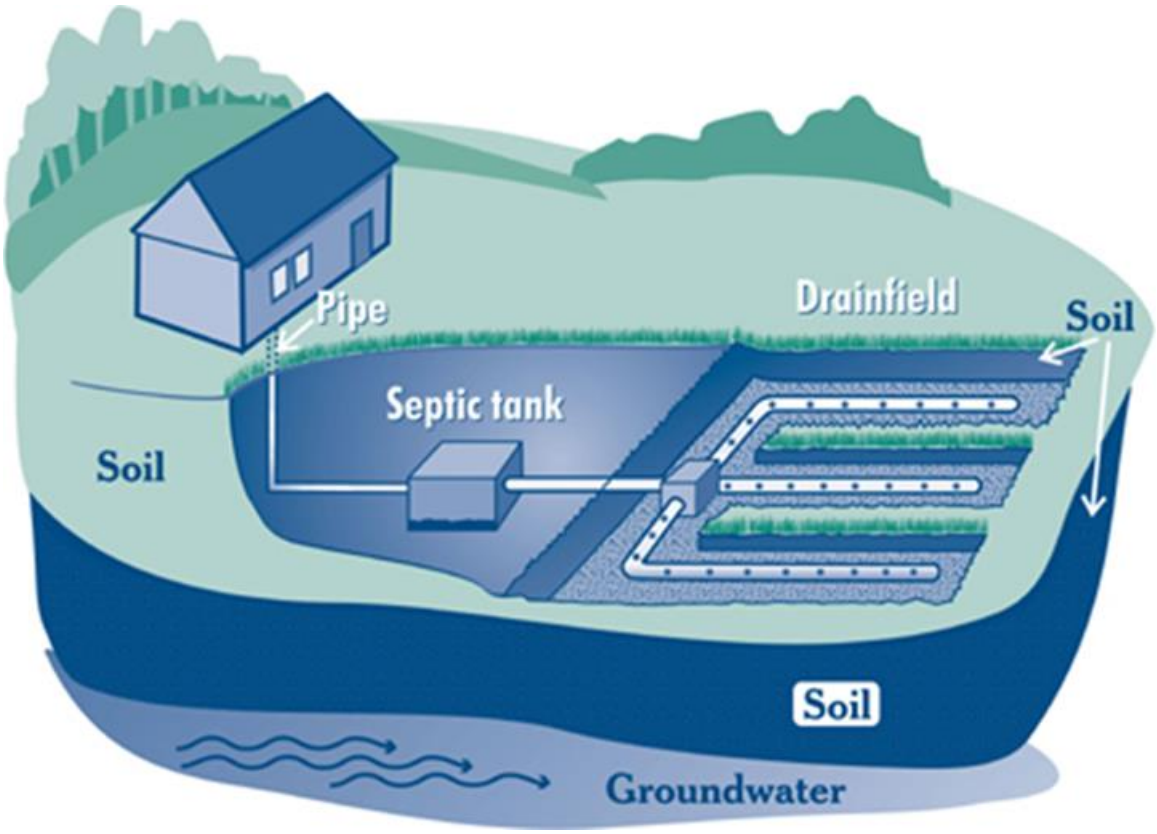
Draft Staff Report

Basin Plan Amendment to Incorporate New Onsite Wastewater Treatment System Policy, Amend Wet Weather Overflow Policy, Update Graywater Information, and Update Table of Municipal Wastewater Discharge Locations



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California Regional Water Quality Control Board

San Francisco Bay Region

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San Francisco Bay Regional Water Quality Control Board
1515 Clay Street, Suite 1400
Oakland, CA 94612
Telephone: (510) 622-2300
Fax: (510) 622-2460
http://www.waterboards.ca.gov/sanfranciscobay/basin_planning.shtml

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1. INTRODUCTION

This report supports a proposed amendment of the San Francisco Bay Basin Water Quality Control Plan (Basin Plan) that will be considered by the California Regional Water Quality Control Board, San Francisco Bay Region (Water Board). The proposed amendment (included in Appendix A) contains four elements:

(1) A revision to the Basin Plan's section on wet weather overflows to delete language that conflicts with the Clean Water Act and a revision to the section on combined sewer overflows to ensure consistency with the U.S. Environmental Protection Agency's (U.S. EPA) Combined Sewer Overflow Control Policy (CSO Control Policy);

(2) A revision to the section on onsite wastewater treatment systems to incorporate the statewide Water Quality Control Policy for Siting, Design, Operation, and Maintenance of Onsite Wastewater Treatment Systems (OWTS Policy, Appendix D), adopted by the State Water Resources Control Board (State Water Board) on June 19, 2012

(3) A revision to the graywater systems section to reflect updates to the California graywater standards approved in 2009 by the California Building Standards Commission and

(4) An update to an existing table containing the effluent flow rates and discharge locations of publicly-owned treatment works (POTWs).

In its 2012 Triennial Review of the Basin Plan, the Water Board identified some of these amendment elements as priority Basin Planning projects. Chapter 2 of this staff report provides background information for each of the four amendment elements. Chapter 3 provides regulatory background.

2. BASIN PLAN AMENDMENT BACKGROUND AND DESCRIPTIONS

2.1 Element 1: Revising the Wet Weather Overflow Policy

What the wet weather overflow policy amendment element would accomplish

The proposed Basin Plan Amendment for wet weather overflow implementation is contained in Appendix A. As explained below, the amendment would eliminate section 4.9.2 and Table 4-7 pursuant to State Water Board's directive.

Staff also proposes to amend Basin Plan section 4.9.1 to eliminate unnecessary and misleading language describing the federal CSO Policy. Specifically, this section would be streamlined to a paragraph that: 1) refers to the federal CSO Control Policy; 2) provides a brief, yet accurate description of the policy; and 3) notes that the Water Board implements the CSO Control Policy for the City and County of San Francisco's combined sewer system. The online version of the Basin Plan would also provide a hyperlink to the CSO Control Policy to help readers easily find more information about it.

Background

During periods of heavy rainfall, large pulses of water enter sewerage systems. When these pulses exceed the collection, treatment, or disposal capacity of a sewerage system, wet weather overflows occur. The City and County of San Francisco's sewer systems combine both sanitary sewage and stormwater, and these combined sewer systems are especially vulnerable to wet weather overflows.

Section 4.9 of the Basin Plan describes the Water Board's implementation approach for combined sewer overflows. The foundation of the Water Board's approach is the U.S. EPA's 1994 CSO Control Policy (USEPA 1994). The Basin Plan also describes a conceptual framework for controlling wet weather overflows, envisioned as a complement to the CSO Control Policy that provides guidance in adopting specific control measures.

The federal CSO Control Policy consists of a two-phased regulatory process for NPDES-permitted wet weather discharges. During the first phase, permittees must immediately demonstrate implementation of nine minimum technology-based controls to reduce CSOs and their effects on receiving water quality. The second phase of the policy requires permittees to develop and implement long-term CSO control plans that will ultimately result in compliance with the requirements of the Clean Water Act (i.e., will achieve water quality standards). Basin Plan Section 4.9.1 provides a partial summary of the federal CSO Control Policy and a brief account of how the Water Board intends to implement this policy for the combined sewer overflows from the City and County of San Francisco.

As a complement to the federal CSO Control Policy, Basin Plan section 4.9.2 describes a "conceptual approach" to controlling wet weather wastewater overflows that includes

treatment levels, ranging from no treatment to secondary, that vary depending on beneficial use protection categories. For example, Table 4-7 suggests that the appropriate level of treatment for discharges to "areas where the aquatic environment should be free of any identifiable risk from the discharge of untreated waste" is secondary treatment of flows up to a "20-year recurrence interval" (i.e., discharge volumes that occur once every 20 years). This table also suggests that the appropriate level of treatment for discharges to "areas where water quality or aquatic productivity may be limited due to the pollution effects of a dense human population…." is secondary treatment of flows up to a half-year recurrence interval, primary treatment of flows up to a five-year recurrence interval, and no required treatment for flows exceeding a five-year recurrence interval.

In September 2005, the Water Board issued an NPDES permit (Order No. R2-2005-0047) and time schedule order (Order No. R2-2005-0048) regulating East Bay Municipal Utility District's (EBMUD) three wet weather facilities that intermittently discharge primary-treated sewage (i.e., sewage from which solids have been removed by settling) to central and lower San Francisco Bay. This permit implemented the Basin Plan's implementation plan for wet weather overflows.

In 2007, the State Water Board reviewed, on its own motion, EBMUD's wet weather facility NPDES permit and concluded "that the San Francisco Bay Water Board must revise Basin Plan provisions that purport to authorize the discharge of raw or partially treated sewage that does not meet secondary treatment standards to waters of the United States." Specifically, the State Water Board stated that "the conceptual approach (section 4.9.2) outlined in the Basin Plan is in clear conflict with the Clean Water Act, which unequivocally requires that POTWs achieve secondary treatment. The secondary treatment requirement reflects the minimum acceptable treatment technology that POTWs must achieve. Because the requirement is technology-based, the requirement is independent of any water quality considerations" (State Water Board 2007). Ultimately, the State Water Board remanded the 2005 EBMUD wet weather facilities permit and directed the Water Board to amend the San Francisco Bay Region Basin Plan to delete language that conflicts with the Clean Water Act (State Water Board 2007). In 2009, The Water Board amended and re-issued the EBMUD wet weather facilities permit (Order No. R2-2009-0004) and a cease and desist order (Order R2-2009-0005) to make them consistent with the Clean Water Act.

As part of this Basin Plan amendment, we comply with the State Water Board's directive to delete section 4.9.2 from the Basin Plan. Deleting this section requires some revision of the preceding section (4.9.1) on CSOs, which includes a narrative reference to the wet weather overflow section (4.9.2). In reviewing section 4.9.1 for clarity and consistency, staff concluded that additional revisions should be made.

First, section 4.9.1 provides an incomplete, unbalanced, and potentially misleading summary of the federal CSO Control Policy. The Basin Plan's summary overemphasizes the minimum (technology-based) controls associated with the first phase of the policy and lacks detail regarding the second (water quality-based) phase of the process. In order to avoid confusion about the intent and requirements of the CSO Control Policy, staff

recommends editing this portion of the Basin Plan to reference and briefly describe the policy without attempting to summarize the requirements.

Second, the Basin Plan states that the City and County of San Francisco has substantially completed implementation of a long-term CSO control plan, but then erroneously states that San Francisco is exempt from requirements to prepare a long-term control plan. Staff recommends deleting this factually incorrect passage.

Last, the Basin Plan states that "numeric water quality-based effluent limits are not readily established due to the unpredictability of storm events and the general lack of data." Staff recommends deleting this statement for two reasons. First, it could be construed to suggest that data limitations and storm unpredictability would always make it impracticable to establish numeric water quality-based effluent limits. Second, the statement does not accurately reflect the intent of the CSO Control Policy, which envisions that water quality-based effluent limits would be expressed initially as narrative requirements, but "ultimately may also be expressed as numeric effluent limits when data are sufficient to support their development" (USEPA 1995).

2.2 Element 2: Revising the Onsite Wastewater Treatment System Policy

What the Onsite Wastewater Treatment System Policy Amendment Would Accomplish

The amendment would revise the Basin Plan to incorporate the OWTS Policy adopted by the State Water Board in 2012. Existing Basin Plan language superseded by the OWTS Policy would be deleted.

Background

On June 19, 2012, the State Water Board adopted the OWTS Policy. Applicable statewide, the OWTS Policy gives the Regional Water Quality Control Boards the principal responsibility to oversee its implementation and calls for incorporating the OWTS Policy requirements into all Water Boards' Basin Plans within a year of the policy's effective date. Implementation of the OWTS Policy will provide more effective and efficient regulation of onsite systems via clear criteria, a streamlined regulatory tool (a conditional waiver of waste discharge requirements), broader coverage (of discharges up to 10,000 gallons per day), and flexible local alternatives where Local Agency Management Programs (LAMPs) are implemented.

The Basin Plan has existing language regarding onsite wastewater treatment systems that covers a broader range of systems than the OWTS Policy (e.g. commercial and industrial systems and wastewater plants that exceed the 10,000 gallon per day limits of the OWTS Policy or those that might discharge to land rather than subsurface). Thus, while we must revise the Basin Plan to incorporate the OWTS Policy, existing language pertaining to these other systems must be retained. Below is 1) an overview of regulatory tools governing onsite discharge; 2) an overview of the OWTS Policy; followed by 3) an overview of existing Basin Plan language regulating OWTS.

Onsite Discharge Regulatory Tools - Persons who discharge waste that could affect the quality of waters of the state, including discharges from onsite wastewater systems, are required to submit a report of waste discharge (ROWD) under California Water Code section (Water Code) 13260 and obtain waste discharge requirements (WDRs) or comply with a conditional waiver of waste discharge requirements. The OWTS Policy contains a conditional waiver of WDRs, a waiver of the requirement to submit a ROWD, and a waiver of application fees for onsite systems that comply with the OWTS Policy.

The OWTS Policy establishes levels (tiers) of requirements for onsite systems based on potential threat to water quality. Requirements for siting, design, operation, and maintenance vary by tier. The tiers are as follows (OWTS Policy, Appendix D):

Tier 0 covers existing, properly functioning systems that are not failing or in need of corrective action to prevent groundwater impairment and are not determined to be contributing to an impairment of surface water. Tier 0 systems are covered under a conditional waiver of waste discharge requirements that is part of the OWTS Policy.

Tier 1 covers new or replacement systems that comply with specific criteria intended to protect water quality. The criteria are intentionally conservative to ensure that use of such systems, without specific monitoring, will not result in water quality impairment. Tier 1 systems are covered under a conditional waiver of WDRs that is part of the OWTS Policy.

Tier 2 allows local agencies to propose local agency management plans (LAMPS) for OWTS with alternative criteria to those applicable to Tier 1 that are protective of water quality and public health. These LAMPs are intended to address unique geologic conditions or management approaches while allowing local agencies to oversee OWTS and are subject to Water Board review and approval. An OWTS under Tier 2 management may consist of a variety of technological designs for both the treatment and dispersal system. Table 1, adapted from a table in the OWTS Policy CEQA analysis, provides some examples of treatment and dispersal systems that may be allowable under a Tier 2 management program (State Water Board 2012).

Table 1: Tier 2 Treatment Systems and Dispersal (adapted from State Water Board 2012)

Supplemental Treatment Systems	Dispersal Systems
• Suspended Growth Aerobic Treatment Systems • Attached Growth Aerobic Treatment Systems • Composting Systems • Anoxic and Aerobic Systems • Combined Suspended and Attached Growth Aerobic Treatment Systems • Bottomless Packed Bed Filter Systems • Upflow Biofilter Systems • Solar, Aquatic, and Plant Based Treatment Systems • Incineration Systems • Disinfection Systems	• At-grade and Mound Systems • Bed and Trench Systems • Seepage Pit Systems • Shallow Subsurface Drip Systems • Gravelless Trench Systems • Pressure Distribution Systems

Tier 3 covers onsite systems located within 600 feet of a surface water body listed on the Clean Water Act Section 303(d) list as impaired by nitrogen (or other nutrients) or pathogens. Tier 3 provides special conditions for the design, operation, and maintenance of those systems. Table 2 below lists the water bodies in the San Francisco Bay Region that are on this list. New and existing onsite systems in this Tier must comply with the applicable total maximum daily load (TMDL) implementation program developed for these or other impaired waters identified in the future. Alternately, where there is an approved LAMP with special provisions, they must comply with those provisions. Where there is no TMDL or LAMP with special provisions in place, onsite systems within 600 feet of certain impaired surface waters must meet the "Advanced Protection Management Program" requirements specified in the OWTS Policy.

Table 2: Pathogen and Nitrogen Impaired Water Bodies in San Francisco Bay Region Identified in the OWTS Policy (see Appendix D)

Water Bodies Impaired by Pathogens	Water Bodies Impaired by Nitrogen
• China Camp Beach • Lawson's Landing • Pacific Ocean at Bolinas Beach • Pacific Ocean at Fitzgerald Marine Reserve • Pacific Ocean at Muir Beach (proposed for delisting) • Pacific Ocean at Pillar Point Beach • Petaluma River (mainstem and tidal portion) • San Gregorio Creek	• Lagunitas Creek • Petaluma River (mainstem and tidal portion) • Tomales Bay • Walker Creek

Napa River and Sonoma Creek were identified in the OWTS Policy as impaired by nitrogen. However, the Water Board approved at its February 12, 2014 meeting a proposal to delist both of these waterbodies for nutrients resulting in excessive algae growth and to remove these water body from the EPA 303(d) list. These delisting decisions will be included in the Integrated Report submitted to U.S. EPA for the 2014 listing cycle.

Tier 4 covers failing onsite systems and specifies corrective actions for them. Pending completion of corrective action, the onsite system must meet applicable Tier 1, Tier 2, or Tier 3 requirements, whichever is appropriate in the specific circumstances.

Provides a Waiver of Waste Discharge Requirements - The conditional waiver of WDRs included in the OWTS Policy clarifies the role of local agencies in regulating the installation and operation of OWTS. Prior to the policy, the Water Board was issuing WDRs for community wastewater systems. The OWTS Policy now allows local agencies to permit these facilities if flows are less than 10,000 gallons per day. However, the OWTS Policy does not authorize local agencies to permit OWTS that accept industrial or commercial process water. Historically, the Water Board, via waivers of WDRs, allowed local agencies to permit some industrial and commercial types of facilities if deemed a low threat to water quality. Wineries are in this category. The Water Board will now need to develop general WDRs to cover categories of discharges that are not covered by the OWTS Policy or issue individual WDRs.

The OWTS Policy does not waive any Basin Plan prohibitions or local agency requirements. Nor does the OWTS Policy limit the Water Board's authority to require reports of waste discharge and to issue a conditional waivers or general or individual waste discharge requirements when such actions are needed to protect water quality. Staff will be working with local agencies as part of the LAMP review and approval process and will consider these and other regulatory tools as necessary.

Local Agency Management Programs - Onsite management programs developed and implemented by local agencies form the foundation of the OWTS Policy. Tier 2 of the OWTS Policy provides the flexibility for local agencies to develop LAMPs that may implement area-specific programs with different conditions, different criteria, and different methods of assessing compliance than those specified in Tiers 1, 2 and 3. Providing this flexibility is important because LAMPs must be implemented in areas where site conditions may be more or less favorable for onsite systems than site conditions considered during OWTS Policy development.

Onsite wastewater treatment system regulation in San Francisco Bay region prior to the OWTS Policy

Historically, discharges from conventional onsite systems have been regulated by the Water Board and local agencies (typically city and county environmental health departments) that implement local requirements. Approvals for onsite systems in the San Francisco Bay Region had to be consistent with two policies that are cited and briefly described in the Basin Plan: Section 4.18 of the Basin Plan summarizes the first of these policies, the 1978 "Policy on Discrete Sewerage Facilities" (1978 Policy, Appendix B); and Section 4.18.2 references a 1979 policy document called "Minimum Guidelines for the Control of Individual Wastewater Treatment and Disposal Systems" (Minimum Guidelines, Appendix C).

The 1978 Policy has three guiding principles applicable to all wastewater discharges and sets forth five policies that the Water Board has applied when regulating onsite wastewater treatment systems. Parts of the 1978 Policy will be rescinded as part of this Basin Plan amendment because some elements are rendered unnecessary by the adoption of the new 2012 OWTS Policy or by changed circumstances. However, some elements of the 1978 Policy will be retained in the Basin Plan as described below.

The three principles referenced above are that:

- The system must be designed and constructed so as to be capable of preventing pollution or contamination of the waters of the state or creating nuisance for the life of the development.
- The system must be operated, maintained, and monitored so as to continually prevent pollution or contamination of the waters of the state and the creation of a nuisance.
- The responsibility for both of the above must be clearly and legally assumed by a public entity with the financial and legal capability to assure that the system provides protection to the quality of the waters of the state for the life of the development.

The first two of these principles will be retained because they are common-sense statements that inform Water Board regulatory practice and are consistent with the OWTS Policy, although reference to the life of the development will be deleted since the requirement pertains to all OWTSs, not just those in new housing developments. Although the Basin Plan implies that the third principle applies to all wastewater discharges, the 1978 Policy only requires the demonstration of financial and legal capability when new *community wastewater systems* are being constructed. Retaining this principle in section 4.18.1 erroneously suggests that this requirement should be applied to all onsite systems, so this third principle will be removed from this list, but incorporated, in modified form, elsewhere in this section of the Basin Plan and explicitly applied to community systems (see below, Policy 2 of 1978 Policy).

Policy 1 of the 1978 Policy ***requests*** that city and county governments should:

- Prohibit the use of new discrete sewerage systems where existing community sewerage systems are reasonably available.
- Prohibit the use of individual onsite systems for any subdivision of land unless the governing body having jurisdiction determines that the use of the systems is in the best public interest and that the existing quality of the waters of the state is maintained consistent with the State Water Board's Resolution 68-16.
- Assure that individual disposal systems are maintained to the satisfaction of the responsible health officer.
- Consider the cumulative impacts of individual system discharges as part of the approval process for development.

This policy is no longer necessary with the adoption of the 2012 OWTS Policy. The State Water Board intended the new OWTS Policy to be the source of all requirements governing most individual onsite systems and allows local agencies to implement the relevant portions of this policy via Local Agency Management Plans. The proposed Basin Plan amendment recommends removing language from the Basin Plan corresponding to this part the 1978 Policy.

Policy 2 of the 1978 Policy requires a ROWD to be submitted for all proposed waste discharges that involve the use of new community wastewater treatment and disposal systems. Community systems are collection sewers plus treatment facilities serving multiple discharges under separate ownership, such as small packaged[1] wastewater treatment plants or common septic tanks plus dispersal facilities. This policy requires that a public entity assume legal authority and responsibility for the planning, design, financing, construction, operation, and maintenance of the proposed wastewater treatment and disposal system. The ROWD required by this policy must include:

- A final Environmental Impact Report or Negative Declaration covering the total project, unless categorically exempt, prepared and approved by the local lead agency pursuant to CEQA.
- Operation, maintenance, and revenue and contingency plans for the wastewater treatment and disposal facility or a commitment by the public entity to prepare and submit such plans prior to the initiation of discharge.

The OWTS Policy includes a conditional waiver of waste discharge requirements that renders unnecessary the submittal requirement for systems covered by the conditional waiver of the OWTS Policy. However, community systems pose ongoing oversight challenges for responsible regulatory agencies because these facilities serve multiple discharges under separate ownership (Water Board 2013). The 1978 Policy noted that Regional Water Boards had found that public entities are more capable of providing adequate resources to assure proper planning, design, construction, operation, and maintenance of wastewater systems and, with the establishment of a public entity, legal procedures and remedies are greatly simplified in the event of a violation of Board requirements.

The proposed Basin Plan amendment would retain the requirements from this policy that apply to new community wastewater treatment and disposal systems and require a public entity to demonstrate legal authority and responsibility for the planning, design,

[1] Packaged wastewater treatment plants used for onsite wastewater systems are (generally small) pre-engineered wastewater treatment plants combining many of the treatment processes found in larger systems in a single prefabricated unit.

financing, construction, operation, and maintenance of the system; and prepare operation, maintenance, revenue, and contingency plans (plans) for the system.

For new community wastewater systems covered by the OWTS Policy conditional waiver, these plans shall be included in the application submitted to local agencies. Local agencies, upon receipt of these plans, should notify the Water Board. For new community onsite wastewater systems not covered by the OWTS Policy conditional waiver, these plans must be included in the ROWD submitted by the discharger directly to the Water Board.

Policy 3 of the 1978 Policy addresses individual wastewater treatment and disposal systems and requires:

A. Assessments of the cumulative impact of discharges from individual wastewater treatment and disposal systems on water quality and public health where the density of systems is such that adverse impacts may occur.

B. That the Water Board will periodically review its waivers of the reporting of waste discharge to determine if local ordinances for the control of individual wastewater treatment and disposal systems and the actions of local agencies in implementing those ordinances are adequate.

C. A ROWD to be filed for all individual wastewater treatment and disposal systems which discharge to the surface of the land or to surface waters of the State.

The requirement for cumulative impact assessment in the 1978 Policy was based on the recognition that groundwater basins with numerous onsite wastewater treatment systems in a small geographic area may be challenged with elevated nitrate or salt concentrations due to the cumulative impacts of these onsite systems. The 1978 Policy recommended that the cumulative impacts of the discharges from individual systems on groundwaters should be analyzed on a case-by-case basis to assure the use of individual systems will not impair groundwater beneficial uses (1978 Policy, Appendix B).

Water Board staff continues to encounter proposals for new onsite systems in areas where geologic site conditions, the density of existing onsite systems or poor groundwater quality, may increase the likelihood of adverse impacts. For example, cumulative impacts are more likely in areas with high or rapidly changing groundwater elevations, clay soil, highly expansive soil, steep slopes, or close proximity to downgradient waterbodies. Cumulative impact assessments are also recommended for areas with numerous onsite systems in a small geographic area (high density), especially in a valley or ravine. Finally, cumulative impact assessments should be conducted for new onsite systems in areas with known or suspected groundwater contamination, especially with high nitrate levels (Water Board 2014b).

The OWTS Policy includes a conditional waiver of the requirement to submit a ROWD and defines what will be deemed adequate in terms of local agency control of these

systems. The Water Board will no longer be issuing waivers for systems that are covered by the OWTS Policy conditional waiver, so the Water Board no longer needs to review (per 1978 Policy 3.B) its waivers of the reporting of waste discharge.

However, Water Board staff will be annually reviewing LAMPS and, every five years, reviewing water quality data collected by local agencies to determine whether implementation of the LAMPS is protective of water quality. The State Water Board is currently developing a guidance document that describes the requirements set forth in the OWTS Policy for LAMP submission and approval, and includes recommendations to assist the Regional Water Boards and local agencies to evaluate whether local programs adequately protect water quality and public health. When reviewing LAMPs, Water Board staff can alert local agencies to Basin Plan requirements for new community onsite systems (e.g., operation, maintenance, and revenue and contingency plans prepared by a public entity for community systems, and cumulative impact assessments in high risk groundwater basins) that must be part of an effective LAMP.

The requirement for a ROWD (1978 Policy 3.C) for individual wastewater treatment systems discharging to the land surface or surface waters must be retained in the Basin Plan because these systems will not be covered by the OWTS conditional waiver.

Policy 4 of the 1978 Policy prohibits the discharge of wastes that threaten to cause water pollution, water quality degradation, or the creation of health hazards or nuisance conditions, or which do not comply with policy 2 of the 1978 Policy. It is not necessary to retain this prohibition from the 1978 Policy as the Basin Plan already contains a general prohibition against the "discharge of raw sewage or any waste failing to meet waste discharge requirements" (Basin Plan Discharge Prohibition No. 15).

Policy 5 of the 1978 Policy gives special consideration to the portion of the Alameda Creek Watershed above Niles with respect to the use of new discrete sewerage systems. This policy discourages "new discrete discharges within the Alameda Creek Watershed which will not be part of the Livermore Amador Valley Wastewater Management Association (LAVWMA) export project[2] until a water quality management plan for the Alameda Creek Watershed above Niles has been completed and approved by the Regional Board." This policy is not explicitly mentioned in the Basin Plan.

[2] The LAVWMA export project is a joint powers agency created in 1974 by the cities of Livermore and Pleasanton and the Dublin San Ramon Services District. Operations began in September 1979 with expansions in 1983, 1987, and 2005 for a current design capacity of 41.2 million gallons per day of treated wastewater. The wastewater is conveyed via a 16-mile-long pipeline from Pleasanton to San Leandro and enters the East Bay Dischargers Authority (EBDA) system for dechlorination and discharge through a deepwater outfall into San Francisco Bay.

This policy five of the 1978 Policy was motivated by a concern over the lack of water quality planning for the watershed. The Water Board has long been engaged in efforts to protect the Niles Cone and Livermore-Amador Valley groundwaters, which are two of the most important groundwater systems in the region.[3,4] Past wastewater disposal practices created water quality problems in both of these groundwater systems. The Water Board had prohibited, and continues to prohibit wastewater discharges to the surface waters of the watershed.

In 1982, Zone 7 prepared a "Wastewater Management Plan for the Unsewered, Unincorporated Area of Alameda Creek Watershed Above Niles" (Management Plan) (Zone 7 1982). The Management Plan recommended solutions to local septic problems and also recommended broader wastewater management policies to prevent degradation of the surface and ground waters if and when the unincorporated areas are subdivided and urbanized. For example, the Management Plan recommended continuing the policy of discouraging onsite wastewater treatment systems in this watershed, established a minimum lot size for which onsite systems would be allowed, and established policies determining the suitability of onsite systems in more intensely developed areas (Zone 7 1982). The Management Plan was approved by the Water Board when it was incorporated, verbatim, into the 1986 version of the Basin Plan (Water Board 1986). Therefore, this policy from the 1978 Policy is no longer necessary and will not be retained in the revised Basin Plan. However, water quality concerns regarding nitrates in groundwater still remain, and Zone 7 is in the process of developing a salt and nutrient management plan that should help guide future management actions. The OWTS policy specifically notes that the LAMPs need to take into consideration regional salt and nutrient plans.

[3] The Niles Cone Groundwater Basin is vital to Alameda County Water District's ability to meet the water supply needs of the people it serves. Wells extracting water from the Niles Cone Basin are capable of producing up to 47.5 million gallons of water per day (http://www.acwd.org/index.aspx?nid=380).

[4] The Livermore-Amador Valley Main Groundwater Basin stores over 225,000 acre-feet of usable groundwater. During years of normal rainfall, it contributes about 15 percent of the Valley's water supply. In the event of a prolonged drought, enough water can be stored there to augment the reduced surface supplies (http://www.zone7water.com/wonderdownunder/ag.htm).

Minimum Guidelines (Resolution No. 79-5)

As discussed above, policy 3 of the Water Board's 1978 Policy states that the Water Board would "adopt guidelines by which it will judge the adequacy of local ordinances for the control of individual wastewater treatment and disposal systems". These guidelines were set forth in a 1979 resolution that included an attached report called "Minimum Guidelines for the Control of Individual Wastewater Treatment and Disposal Systems" (Resolution No. 79-5, Minimum Guidelines, Appendix C). These guidelines, included by reference in section 4.18.2 of the Basin Plan, recommended practices for onsite system design, construction, operation and maintenance, and cumulative impact assessments. The Minimum Guidelines have been used by the Water Board to assist in deciding whether to renew, amend, or rescind existing waivers of waste discharge requirements, or to issue new waivers.

The OWTS Policy establishes a statewide, risk-based, tiered approach for the regulation and management of OWTS installations and replacements and sets the minimum levels of performance and protection expected from OWTS. The State Water Board intended the OWTS Policy to replace existing requirements, like those contained in the Minimum Guidelines, although it allowed Regional Water Boards to adopt or retain more protective standards. To the extent that a Regional Water Board determines that it is necessary and appropriate to retain or adopt any more-protective standards, it must reconcile them with the OWTS Policy to the extent feasible and provide a detailed basis for its determination that each of the more-protective standards is necessary and appropriate (OWTS Policy, Appendix D).

Comparing the requirements in the Minimum Guidelines with those in the OWTS Policy is challenging because the Minimum Guidelines do not have the OWTS Policy's risk-based framework (tiers), and the system siting and design requirements are often stated in ways that make comparison difficult. In fact, it would be very difficult to retain any portion of the Minimum Guidelines without confusing those readers attempting to understand whether requirements from the Minimum Guidelines or those from the OWTS Policy applied to a particular system.

After reviewing and comparing the requirements in the Minimum Guidelines with their counterparts in the OWTS Policy, staff did not identify any specific requirements in the Minimum Guidelines that did not have counterparts in the OWTS Policy or were essential to retain in the Basin Plan for the regulation of onsite systems. Moreover, the Water Board maintains an ongoing role in approving LAMPS and, thus, an opportunity to exercise its discretion to ensure that siting and design elements are adequate to protect water quality. Therefore, staff recommends that the OWTS Policy supersede and replace, in its entirety, the Minimum Guidelines. Accordingly, the proposed Basin Plan amendment deletes Section 4.18.2 from the Basin Plan, which incorporated Resolution No. 79-5 (the Minimum Guidelines) by reference. In addition, Section 5.2.7

Table 1 Disposition of Elements from the 1978 OWTS Policy and 1979 Minimum Guidelines. This table summarizes the content of the preceding sections and explains how the proposed amendment will impact the status of the policies of the 1978 Policy and the Minimum Guidelines.

Policy Element	Disposition after Basin Plan amendment	Summary of Rationale
1978 Policy on Discrete Sewerage Facilities		
• Guiding Principles 1 and 2	Principles regarding proper system design, operation, and maintenance would be retained in the Basin Plan.	Common sense and good regulatory practice consistent with the OWTS Policy.
• Guiding Principle 3	The principle about legal and financial responsibility would be relocated and applied to community systems only.	Deleted principle was incorporated elsewhere in Basin Plan where it correctly applied.
• Policy 1	This policy, which made a series of requests of local governments related to regulation of onsite systems, would not be retained in the Basin Plan	Non-regulatory policy is confusing and implies regulatory burden not contemplated by State Water Board in adopting the OWTS Policy
• Policy 2	Requirements from this policy that a public entity must demonstrate legal authority and responsibility for community systems and submit operation, revenue, maintenance and contingency plans would be retained in the Basin Plan.	Historical and ongoing regulatory challenges for community wastewater system necessitate retention of certain requirements of this policy.
• Policy 3	Requirement for review of waivers would not be retained in the Basin Plan. The requirement for cumulative impacts in areas where the density of systems may lead to adverse impacts and the requirement for WDRs for systems discharging to land surface or surface waters would both be retained.	Cumulative impacts should continue to be assessed for systems located in areas with poor site conditions, high system density, or poor, existing groundwater quality. WDRs will need to be issued by Water Board for all individual wastewater treatment systems not covered by OWTS Policy
• Policy 4	This policy prohibits the discharge of wastes that threaten to cause water pollution, water quality degradation, or the creation of health hazards or nuisance conditions. It would not be retained in the Basin Plan	This prohibition need not be retained because the Basin Plan already contains a similar general prohibition
• Policy 5	This policy discouraged new discrete sewage discharges in the Alameda Creek Watershed until a water quality management plan was adopted for this watershed. This policy would not be retained in the Basin Plan	This policy is no longer necessary because the management plan required by the policy has been produced by the Alameda County Flood Control and Water Conservation District (Zone 7) and approved by the Water Board
1979 Minimum Guidelines	This Policy contained recommended practices for onsite system onsite system design, construction, operation and maintenance and cumulative impact assessment. It would be rescinded.	Policy contains similar requirements to those in the OWTS Policy. Retaining this policy would cause confusion and is not necessary.

Summary of Proposed Changes to Chapter 5 of the Basin Plan

The proposed Basin Plan Amendment for the OWTS Policy element is contained in Appendix A. In addition to the revisions to Chapter 4 described above, the changes to Chapter 5 of the Basin Plan for the OWTS Policy would consist of the following:

- **In Basin Plan section 5.1, staff would:**
  - Incorporate the OWTS Policy by reference and provide a brief description of this policy.
- **In Basin Plan section 5.2.7, staff would:**
  - Delete the section entitled "Waiver of Requirement to Report Waste Discharge for Systems Regulated by County and Local Agencies" because such onsite systems will be covered either under a conditional waiver included in the OWTS Policy or by Waste Discharge Requirements issued by the Water Board if the system does not meet OWTS Policy applicability criteria. The proposed Basin Plan amendment would remove reference to the following Water Board resolutions in Section 5.2.7 and these resolutions would be rescinded.
    - Resolution Nos. 512 (Alameda County), 583 (Contra Costa County), 596 (Napa County), 598 (Solano County), 599 (Sonoma County), and 600 (Santa Clara County) were adopted by the Water Board in 1963 and 1964. Resolution No. 81-9 is a similar resolution for San Mateo County. In these resolutions, the Water Board waived its regulatory authority over waste discharge reporting for family dwellings using discrete systems, as long as they were already regulated by local health departments and met certain conditions. In the same resolutions, the Water Board also urged local planning and legislative bodies to require connection to sewer systems for all new development whenever feasible. These resolutions are no longer applicable because regulation of individual wastewater treatment and dispersal systems must now be applied consistent with the OWTS Policy as previously described.
    - Resolution No. 75-12 amended Resolution No. 598 (for Solano County) to specify that the waiver does not apply to any planned unit development when the minimum lot size is less than 2.5 acres. This resolution is no longer applicable for the same reasons as stated previously for Resolution No. 598.
    - Resolution No. 80-9 requested that the County of Alameda correct deficiencies in its individual waste treatment and disposal systems program, acting under policies adopted in the Resolution No. 512

and discrete sewerage policies. This resolution is no longer applicable for the same reasons as stated previously for Resolution No. 512.

- Resolution No. 83-1 amended Resolution No. 598 (for Solano County) by making waiver subject to additional conditions. This resolution is no longer applicable for the same reasons as stated previously for Resolution No. 598
- Resolution No. 83-2 amended Resolution No. 583 (Contra Costa Co.) This resolution is no longer applicable for the same reasons as stated previously for Resolution No. 583.
- Resolution No. 84-12 granted a waiver for the reporting of sewage discharges from individual dwellings in Marin County where the disposal of sewage is regulated by the County Health Department. This resolution is no longer applicable for the same reasons as stated previously for the other county-specific waivers.

o Delete the section on Resolution No. 87-155 concerning the waiver of waste discharge reporting requirements from individual wastewater treatment systems in the City of Novato. This resolution extended Resolution No. 84-12 to include the City of Novato. These resolutions are no longer applicable for the same reasons stated previously for the other county-specific waivers.

2.3 **Updating Graywater System Descriptive Language**

Background

Graywater systems are a special group of onsite systems that are used to manage only isolated domestic wastewaters that have not come in contact with toilet wastes. Section 4.18.4 of the Basin Plan consists of non-regulatory language that defines graywater systems and identifies where applicable standards are found in the California Code of Regulations. In 2009, the California Building Standards Commission revised graywater standards by expanding both the definition of graywater systems and the allowable uses of graywater. The current Basin Plan language is outdated because it refers to the previous standards update accomplished in 1979.

What the graywater systems amendment element would accomplish

The proposed basin plan amendment would update Basin Plan language in four ways. First, the revised language would recognize the new 2009 Graywater Standards and specifically identify where they are codified in the California Code of Regulations at Title 24, CCR, Part 5, Chapter 16A, part I (Graywater Standards). Second, the proposed amendment element would explicitly provide the updated and expanded definition of graywater:

> *"….untreated wastewater that has not been contaminated by any toilet discharge, has not been affected by infectious, contaminated, or unhealthy bodily wastes, and does not present a threat from contamination by unhealthful processing, manufacturing, or operating wastes. "Graywater" includes, but is not limited to, wastewater from bathtubs, showers, bathroom washbasins, clothes washing machines, and laundry tubs, but does not include wastewater from kitchen sinks or dishwashers."*

Third, the passage describing uses of graywater would be amended to recognize that the 2009 Graywater Standards allow graywater to be used not only in irrigation systems, but now, with prior treatment, can also be used for certain indoor applications. Last, a brief passage would be added explaining that the motivation for the 2009 Graywater Standards update was to promote water conservation by facilitating re-use and also noting that some types of graywater systems can be installed without a building permit.

2.4 Updating Discharge Locations of POTWs (Table 4-8)

Background

Table 4-8 is a list of municipal wastewater treatment facilities, excluding wet weather facilities, within the Region that discharge directly into surface waters. For each facility, Table 4-8 contains a numeric key indicating: the facility's location on a Basin Plan map (Figure 4-1 of the Basin Plan), average dry weather design flow, and level of treatment provided; the latitude and longitude of the facility's outfall or outfalls; and some informational comments. The information in this table has not been updated for several years. This Basin Plan amendment provides an opportunity to update Table 4-8 with the relevant information from the facilities' current NPDES permits (Water Board 2014a).

What the amendment element would accomplish

Staff reviewed the most recent NPDES permits for the facilities shown in Table 4-8 and proposes to update the table for clarity and accuracy in several respects (see Appendix A). The proposed Basin Plan amendment accomplishes the following:

- Updates the average dry weather design flow volumes in the table.
- Corrects and updates the names of several dischargers.
- Updates and clarifies the comments column for several facilities.
- Adds a column indicating the number of outfalls used by the facility.
- Converts the facility discharge location latitudes and longitudes from "degrees, minutes, seconds" format to decimal degrees, and shows the locations of all outfalls, including those facilities with multiple outfalls.
- Adds a row for the Paradise Cove Wastewater Treatment Plant.
- Edits the table with respect to certain facilities that discharge through the East Bay Dischargers Authority (EBDA) common outfall in order to improve clarity.

Specifically, we would delete the entry for Livermore Amador Valley Waste Management Agency (LAVWA) because this is a pipeline conveying wastewater from Pleasanton to San Leandro for final treatment and discharge rather than an entity with its own outfall. The previous version of the table showed two LAVWA member facilities – the City of Livermore and Dublin/San Ramon Sanitary District. The revised table would instead show the City of Livermore and Dublin/San Ramon Sanitary District as separate facilities, both discharging into the EBDA common outfall. The reference to LAVWA was not necessary and would be removed.

3. REGULATORY BACKGROUND

3.1 Regulatory Background: CEQA

This amendment contains no new regulatory provisions and is not subject to additional environmental review pursuant to the California Environmental Quality Act (CEQA). The following paragraphs explain, for each amendment element, both why the element is non-regulatory and why CEQA environmental review is not required.

Element 1. Revising wet weather overflow implementation is not a regulatory change and not a project under CEQA

This element of the amendment consists of deleting, pursuant to a directive by the State Water Board (State Water Board 2007), a portion of the Basin Plan's section on wet weather overflow implementation that conflicted with the Clean Water Act and streamlining other passages describing CSO implementation to ensure consistency with the U.S. EPA's CSO Control Policy (59 Fed. Reg. 18688, Apr. 19, 1994). As such, this element contains no new regulatory provisions. Moreover, the two permits issued for the City and County of San Francisco's combined sewer system (Order Nos. R2-2009-0062 and R2-2013-0029) and the permit for East Bay Municipal Utility District's wet weather facilities (Order No. R2-2009-0004) already reflect the revised language proposed in this amendment element. These are the only facilities potentially affected by these changes to the Basin Plan. Therefore, this amendment element does not require additional environmental review pursuant to CEQA because the activity (revising the wet weather overflow language) will not result in a direct or reasonably foreseeable indirect physical change in the environment and is not considered a project under CEQA (Pub. Res. Code § 21065; Cal. Code Regs. tit. 14, §§ 15061, subd. (b)(3) and 15378).

Element 2. Revising the OWTS implementation results in no new regulatory provisions and is not subject to additional CEQA review

This element consists of rescinding existing Water Board policies and waivers governing OWTS and incorporating by reference the superseding 2012 State Water Board OWTS Policy – which is already in force. Some existing Water Board policies concerning OWTS will be retained, but these retained policy elements would not constitute new regulatory provisions. Therefore, this amendment element contains no new regulatory provision.

The Water Boards' discretionary decisions are typically subject to the requirements of CEQA. The Secretary for Natural Resources has certified the basin planning process as an exempt regulatory program, and therefore the Water Boards are exempt from the specific CEQA requirement to prepare an environmental impact report or negative declaration when the Water Board is complying with the procedures identified in the certified regulatory program. Instead, they are required to prepare a Substitute Environmental Document (Cal. Code Regs., tit. 23, §§ 3775-3781; Pub. Res. Code § 21080.5; Cal. Code Regs., tit. 14, §§ 15251-15253 and 15378).

A Substitute Environmental Document (SED) was prepared by the State Water Board for the OWTS Policy in accordance with the Water Board's certified regulatory program. The State Water Board approved the OWTS Policy and the SED on June 19, 2012. The proposed amendment removes most

existing Basin Plan provisions regulating onsite systems, retains selected existing provisions, and incorporates by reference the State Water Board's OWTS Policy. No substantive changes or modifications to the State Water Board-approved OWTS Policy are proposed, no substantial changes with respect to circumstances under which the project will be undertaken have occurred, and no new information triggers the need for supplemental or subsequent CEQA analysis. Because this amendment element falls within the scope of the OWTS Policy as analyzed by the State Water Board in the SED for the OWTS Policy (State Water Board 2012), the recommended actions do not require further environmental review pursuant to CEQA (Pub. Res. Code § 21166; Cal. Code Regs. tit. 14, §§ 15162 and 15163). In addition, the rescission of Water Board policies described herein is not a project as defined in CEQA. There is no possibility that the activity in question may have a significant effect on the environment. (Cal. Code Regs., tit. 14, §§ 15378 and 15061, subd. (b) (3).)

Element 3. Updating the graywater systems section is not a regulatory change and not a project under CEQA

This element consists of updating non-regulatory Basin Plan language concerning graywater systems to reflect changes to California graywater standards approved in 2009 by the California Building Standards Commission. This element is entirely informational and contains no regulatory provisions. The activity (updating graywater system language) is not subject to CEQA because it will not result in a direct or reasonably foreseeable indirect physical change in the environment and is not considered a project under CEQA (Pub. Res. Code § 21065; Cal. Code Regs. tit. 14, §§ 15061, subd. (b)(3) and 15378).

Element 4. Updating the table of POTW outfall locations is not regulatory and not a project under CEQA

This element consists of updating non-regulatory information in Table 4-8 of the Basin Plan concerning the outfall locations and daily discharge volumes of municipal wastewater treatment plants. This element is entirely informational and contains no regulatory provisions. The activity (updating Table 4-8) is not subject to CEQA because it will not result in a direct or reasonably foreseeable indirect physical change in the environment and is not considered a project under CEQA (Pub. Res. Code §21065; Cal. Code Regs. tit. 14, §§ 15061, subd. (b)(3) and 15378).

3.2 Regulatory Background: Peer Review

Peer review is not required for this Basin Plan amendment. First, the OWTS Policy was subjected to an independent, external peer review prior to its adoption by the State Water Board. Second, as described in the preceding section, there are no new regulatory provisions proposed in this Basin Plan amendment. As such, there is no need for external scientific peer review pursuant to section 57004 of the Health and Safety Code, which specifies that an external review is only required for *work products that serve as the basis for a rule* "…establishing a regulatory level, standard, or other requirements for the protection of public health or the environment."

4. REFERENCES

1. State Water Board. 2012. *Onsite Wastewater Treatment System Policy Final Substitute Environmental Document.* Sacramento, California.

2. State Water Board. 2007. *Order WQ 2007-0004: In the Matter of Own Motion Review of East Bay Municipal Utility District Wet Weather Permit (Order No. R2-2005-0047 [NPDES No. CA0038440]) and Time Schedule Order (Order No. R2-2005-0048).* Sacramento, California.

3. San Francisco Bay Regional Water Quality Control Board (Water Board). 1986. *Water Quality Control Plan San Francisco Bay Basin Region (2), pages IV-20 through IV-25.*

4. San Francisco Bay Regional Water Quality Control Board (Water Board). 2014a. *Worksheet to Compute POTW Coordinates And Summarize Facility Effluent Flow.*

5. San Francisco Bay Regional Water Quality Control Board (Water Board). 2014b. *OWTS and Cumulative Impacts (memorandum).*

6. U.S. Environmental Protection Agency (U.S. EPA). 1994. *Combined Sewer Overflow (CSO) Policy.*

7. U.S. Environmental Protection Agency (U.S. EPA). 1995. *Combined Sewer Overflows Guidance for Permit Writers.* EPA 832-B-95-008.

8. Zone 7 Alameda County Flood Control and Water Conservation District. 1982. *Wastewater Management Plan for the Unsewered, Unincorporated Area of Alameda Creek Watershed above Niles.*

Appendix A – Basin Plan Amendment

Language that will be deleted is shown in ~~strikeout~~. Added language is underlined.

CHAPTER 4 IMPLEMENTATION PLANS

4.9.1 FEDERAL COMBINED SEWER OVERFLOW CONTROL POLICY

On April 11, 1994, the U.S. EPA adopted the Combined Sewer Overflow (CSO) Control Policy (50 FR 18688)[5]. This policy establishes a consistent national approach for controlling wet weather discharges from ~~CSOs~~ combined sewer systems to the nation's water. The policy requires implementation of nine minimum controls that serve as minimum technology-based requirements pursuant to the Clean Water Act. The policy also requires implementation of a long-term control plan that serves as the water quality-based requirements of the Clean Water Act. The long-term control plan must consider the permittee's financial capability and provide for the attainment of water quality standards. The Water Board applies the policy to the City and County of San Francisco's combined sewer system.

~~… Using the NPDES permit program, the policy initiates a two-phased process with higher priority given to more environmentally sensitive areas. During the first phase, the permittee is required to implement the following 9 Minimum Controls. These constitute the technology-based requirements of the Clean Water Act as applied to combined sewer facilities (best conventional treatment (BCT) and best available treatment (BAT)). These minimum controls can reduce CSOs and their effects on receiving water quality:~~

- ~~(1) Conduct proper operation and regular maintenance programs for the CSS and the CSO outfalls;~~
- ~~(2) Maximize use of the collection system for storage;~~
- ~~(3) Review and modify pretreatment programs to ensure that CSO impacts are minimized;~~
- ~~(4) Maximize flow to the POTW for treatment;~~
- ~~(5) Prohibit CSOs during dry weather;~~
- ~~(6) Control solids and floatable materials in CSOs;~~
- ~~(7) Develop and implement pollution prevention programs that focus on contaminant reduction activities;~~

[5] A hyperlink to the CSO Control Policy (http://cfpub.epa.gov/npdes/cso/cpolicy.cfm) will be added to the online version of the Basin Plan.

(8) Notify the public; and

(9) Monitor to effectively characterize CSO impacts and the efficacy of CSO controls.

Compliance with the minimum controls shall be as soon as practicable, but no later than January 1, 1997. The permittee is also required to initiate development of a long-term control plan to select CSO controls, based on consideration of the permittee's financial capability.

The second phase of the process involves implementation of the long-term control plan developed in the first phase. Such implementation must provide for the attainment of water quality objectives and may result in additional site-specific technology-based controls, as well as water quality-based performance standards that are established based on best professional judgement. While numeric water quality-based effluent limits are not readily established due to unpredictability of a storm event and the general lack of data, the CSO Control Policy requires immediate compliance with water quality standards expressed in the form of a narrative limitation.

The Water Board intends to implement the federal CSO Control Policy for the combined sewer overflows from the City and County of San Francisco. The City and County of San Francisco has substantially completed implementation of the long-term CSO control plan (and is thereby exempted requirements to prepare a long-term control plan).

Additionally, the following is the Water Board's recommended approach to control the seasonal degradation of water quality that results from all wet weather overflows of wastewater, including POTWs with either combined and separate sewer systems, and industrial wastewater facilities. The overflow from San Francisco's combined sewer system is addressed by the CSO Control Policy described above.

4.9.2 CONCEPTUAL APPROACH

The recommended approach to controlling wet weather overflows of wastewater that contains particular characteristics of concern to beneficial uses is a combination of designated alternative levels of maintenance (i.e., combination of treatment levels and beneficial use protection categories) and guidance for the design of overflow discharge structures. The Water Board is not endorsing any specific control measures, but is presenting a conceptual framework that allows for the evaluation of costs and benefits. This framework can be used as guidance in adopting specific control measures. As with all of its programs, the Water Board will implement this conceptual approach consistent with the national goal of "...water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water."

Maintenance and associated treatment and overflow requirements are detailed in Table 4-7. The following requirements should be met for all overflows:

(a) Outfalls achieve an initial dilution of 10:1;

(b) Overflows receive treatment to remove large visible floatable material and to protect the outfall system; and

~~(c) Overflow locations be removed from dead-end sloughs and channels, and from close proximity to beaches and marinas.~~

~~Exceptions to (a) and (c) will be considered where an inordinate burden would be placed on the discharger relative to beneficial uses protected, and when an equivalent level of environmental protection can be achieved by alternative means, such as an alternative discharge site, a higher level of treatment, and/or improved treatment reliability.~~

~~The conceptual approach described above will be used by the Water Board in evaluating wet weather discharge conditions where polluted stormwater or process wastewater bypasses any treatment unit or units that are used in the normal treatment of the waste stream. Evaluation of such discharges must include identification of:~~

- ~~Actual capacities of the collection system, each treatment unit, and the disposal system;~~
- ~~Flow return period probabilities for the specific facility location;~~
- ~~Cost of providing complete storage or treatment capacity and disposal capacity for flow return periods of 1, 5, and 20 years;~~
- ~~Quality of the polluted stormwater and process wastewater for flow return periods of 1, 5, and 20, years; and~~
- ~~Beneficial uses that may be affected by such discharges.~~

4.9.3~~2~~ SURFACE IMPOUNDMENT OVERFLOW PROTECTION

Note: Section 4.9.3 would be renumbered to Section 4.9.2 because of the proposed deletion of Section 4.9.2. The text in Section 4.9.3 would be retained unchanged. Table 4.7 will be deleted as part of this amendment

Table 4-7: Controlling Wet-weather Overflows

Levels of Water Quality Protection	Appropriate Level of Treatment
Complete protection for areas where the aquatic environment should be free of any identifiable risk from the discharge of untreated waste (i.e., shellfish beds for year-round harvesting)	Maintenance Level A: Secondary treatment up to 20-year recurrence interval; above 20-year overflows allowed
Areas that do not need complete year-round protection, such as shellfish beds for dry-weather harvesting, public beaches, and other water contact areas	Maintenance Level B: Secondary treatment for all flows up to two-year recurrence interval; primary treatment up to 20-year recurrence interval; above 20-year overflows allowed
Areas where water quality or aquatic productivity may be limited due to the pollution effects of a dense human population or other urban activities that are largely uncontrollable. Such areas may include some shipyards and harbors	Maintenance Level C: Secondary treatment to half-year recurrence interval; primary treatment to five-year recurrence interval; above five-year overflows allowed

4.18 ONSITE WASTEWATER TREATMENT AND DISPERSAL SYSTEMS

As the population of the Region increases, demand for new development increases. In many cases, new development is within areas served by municipal sewer systems. However, development is also occurring in outlying areas not served by existing sewerage agencies. In those instances, new discrete sewerage systems are being proposed. These are primarily onsite wastewater treatment and dispersal systems (onsite systems or septic systems) serving individual homes, but include community systems serving multiple residences. Today there more than 110,000 onsite systems throughout the Region, and approximately 1,000 new systems are approved each year.

In response to these development pressures, the Water Board adopted a Policy on Discrete Sewerage Facilities in 1978 (Board Resolution No. 78-14). The Policy set forth guiding regulatory principles and the actions that the Water Board ~~will~~ would take with respect to proposals for individual or community sewerage systems serving new development. The 1978 Policy was rescinded in 2014 when the State Water Board's statewide Water Quality Control Policy for Siting, Design, Operation, and Maintenance of Onsite Wastewater Treatment Systems (OWTS Policy) was incorporated by reference into the Basin Plan (section 4.18.2), but relevant guiding principles and requirements from the 1978 Policy have been retained in section 4.18.1 to complement the OWTS Policy. ~~An important provision of the policy required the development of guidelines for acceptable onsite system practices. The Water Board's policy and guidelines are presented below.~~

4.18.1 POLICY ON DISCRETE SEWERAGE FACILITIES

~~This~~ The Water Board will apply ~~policy enumerates~~ the following guiding principles~~, which apply~~ to all wastewater discharges from discrete sewerage systems:

- The system must be designed and constructed so as to be capable of preventing pollution or contamination of the waters of the state or creating nuisance ~~for the life of the development~~;
- The system must be operated, maintained, and monitored so as to continually prevent pollution or contamination of the waters of the state and the creation of a nuisance;
- ~~The responsibility for both of the above must be clearly and legally assumed by a public entity with the financial and legal capability to assure that the system provides protection to the quality of the waters of the state for the life of the development.~~

~~The policy also makes the following requests of city and county governments:~~

- ~~That the use of new discrete sewerage systems be prohibited where existing community sewerage systems are reasonably available;~~
- ~~That the use of individual onsite systems for any subdivision of land be prohibited unless the governing body having jurisdiction determines that the use of the systems is in the best public interest and that the existing quality of the waters of~~

~~the state is maintained consistent with the State Water Board's Resolution 68-16; and~~

- ~~That the cumulative impacts of individual system discharges be considered as part of the approval process for development.~~

~~Finally, the policy also requires that a public entity assume legal authority and responsibility for new community wastewater treatment and dispersal systems.~~

The Water Board requires an assessment of the cumulative impact of discharges from individual wastewater treatment and disposal systems on water quality and public health where the density of systems or geologic conditions are such that adverse impacts may occur. This assessment shall be included in the application submitted to local agencies for systems covered by the OWTS Policy conditional waiver or, if not covered by the conditional waiver, in the Report of Waste Discharge submitted to the Water Board.

The Water Board also requires that a public entity must assume legal authority and responsibility for the planning, design, financing, construction, operation, and maintenance of any new community wastewater treatment and dispersal system. Community systems are defined as collection sewers plus treatment facilities serving multiple discharges under separate ownership, such as small, pre-engineered and prefabricated packaged wastewater treatment plants or common septic tanks plus dispersal facilities. The responsible public entity must prepare acceptable operation, maintenance, revenue, and contingency plans for the wastewater treatment and dispersal facility. These plans shall be included in the application submitted to local agencies for systems covered by the OWTS Policy conditional waiver or, if not covered by the conditional waiver, in the Report of Waste Discharge submitted to the Water Board. In the absence of acceptable plans, the discharge will be prohibited.

~~The policy requires local governments, during the development approval process, to consider either the formation of a new government entity or an existing public entity to assume this responsibility.~~

4.18.2 ONSITE WASTEWATER SYSTEM REQUIREMENTS

The Water Board prohibits the discharge of wastes which threaten to cause water pollution, water quality degradation, or the creation of health hazards or nuisance condition. Requirements for siting, design, operation, maintenance, and management of onsite wastewater treatment systems are specified in the State Water Board's OWTS Policy. The OWTS Policy, including future revisions, is incorporated into this Basin Plan and shall be implemented according to the policy's provisions.

The OWTS Policy sets forth a tiered implementation program with requirements based upon levels (tiers) of potential threat to water quality. The OWTS Policy applies to: individual treatment and dispersal systems; community collection, treatment, and dispersal systems; and alternative collection, treatment, and dispersal systems that use subsurface dispersal. The OWTS Policy only applies to such systems with a projected flow of 10,000 gallons per day or less of domestic wastewater and, in some cases, high

strength wastewater (not exceeding 900 mg/L BOD) from commercial food service buildings equipped with a properly sized and functioning oil/grease interceptor.

The OWTS Policy includes a conditional waiver of waste discharge requirements for onsite systems that are in conformance with the policy. Onsite wastewater treatment systems that do not meet the applicability criteria of the OWTS Policy or whose wastewater does not meet the quantity and quality specifications of the policy cannot receive coverage under the conditional waiver so these systems will be regulated by the Water Board through other regulatory means.

~~**4.18.2 ONSITE SYSTEM GUIDELINES**~~

~~Since the early 1960s, the Water Board, pursuant to Section 13296 of the Water Code, adopted waivers for reporting certain septic system discharges in all the Region's counties except San Francisco. In its policy, the Water Board required the development of individual system guidelines concentrating mainly on septic systems. These guidelines provided information on system design and construction, operation and maintenance, and the conduct of cumulative impact studies.~~

~~In 1979, the Water Board adopted Resolution No. 79-5: Minimum Guidelines for the Control of Individual Wastewater Treatment and Disposal Systems (Minimum Guidelines). These guidelines include recommended practices for onsite system design, construction, operation and maintenance, and cumulative impact assessments, along with supporting rationale. The guidelines focus on the most common and conventional type of onsite systems, a septic tank followed by gravity-flow discharges into a subsurface soil absorption system, but underlying principles remain applicable to all types of onsite systems.~~

~~**4.18.3 ALTERNATIVE ON-SITE SYSTEMS**~~

~~The conventional onsite system, when properly constructed and operated, has long been a reliable and acceptable method of providing onsite sewage management. However, there are widespread conditions throughout the Region that preclude the use of conventional systems, including high groundwater, shallow or poor quality soil, or steep slopes. In recent years, there has been active interest and research in the development of alternative methods of onsite wastewater management to accommodate these limiting conditions. Alternative methods currently in use include additional treatment prior to soil discharge such as by a sand filter, or improved methods of dispersal into native soil such as by pressurized distribution throughout the soil absorption system, or via an engineered above-grade mound unit.~~

~~While alternative methods can afford improved practices, the use of alternative systems is not without limitations. The site and soil conditions that preclude conventional practices remain and must be appropriately addressed, since all onsite systems ultimately rely on soil absorption of all or most of the wastewater generated. Most alternative systems require a high degree of design expertise, which increases the danger of faulty design or installation and complicates the review of various proposals. Furthermore, given that~~

~~alternative systems are primarily used in areas of existing site or soil limitations, in the event of failure, options for replacement will be few, and corrections difficult to achieve. Finally, most alternative systems require a far more intensive and sophisticated level of management than conventional systems, including inspection, monitoring and maintenance by qualified service providers, and increased regulatory oversight, as well as careful use and operation by the homeowner.~~

~~Recognizing the need for a position on alternative systems, the Water Board adopted the following statement in the 1979 Minimum Guidelines:~~

~~"The Water Board Executive Officer may authorize the Health Officer to approve alternative systems when all of the following conditions are met:~~

- ~~a. Where the Health Officer has approved the system pursuant to criteria approved by the Water Board Executive Officer;~~
- ~~b. Where the Health Officer has informed the Water Board Executive Officer of the proposal to use the alternative system and the finding made in (a) above; and~~
- ~~c. Where a public entity assumes responsibility of the inspection, monitoring and enforcing the maintenance of the system through:~~
  - ~~i. Provision of the commitment and the necessary legal powers to inspect, monitor, and when necessary to abate/repair the system; and~~
  - ~~ii. Provision of a program for funding to accomplish (i) above."~~

~~The fundamental point is that the Water Board will allow the use of alternative systems only if adequate design review, system management, and means for failure correction are assured, and a county or some other public agency assumes ultimate responsibility for these actions.~~

~~The Water Board may authorize local agencies to approve and permit alternative on-site systems, provided the local regulatory program is found to be acceptable and in accordance with the Water Board's position on alternative systems discussed above. An acceptable program should include a) siting and design criteria for the types of alternative systems being approved, b) procedures for on-going inspection, monitoring, and evaluation of these systems, and c) appropriate local regulations for implementation and enforcement of the program. Authorization may be granted through a conditional waiver adopted by the Water Board and will typically include a Memorandum of Understanding (MOU) between the Water Board and the local agency. Typically, that agency will be the county environmental health department. The MOU provides a means for identifying the responsibilities of both the Water Board and the local agency, applicable criteria for siting, design, construction, operation, maintenance and monitoring, and procedures for implementing the program.~~

~~Alternative onsite system designs proposed for approval in a local agency program should be substantiated by suitable reference materials demonstrating successful performance under site and soil conditions similar to the local conditions, including previous field or research facility testing and documentation of applicable design,~~

~~installation and use criteria. System designs that have not been fully proven under proposed conditions will be considered experimental and treated with caution. In general, experimental systems will require more careful siting and design review and, if approved, intensive monitoring and inspection to ensure adequate system operation and performance. Experimental systems are generally approved only for limited use, until successful performance has been demonstrated and documented, and acceptable design, installation and use criteria determined.~~

4.18.4 GRAYWATER SYSTEMS

Graywater systems are a ~~special group~~ type of onsite systems that are used to manage only isolated domestic wastewaters that have not come in contact with toilet wastes. In ~~1997~~ 2009, the California Building Standards Commission approved revised California Graywater Standards (Graywater Standards). These standards developed by the California Department of Housing and Community Development~~Water Resources (DWR)~~, are codified at Title 24, CCR, Part 5, Chapter 16A, part I ~~Appendix G~~, and apply to all graywater systems statewide.

Pursuant to Health and Safety Code section 17922.12, "graywater" means untreated wastewater that has not been contaminated by any toilet discharge, has not been affected by infectious, contaminated, or unhealthy bodily wastes, and does not present a threat from contamination by unhealthful processing, manufacturing, or operating wastes. "Graywater" includes, but is not limited to, wastewater from bathtubs, showers, bathroom washbasins, clothes washing machines, and laundry tubs, but does not include wastewater from kitchen sinks or dishwashers.

The Graywater S~~s~~tandards specify the means by which graywater ~~certain non-toilet wastewaters~~ may be collected, filtered, and used either in irrigation systems or, if treated, certain indoor uses. ~~discharged into onsite subsurface irrigation systems~~. ~~Allowable sources of graywater include showers, tubs, bathroom sinks and laundry water. Discharged graywater may only be used for subsurface landscape irrigation.~~ The standards apply to both residential and commercial buildings. The Graywater Standards promote water conservation by facilitating re-use of laundry, shower, lavatory and similar sources of discharge for irrigation and/or indoor use. These revised standards allow certain types of systems to be installed without a building permit.

Cities and counties have authority to develop policies and procedures for the implementation of graywater programs. In developing these, consultation with the Water Board and local water districts can ensure that potential impacts on local water quality are taken into consideration.

CHAPTER 5: PLANS AND POLICIES

5.1 STATE WATER BOARD PLANS AND POLICIES

Add the following language at the end of section 5.1, right before section 5.2

WATER QUALITY CONTROL POLICY FOR SITING, DESIGN, OPERATION, AND MAINTENANCE OF ONSITE WASTEWATER TREATMENT SYSTEMS (OWTS POLICY)

The *Water Quality Control Policy for Siting, Design, Operation, and Maintenance of Onsite Wastewater Treatment Systems* (OWTS Policy), Resolution No. 2012-0032, was adopted by the State Water Resources Control Board on June 19, 2012. This Policy implements California Water Code, Chapter 4.5, Division 7, sections 13290-13291.7, and establishes statewide regulations and standards for permitting and operation of onsite wastewater systems. The OWTS Policy specifies criteria for existing and new onsite systems and establishes a conditional waiver of waste discharge requirements for onsite systems that comply with the policy.

5.2.7 ONSITE WASTE DISPERSAL AND WASTE DISCHARGE

The Water Board's policy on small waste discharge systems has evolved considerably as the Bay Area has become more developed. The following section summarizes a series of resolutions regarding conditions under which the Water Board would either object to or prohibit specific activities involving small waste discharge systems. ~~would waive waste discharge reporting requirements. Generally, this waiver is only granted when a county or other government entity has an active permitting and monitoring program comparable to the Water Board's.~~

SEPTIC, LEACHING, AND SMALL COMMUNITY SYSTEMS—RESOLUTION NO. 81 (1951)

This resolution stated the Water Board's objection to the construction and use of wells for septic effluent disposal or street runoff, except when such wells discharge into geologic formations that at no time contained water suitable for domestic, agricultural, or industrial use.

~~WAIVER OF REQUIREMENT TO REPORT WASTE DISCHARGE FOR SYSTEMS REGULATED BY COUNTY AND LOCAL AGENCIES~~

~~In 1963 and 1964, the Water Board waived its regulatory authority over waste discharge reporting for family dwellings using discrete systems, as long as they were already regulated by local health departments and met certain conditions. In the same resolutions, the Water Board also urged local planning and legislative bodies to require connection to sewer systems for all new development whenever feasible. Resolutions were adopted for Alameda County (No. 512; 1963), Contra Costa County (No. 583; 1964), Napa County (No. 596; 1964), San Mateo County (No. 597; 1964), Solano County (No. 598; 1964), Sonoma County (No. 599; 1964), and Santa Clara County (No. 600; 1964). The Solano County waiver (Res. 598) was later amended by Resolution No. 75-12 in 1975, which indicated that the waiver would not apply to planned unit development with minimum lot sizes smaller than 2.5 acres and by Resolution 83-1 (1983).~~

~~The Water Board's general policy on discrete sewerage facilities was later amended by Resolution Nos. 78-14 (1978) and 79-5 (1979). The first described specific actions that would be taken by the Water Board when it was presented with a proposal for new discrete sewerage systems and what specific requests it would make of local governments. In 79-5, the Water Board set minimum guidelines for determining the adequacy of local ordinances for controlling individual wastewater treatment and disposal systems.~~

~~In 1980, the Water Board (Resolution No. 80-9) requested that the County of Alameda correct deficiencies in its individual waste treatment and disposal systems program, acting under policies adopted in the Alameda County waiver (Res. 512) and discrete sewerage policies (Res. 78-14 and 79-5). In 1981, the Water Board rescinded Resolution No. 597 and reissued a policy (Resolution No. 81-9) on waiving reporting of discharges from individual wastewater treatment and disposal systems in San Mateo County. The Contra Costa County Waiver was amended in 1983 (Res. 83-2), and the Marin County Waiver in 1984 (Res. 84-12).~~

~~CITY OF NOVATO — RESOLUTION NO. 87-155~~

~~In this resolution, the Water Board stated its policy regarding a waiver of waste discharge reporting requirements from individual wastewater treatment systems in the City of Novato.~~

UPDATES TO TABLE 4-8

Table 4-8: Publicly Owned Treatment Works (POTWs)

POTW ~~Facility~~ Discharger Name	POTW Outfall Location[a]	Number of Outfalls	Flow[b] (MGD)	Treatment Level[c]	Discharge Point Latitude	Discharge Point Longitude	Comment
City of American Canyon	1	2	2.5	Advanced Secondary	~~38 11 11~~ 38.1879 38.1849	~~122 16 27~~ 122.2771 122.2791	
City of Benicia	2	1	4.5	Secondary	~~38 02 30~~ 38.0417	~~122 09 03~~ 122.1508	
City of Burlingame	3	1	5.5	Secondary	~~37 39 55~~ 37.6653	~~122 21 41~~ 122.3614	Discharges through North Bayside System Unit outfall
City of Calistoga	4	2	0.84	Advanced Secondary	~~38 33 34~~ 38.5594 38.5703	~~122 33 28~~ 122.5578 122.5611	~~With dry weather reclamation~~ seasonal discharge restrictions apply
Central Contra Costa Sanitary District	5	1	53.8	Secondary	~~38 02 44~~ 38.0456	~~122 05 55~~ 122.0986	
Central Marin Sanitation Agency	6	1	10	Secondary	~~37 56 54~~ 37.9483	~~122 27 23~~ 122.4564	
Contra Costa Co. Sanitary District No. 5	7	1	~~0.025~~ 0.033	Secondary	~~38 02 55~~ 38.0486	~~122 10 56~~ 122.1822	
Delta Diablo ~~Sanitary District~~	8	1	16.5	Secondary	~~38 01 40~~ 38.0278	~~121 50 14~~ 121.8372	
Dublin/San Ramon Sanitary District	9	1	17	Secondary			Discharges to EBDA outfall
East Bay Dischargers Authority (EBDA)[d]	9	1	~~77.1~~ 79.1	Secondary	~~37 41 40~~ 37.6944	~~122 17 42~~ 122.2950	~~Common outfall for EBDA and LAVWMA~~
• City of Hayward			18.5	Secondary			EBDA member ~~(16.5 mgd)~~
• Oro Loma Sanitary District			20	Secondary			EBDA member ~~(20 mgd)~~
• City of San Leandro			7.6	Secondary			EBDA member ~~(7.6 mgd)~~
• Union Sanitary District			33	Secondary			EBDA member ~~(33 mgd)~~
East Bay MUD	10	1	120	Secondary	~~37 49 02~~ 37.81722	~~122 20 55~~ 122.3486	

POTW ~~Facility~~ Discharger Name	POTW Outfall Location[a]	Number of Outfalls	Flow[b] (MGD)	Treatment Level[c]	Discharge Point Latitude	Discharge Point Longitude	Comment
Fairfield Suisun Sewer District	11	4	~~17.5~~ 23.7	Advanced Secondary	~~38 12 33~~ 38.2092 38.2144 38.2097 38.2333	~~122 03 24~~ 122.0567 122.0656 122.0581 122.0589	~~With dry weather reclamation~~ seasonal discharge restrictions apply
Las Gallinas Valley Sanitary District	12	2	2.92	Secondary	~~38 01 32~~ 38.0253 38.0269	~~122 30 58~~ 122.5169 122.5133	seasonal discharge restrictions apply
~~Livermore-Amador Valley Waste Management Agency (LAVWMA)~~	~~9~~		~~20~~	~~Secondary~~	~~37 41 40~~	~~122 17 42~~	~~Discharge to EBDA outfall~~
~~• Dublin/San Ramon Sanitary District~~			~~17~~	~~Secondary~~			~~LAVWMA member (11.5 mgd)~~
City of Livermore	9	1	8.5	Secondary			~~LAVWMA member (5.25 mgd)~~ Discharges to EBDA outfall
Marin County Sanitary District No. 5 (Tiburon Wastewater Treatment Plant)	13	1	0.98	Secondary	~~37 52 12~~ 37.8700	~~112 27 05~~ 122.4514	Shares outfall with the Sewerage Agency of Southern Marin
Marin County Sanitary District No. 5 (Paradise Cove Wastewater Treatment Plant)	Not shown on Figure 4-1	1	0.04	Secondary	37.8972	122.4611	
City of Millbrae	3	1	3.0	Secondary	~~37 39 55~~ 37.6653	~~122 21 41~~ 122.3614	Discharges ~~thru~~ through North Bayside System Unit outfall
Mt.~~ountain~~ View Sanitary District	14	1	~~2.4~~ 3.2	Advanced Secondary	~~38 01 12~~ 38.0211	~~122 05 47~~ 122.1036	
Napa ~~Sanitary~~ Sanitation District	15	1	15.4	~~Advanced~~ Secondary (filtration for reclamation)	~~38 14 09~~ 38.2358	~~122 17 10~~ 122.2861	~~With dry weather reclamation~~ seasonal discharge restrictions apply
North San Mateo County Sanitation District	16	1	8.0	Secondary	~~37 42 48~~ 37.7133	~~122 30 50~~ 122.5139	

POTW ~~Facility~~ Discharger Name	POTW Outfall Location[a]	Number of Outfalls	Flow[b] (MGD)	Treatment Level[c]	Discharge Point Latitude	Discharge Point Longitude	Comment
Novato Sanitary District	17	1	~~6.55~~ 7.05	Secondary	~~39 04 00~~ 38.0600	~~122 29 00~~ 122.4900	seasonal discharge restrictions apply
City of Pacifica	18	1	~~3.3~~ 4	Advanced Secondary	~~37 36 53~~ 37.6147	~~122 29 16~~ 122.4878	
City of Palo Alto	19	2	39	Advanced Secondary	~~37 27 11~~ 37.4583 37.4417	~~122 06 36~~ 122.1103 122.1125	
City of Petaluma	20	1	~~5.2~~ 6.7	Secondary	~~38 12 33~~ 38.2092	~~122 34 22~~ 122.5728	~~With dry weather reclamation~~ seasonal discharge restrictions apply
~~Cities~~ City of Pinole ~~& Hercules~~	21	1	~~4.06~~ 3.52	Secondary	~~38 03 06~~ 38.0517	~~122 15 55~~ 122.2700	Share outfall w~~i~~ith Rodeo Sanitary District
Rodeo Sanitary District	21	1	1.14	Secondary	~~38 03 06~~ 38.0517	~~122 15 55~~ 122.2700	Shares outfall w~~i~~ith City of Pinole~~/Hercules~~
City & County of San Francisco, Southeast	22	4	~~85.4~~ 84.5	Secondary	~~37 44 58~~ 37.7494 37.7472 37.8069 37.8100	~~122 22 22~~ 122.3728 122.3869 122.4031 122.4056	
City & County of San Francisco, Oceanside	23	1	43	Secondary	~~37 42 18~~ 37.7050	~~122 34 39~~ 122.5775	
City & County of San Francisco, International Airport	3	1	2.2	Secondary	~~37 39 55~~ 37.6653	~~122 21 41~~ 122.3614	Discharges through North Bayside System Unit outfall
San Jose/Santa Clara Water Pollution Control Plant	24	1	167	Advanced Secondary	~~37 26 06~~ 37.4398	~~121 57 08~~ 121.9581	
City of San Mateo and City of Foster City Estero Municipal Improvement District	25	1	~~13.6~~ 15.7	Advanced Secondary	~~37 34 50~~ 37.5806	~~122 14 45~~ 122.2458	
Sausalito-Marin City Sanitary District	26	1	1.8	Secondary	~~37 50 37~~ 37.8433	~~122 28 03~~ 122.4761	
Sewer Authority Mid-Coastside	27	1	4.0	Secondary	~~37 28 23~~ 37.4731	~~122 27 00~~ 122.4500	

POTW ~~Facility~~ Discharger Name	POTW Outfall Location[a]	Number of Outfalls	Flow[b] (MGD)	Treatment Level[c]	Discharge Point Latitude	Discharge Point Longitude	Comment
Sewerage Agency of Southern Marin	13	1	3.6	Secondary	~~37 52 12~~ 37.8700	~~121 27 05~~ 121.4514	Shares outfall with Marin County Sanitary District No. 5 (Tiburon Wastewater Treatment Plant)
Sonoma Valley County Sanitary District	28	5	3.0	Secondary	~~38 14 14~~ 38.2372 38.2183 38.2189 38.2036 38.2052	~~122 25 51~~ 122.4319 122.3833 122.3904 122.3314 122.3320	~~With dry weather reclamation~~ seasonal discharge restrictions apply
~~South Bayside System Authority~~ Silicon Valley Clean Water	29	1	29	Advanced Secondary	~~37 33 48~~ 37.5611	~~122 12 55~~ 122.2172	
Cities of South San Francisco~~/~~ and San Bruno ~~Water Quality Control Plant~~	3	1	13	Secondary	~~37 39 55~~ 37.6653	~~122 21 41~~ 122.3614	Discharges through North Bayside System Unit outfall
City of St. Helena	30	1	0.5	Secondary	~~38 30 10~~ 38.5028	~~122 26 15~~ 122.4375	~~With dry weather reclamation~~ seasonal discharge restrictions apply
City of Sunnyvale	31	1	29.5	Advanced Secondary	~~37 26 00~~ 37.4203	~~122 02 00~~ 122.0167	
~~U.S. Navy~~ Treasure Island	32	1	2.0	Secondary	~~37 49 50~~ 37.8306	~~122 21 25~~ 122.3569	As part of base closure will be transferred to City & Co. of S.F.
Vallejo Sanitation & Flood Control District	33	2	15.5	Secondary	~~38 03 53~~ 38.0897 38.0647	~~122 13 42~~ 122.2533 122.2283	~~W/dry weather reclamation~~
West County Agency (WCA)	34	1	28.5	Secondary	~~37 54 47~~ 37.9631	~~122 25 06~~ 122.4183	WCA common outfall
• City of Richmond			16	Secondary			WCA member ~~(16 mgd)~~
• West County Wastewater District			12.5	Secondary			WCA member ~~(12.5 mgd)~~

POTW ~~Facility~~ Discharger Name	POTW Outfall Location[a]	Number of Outfalls	Flow[b] (MGD)	Treatment Level[c]	Discharge Point Latitude	Discharge Point Longitude	Comment
Town of Yountville	35	1	0.55	Secondary	~~38 24 30~~ 38.4061	~~122 20 25~~ 122.4922	~~With dry weather reclamation~~ seasonal discharge restrictions apply

NOTES:

a. Figure 4-1 shows corresponding outfall locations. For facilities with multiple discharge points, the main outfall is listed first.

b. Dry weather average design flow as identified in ~~current~~ permits. MGD = million gallons per day.

c. This column indicates the level of treatment. Advanced secondary treatment includes, at a minimum, filtration.

d. The combined dry weather average design flow discharged from the EBDA outfall is 107.8 MGD. This flow is a combination of flows from EBDA member agencies and flows from the Livermore Amador Valley Water Management Agency pipeline, which carries flows from the City of Livermore, the and Dublin/San Ramon Sanitary District and flows from other sources.

Appendix B:

Resolution No. 78-14

Policy on Discrete Sewerage Facilities

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

RESOLUTION NO. 78-14

POLICY ON DISCRETE SEWERAGE FACILITIES

I. Whereas, on June 16, 1966, the Board adopted a policy statement, Resolution No. 768, with respect to sewerage in urbanizing areas of the region, and;

II. Whereas, the policy has been followed by the Board and its staff in judging the acceptability of the use of septic tanks or small community systems since 1966, and;

III. Whereas, this Regional Board finds:

A. The application of Resolution No. 768 has been difficult due to its indirect nature (it requests City and County government to act rather than stating the Regional Board will act).

B. There is a need for restatement of the Regional Board's policy to clearly set forth the actions which the Regional Board will take with respect to proposals for new discrete sewerage systems, as well as what it will request of local governments.

IV. Whereas, this Regional Board has prepared a negative delcaration in accordance with the California Environmental Quality Act (Public Resources Code, Section 21000 et seq.) and the State guidelines, and the Board determines that there will be no substantial adverse change in the environment as a result of the project.

V. Whereas, on September 20, 1977, October 18, 1977, December 20, 1977, April 18, 1978, and July 18, 1978, this Board held public hearings and heard and considered all comments pertaining to this matter, and;

VI. Whereas, this Regional Board has determined that there are no state mandated local costs under Section 2231 of the Revenue and Taxation Code as a result of the foregoing regulation because such regulation is not an executive regulation by virtue of Section 2209 of the Revenue and Taxation Code, and;

VII. Therefore, Be It Resolved that this Regional Board adopts the policies set forth in the attached document entitled "Policy on Discrete Sewerage Facilities" and rescinds this Board's Resolution No. 768 to become effective upon approval by the State Water Resources Control Board.

I, Fred H. Dierker, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of a Resolution adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on July 18, 1978.

FRED H. DIERKER
Executive Officer

POLICY ON DISCRETE SEWERAGE FACILITIES

BACKGROUND

As the population of the Bay Area increases, demand for residential development increases. In many cases, residential development is occurring in close proximity to existing urban areas and within the service areas of existing municipal sewerage agencies. In an increasing number of instances, however, development is being proposed in outlying areas which cannot easily be served by existing sewerage agencies. In these instances discrete sewerage systems are being proposed (i.e. separate from existing sewerage systems). In many cases the legal and financial arrangements for the planning, design, operation and maintenance of these discrete sewerage systems are uncertain at the time the residential development is proposed.

On June 16, 1966 this Regional Board adopted a policy statement (Resolution 768) with respect to sewerage in urbanizing areas of the region. Resolution 768 contains the following request of City and County governments.

"BE IT FURTHER RESOLVED, that it is the policy of this Regional Board:

A. That City and County government is requested to:

1. Prohibit the use of septic tanks and leaching systems for sewage disposal:

   a. For any subdivision of land which comes under the provisions of the Subdivision Map Act of California unless the subdivider clearly demonstrates to the satisfaction of the governing body having jurisdiction that the use of septic tanks will be in the best public interest and that the beneficial uses of water of the State will not be adversely affected; and

   b. For any other area where minimum lot sizes and dwelling densities, meeting the approval of the appropriate health officer, have not been established by ordinance.

2. Prevent the development of any subdivision, trailer park, or similar development that will use its own community system for the disposal of sewage unless:

   a. The subdivision, trailer park, or similar development is within a pre-existing governmental sewerage entity (city or district) that has authority to and has stated its intent to assume responsibility for the planning, construction, operation, and maintenance of the sewerage system; and

   b. The governmental sewerage entity (city or district) has developed a master plan for sewerage which includes the subdivision, trailer park, or similar development;"

Resolution 768 does not set forth a course of action for the Regional Board to follow when proposals are made for discrete systems. Since the adoption of Resolution 768 both State and Federal law have been amended to strengthen the regulatory authority of the Board.

The Regional Board has determined that there is a need for restatement of its policy to clearly set forth the actions which the Regional Board will take with respect to proposals for new discrete sewerage systems. Definitions of certain terms used in this document are included at the end of the document.

PRINCIPLES

This Regional Board is a State regulatory agency which has been given legislative authority and direction to protect the quality of the waters of the State. The Board's basic authority and responsibilities are set forth in the Porter-Cologne Water Quality Control Act. The Regional Board has no authority to regulate land use as a Responsible Agency under the California Environmental Quality Act (CEQA). This Regional Board has operated under the principle that regulation of land use is the responsibility of city and county governments. The policies which follow are based upon this principle.

This Regional Board will apply the following principles to all wastewater discharges:

1. The system must be designed, constructed, and installed so as to be capable of preventing pollution or contamination of the waters of the State or creating nuisance for the life of the development.

2. The system must be operated, maintained and monitored so as to continually prevent pollution or contamination of the waters of the State and the creation of a nuisance.

3. The responsibility for both of the above must be clearly and legally assumed by a public entity with the financial and legal capability to assure that the system provides protection to the quality of the waters of the State for the life of the development.

POLICY

The policy of this Regional Board with respect to the use of new discrete sewerage systems is set forth below. The policy recognizes that there are certain actions which are best undertaken by local governments to minimize the potential for water quality problems resulting from the use of new discrete sewerage systems.

POLICY 1

It is the Policy of this Regional Board that city and county governments are requested:

1. Prohibit the use of new discrete sewerage systems where existing community sewerage systems are reasonably available. The determination of whether or not existing systems are reasonably available will be the responsibility of the local agency or agencies having jurisdiction over the project.

2. Prohibit the use of individual septic tank disposal systems for any subdivision of land unless the governing body having jurisdiction determines that the use of septic tanks will be in the best public interest and that the existing quality of the waters of the State will be maintained consistent with the State Water Resources Control Board's Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality Waters in California."

3. Assure that individual disposal systems are maintained to the satisfaction of the responsible Health Officer. This could be accomplished through establishment of special maintenance districts, by the amendment of existing ordinances assuring adequate maintenance documented through periodic inspections, or other alternatives as deemed appropriate by the local Health Officer.

4. Consider the cumulative impacts of individual disposal system discharges as a part of the approval process for development.

POLICY 2

This Board will require a Report of Waste Discharge to be filed for all proposed waste discharges which involve the use of new community wastewater treatment an disposal systems. Before this Board will consider the Report of Waste Discharge to be complete, the following requirements must be met:

A. A public entity must assume legal authority and responsibility for the planning, design, financing, construction, operation, and maintenance of the proposed wastewater treatment and disposal system. The Report of Waste Discharge must be submitted by the public entity.

B. The Report of Waste Discharge must include the following:

1. A final Environmental Impact Report or Negative Declaration covering the total project, unless categorically exempt, prepared and approved by the local lead agency pursuant to the California Environmental Quality Act of 1970 (as amended) and Chapter 3, Division 6, Title 14, of the California Administrative Code (as amended).

2. Include operation, maintenance, revenue and contingency plans for the wastewater treatment and disposal facility or a commitment by the public entity to prepare such plans and submit them to the Regional Board at least sixty (60) days prior to the initiation of discharge. In the absence of a satisfactory report, the discharge will be prohibited.

RATIONALE: The filing of a Report of Waste Discharge is required by Section 13260 of the California Water Code. The requirement for a public entity to assume authority for the proposed treatment and disposal system is based upon State-wide experience with small community wastewater systems. In general, it has been the experience of this Regional Board and other Regional Boards throughout the State, that public entities are more capable of providing adequate resources to assure the proper planning, design, construction, operation, and maintenance of wastewater systems. With the establishment of a public entity, legal procedures and remedies are greatly simplified in the event of violation of Board Requirements. The California Environmental Quality Act of 1970 requires

that a final Environmental Impact Report or Negative Declaration (unless categorically exempt) be considered by this Regional Board prior to the adoption of waste discharge requirements. The preparation of this document should be the responsibility of the local agency responsible for approval of the project.

Operation and maintenance and revenue plans have been required for all new facilities constructed through the grant program. The development of these plans helps to assure proper operation and maintenance of a facility once it is constructed and future replacement of that facility. The development of these plans for all new facilities will help assure proper operation and maintenance and will aid the public entity in determining the appropriate level of funding and staffing for the operation and maintenance of the facilities. Contingency plans have been required from all dischargers pursuant to the Board's Resolution No. 74-10.

POLICY 3

This Regional Board will pursue the following course of action with respect to the use of individual wastewater treatment and disposal systems.

A. It will require assessments of the cumulative impact of discharges from individual wastewater treatment and disposal systems on water quality and public health where the density of systems is such that adverse impacts may occur. The Board will identify each area where such assessments are necessary and will adopt individual time schedules for the appropriate public entity to develop the required report. The Executive Officer is directed to work with local planning and health departments to:

1. Identify areas within each County where the ultimate density of individual wastewater treatment and disposal systems is such that adverse impacts on water quality or public health might occur.

2. Define the scope and time schedule for each cumulative impact assessment.

3. Estimate assessment costs and identify potential sources of funding.

B. It will periodically review its waivers of the reporting of waste discharge pursuant to Section 13269 of the California Water Code to determine if they should be continued. The criteria by which the Board will determine whether or not to continue the waivers will be the adequacy of local ordinances for the control of individual wastewater treatment and disposal systems and the actions of local agencies in implementing those ordinances.

This Board believes that adequate surveillance and maintenance of individual wastewater treatment and disposal systems is imperative. In the review of its waivers, the Board will look for provisions for adequate maintenance such as periodic inspections or establishment of maintenance districts and will also evaluate the response of local agencies to Policy 1 and Policy 3A.

This Board will adopt guidelines by which it will judge the adequacy of local ordinances for the control of the individual wastewater treatment and disposal systems.

C. It will require a Report of Waste Discharge to be filed for all individual wastewater treatment and disposal systems which discharge to the surface of the land or to surface waters of the State.

RATIONALE: Individual treatment and disposal systems are an acceptable means of wastewater disposal in rural area. Septic tanks and leachfields have been the predominant types of individual systems. It has been the experience of this Board that water quality and public health problems can result when such systems are used inappropriately. Failure of septic tank systems may occur due to their design or the physical characteristics of the disposal site or failure may occur due to inadequate or improper construction, maintenance or operation of the system. Adequate local ordinances for the control of individual systems should help prevent the first cause of failure. In the absence of a governmental public entity that has assumed this responsibility, only proper maintenance and operation by the homeowner can prevent the second cause noted above. Homeowner maintenance and operation is generally inadequate. Periodic inspections by local agencies or the establishment of maintenance districts should assure proper operation and maintenance.

The use of proper design codes and good operation and maintenance practices will minimize the failure of individual systems. However even a properly functioning system will contribute nitrate nitrogen and TDS to groundwaters. High nitrate or TDS concentrations will impair the beneficial uses of groundwater.

The impacts of the discharge from individual system on groundwaters must be analyzed on a case-by-case basis for each groundwater basin. It is obviously not necessary to study all groundwater basins. Those basins should be studied where the density of individual systems may result in elevated nitrate or TDS concentrations. The studies will assure the use of individual systems will not impair beneficial uses of the groundwaters and will be consistent with the State Water Resources Control Board's Nondegradation Policy (Resolution No. 68-16).

POLICY 4

This Regional Board will prohibit the discharge of wastes which threaten to cause water pollution, water quality degradation, or the creation of health hazards or nuisance conditions or which do not comply with the provisions set forth in Policy 2 above.

RATIONALE: Section 13243 of the California Water Code states that a Regional Board, in a water quality control plan or waste discharge requirements, may specify certain conditions or areas where the discharge of waste, or certain types of waste, will not be permitted.

POLICY 5

It is the position of this Board that the Alameda Creek Water shed above Niles must receive special consideration with respect to the use of new discrete sewerage systems. It is the intent of this Board to discourage new discrete discharges within the Alameda Creek Watershed which will not be part of the LAVWMA export project until a water quality management plan for the Alameda Creek Watershed above Niles has been completed and approved by this Regional Board.

RATIONALE: The Alameda Creek Water shed above Niles has been an area of critical Regional Board Concern for over two decades. To date, the Board's efforts have focused on the three major dischargers in the Livermore-Amador Valley, however, the Board has on several occasions expressed concern over the lack of water quality management planning for the entire watershed.

The Niles Cone groundwater system and Livermore-Amador Valley groundwater basin are two of the most important groundwater systems in the Region. Both are used as sources of domestic water supply and they serve a combined population of approximately 250,000.

There is a long history of actions taken by the Regional Board to protect the Niles Cone and Livermore-Amador Valley groundwaters. In the past three years the Board has taken several actions in the attempt to get local agencies to develop an overall water quality management plan for the entire Alameda Creek Watershed above Niles.

Existing wastewater disposal practices are creating water quality problems in both the Niles Cone and Livermore-Amador Valley groundwaters. The Regional Board has prohibited wastewater discharge to the surface waters of the watershed. Implementation of this prohibition through the LAVWMA export project and application of the prohibition to any new discharges proposed for the watershed will protect the Niles Cone groundwaters from discharges in the Livermore-Amador Valley. Recent studies indicate that degradation of the Livermore-Amador Valley groundwaters will continue even with the export of all wastewaters. New discharges could accelerate that degradation.

The Alameda County Flood Control and Water Conservation District - Zone 7 has recoznized this problem through adoption of an Interim Policy (Resolution 823) which prohibits any new reuse of treated wastewater within the Livermore-Amador Valley and express its intent to evaluate the long-term effects of existing reuse on the groundwater resources.

A water quality management plan is necessary to determine if new discharges should be allowed in the watershed and to provide appropriate management practices to protect the quality of the groundwaters.

DEFINITIONS

Terms used in this policy are defined as follows:

COMMUNITY SYSTEMS - collection sewers plus treatment facilities serving multiple discharges under separate ownership, such as package plants or common septic tanks plus disposal facilities such as evaporation ponds or leachfields.

INDIVIDUAL SYSTEMS - systems for an individual home such as septic tank and leachfield systems.

MAINTENANCE DISTRICT - an entity established to own, monitor, inspect, and maintain individual treatment and disposal systems. Pursuant to SB430 on-site wastewater disposal zones may be formed which have broader powers than those described above.

PUBLIC ENTITY - A local agency, as defined in the State of California Government Code Section 53090 et seq., which is empowered to plan, design, finance, construct, operate, maintain, and to abandon, if necessary, any sewerage system or the expansion of any sewerage system and sewage treatment facilities serving a land development. In addition, the entity shall be empowered to provide permits and to have supervision over the location, design, construction, operation, maintenance, and abandonment of individual sewage disposal systems within a land development, and shall be empowered to design, finance, construct, operate, and maintain any facilities necessary for the disposal of wastes pumped from individual sewage disposal systems and to conduct any monitoring or surveillance programs required for water quality control purposes.

WATERS OF THE STATE - as defined in Section 13050 of the California Water Code, means any water, surface or underground, including saline waters, within the boundaries of the State.

WATER QUALITY MANAGEMENT PLAN - a plan which integrates the following elements into a management tool in a manner compatiable with maintaining the quality of the waters of the State consistent with the water Quality Control Plan for the San Francisco Bay Basin.

(1) Water supply (surface & groundwater);
(2) Surface water quality;
(3) Groundwater quality;
(4) Water-related recreation & wildlife preservation;
(5) Water reclamation, reuse, and conservation; and
(6) Wastewater collection, treatment and disposal.

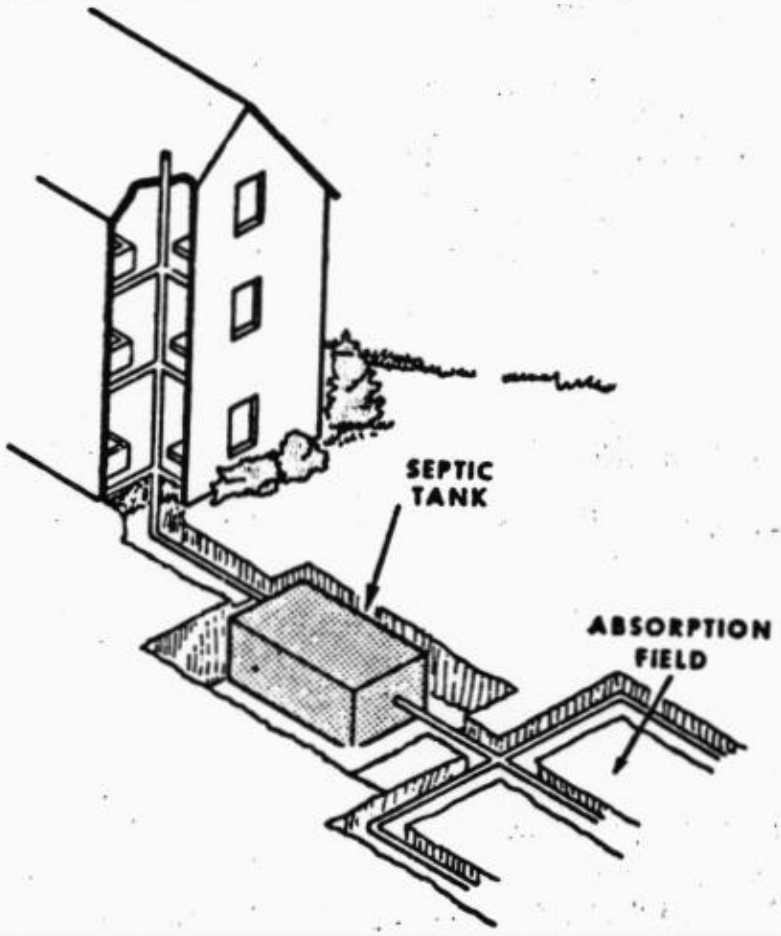
LOCAL LEAD AGENCY - as defined in Section 21062 and 21067 of CEQA means any public agency other than a State agency, Board, or Commission which has the principal responsibility for carrying out or approving a project which may have a significant effect upon the environment.

Appendix C:

Resolution No. 79-5

Minimum Guidelines for the Control of Individual Wastewater Treatment and Disposal Systems

MINIMUM GUIDELINES for the CONTROL of INDIVIDUAL WASTEWATER TREATMENT & DISPOSAL SYSTEMS



CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

MINIMUM GUIDELINES FOR THE CONTROL OF INDIVIDUAL WASTEWATER TREATMENT & DISPOSAL SYSTEMS

PREPARED BY
ADAM W. OLIVIERI AND ROBERT J. ROCHE

UNDER THE DIRECTION OF
RICHARD H WHITSEL
GRIFFITH 1. JOHNSTON
AND
FRED H. DIERKER, EXECUTIVE OFFICER

APRIL 1979

STATE OF CALIFORNIA
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD SAN FRANCISCO BAY REGION

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

RESOLUTION NO. 79-5

Minimum Guidelines for the Control of Individual Wastewater Treatment & Disposal Systems

I. Whereas, on July 18, 1978, the Board adopted a Policy on Discrete Sewerage Facilities, Resolution 7b-14, and;

II. Whereas, the Board within Policy 3B of Resolution 78-14 expressed its intent to adopt guidelines by which it will judge the adequacy of local ordinances for the control of individual wastewater treatment and disposal systems, and;

III. Whereas, this Regional Board finds the report entitled "Minimum Guidelines for the control of Individual Wastewater Treatment and Disposal Systems" fulfills the expressed intent of provision II above.

IV. Whereas, this Regional Board, as part of its Policy on Discrete Sewerage Facilities prepared a negative declaration in accordance with the California Environmental Quality Act (Public Resources Code, Section 21000 et seq.) and the State Guidelines, and determined that there should be no substantial adverse change in the environment as a result of the project.

V. Whereas, on March 20, 1979, this Board held a public hearing and heard and considered all comments pertaining to this matter, and;

VI. Whereas, this Regional Board has determined that there are no State mandated local costs under. Section 2231 of the Revenue and Taxation Code as a result of the foregoing regulation because such regulation is not an executive regulation by virtue of Section 2209 of the Revenue and Taxation Code, and;

VII. THEREFORE, BE IT RESOLVED that this Regional Board adopts the guidelines set forth in the attached document entitled "Minimum Guidelines for the Control of Individual Wastewater Treatment 6 Disposal Systems."

I, Fred H. Dierker, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of a Resolution adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on April 17, 1979.

FRED H. DIERICER
Executive Officer

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PREFACE

As the population of the Bay Area increases, demand for new development increases. In many cases, new development is occurring in close proximity to existing urban areas and within the service areas of existing municipal sewerage agencies. In an increasing number of instances, however, development is being proposed in outlying areas which cannot easily be served by existing sewerage agencies. In those instances new discrete sewerage systems (1970-approximately 94,000 [16] septic tanks & cesspools) are being proposed (i.e. new systems separate from existing public sewerage systems). The San Francisco Bay Regional Water Quality Control Board in 1978 adopted a Policy on Discrete Sewerage Facilities which sets forth the actions the Board will take with respect to proposals for Individual or community sewerage systems serving new residential development. An important provision of that policy requires the development of guidelines for the control of Individual wastewater treatment and disposal systems. The guidelines which are being proposed concentrate on septic tank - leachfield systems. The development of the guidelines involved the review of existing regulations, past practices, and the literature. Recommendations are made for technically defensible minimum guidelines for regulation, design, construction and operation and maintenance of septic tank-leachfield systems.

MINIMUM GUIDELINES FOR THE CONTROL OF INDIVIDUAL WASTE TREATMENT AND DISPOSAL SYSTEMS

RECOMMENDED MINIMUM GUIDELINES FOR THE CONTROL OF INDIVIDUAL WASE TREATMENT DISPOSAL SYSTEMS

Introduction

Section 13269 of the California Water Code provides that a Regional Board may waive the filing of reports of waste discharge for certain specific types of discharge where such waiver is not against the public interest. Such waiver shall be conditional and may be terminated at any time by the Board. In the early 1960's the Board adopted waivers for reporting certain septic tank discharges in all Bay Area counties except San Francisco and Marin. The Policy on Discrete Sewerage Facilities states the Board's intent to review the matter of septic tank system discharge waivers.

These guidelines have been developed to provide recommended minimum uniform regional criteria to protect water quality and to preclude the creation of health hazards and nuisance conditions which could result from the use of individual wastewater treatment and disposal systems (mainly septic tank systems). These guidelines will be used by the Regional Board to assist in deciding whether to renew, amend, or rescind existing waivers, or to issue new ones. Since the waivers must not be against the public interest, the Regional Board will examine many factors in addition to compliance with these guidelines. Some of these factors are:

1. How at effectively are septic tank systems being regulated in the area under consideration, i.e. are they causing or threatening to cause water quality problems, nuisance, or health hazards.

2. If septic tank systems are causing or threatening problems that are unacceptable, what mitigation measures are required to reduce impacts to acceptable levels and what are the impacts of the mitigation measures?

3. If a waiver were not adopted in a specific area, what would be the probable effect on septic tank system regulation and on Regional Board workload?

4. Evaluation of the capability of individual systems to achieve continuous, safe disposal of wastes requires detailed local knowledge of the area involved. The experience and recommendations of local agencies will, therefore, be an important input to the information upon which the Board will base its decision.

There are great differences in the geology, hydrology, geography, and meteorology of the nine counties which lie partially or wholly within the San Francisco Bay Region. These guidelines represent minimum criteria generally acceptable for the construction and use of new individual wastewater disposal systems for single family residences. Sections of these guidelines may also be used to determine soil suitability for land divisions as well as for the construction and use of individual systems for other types of domestic discharges (i.e. church, school, etc.). Adherence to these guidelines does not guarantee acceptable operation of a system.

These guidelines do not discourage a local agency from adopting and enforcing comparable or sore stringent regulations. Local Agencies are encouraged to adopt more stringent criteria when warranted by local conditions · Where local standards are more stringent they would take precedent over the minimum guidelines proposed by the Board. The Board does not intend to preempt local authority and will support local authority to the fullest extent possible.

Scope

The provisions of these guidelines apply to the regulation, design, construction, installation, operation & maintenance of septic tank and soil absorption systems • Guidelines are also

provided covering the areas of cumulative impacts and the use of alternative systems.

I. Design:

A. Septic Tanks

(1) Septic tank design shall be such as to produce a clarified effluent consistent with acceptable standards (Part 1 -Section of a Septic Tank, USPHS Manual ref. 6 or the Uniform Plumbing Code ref. 34) and shall provide adequate space for sludge and scum accumulations.

B. Soil Absorption Systems

(1) Dual leachfields shall be required for all new disposal systems.

(2) The dual system shall consist of two fields each sized separately according to section I-B-5 and constructed according to section II-B (below).

(3) The two fields shall be connected by a diversion valve which allows alternate use of the fields. It is recommended that each field use be alternated on a 6-12 month basis. A post card system may be used to inform the homeowner to turn the valve.

(4) In addition, a reserve area, coinpatiablo with the life of the discharge, may be required by the Health Officer.

(5) Absorption area, in terms of effective infiltrative surface, can be calculated from the following table.

Maximum Effluent Loading Rates of Soil Absorption systems

Percolation Rate mm/in (in/hr)	Maximum Loading Rate (gal/Ft ^{2}/day)
less than 1	system prohibited
1 (60)	1.58
2 (30)	1.24
3 (20)	1.0
4 (15)	.86
5 (12)	.82
10 (6)	.64
20 (3)	.45
30 (2)	.3
40 (1.5)	.26
60-120 (l-.5)	.22

*effective infiltrative surface includes the bottom area plus all but the upper six inches of gravel for the sidewall area. The minimum depth of gravel in the trench shall be twelve inches.

(6) When non-standard percolation test holes are used adjustments to the percolation rates must be made using the adjustment factor contained in the following table.

Percolation Rate Adjustment Factors

Hole diameter	Adjustment factor for. (hole diameter)	Adjustment factor for hole diameter plus pipe & gravel)
4 inches	2.5	3.61
6 inches	1.8	2.32
12 inches	1.1	l.43
14 inches	1.0	l.24

1) 3 inch O.D. 1/4" perforated pipe
2) 5 inch O.D. 1/4" perforated pipe
3) 10 inch O.D. 1/2" perforated pipe
4) 12 inch O.D. 1/2" perforated pipe

example calculation

If a 6" augured test hole measures 10 mm/inch, this corresponds to a 18 mm/inch standardized per. rate (10 x 1.8 18)

C. Wastewater Generation for Individual Dwellings

(1) To calculate the required absorption area, the minimum design shall be for 150 gallons per day for a one bedroom dwe11ing~ for each additional bedroom or potential bedroom, add 150 gallons per day.

(2) The use of water saving devices is encouraged. Where permanent devices are used, reduction of the 150 gallon per day per bedroom flow may be granted by the Health Officer where the Health Officer can enforce the continued use of the permanent water saving device.

II. Construction Techniques

A. Septic Tanks

U) On-site disposal system construction plans shall be submitted to the Health Officer (as amended *) for review and approval.

B. Soil Absorption Systems

(1) Surface smearing of the infiltrative surfaces during construction shall be corrected by scarifying the infiltrative surfaces after excavation is complete.

(2) Surface runoff shall not be permitted into open trenches during construction to limit siltation of the bottom area.

(3) An effective barrier such as untreated building paper shall be provided to limit the entrance of fines from the soil backfill into the drainfield gravel.

(4) Backfill shall be placed so as to maximize surface runoff and not crush drain lines.

(5) Leachfield lines should be arranged in conformance with the USPHS - Manual of Septic Tank Practice (Section -Serial Distribution).

C. Construction Inspection

(1) All systems shall be inspected during construction by the Health Officer before the system is backfilled.

III. Field Observations for Installation

A. Percolation Test

(1) A standardized procedure as discussed below shall be used to measure percolation rate.

(a) Percolation tests are to be carried out (in soils in their native state) at the proposed depth of the soil absorption field. Percolation tests may be conducted at the bottom of backhoe or other excavation holes where deeper testing is required by the Health Officer.

* Hea1th Officer: means either the County Health Officer, other responsible administrators, or a regulatory agency approved by the Regional Board.

(b) Individual tests are to be run in 12" square or 14" diameter holes dug or bored using hand tools. If power based tools are used remove any smeared soil surfaces from the sides of the hole. Although not recommended, where different diameter holes are used the percolation rate adjustment factors in Section 1(B) (6) must be used.

(a) Remove loose material from the bottom of the hole and add 2 inches of coarse sand or fine gravel to protect the bottom from scouring.

(d) If soils tend to collapse, place a perforated pipe (at least 12 inches in diameter) in the hole and carefully pack gravel around it between the pipe and the hole wall. (The percolation rate adjustment factor in Section 1(8) (6) must be employed when this method is used.)

(e) Presoaking will be required in all tests. The water shall be carefully placed within the hole. Water must be added to at least 8" in depth over the gravel and maintained at this level for at least 4 hours and preferably overnight. If the soil is known to have a low shrink—swell potential (clay content 15% or less) testing may proceed (Section F) after the 4 hour presoak. Soils with higher shrink-swell potential are to be tested the following day but within 24 hours of presoaking as follows.

(f) Fill the hole with c lean water (no chemical additives) exactly 6 inches above the soil bottom (do not consider the gravel). With a float gauge or secure fixed reference and time piece determine the time for the water to recede exactly one inch or determine the drop of water after exactly 60 minutes whichever takes less tine. Refill and repeat the process until subsequent tests indicate a stabilized rate has been attained (i.e. three consecutive rates are within 10% of each other). Time lapse between test intervals should be minimal (5-10 mm.). Test results should be reported in units of minutes per inch.

(2) At least three percolation tests shall be made in separate test holes spaced over the proposed absorption field. The average of the three tests shall be used for determining the appropriate loading rate from the table in Section I (B)(5).

B. Septic Tank and Soil Absorption System Setbacks

(1) The minimum distance (feet) between the septic tank -soil absorption system and various physical site features shall be as shown in the following table:

	Septic Tank	Disposal Field
All wells	50	100
All streams and waterbodies*	50	100
reservoirs*	100	200***
cuts or embankments**	10	4h**
drainageway	50	50

* Distancesare as measured from the top edge of stream banks or high water mark of lakes & reservoirs.

**Distances in feet equals four times the vertical height of the cut or fill bank. Distance is measured from the top edge of the bank. Where an impermeable layer intersects a cut bank the setback shall be 100 feet.

***See Section V (A) (1) for watershed protection requirements.

(2) The minimum distances between the septic tank — soil absorption system and structures or legal site conditions should be consistent with the USPHS recommendations or other distances as determined by the Health Officer.

C. Depth to Groundwater

(1) Depth to the highest seasonal elevation of the water table, below the bottom of the leachfield trench, shall be as shown in the following table.

Percolation Test Rate (min/inch)	Minimum depth (ft) to seasonally high water table
greater than 5	3
between 1 and 5	20
less than 1	system prohibited

(2) Demonstration of meeting -the depth to water table requirement should be through the use of (at least one) field observation hole (in the area of the proposed field) or through historical records acceptable to the Health Officer.

D. Depth to Impermeable Layer

(1) Depth to an impermeable layer (i.e. clay to solid granite), below the bottom of the leachfield, shall be 3 to 5 feet.

(2) Demonstration of meeting this depth requirement should be through the use of a field observation hole, historical records acceptable to the Health Officer or a backhoe hole.

E. Slope

(1) Ground slope of the field shall not exceed 20%.

(2) Variances may be granted by the Health Officer on a case-by-case basis

where it can be demonstrated, through a technical report prepared by a State registered civil engineer (with soils and a geological background) or geologist, that use of a soil absorption system will not surface in the absorption field, or reserve area, create water quality problems, jeopardize contiguous properties, and affect soil stability.

F • Trench Spacing and Depth

(1) The minimum spacing between trench walls shall be calculated as twice the effective depth (effective depth being the depth of drain rock below the pipe).

(2) Because of potential construction hazards, design questions and questionable operation, the maximum depth of the disposal trench should not exceed 8 feet.

IV. Operation and Maintenance

A. Septic Tank - Soil Absorption System

(1) It is the responsibility of the Health Officer to assure that all systems within the county are maintained and operating satisfactorily.

(2) All new systems shall be inspected at a frequency of at least once every two years to determine sludge and scum depths, observe evidence of surfacing effluent, and to assess general system operation. This inspection frequency may be waived on a case-by-case basis to a frequency of not less than once every five years where the health officer has determined that adequate operation and maintenance will be assured through other means.

B. Septage Disposal

(1) Continue existing practice of septage disposal at approved class II landfill sites and to wastewater treatment plants which will accept it.

C. Correction of System Failures Utilizing Alternative Systems

(1) Approval to use alternative systems to correct existing septic tank - soil absorption system failures may be allowed under the following conditions:

(a) Where the Health Officer has approved the system pursuant to criteria approved by the Regional Board Executive Officer;

(b) Where the Health Officer has informed the Regional Board Executive Officer of the proposed system correction; and

(c) Where a public entity assumes responsibility for inspecting, monitoring and enforcing the maintenance of the system.

D. Abandoned Individual Systems

(1) Every individual system which has been abandoned or has been discontinued from further use or to which no waste or soil pipe from a plumbing fixture is connected shall:

(a) Have the sewage removed from and disposed of in a manner approved by the Health Officer; and

(b) Be either completely filled with material (concrete, etc.) approved by the Health Officer or be removed and disposed of in a manner approved by the Health Officer.

V. Cumulative Impacts & Alternative Systems

A. Watershed Protection

(1) *A* cumulative impact assessment approach shall be considered for watershed areas which are susceptible to development utilizing septic tank — soil absorption systems.

B. Mounding of the Groundwater Table

(1) When considering a single septic tank — soil absorption system, the requirements of Section Ill-C depth to groundwater, Section III—D depth to impermeable layer, and Section Ill-F trench spacing are sufficient.

(2) When considering areas where the ultimate density of systems is such that adverse impacts on water quality and/or public health may occur, a cumulative impact assessment approach should be considered.

C. Lot Size (Density of Systems Within a Given Area)

(1) A cumulative impact assessment approach should be utilized in establishing an allowable upper limit on the number of systems.

D. Cesspools & Drainage Wells

(1) Cesspools are prohibited from use.

(2) Drainage wells are prohibited from use by the Regional Boards Resolution No. 01.

E. Holding Tank

(1) Holding tanks are prohibited from use.

(a) Exceptions to this prohibition may be granted by the Health Officer:

1. If it is necessary to use a holding tank in abating a nuisance and health hazard.

2. If an area is within a sewering agency, sewers are under or proposed for early construction, there is capacity at the wastewater treatment plant the severing agency assumes responsibility for maintenance of the tank and contracts have been let.

(b) Where exceptions are granted, the Health Officer must also approve the tank pumper.

F. Alternative Systems (with subsurface disposal)

(1) The Regional Board Executive Officer may authorize the Health Officer to approve alternative systems when all of the following conditions are set:

(a) Where the Health Officer has approved the system pursuant to criteria approved by the Regional Board Executive Officer;

(b) Whore the Health Officer has informed the Regional Board Executive Officer of the proposal to use the alternative system and the finding made in (a) above; and

(c) Where a public entity has met the responsibility for the inspection, monitoring and enforcing the maintenance of the system through:

1. Provision of the commensurate and the necessary legal powers to inspect, monitor, and when necessary to abate/repair the system; and

2. Provision of a program for funding to accomplish 1 above.

G. Disclosure of the Wastewater Disposal System

(1) There exists a genuine need to inform the potential or unknowing buyer of the homes wastewater disposal system.

(2) The. following program is suggested in order to fulfill this needs

(a) Prior to entering into an agreement of sale of any residential building, the owner o r, authorized representative should obtain from the City or County a copy of the original and any modifications of the septic tank - soil absorption system plans (where available);

(b) The septic tank soil absorption system plans should be delivered by the owner, or authorized representative to the buyer or transferee of the residential building prior to the consummation of the sale or exchange.

(3) Implementation of such a program could be through the adoption of a local ordinance by the septic tank system permitting authority, which imposes such conditions as part of a building permit, septic tank system permit or any renewal of the septic tank system permit.

(4) To further encourage disclosure and to provide long term integrity of the individual wastewater treatment and disposal system, any county or other public entity which approves a subdivision or other division of land should require as a condition of its approval that the proponent, of the development provide assurances by way of covenants, conditions and restrictions or drainage or other easements that the septic tank—soil absorption system (including any reserve area) will be available solely for its original intended purpose for the lit, of the development. Regarding currently existing individual parcels, any county or other public entity which issues a septic tank system permit should include as a condition of the permit or otherwise by ordinance that the property owner provide assurances by way of covenants, conditions and restrictions or drainage or other easements that the septic tank-soil absorption system (including any reserve area) will be available solely for its original intended purpose for the life of the development.

TECHNICAL SUPPORT

I. DISPOSAL FIELD DESIGN

I- (1) The Septic Tank and Soil Absorption System

A schematic of a typical septic tank and soil absorption system is shown in figure 1-1. Wastewater flows from the home normally by gravity to a septic tank, which is a rectangular box constructed of a watertight material. The tank is basically or primary treatment facility where heavier solids settle to the bottom and accumulate as sludge, and the grease and lighter particles rise to the surface and form a scum. The clarified effluent then flows to a soil absorption field.

A cross sectional view of a disposal trench is shown in figure 1-2. Most commonly, trenches are about two feet wide and three feet deep. In typical construction (LJPC Appendix I, section 1-6), coarse gravel is placed in the lower 12 Inches of the trench. A perforated distribution line with an additional 6 inches of gravel. The gravel is covered with permeable building paper and the excavation is backfilled.

Infiltration vs. Percolation

To minimize health risks the soil mantle must be able to accept and transmit household wastewater such that surfacing of effluent does not occur and microorganisms are rapidly eliminated from underground flows. Proper design of a soil absorption system requires an understanding of the rate of movement of water out of the trench and also through the soil mantle. These are quite different phenomena.

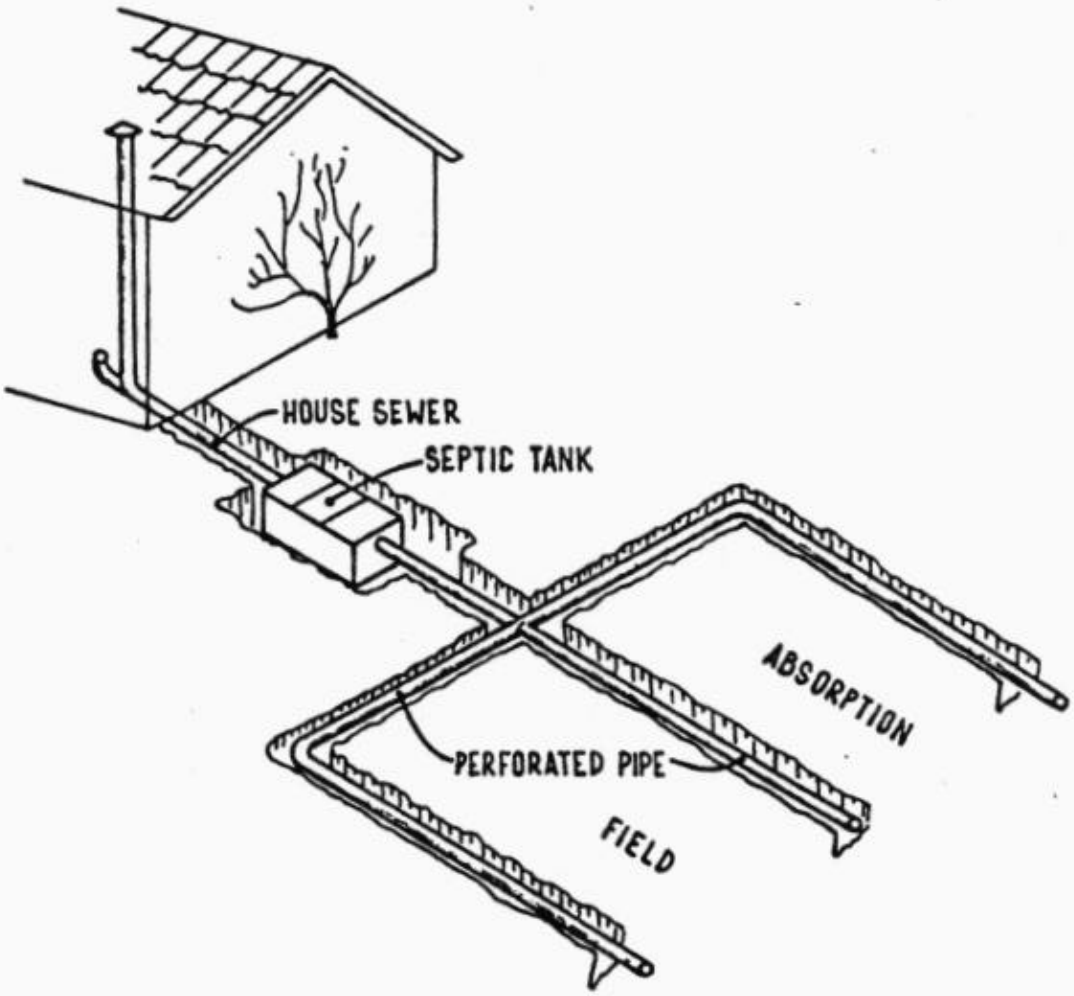
McGauhey (3) has defined the rate at which liquid passes through the soil-water Interface at the trench wall as the infiltrative capacity of the soil, and the rate of movement of water in the soil system as the percolative capacity. McGauhey and Winneberger (2,3) indicate that the only time the two rates are the same is at the beginning of operation of the system and that the Infiltrative rate ultimately governs the outflow of water.

A typical infiltration rate curve, showing the three phases of the infiltration process over time is presented in figure 1-3 (3). Phase 1, the initial decrease in permeability, is generally agreed to result from initial wetting of the soil (i.e., reduction of initial moisture potential).

Phase 2, the temporary Increase in soil permeability, has been shown to result from the removal of entrapped air by solution In the percolating water. Phase 3, the long term decrease In permeability has been demonstrated to result primarily from microbial activity at the soil-water interface; note In figure 1-3 that the use of sterile soil and water shows no decrease in the percolation rate. This latter phase is highly important in the design of soil absorption systems as the long term infiltration rate governs the size of the trench needed to dispose of given household wastewater flows.

FIGURE I-1

SEPTIC TANK SEWAGE DISPOSAL SYSTEM



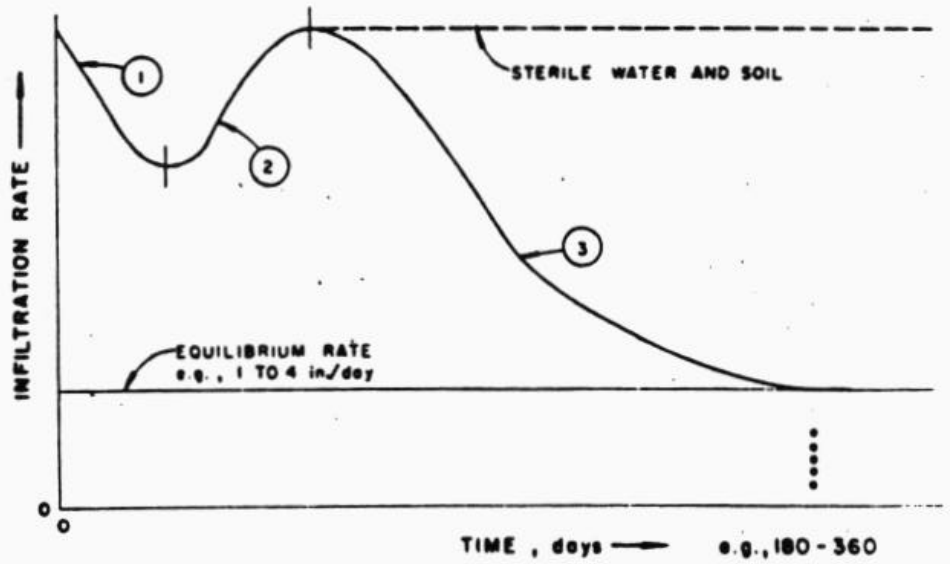


FIGURE I-3 TYPICAL TIME-RATE INFILTRATION CURVE FOR WATER (3)

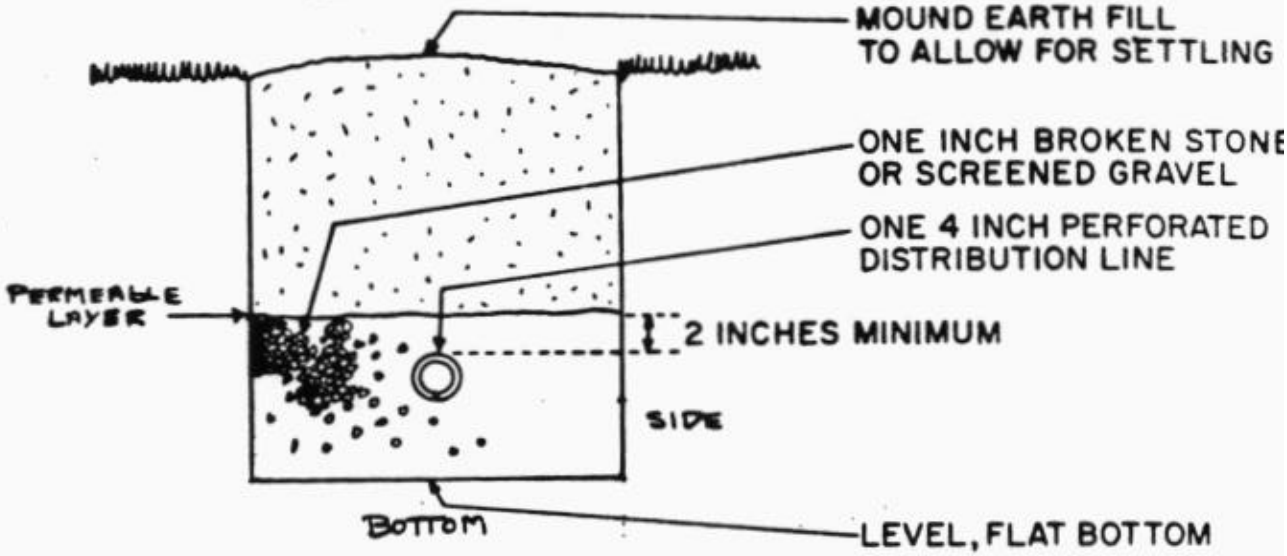


FIGURE I-2 CROSS-SECTION OF DISPOSAL TRENCH

Microbial growth at the soil-water interface occurs within the first two inches of soil. This growth results in a slime layer which greatly reduces the soil permeability within the zone. The filtration of suspended solids adds to this reduction of the naturally occurring soil permeability. These processes occur on a time scale of weeks while another biological process, the reduction of sulfate to ferrous sulfide, develops over months and years. This latter process can ultimately lead to highly impermeable conditions and to failure of the soil absorption system.

Because of the reduction in the infiltration rate, the maximum percolative capacity of the soil is not maintained. In effect, the larger pores in the soil behind and under the clogged layer no longer transmit water as only the smaller flow channels are needed to carry the Infiltrating water. The movement of water only in the finer pores of a soil is synonymous with unsaturated flow, which is a characteristic of all percolating waters whether from a wastewater disposal trench or from rainfall.

Thus far it has been implied that only the permeability of the slime layer determines the infiltration rate. To a large degree this is true. However, two other related factors are involved in fixing the infiltration rate from a disposal trench. One is the depth of water within the trench and the other is the moisture potential (suction) In the unsaturated zone. Logically the deeper the water is within a trench the greater the downward driving force and the faster the Infiltration rate. The manner by which moisture potential in the unsaturated zone affects the infiltration rate is not as straightforward. At saturation the moisture potential of a soil is zero, however, it increases as the soil water content decreases. In an operating soil absorption system the unsaturated zone is generally at field capacity with a corresponding moisture tension. This suction of water through the relatively impermeable slime layer can be an important factor in establishing acceptable infiltration rates particularly in fine grained soils.

The infiltration rate in a soil absorption system is thus determined by three interdependent factors; 1) permeability of the slime layer, 2) moisture tension in the unsaturated zone, and 3) depth of water in the disposed trench. To work properly the soil absorption system must operate such that these three parameters are in dynamic equilibrium and wastewater does not overflow the

Design Criteria

To design a soil absorption system properly it is clear that some estimates must be made of the long term infiltrative capacity of the soil. Because this infiltrative capacity is highly dependent upon soil particle sizes and their distribution, the method used to predict long term infiltrative capacities must be site specific. In addition, due to the widespread usage of septic tanks and to individual installation, the test must be both simple and inexpensive. The only procedure which meets these requirements is the percolation test. This test simply involves digging or auguring a hole several feet deep, partially filling it with water, and observing the rate at which the water level drops. When standardized this testing procedure has proved to be quite adequate to characterize, the infiltrative capacity of a given site.

Referring to figure 1-3, it should be noted that the percolation test provides an estimate of infiltration rates occurring in Phase 1. Therefore, if a standard percolation test is used in sizing a disposal trench, a correlation must be made between Phase 1 infiltration and the long

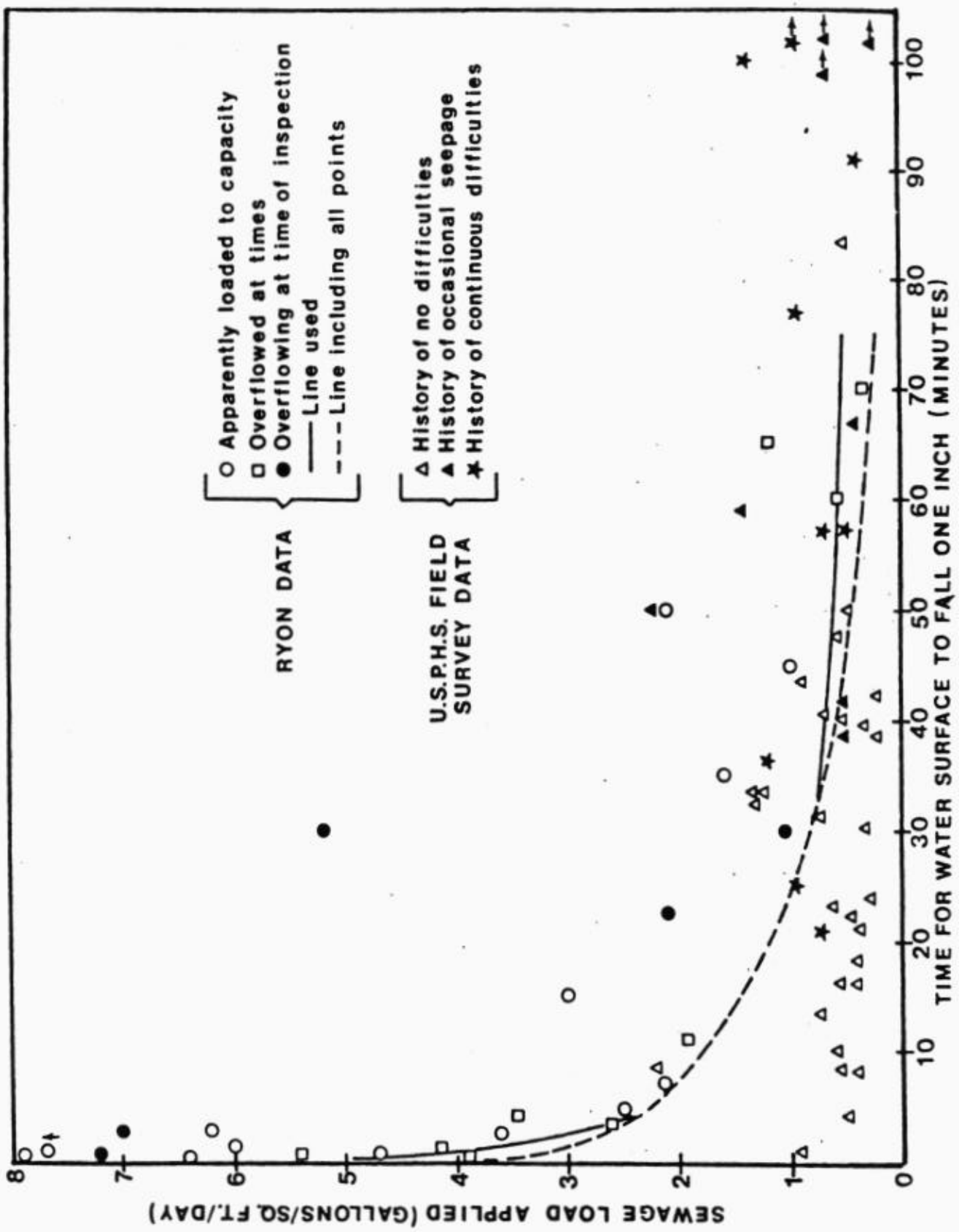
term acceptance rate in Phase 3.

The rapid change in infiltration rates occurring in Phase I shows the need to standardize percolation testing procedures. This will be discussed in more detail in Section III—(l).

The most important work that has drawn a correlation between percolation testing and long term infiltration rates was done in 1926 by Henry Ryon, an engineer with the New York State Engineers office. His results were subsequently verified by the U. S. Public Health Department in 1947-48 (6). Ryon simply went to communities in which soil absorption systems were failing and performed percolation tests at various sites. He also determined the loading rate of each system in terms of gallons per square foot of trench bottom per day. From this information he was able to correlate initial percolation rates with long term acceptance rates. Ryon's correlation as well as USPHS data are shown in figure 1-4.

This early work of Ryon's and that of the USPHS imply that the bottom surface of a disposal trench is the important infiltrative surface. As shown in figure 1—2, the soil absorption system has two infiltrative surfaces; the horizontal bottom of the trench and the vertical sidewalls. A significant portion of the literature with respect to soil absorption systems has centered on a discussion of which infiltrative surface is the more significant and which should be used as a basis of design.

FIGURE I-4


SEWAGE LOAD APPLIED (GALLONS/SQ. FT./DAY)
TIME FOR WATER SURFACE TO FALL ONE INCH (MINUTES)
RYON DATA
○ Apparently loaded to capacity
□ Overflowed at times
● Overflowing at time of inspection
—— Line used
- - - Line including all points
U.S.P.H.S. FIELD SURVEY DATA
△ History of no difficulties
▲ History of occasional seepage
✱ History of continuous difficulties

In general these researchers have concurred that sidewalls are an effective infiltrative surface. However, recommendations for design run the spectrum from use of only sidewall, to only bottom, to a combination of the two. For example, Winneberger recommends that only sidewalls be used since he has concluded that the bottom surface becomes clogged (3). On the other hand Bauma argues that only bottom should be used particularly in areas in which soils are saturated for extensive periods as lateral moisture tensions are lowered during these periods (12). Finally, Healy and Laak (28) support the use of the total wetted perimeter (bottom plus sidewall surface) based on their concept of long term acceptance rates.

To pursue investigation of this divergence of opinions, let us assume that infiltration is approximately the same for bottom and sidewalls. It would then be possible to make use of Ryon's Correlation by adjusting his bottom loading rate calculations to include sidewalls. Investigation by Winneberger (21) found that the typical disposal trench in Ryon's time was about 1 foot wide and had a gravel depth of 16 inches. This corresponds to an effective infiltrative area of 2.67 square feet per lineal foot of trench. Using this adjustment factor on Ryon's original design curve, figure 1-5 shows a plot of loading rates for the entire infiltrative surface area versus percolation test rates.

The assumption of approximately equal Infiltration rates of bottom and sidewall is not without substantiation as Bauma (12) has shown in field work that infiltration through bottom and sidewalls of disposal trenches are nearly equal. A plot of his data for bottom versus sidewall infiltration rates gives a slope of 0.96 with a correlation coefficient of 0.94. This is highly significant and strong evidence that the assumption is correct.

Further substantiation of the reasonableness of the recommended adjustment of Ryon's design curve comes from the work of various Investigators who have estimated long term infiltration rates of wastewater Into soil systems. The data points shown in figure 1-5 provide a comparison of Ryon's adjusted curve to estimates given by these investigators. Data is taken from infiltration studies of wastewater spreading ponds (3), lysimeter work of McGauhey and Winneberger at SERL (23), and a literature review by Healey and Laak at the University of Connecticut (4).

The fact that Ryon's adjusted curve fits the data of these other Investigations together with the evidence that bottom and sidewall infiltration rates are approximately equal, gives strong credence to the reasonableness of using total Infiltrative area in the design of soil absorption systems and the appropriateness of adjusting Ryon's design curve.

It now appears that a reasonable design curve expressing loading rates vs. percolation rates exists. Howe in applying such a curve it becomes readily apparent that a factor of safety is necessary to prevent lar amounts of ponded wastewater, within the trenches, from coming close to the ground surface. It appe reasonable to keep the ultimate ponding level within the trench at least 6 inches below the top of the gra and ultimately 1.5 feet below the ground surface. This then leads to use of the effective infiltrative surfa Figure 1-6, for design purposes.

The fact that large amounts of ponded wastewater could exist within soil absorption systems also rais number of concerns relative to the public health and potential water quality impacts. In trying to address th concerns one may ask the question: Will designing the soil absorption system at the suggested loading r provide for long term operation of the system?

A review of the literature on this subject indicates that system performance is usually expressed in the form survival curves, showing the percentage of failures of the soil systems in relation to the age of the system studies conducted by the United States Public Health Services (13) the Robert A. Taft Engineering Ce reported the results of numerous detailed surveys of existing septic tank systems in various parts of t county. As indicated by their survival curves, the best survival rate was 70% after 12 years. Along this s line of thinking, Hill and Frink (33) evaluated the longevity of 2,845 septic tank systems within Connecti They found the average half—life to be 27 years. Based on this discussion it appears that there is a finite to continually loaded systems.

At this point one now wonders how to achieve a system that could potentially provide for long term operat A review of the literature indicates that there are two key points which could allow for indefinite operati

(1) System Maintenance; and (.2) Dual Systems

(1) <u>System Maintenance</u>

Although a septic tank can normally function for several years without pumping, the sludge and sc accumulation will eventually build up to a point at which detention time is reduced, suspended solid ineffectively removed and the soil system is clogged to a further degree by carryover of solids. Stu (13) have indicated that removal of accumulated sludge by pumping at intervals of from 3 to 5 ye with wore frequent removal of scum, will normally be required for proper performance., Variation sludge and scum accumulation rates, however, indicate that the pumping period should be establishe system inspections. The concept of system maintenance will be further discussed in section IV

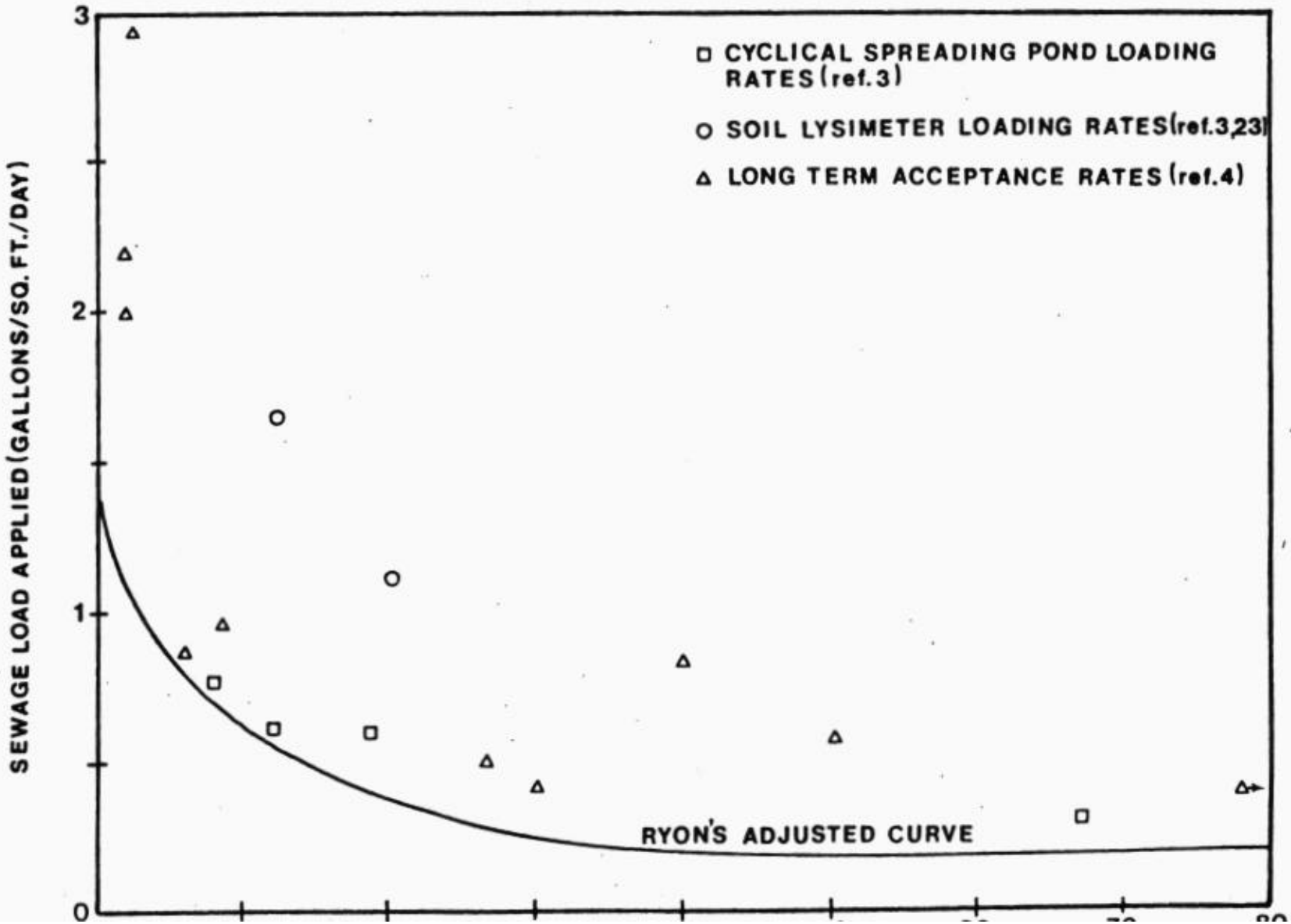
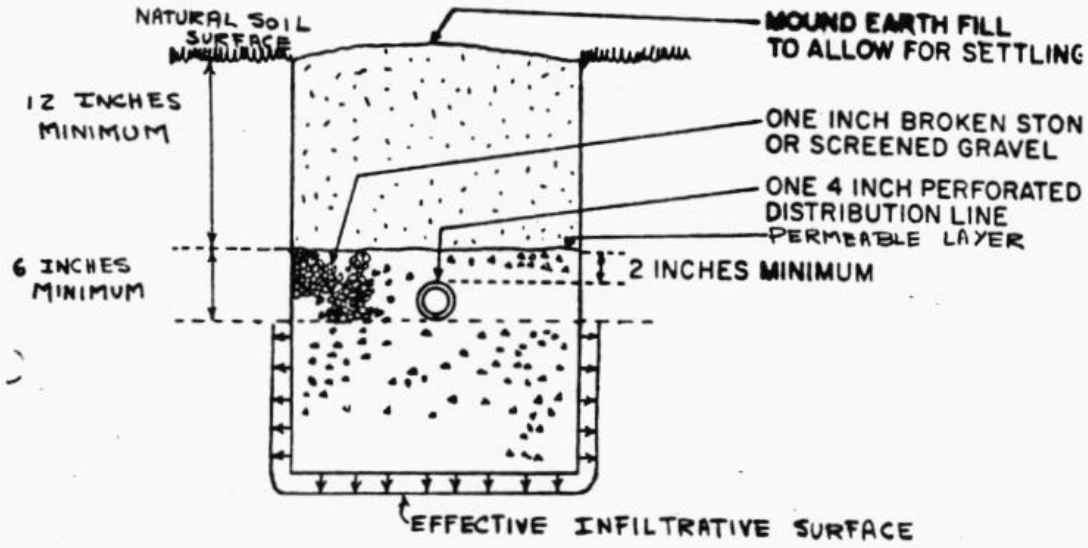

SEWAGE LOAD APPLIED (GALLONS/SQ. FT./DAY)
3
2
1
0
□ CYCLICAL SPREADING POND LOADING RATES (ref. 3)
○ SOIL LYSIMETER LOADING RATES (ref. 3,23)
△ LONG TERM ACCEPTANCE RATES (ref. 4)
RYON'S ADJUSTED CURVE

FIGURE I-6 EFFECTIVE INFILTRATIVE SURFACE



(2) Dual Systems

Most data pertinent to the relation of loading and soil clogging has been developed from studies of surface infiltration ponds. Field observations (3) have led to the conclusion that approximately equal periods of loading and resting are required for surface spreading ponds. The effect of alternate weekly periods of loading and resting of infiltration ponds applying sewage effluent (primary) to Yolo loam at Lodi, California (3) again demonstrated the fact that soil resting (i.e. draining and reestablishment of an aerobic system) will lead to recovery of a large percentage of the soil's original infiltrative capacity. Reestablished infiltrative rates averaged 7 to 10 times the observed equilibrium infiltration rates.

Experiments by McGauhey, et al (3) under anaerobic conditions (continuous soil loading) produced clogging of the type observed in the field. In his work Winneberger discovered that the black layer at the surface of the soil system was due to Ferrous Sulfide precipitated by anaerobic degradation of sulfates and did not represent, as previously assumed, the depth to which the organic matter penetrated the soil. The organic mat itself was found to be confined to a layer of .5 to 1cm as compared to the 5 to 10cm penetration of ferrous sulfide. A key finding of Winneberger's work was that when the soil system was allowed to drain, ferrous sulfide clogging was quickly overcome by the oxidation of sulfide to sulfate In the presence of atmospheric oxygen and that during subsequent loading cycles the soluble sulfate was carried away by the percolating water.

In conclusion, with regard to soil absorption systems, Winneberger et al (23) found resting to be beneficial in restoring the infiltrative capacity. Their findings indicate that partial recovery of the initial infiltrative capacity of a soil does not require drying, but that draining is necessary to reestablish the aerobic system. Full recovery capacity required days rather than hours in the resting cycle, just as observed with surface ponds.

Conclusions

Review of studies on water and sewage spreading on the surface of soils has led to a number of conclusions.

1. Any soil continuously inundated with either fresh water or with sewage effluents exhibits a typical die-away curve of percolation rates with time. (3)

2 The time-percolation rate curve reaches essentially the same steady-state magnitude regardless of whether water or sewage effluent is the percolant (3) and a reduced long term acceptance rate ensues (4).

3. Soon after a septic tank system is put into use, ponding of effluent continues to rise because of decreased Infiltration vertically and horizontally, caused, by the development of a slime layer on the soil surfaces (3).

4. Clogging of a soil is essentially a surface phenomenon and drying and resting of

a spreading ground restores much of its infiltrative capacity (3).

5. The bottom Infiltrative surface area of a soil absorption system is an effective Infiltrative surface, figure 1-6.

6.. The total wetted perimeter of the soil absorption system should be used as the effective infiltrative surface for design.

7. The flow of wastewater effluent through the soil surrounding the soil absorption system is unsaturated (12). Only during extended rainfall events will soils at the effective sidewalls of a disposal trench become saturated.

8. The expected life of the soil system is finite and that It appears this life may be extended through the use of dual systems.

Recommendations

Based on the above conclusions, it is recommended that the following criteria be used as minimum guidelines for the design of soil absorption systems.

(1) Design curve as shown in figure 1-5 (utilizing the wetted perimeter-effective Infiltrative surface figure 1-6).

(2) The ultimate ponded level of wastewater within the trench be kept 6" below top of gravel and that there be a 12" backfill above top of gravel. (i.e. the effective sidewall infiltrative surface does not include the first 6" of gravel, figure 1.6.)

(3) Dual fields be utilized and operated on a 6-12 month cycle.

I-(2) Wastewater Generation

If a soil absorption system is to have an equivalent degree of reliability as a sewerage system it must be designed for the largest potential flow. The number of individuals residing in a specific home and their personal water use habits determine the amount of wastewater generated. Since a number of different families will most probably occupy a given home it has proven most efficient to require that soil absorption systems be designed according to the number of bedrooms in the home.' A design basis of 150 gallons per day per bedroom as recommended by the Public Health Service (6), has proved satisfactory in practice.

Estimation of flow from public buildings, commercial establishments, and recreational facilities is more difficult to predict. Aids for estimating these flows are included in a number of readily available references (6, 17, 31).

Recommendation

It is recommended that a value of 150 gallons/bedroom/day be used for design of s oil absorption systems. Potential bedrooms should also be considered for design purposes.

I-(3) Drainfield Replacement Area

The probability of disposal field failures requires that provision be made for correction of such failures and/or replacement of the disposal field. An area equivalent to 100% of the initial disposal field should be set aside for this purpose. This area should be so defined and reserved for this specific purpose and all incompatible uses should be permanently prohibited.

Recommendation

Since it was recommended in the section covering absorption capacity of the soil that at a minimum a dual soil absorption system be utilized (i.e. 100% design per side) it does not appear necessary to have any reserve area.

II. CONSTRUCTION TECHNIQUES

II-(l) Construction Techniques

Careful construction is important in obtaining a satisfactory septic tank-soil absorption system. The standardization of septic tank construction requirements and the use of precast concrete septic tanks has essentially eliminated construction caused difficulties with this unit. It is the soil absorption system which is most 'susceptible to damage through poor construction practices.

Recommendation

The USPHS manual (6) provides a good discussion of construction practices and it is recommended that as a general rule they be followed. However, listed below are the four key points which should be followed in the construction of a soil absorption system.

(1)Surface smearing of the infiltrative surfaces during construction shall be corrected by scarifying the trench walls and bottom after excavation is complete.

(2)Surface runoff shall not be permitted into open trenches during construction to limit siltation of the bottom area.

(3)An effective barrier such as straw or untreated building paper shall be provided to limit the entrance of fines from the soil backfill into the gravel.

(4)Backfill shall be placed so as to maximize surface runoff and not crush drain lines.

II- (2) Construction Inspections

Adequate inspection and control of septic tank system construction Is necessary. Since the system is completely buried, post-construction inspection is meaningless. Therefore, unless the system is inspected during construction, the entire responsibility for acceptable construction practices lies with the contractor. This is unacceptable.

While it is improbable that any one system would suffer from all the construction problems as described in section II-(l), nearly every system is affected to some degree. Adequate inspection during construction will serve to eliminate the worst problems.

Recommendation

It is recommended that every system be inspected during construction by personnel approved by the Health Officer before the system is backfilled.

III. FIELD OBSERVATIONS FOR INSTALLATION

Field Observations

A number of physical site characteristics affect leach field performance. These include soil permeability, depth to groundwater and depth to an Impermeable layer. Land slope and the proximity of an absorption field to wells or surface waters also affect performance. Each of these parameters are unique to a given site and must be measured in the field and evaluated relative to other existing and proposed contiguous developments before a disposal system can be properly designed. The following discussions with respect to each of these site characteristics are intended to provide the basis for recommendation which are made at the end of each section.

III- (l) Percolation Test

In order to determine if a leach field system is appropriate for a given site, some method must be employed to quantitatively measure the percolative capacity of the soil. If conducted carefully by experienced personnel, a standard percolation test will fulfill this need.

As is indicated in figure 1-3, the infiltration rate drops off rapidly when a soil is first wetted. Measurement of the infiltration rate during this initial period can lead to significant overestimates of a soil's percolative capacity. An initial period of wetting is therefore required to bring the soil to the quasi equilibrium point which separates phase 1 and 2 infiltration.

In developing a design curve of wastewater loading versus percolation test rate; Ryon used a standardized percolation testing method very similar to the procedure recommended below. In it a hole diameter of 14 inches is used. Other diameter auger holes significantly alter percolation test results. While we strongly recommend use of a standard test hole, other sizes could be used if a correction factor were incorporated to adjust observed percolation rates to those that would be obtained from a standard 14 inch diameter hole. This adjustment factor is based upon two items 1) The volume of water contained in one vertical inch of the test hole, and 2) the average Infiltration surface area. Also the assumption is made that infiltration rates per unit area are independent of hole diameter. The following equation can then be derived:

$$\text{Adjustment Factor} \quad \frac{Ts}{T_0} = \frac{Vs}{V_0} * \frac{Ao}{As}$$

S = subscript for standard test hole
0 = subscript for test hole used (observed)
T = time for water level to drop 1 inch
V= volume of water in 1 vertical inch of the auger hole
A = average infiltrative surface area.

The adjustment factors for various diameter test holes have been calculated using the above equation and our contained in the table below.

Aside from adjusting percolation rates for various hole diameters, adjustments must also be made to percolation rates where recommendation (d) below is utilized. That is, where a pipe and gravel backfill are used to stabilize the test hole in soils that tend to collapse, the water volumes in the vertical inch must be adjusted accordingly. Adjustment factors to account for use of pipe and gravel are also included in the table below.

While at best these adjustment factors are estimates, their use is much better than making no correction for test hole diameters.

Percolation Rate Adjustment Factors

Hole diameter	Adjustment factor for. (hole diameter)	Adjustment factor for hole diameter plus pipe & gravel)
4 inches	2.5	3.61
6 inches	1.8	2.32
12 inches	1.1	l.43
14 inches	1.0	l.24

1) 3 inch O.D. 1/4" perforated pipe
2) 5 inch O.D. 1/4" perforated pipe
3) 10 inch O.D. 1/2" perforated pipe
4) 12 inch O.D. 1/2" perforated pipe

example calculation

If a 6" augured test hole measures 10 mm/inch, this corresponds to a 18 mm/inch standardized per. rate (10 x 1.8 = 18)

Recommendation

It is recommended that a standard percolation test be utilized to measure the percolative capacity of the soil. It is further recommended that the following be the standard percolation test (21).

(a) Percolation tests are to be carried out (in soils in their native state) at the proposed depth of the soil absorption field. Percolation tests may be conducted at the bottom of backhoe or other excavation holes where deeper testing is required by the Health Officer.

(b) Individual tests are to be run in 12" square or 14" diameter holes dug or bored using hand tools. If power tools are used remove any smeared soil surfaces from the sides of the hole. Although not recommended, where different diameter holes are used, the percolation rate adjustment factors noted above must be used.

(c) Remove loose material from the bottom of the hole and add 2 inches of coarse sand or fine gravel to protect the bottom from scouring.

(d) If soils tend to collapse, place a perforated pipe (at least 12 inches in diameter) in the hole and carefully pack gravel around it between the pipe and the hole wall. Percolation rate adjustment factors noted must be employed when this method is used.

(e) Presoaking will be required in all tests. The water shall be carefully placed within the hole. Water must be added to at least 8" in depth over the gravel and maintained at this level for at least 4 hours and preferably overnight. If the soil is known to have a low shrink-swell potential (clay content 15% or less) testing may proceed (section F) after the 4 hour presoak. Soils with higher shrink-swell potential are to be tested the following day but within 24 hours of presoaking as follows.

(f) Fill the hole with clean water (no chemical additives) exactly 6 inches above the soil bottom (do not consider gravel). With a float gauge or secure fixed reference and time piece, determine the time for the water to recede exactly 1" or determine the drop of water after exactly 60 minutes which ever takes less time. Refill and repeat the process until subsequent tests indicate a stabilized rate has been obtained (i.e. three consecutive rates are within 10% of each other). Time lapse between test intervals should be minimal (5-10 mm.). Test results should be reported in units of minutes per inch.

(g) At least three percolation tests shall be made in separate test holes spaced over the proposed absorption field. The average of the three tests shall be used for determining the appropriate loading rate from Figure 1-5.

III- (2) Depth to Groundwater and Setback Distances

Proper performance of on-site wastewater disposal systems depends upon the ability of the soil mantle to absorb and purify the wastewater. Two distinctly different phases of travel are involved in the drainage of septic tank leach fields: (1) the movement of percolating water down through the unsaturated zone and (2) the lateral movement of water through saturated soils below the water table. The efficiency of bacterial and viral removals in each of these phases is quite different.

Unsaturated Flow

As noted in section I-i, the presence a. relatively impermeable biological slime layer at the soil/water interface establishes unsaturated flow through the soil mantle. Infiltration becomes a function of the permeability of the slime layer, the moisture potential (suction) in the unsaturated zone, and the head of water in the trench. In order for the leach field to operate properly these interdependent variables must be in equilibrium such that water does not surface.

High water tables can affect this balance. In areas with a large depth to groundwater, the moisture potential down through the soil column stays constant at a tension corresponding to the field capacity of the soil until the capillary fringe above the water table is encountered. Below this point soil moisture increases to saturation at the water table and correspondingly moisture tensions decrease to zero.

For cases in which the capillary fringe is above the trench bottom, the reduction (n soil moisture tension results in decreased infiltration rates. This can be a problem particularly in fine grained soils where surface tension and capillary action principally control infiltration. In such instances maintenance of the capillary fringe below the trench bottom is very important. Without this provision, wastewater will rise in the trench to compensate for reduced suction. Ultimately, the system may fail with surfacing effluent.

The height of the capillary fringe is dependent on the soil particle size. For example, capillary rise ranges from a fraction of an inch in gravel, to a foot in sand, to several feet in clay. On this basis a minimum depth to groundwater of 2 to 3 feet is necessary to maintain the hydraulic capacity of the soil mantle.

From a hydraulics standpoint, the existence of a water table at the level of the leachfield in porous soils may be quite acceptable. However, the occurrence of a large volume of essentially unpurified septic tank effluent close to the surface of the ground, subject to surfacing under adverse conditions represents a public health hazard. This in itself is cause to require a minimum depth to groundwater.

Of more importance to either hydraulics or close proximity of contaminated water to the land surface is the effectiveness of bacterial & viral removals in the unsaturated zone. There are a number of factors which cause this phenomenon, all of which are related to the fact that flow only occurs in the finer pores.

(1) Flow of liquid in unsaturated soil proceeds at a much slower rate than in saturated soils. These longer detention times allow for substantial bacterial dieoff. For example, time to travel one foot in sandy loam at saturation takes about three hours whereas at field capacity eight days are required.
(2) Flow in only the smaller pore spaces enhances filtration of bacteria whereas many of the larger interstices used in saturated flow would allow organisms to pass through.
(3) Under unsaturated conditions air continues to migrate through the soil profile and thereby maintains, the oxidation processes in the zone which have been noted as being particularly important in bacterial kills. (4) Finally the large ratios of surface area to water volume occurring in the finer interstices increases bacterial and particularly viral adsorption onto soil particles.

A review of the literature shows that for most soils nearly complete bacteria and viral removal occurs in the first 3 to 5 feet of unsaturated soil. Thus, the zone of unsaturation is very important in soil minimizing the travel of pollutants.

The following graph taken from a review article by Romero (5) indicates that soils with particle sizes less

than .0.08 mm show nearly complete removals of bacteria in the first several feet of soils. Bacterial removals in soils with particle sizes between 0.08 mm and 0.25 mm are variable, with effective removals occurring in the range of 5 to 20 feet. Soils with particle sizes greater than 0.25 mm do not show effective bacterial removals. Table 111-1 summarizes these travel distances and indicates the approximate percolation test rate which corresponds to each soil particle size. Recommendations with respect to minimum depths to groundwater will be made based on this data.

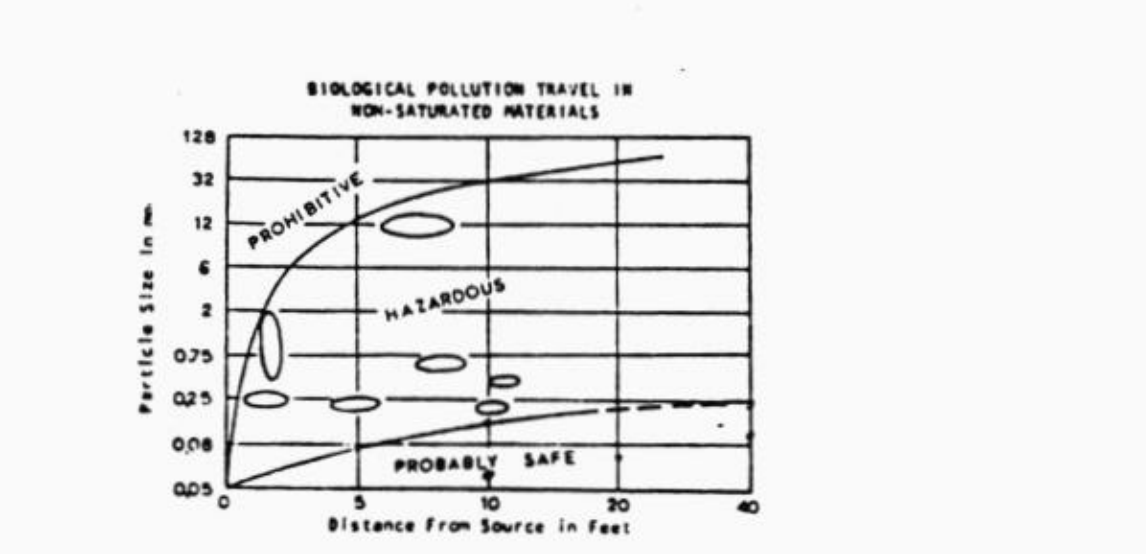


FIGURE 111-1 Biological pollution travel in nonsaturated materials (5).

Table 111-1 GRAIN SIZE AND BIOLOGICAL POLLUTION TRAVEL

Soil Particle Size (effective diameter*)	Travel Distance	Percolation Test Rate
0.08mm	less than 5 ft	5 mm/inch
0.25mm	between 5 and 20 ft	1 mm/inch

*Hazen's effective size is commonly used to characterize soils because it has been shown to be the hydraulically effective size. Hazen observed that the hydraulic resistance of unstratified sand beds was left relatively unaffected by size variation so long as the 10 percentile remained unchanged.

Saturated Flow

Once percolating wastewaters reach the groundwater table flow shifts horizontally. In the saturated phase bacterial end viral removals continue to be effective but to a considerably lesser degree than that possible

in unsaturated flow. The distance bacteria travel through the saturated zone has been shown to be proportional to both the physical/chemical characteristics of a soil (filterability) and the initial concentration of organisms (3). Travel has been shown to be limited to less than 100 feet except in areas with coarse sand and gravel or where fissures allow channeled flow. Most septic tank codes, therefore, require a 100 foot separation between leach fields and water wells.

In establishing this setback requirement it was necessary to provide for the protection of public health while at the same time being reasonably fair to the landowner who wishes to have his own source of domestic water. With such a tradeoff there does exist a risk that pathogenic organisms will travel the 100 feet to a water well. To minimize this risk, the unsaturated zone between the leach field and groundwater table is important as the numbers of organisms reaching the groundwater can be greatly reduced if not eliminated in this region. The logic being to minimize the number of organisms reaching the saturated zone and consequently the distance they will travel in lateral groundwater' flows.

Recommendations

Depth to Groundwater

It is recommended that the depth to the highest seasonal elevation of the water table, below the bottom of the leachfield trench, be as given in the following table.

Percolation Test Rate (mm/Inch)	minimum depth (ft) to seasonally high water table
greater than 5	. 3
between 1 and 5	20
less than 1	system prohibited

Setback Distances

It is suggested that the setback distances presented in Table 111-2 be used as minimum standards. It is also suggested that setback distances from foundations, large trees, property boundaries, swimming pools, etc. be consistent with USPHS Recommendations or other distances as determined by the Health Officer.

TABLE 111-2 MINIMUM SETBACK REQUIREMENTS (FEET)

	Septic Tank	Disposal Field
All wells	50	100
All streams and waterbodies*	50	100
resevoirs*	100	200***
cuts or embankments**	10	4h**
Drainage way	50	50

*Distances are as measured from the top edge of streambanks or high water of lakes and reservoirs.

**Distance in feet equals four times the vertical height of the cut or fill bank. Distance is measured from the top edge of the bank. Where an impermeable layer intersects a cut bank the setback shall be 100 feet.

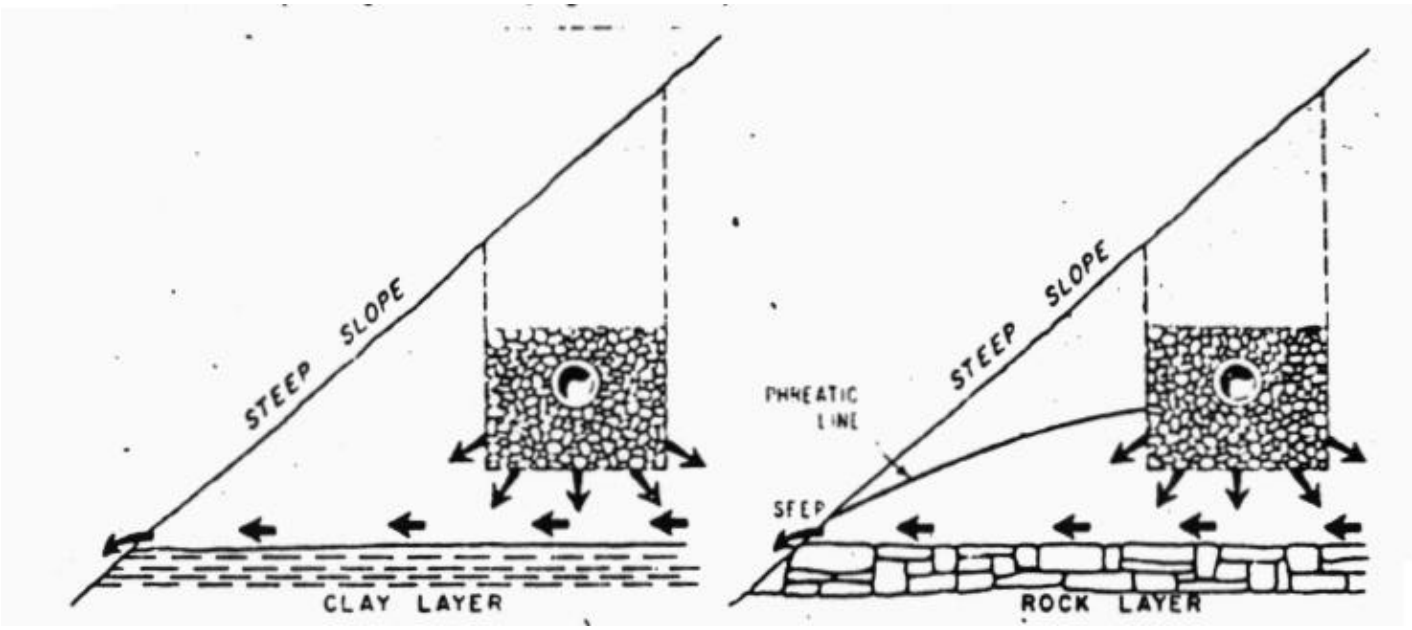
***See requirements for watershed protection.

III-(3) Depth to Impermeable Layer

At least three to five feet of good percolative soil should exist between the bottom of the disposal trench and any impermeable layer to allow for absorption, filtration and movement of the septic tank effluent in such a manner so as not to hinder the operation of the soil absorption system.

Recommendation

It is recommended that there be three to five feet of good percolative soil (1-120 mm/in) below the bottom of the disposal trench.



III- (4) Slope

Excessive slopes affect the initial construction of the soil absorption system and can create a number of serious problems in the subsequent operation and maintenance of the systems. It has been noted (14) that slopes of less than 15 - 20% usually do not create serious problems in either the construction or maintenance of the absorption field provided the soils are otherwise satisfactory. On steeper slopes, controlling the downhill flow of effluent may be a serious problem. Septic tank effluent may surface at the base of the slope creating a public health hazard. This type of situation may develop where an impervious layer exists near the surface and allows effluent to run laterally down the slope to subsequently surface (Figure 111-2)

FIGURE 111-2 A leach field on a steep slope where there is a layer of dense clay, rock, or other impervious material near the surface is unsatisfactory. The effluent will flow above the impervious layer to the hillside soil surface and run unfiltered down the slope (14).

Recommendation

It is recommended that the maximum ground slope not exceed 20%. It is also recommended that the Health Officer be allowed to grant variances on a case-by-case basis where it can be demonstrated through a technical report prepared by a State registered civil engineer or geologist, that use of a soil absorption system will not create a public health hazard, water quality problem or jeopardize contiguous properties.

It is further recommended that the recommendations of the United States Public Health Service Manual (6) (Section - Serial Distribution) be followed in arranging the leachfield trenches.

Where an impermeable layer intersects a c ut bank, effluent may surface at the intersection. To avoid public health and water quality problems, a setback of 100 feet based on bacteriological removals, should be required. This has been incorporated into the footnotes in the setback Table in section III- (2).

IV. OPERATION AND MAINTENANCE

IV- (l) Operation and Maintenance

It has been the experience of the Board that water quality and public health problems can result when soil absorption systems are used in unsuitable areas. Failure of such systems may occur due to use in unsuitable areas, inadequate design, faulty construction or to inadequate operation and maintenance. Adequate local ordinances establishing minimum standards for the control of soil absorption systems should help prevent the first cause of failure. However, relative to the second cause of failure, no matter how well the system is designed and constructed, it cannot be expected to perform satisfactorily unless adequate operation and maintenance is provided. At present, this operation and maintenance is provided by the homeowner. However, homeowner operation and maintenance Is generally inadequate since few owners are concerned with the functioning of the system so long as it is not causing problems. Since the chief source of trouble is failure to have the tank pumped regularly, it is obvious that failures resulting from inadequate operation and maintenance can be easily prevented. However, the question of who provides the adequate operation and maintenance still remains to be answered. Considering that failure of a septic tank soil absorption system creates both a public health hazard and water quality problems, or, at the very least, a public nuisance, it falls, in our opinion, within the public purview to regulate the operation of such systems to insure proper maintenance. In order for such public regulation to provide the desired results, both a qualified staff end a well thought out financing program are necessary.

Recommendation

Assurance that septic tank soil absorption systems are maintained in a satisfactory manner should be the responsibility of the Health Officer. It is recommended that the septic tank - soil absorption system be inspected at a minimum of once every two years. The recommended Inspection frequency is based on the fact that removal of accumulated sludge and scum usually occurs at intervals of from 3 to 5 years, with more frequent removal of scum. However, the variations in sludge and scum accumulation rates indicate that the pumping period should be established by periodic inspections. Therefore the biennial inspection frequency was recommended.

It is also recommended that the Health Officer be given the authority to waive the inspection frequency to not less than once every five years, on a case-by-case basis, where he/she determines that adequate operation and maintenance will be provided through other means (ie. large lots, proof of septic tank pumping etc.).

Finally, it is recommended that the Health Officer developed a program with appropriate staffing and financing to insure proper maintenance.

IV – (2) Septage Disposal

Septic tanks are emptied of excessive accumulations of sludge and scum by suction pumping through a hose into a tank truck affectionately referred to as a “honey wagon.” The pumped contents of the septic tanks has been given the name “Septage.”

Septage is a highly variable anaerobic slurry with characteristics that include large quantities of grit, grease, high offensive odor, the ability to foam, poor settling and dewatering, high solids and organic content, and quite often, an accumulation of heavy metals (32). Given these characteristics it is obvious that the improper disposal of septage can pose both public health and water quality problems. Responsible practice in communities utilizing septic tanks requires adequate planning for proper disposal of septage in order to avoid problems associated with unauthorized and unsupervised disposal.

Existing Disposal Practices

Septage (i.e. Septic tank pumpings) is classified by the California Administrative Code, Section 2521(a), as a Group 2 Waste of Municipal and Industrial Origin. Section 14020 of the California Water Code (CWC) requires all liquid waste haulers to be registered by the State Water Resources Control Board. Section 14040 of the CWC requires that the Regional Board approve sites suitable for the disposal of the different kinds of liquid wastes. Section 2500 - 25010 of the State Health and Safety Code requires the Health Officer to approve pumpers and disposal sites.

At present septage is disposed either at an approved sanitary landfill or a municipal sewage treatment facility capable of accepting such wastes. A list of the landfills within Region 2 which have been approved for accepting such wastes is shown in Table IV-l. Although these sites can accept such wastes, limits are imposed on the total quantity they may accept since septage has a high moisture content. A listing of the municipal sewage treatment facilities accepting septage is shown in Table IV-2. Although the listed facilities are accepting septage at the present time, their ability to accept septage should be checked with the Regional Water Quality Control Board or the municipality as their approval status changes from time to time.

Recommendation

Existing practices appear to be adequate. Therefore, at this time we do not recommend any changes.

TABLE IV-l
APPROVED CLASS II SANITARY LANDFILLS

Contra Costa County

(1) Acme Fill, End of Arthur Road, Martinez, CA

Marin County

(1) Borello Disposal, Pt. Reyes Station, CA
(2) Martinelli Sanitary Landfill Pt. Reyes, CA

Santa Clara County

(1) Mt. View Shoreline Park Mt. View, CA

Alameda County

(1) Eastern Alameda County - Livermore
(2) Turk Island Company - Union City

TABLE VI-2
MUNICIPAL SEWAGE TREATMENT PLANTS ACCEPTING SEPTAGE

Counties

Alameda - None

Contra Costa - Central Contra Costa S.D.

San Mateo - None

Santa Clara - San Jose/Santa Clara, Cities of

Solano - None

Sonoma - Sonoma Valley County S.D.
City of Petaluma

Marin - None

Napa - Napa S.D.
City of St. Helena

IV-(3) Correction of Soil Absorption System failures Trouble Shooting

A systematic method should be employed when trying to determine why the soil absorption system and/or the house plumbing fails to operate properly. A number of problems may be caused by the house plumbing and these should be corrected first. What follows is a list of problems and the most likely cause. Additional information will be found In the USPHS Manual (6).

Type of Problem	Most Likely Cause
Lush growth of grass and/or wet spot(s) in the leach field area.	Leach field located in poorly drained soil or in unsuitable type of soil. Field too small. Field improperly installed. Distribution box tipped so that only part of the field is working. Field partly blocked with solids from septic tank. Roots from trees or large shrubs blocking distribution line(s). Field in area that is too steep, has high water table, or is over impervious soil or ledge rock. One or more distribution lines crushed or tipped out of alignment.
Lush growth of grass and/or wet spot in area of septic tank.	Tank too small. Tank needs cleaning or servicing. Improperly designed tank. Obstruction in outlet to the distribution box needs cleaning. Leach field not operating properly (See above).
Waste Water drains slowly and/or trap. and/or Waste Water back up in drains and/or fixtures.	Obstruction in individual fixture drain from fixtures Obstruction in house sewer. Roof vent stack too small or may be partly blocked with frost in cold weather. Septic tank too small and/or needs cleaning. Leaching field not operating properly (see causes above).
Odor from sewage system in bathroom or laundry.	Roof vent stack too small or partly blocked with frost in cold weather. Seal on the toilet flange cracked or broken. Loss of water In the fixture traps. Roof vent stack too low or in a positions that at certain times the wind can blow down the stack.

As is evident from the above discussion on trouble shooting there are a number of different types of problems or failures. Along with this, there are a number of different causes of the problems. The causes can be broken down into two distinct classes:

(1) Failure due to improper design and or physical site characteristics; and

(2) Failure due to improper construction, maintenance and or operation.

Adequate local ordinances should help prevent the first cause of failure and periodic inspections by local agencies or establishment of maintenance districts should help prevent the second cause.

However, application of this approach to areas with existing soil absorption systems is complicated. For example, systems may have been installed in areas of poor physical site characteristics due to the lack of a proper local ordinance and the systems are now failing. In situations such as this, the most likely solution would be sewering the area. However, costs for such an alternative may prove prohibitive in which case other comparable less costly alternatives should be considered.

Recommendations

The following question usually arises in searching for a comparable less costly alternative: Can alternatives such as evapo-transpiration, mounding, composting, incinerating, and gray-water systems be used to eliminate system failures.

In answer to the above question, it is recommended, depending on the cause of the failure, that such alternative systems should be considered in searching for a solution to septic tank - soil absorption system failure. The final approval to use such systems should, however, be based on the following conditions:

(1) That the Health Officer approve the system pursuant to criteria approved by the Regional Board Executive Officer;

(2) That the Health Officer inform the Regional Board Executive Officer of the proposed system correction; and

(3) That a public entity assume responsibility for inspecting monitoring and enforcing the maintenance of the system.

V. CUMULATIVE IMPACTS & ALTERNATIVE SYSTEMS

V- (l) Mounding of the Groundwater Table

The natural drainage capacity of the underlying geologic material depends on the soil percolative capacity, the depth to the groundwater table (saturated soil), the depth to an impermeable layer, and the hydraulic gradient. The application of septic tank effluent to the soil system will increase the excess water percolating to the groundwater table and a groundwater mound will develop, as figure V-i shows. For example, a given site where the percolative capacity may seen reasonable may have a low gradient and a shallow groundwater table and the groundwater mound may reach the surface. Therefore, the buildup of the groundwater mound in relation to the soil surface should be known.

There are two general cases where the concern of surfacing effluent arises.

(1) Areas with a low density of soil absorption systems; and
(2) Area with a high density of soil absorption systems.

Low Density Areas

In areas where the density of soil absorption systems is relatively low (le. for all intents we are considering a single soil absorption system) the question of surfacing effluent is addressed through the use of trench spacing requirements, depth to groundwater and depth to impermeable layer. From both a treatment & hydraulic point of view we see the need for a minimum depth to groundwater (section 111-2) and a minimum depth to an impermeable layer (section 111-3). The final controlling factor is trench spacing. From a theoretical point of view (3), in an Idealized system, the infiltrative capacity would equal the percolative capacity of the soil and water entering the system on a vertical plane would leave the system through a horizontal plane, as figure V-2 shows. From a practical point of view, trench spacing depends on the ability of the soil column between trenches to remain stable during construction. In septic tank system practice this spacing has traditionally been 6 ft. on center. This fact can be shown by reviewing existing county practices, section VI.

Recommendation

It is recommended that the minimum trench spacing be calculated as twice the effective depth of the sidewall Infiltrative surface, as figure V.2 shows. This recommendation is also in general agreement with the USPHS recommendations.

FIGURE V-1 GROUNDWATER MOUND

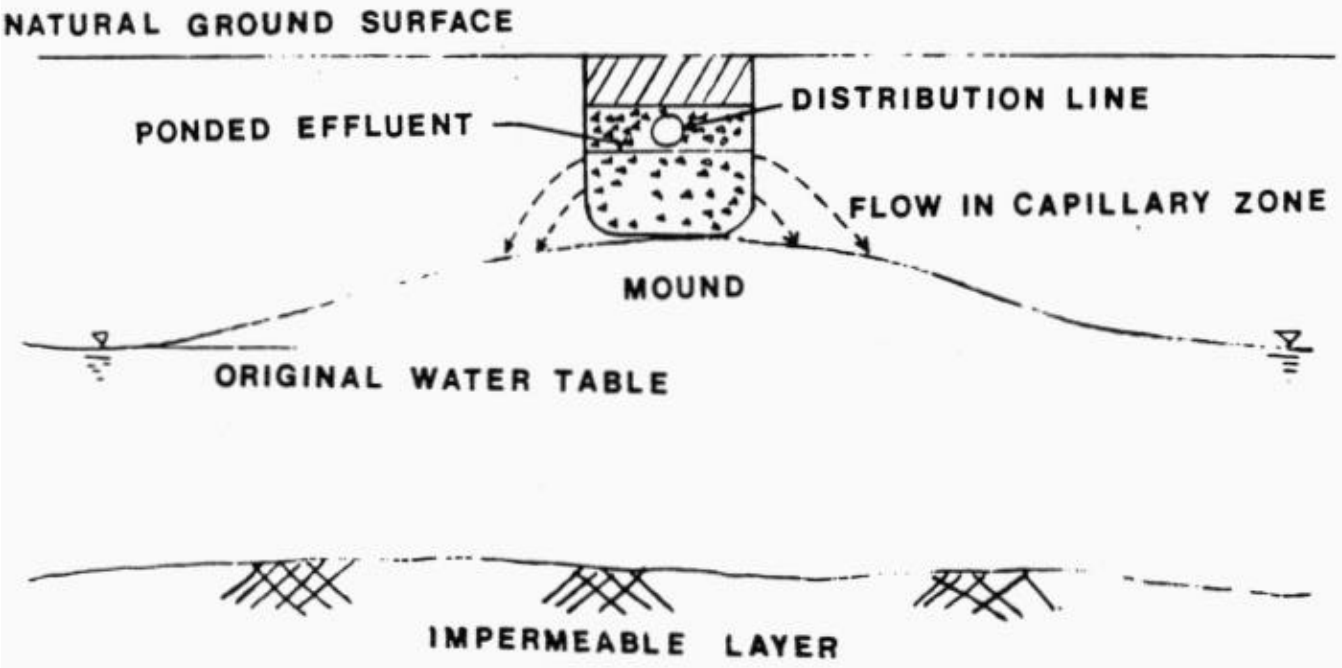
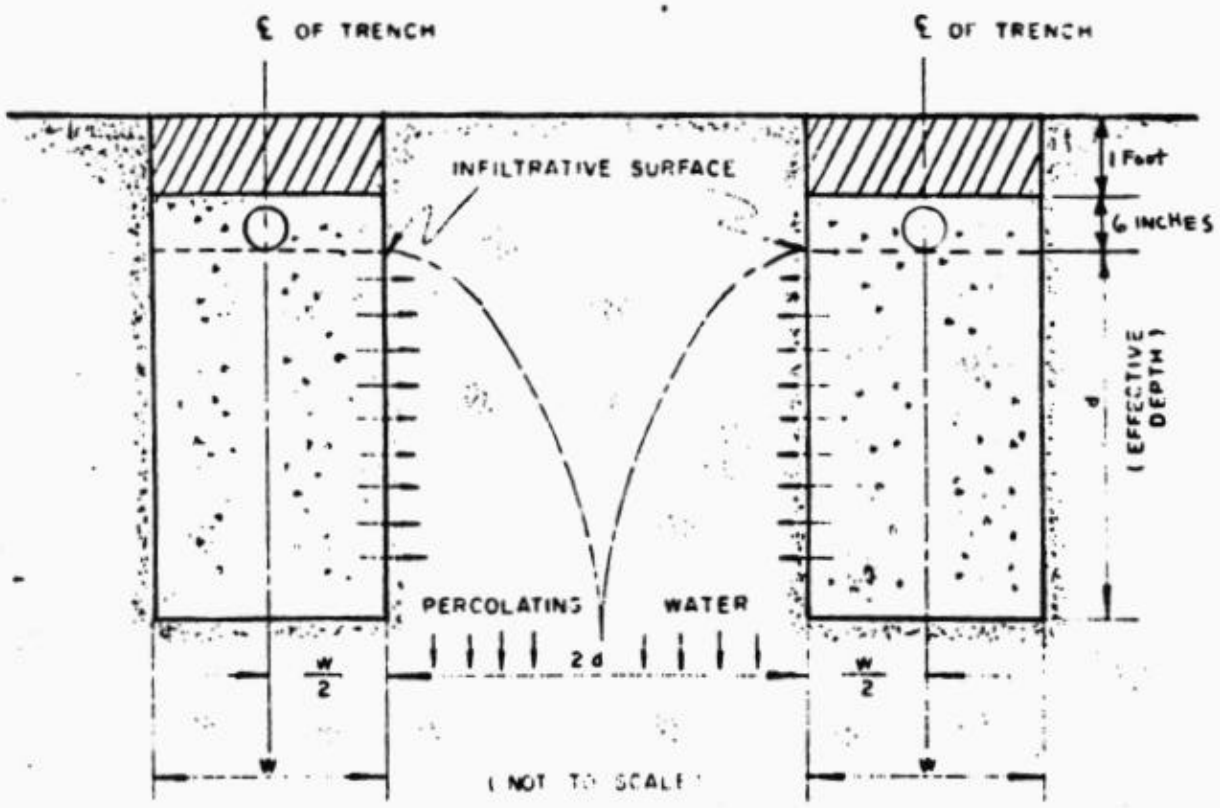


FIGURE V-2 SPACING OF TRENCHES



High Density Areas

In areas where the ultimate density of soil absorption systems is such that adverse impacts on water quality and/or public health might occur the need for an assessment of the cumulative impacts of these discharges arises. An approach to identifying candidate assessment areas as well as an approach for conducting these assessments is presented in Appendix D. The requirements of trench spacing, depth to groundwater and depth to an impermeable layer still apply.

V- (2) Lot Size Requirements

As shown by the comparison of county codes made in section VI all but one county requires a minimum lot size or presents a relationship between landslope and minimum lot size. This type of approach may be appropriate from the stand point of zoning or residential questions but such an approach is not appropriate from the stand point of determining allowable ultimate densities of soil absorption systems. A more suitable approach is to evaluate the affect or cumulative impacts of soil absorption systems on local groundwater, surface water resources and on the publics' health and thereby establish an allowable upper limit on the number of systems. This type of approach was suggested in section V-i covering mounding of the groundwater table. Further details are presented in Appendix B.

V-(3) Watershed Protection

Where septic tank systems are proposed for these lands, the potential hazard to a public water supply justifies the adoption of more stringent design criteria. Although the factors involved are highly variable and not amenable to precise definition, it is possible to establish criteria which are sufficiently conservative to justify their use in this situation (13). Of importance is the assurance that septic tank effluent will travel a sufficient distance through the soil mantel, over a long time, in order to eliminate any significant danger of reservoir contamination, that the capacity of the soil system is not overburdened by the number of soil absorption systems and that a public agency is responsible for the operation and maintenance of all the systems.

Assurance that the first concern is adequately controlled is covered by the recommendations of section 111-2 "Depth to Groundwater and Setback Distances."

Assurance that the second concern is adequately controlled can be given by conducting a cumulative impact assessment.

Recommendation

It is recommended that the cumulative impact assessment approach (Appendix B) be used in watershed areas which are susceptible to development proposing to utilize soil absorption systems.

V- (4) Cesspools and Drainage Wells

Cesspools are covered open-joint walled pits dug into the soil. Cesspools receive raw sewage from which solids settle to the bottom and undergo anaerobic decomposition. The liquid portion of the sewage seeps out through the walls of the pit. These pits require deep porous soils to provide sufficient absorption area. However, deep soils with deeper water tables or impermeable layers are rare occurrences.

The use of wells for the purpose of disposing of effluent from septic tanks or for disposing of surface. runoff from streets or highways was disapproved by the Regional Board in its Resolution No. 81 (Appendix C).

Recommendation

It is recommended that cesspools be prohibited since they provide inadequate treatment and questionable disposal of wastewater.

V- (5) Holding Tanks

Holding tanks are sealed tanks to which sewage is piped and retained. A truck equipped with a pump empties the holding tank and hauls the contents to a treatment plant or a land disposal site.

The holding tank concept originated as a temporary means of sewage disposal pending the Installation of public sewers, however, the concept has been considered for allowing development to take place in areas unsuitable for septic tank leachfield systems.

Holding tanks require regular service and maintenance to prevent their malfunction and overflow. The yearly cost for maintenance alone for a family of four ranges from $1,200 to 2,000. If a holding tank is used as a temporary facility and the sewerage facilities are not implemented then the homeowner is faced with and extremely high cost for waste disposal.

Recommendation

In view of the potential problems that could arise from the use of such systems It is recommended that holding tanks be prohibited from use.

Exceptions to this prohibition may be granted by the Health Officer:

(1) If it is necessary to use a holding tank in abating a. nuisance and health hazard.

(2) If an area is within a sewering agency, sewers are under or proposed for early construction, there is capacity at the wastewater treatment plant, the sewering agency assumes responsibility for maintenance of the tank and contracts have been let.

Where exceptions are granted, the Health Officer must also approve the tank pumper.

V- (6) Alternative Systems

Since large portions of the Bay Area have soils with severe soil limitations and therefore are not suitable for the Installation of conventional subsurface sewage disposal systems, a number of alternative systems are being proposed to allow for development. For a discussion of the various alternative systems being proposed one should refer to the State Water Resources Guidance Manual for Rural Areas (26). Whether or not any of these systems will be acceptable for a given application will depend upon the specific system proposal and specific soil and geohydrological characteristics of the proposed site. It should be kept in mind, however, that there are many sites where no individual sewage disposal system may be acceptable.

Recommendation

It is recommended that the Regional Board allow for the use of a1ternative systems under the

following program:

(1) The Regional Board Executive Officer may authorize the Health Officer to approve alternative systems when all of the following conditions are met:

(a) Where the Health Officer has approved the system pursuant to criteria approved by the Regional Board Executive Officer;

(b) Where the Health Officer has informed the Regional Board Executive Officer of the proposal to use the alternative system and the finding made in (a) above; and

(c) Where a public entity assumes responsibility for the inspection, monitoring and enforcing the maintenance of the system through:

1. Provision of the commitment and the necessary legal powers to inspect, monitor, and when necessary to abate/repair the system; and

2. Provision of a program for funding to accomplish 1 above.

VI COMPARISON WITH COUNTY CODES

VI- (1) Comparison of County Codes with Staff Recommendations

Table Vii presents a comparison of existing county code requirements with those recommended by the staff as well as those recommended by the United States Public Health Service. The following conclusions of the key requirement elements of concern can be drawn from the comparison made in Table Vii. There are also a number of minor differences in some of the other requirement elements. However, discussion of these has not been included since it is expected they can be easily handled.

As pointed out in the introduction, the recommended guidelines represent minimum criteria generally acceptable for the use of Individual waste disposal systems. Adherence to these guidelines does not guarantee acceptable operation of a system and the guidelines do not preclude a local agency from adopting and enforcing more stringent regulations.

Percolation Test

None of the procedures are standardized. Changes are necessary in all existing codes to standardize the test.

Drainfield Requirements

One key point evident from review of Table VI-l Is the fact that four out of eight counties either require or strongly recommend the use of a dual system (alternating fields).

Table VI-2 has been developed to provide a comparison between the staff recommendations and existing practices within the counties of the Bay Area. In order to compare the design requirements on a fairly uniform basis a three bedroom home in a soil with a percolation rate of 10 mm/In was utilized. The different trench design requirements for each county make exact comparisons difficult, but, relative comparisons between the different code requirements can adequately be shown.

Table VI-2 indicates that when reviewing County codes on the basis of Total Square Footage of Infiltrative Area required (this includes reserve area), all county codes require equal or greater square footage staff recommendations. However, following the staff recommendations for use of dual fields and design based on both bottom and side infiltrative areas, may require a number of changes In existing codes.

Inspection and Maintenance

As shown within Table VII, only Mann and Solano counties require Inspection of the system on a continual basis. We consider the lack of such an inspection program a major weakness of the county codes. The staff recommendation for inspection on a biennial basis requires modification of a majority of the Bay Area county codes. However, without such a program health hazards, nuisance conditions and water quality problems will continue to prevail and hamper the suitable use of Individual wastewater treatment and disposal systems.

COMPARISON OF SEPTIC TANK SYSTEM REQUIREMENTS IN THE BAY AREA,
STAFF RECOMMENDATIONS AND USPHS RECOMMENDATIONS

REQUIREMENT ELEMENTS / AGENCIES	REGIONAL BOARD MINIMUM GUIDELINES	ALAMEDA COUNTY	CONTRA COSTA CO. (1)	MARIN COUNTY	NAPA COUNTY	SAN MATEO COUNTY	SANTA CLARA CO.	SOLANO COUNTY	SONOMA COUNTY (1)
• PERCOLATION TEST REQ'S									
Hole width, in inches	12"square 14" dia.	at least 12, in dia.	4 to 12	at least 6	6, in dia. in dia.	1 sq. ft. 12, in dia	12 in dia	4 to 12	6 to 8
Digging Method	dig or bore, scratch surface	scratch surface	scratch surface	6" auger, scratch surface	dig or bore scratch surface	dig or bore scratch surface	- -	dig or bore scratch surface	dig or bore scratch surface
Number of test holes	3	5/parcel (15'-40' apart)	1/parcel in subdiv. 1+ parcel on bldg.	3 at two different locations	1/parcel in subdiv., 6/parcel on bldg.	2/parcel	- -	3/parcel	3 parcel minimum
Measurement tool	Float gauge & time piece	tape to 1/8" rechecked	-	yard stick or equiv.	stick	stick	-	stick	metal tape
Presoaking time	<15% Clay-no presoaking ≥15%-overnight	at least 24 hrs. continuously	4 hrs. to overnight	4 hrs. to 24 hrs.	4 hrs. to overnight	4 hrs. to overnight	overnight	4 hrs. to overnight	day before
Depth of hole	depends on depth of absorb. system	3½ - 5 ft.	to bottom of absorb. device	4 ft.	depends on depth of absorb field	5 ft. min.	5 Ft. Min.	depends on depth of absorb. dev	12" below pipe (min.) varies w/ slope
Presoaking water depth	8 inches over gravel	-	-	12 inches	12 in. over over gravel minimum	12 in. over gravel minimum	10 in from top	12 in. over gravel minimum	simulate operating conditions
Water level maintained	6 in. over bottom	6-12 in. over gravel	6 in. over gravel	12" over 2" gravel	approx. 6" over gravel	6" over 2" gravel	-	approx. 6" over gravel	3-12" over over gravel
• SOIL PROFILE HOLES (WAIVER)	(NO)	-	-	(YES)	-	-	-	-	-
Number of test holes	1/system	at least 1	-	1 (min.)	at least 1	1/parcel	-	-	at least 1
General Requirements	-	-	mat'l separated & inspected by health dept	required on discretion of health dept	dug by backhoe	-	-	-	-
Depth of Holes		8 feet	-	8 feet	8 ft. min.	132 inches	-	-	8 ft. min.
Information Collected	depth of hard pan & ground water	depth of ground water	-	-	-	depth of hard pan & ground water	-	-	depth of ground water & impervious rock
• MINIMUM SETBACK REQ'S. (Waivers)	(NO)			(YES)	(YES)	-	-	-	-
Septic tanks to:									
Buildings	USPHS	10	-	5	5	5	-	0	5
Adjoining Property	USPHS	10	5	5	5 (usually)	10	10	10	8
Wells	50 -	50	50	100	100	50	-	100-public 50-private	100
Natural water	All water bodies 50-Reservoirs-to	50	50	25	25 (200 if watershed)			50-lake 50-flowing	100-lake 100-flowing

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	MENDOCINO	Alameda	CCC	Marin	Napa	San Mateo	Santa Clara	Solano	Sonoma	HEW Manual
	All Water Courses									
Natural water courses	-50; Reservoirs-100	50	50	25	watershed)			50-flowing 25-ephemeral	100-flowing 50-ephemeral	50
Cuts or embankments	10	See other	50	25	5 (200 if watershed)	20	-	10	-	50
Swimming pools	-	10 (rev.)	-	10	5	25	-	10	-	-
Water Lines	USPHS	5	10	10	5	-	-	10	5	10-varies
Walks and drives	-	-	5	5	10	can be under occasionally	-	0	-	-
Foundations	USPHS	-	10	-	5	5	5	-	-	5
Large trees	-	10	10	-	-	-	-	-	10	-
Other	-	5-disposal	-	-	5-disposal	-	-	0-easement	5-disposal field & distrib. box	-
Drainfields to										
Buildings	USPHS	10	-	10 (varies)	10 (varies)	5	-	0	8	20
Adjoining property	USPHS	10	5	5	10	10	10	25	5	5
Wells	100	100	50	100	100	75	100 (usually	100	100	100(min)
Natural water courses	All water bodies -100 Reservoirs-200	50	50	100	100 (200 if watershed)	20	100 (usually	200-lake 100-flowing 50-ephemeral	100-lake 100-flowing 50-ephemeral	50
Cuts or embankments	4 h	25 (rev.)	50	75	25 (200 if watershed)	20	50 (usually)	4xht. of cut		-
Swimming pools	-	25 (rev.)	-	25	25	20	-	-	-	-
Water lines	USPHS	10 (rev.)	10	10	10	-	-	25	5	25
Walks and drives	-	-	5	5	10	0	0	0	-	-
Foundations	USPHS	-	10	-	10	5	10	-	-	20
Large trees	USPHS	+4 (varies)	10	-	-	-	-	-	10	if within 10' 12" of gravel under tile
Other	-	5-distribution box, 4-disp. field, 5-seep. pit	5-septic tank	-	8-disposal field	-	-	0-easement	6-distribution box 15-Fill areas	-
• DRAINFIELD REQ'S (Waiver)	(no)	-	-	(YES)	(YES)	-	-	-	-	-
Max Trench Length (feet)	USPHS	100 (rev.)	-	-	Min. 50 100	-	-	-	-	100
Minimum percolation rate in inches/hour	.5	1.0	1.5 to 2.0 (varies with lot size)	0.5	1.0	0.75	-	1.0	1.0	1.0
Trench width, in inches	-	18-minimum 36-maximum	18	18	12-minimum	18-minimum 24-maximum	24-minimum	12-minimum 36-maximum	24-standard	12-36
Minimum spacing between trenches, in feet	2 times effective depth	4 + 2/foot below bottom of drainline 6' to center	10	-	6 or 2 times depth	2 times the depth 15 between trenches	8-level 12-hillside	6	8-typical center to center	6 between excavations if serial dist.
Drain rock	USPHS	rock	stone, slag or gravel	rock	stone, slag or gravel	rock or gravel	rock	rock	rock	rock/gravel
Drain rock mat'l size in(in)	USPHS	3/4-2 1/2	1-1 1/2	3/4-1 1/2	3/4-1 1/2	3/4-1 1/2	1-2	-	3/4-2 1/2	1-2½
Barrier needed (pervious)	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Soil backfill depth, in(in)	12	12-minimum 18-preferred	18	12	12-18	12-18	-	12-minimum	18-recommend	12, if serial
Min. depth of soil in the drainfield area, in feet * varies with slope	4* below trench	8-below surface	-	4-below surface	3-below trench	3-below trench	-	5-below trench (varies)	1-below trench (varies)	4-below trench
	-	no	-	no	no	no	-	no	no	no
Min. depth of ground water in the drainfield area, in feet	3-highest level below trench	5 below trench 8-below surface	4-highest level; below surface	3-highest levels below trench	3-highest levels below	3-highest levels below tiles	-	5 mean level below surface (varies)	1 highest level; below trench	4 - max. height below trench

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	trench	surface				tiles		(varies)		
* varies	varies with particle size	-	-	-	-	-	-	no	yes	
Drainfield replacement area required, in % of initial	0	100 (installed)	100	100	100	100	100	100	100	100 usually
Description of infiltrative surface requirements	wetted perimeter 95-682 sq. ft./ bedroom	70-330 sq. ft. of bottom area, bedroom min 200	60-180 linear ft. trench per bedroom	600 sq. ft. per capita (or 112 lin. ft./bedrm. if 2'8" deep)	190-600 sq. ft./bedrm. 225 ft.^{2} per system min.	range from 1960-5040 sq.ft.(3 bedrooms)	decision of health dept. min. 125 ft. of trench	8000-1,000 sq.ft. of usable disposable area	60-165 lin. ft./bedrm. if 3' deep with 12" gravel below pipe	trench bottom area 70-330 sq. ft. per bedroom
Dosing/Alternating (time, mo.)	yes (6-12)	-/yes (6-12)		-/yes(3)		-/yes			-/yes	
Max. percent slope, Field in %	20-waiver	25	20	Allow for reduction	See lot size requirements	50 max 20 w/o rept.	-	25	20% need Geol.rept.	50
• SEPTIC TANK REQ'S	USPHS									
Minimum size		1015 gal.	750 gal.	1200 gal.	1200 gal.	1500 gal.	700 gal.	750 gal.	810 gal.	750 gal.
Depends on bedrooms		yes	yes	yes	yes	yes	-	yes	yes	yes
Material specified		redwood, rein. concrete block or concrete w/bituminous coat.; fiberglass	not corrosive	concrete or synthetic; no wood	if concrete must have bituminous coating	concrete with bituminous coating	concrete or redwood	water tight and not subject to excessive corrosion	concrete	corrosion resistant and water tight; may be concrete if plaster coated
Material specified										
Compartmentation Rec.				Yes	Yes	Yes	Yes			Yes
• DISTRIBUTION SYSTEM REQUIREMENTS										
Box required	no	yes	not required	-	no	no	no	no	yes	no
Pipe size to field	-	4" min dia	4" min dia	4" min dia		4" min dia	-	-	-	-
Pipe material to field	-	vitrified clay, cast iron or plastic	not corrosive	-	-	-	-	-	-	-
Pipe size in field	-	4"	4" min dia	4" min dia	approx.4-5"	4" min dia	4"min dia	approx.4-5"	3-4" dia.	4"
Pipe placement in field	-	level, 24" from bottom; 2" from top	in filter	2" from top	2" from top; 12" from bottom	2" rock above	12" from top; 6" from bottom	2" from top; 6" from bottom	2" from top	6" from bottom; 2" from top
Serial distribution	USPHS	-	on both slopes and flat areas	on both slopes and flat areas	yes	recommended	typical hillside	recommended	yes	both slopes and flat areas
Parallel distribution	-	-	prohibited	prohibited	prohibited	-	typical flat	-	typical	-
• LOT SIZE REQUIRED (WAIVER)	-	-		(Yes)	-	-	-	-	-	-
Minimum	-	40,000 sq.ft.	10,000 sq.ft	1 acre	1 acre	varies	varies	5 acres	-	-
Size dependent on	depends on cumulative impact assessments	-	increases to 1 acre if on well	design information and slope 5%=1 acre 5-10%=1.25 10-20%=1.5	1 acre if to sewer in 5 years; 1-20%=1 ac. 2-050%=1-5 50%=5 ac.	geology, percolation rate, bldg. location, and available space	-	2½ acres if on public water supply	-	-
• OTHER DESIGN AND CONSTRUCTION REQ'S	-	minimum 15' horizontal distance to surface on slopes, no cuts or fills >18"	no slides, no 10-year floods, field almost flat, no hardpan	no springs, no fissures, no unstable slopes, no public hazard, dual fields	refers to 1976 UBC	no flooding, flat field, dual fields, requires a geotechnical report on slope	-	-	stable slopes, abandonment requirements wet weather percolation tests,	recommends soils and geologic information be used in determining min. stan-

			distance to surface on slopes, no cuts or fills >18", stable material, & uses 1973 UBC	floors, field almost flat, no hardpan	no unstable slopes, no public hazard, dual fields		dual fields, requires a geotechnical report on slope stability, no fields in filled land	-	-	abandonment requirements wet weather percolation tests, allows curtain drains	grologic information be used in determining min. standards; abandonment standards
●	INSPECTION AND MAINTENANCE	inspection once during construction; & every two years	inspected: after installed & after connected	inspected: after excavated after installed (before backfilled)	inspected: after completion & every 2 yrs for systems installed since 1971	inspection depends on systems; varies with the individual lot	inspected: on day of excavation	-	inspected: after completed & every 5 yrs unless lot is larger than 10 ac.	inspected: after construction is complete	inspected: after constructed but before soil backfilled

(1) being revised
(2) adapted from reference (16)

DESIGN COMPARISON OF INFILTRATIVE SURFACE

TABLE VI-?

Agency / Design (1)	ALAMEDA*	SOLANO	NAPA	SAN MATEO	REGIONAL BOARD STAFF RECOMMENDATIONS	CONTRA COSTA	MARIN STANDARD	MARIN DUAL	SANTA CLARA
Ft^2 required extra available Total (initial installation)	496 (bottom) 825 (side) 1321 (single field)	(2)	750 (side) 84-250 (bottom) 834-1000 (single field)	1820 (side) 210 (bottom) 2030 (Dual system) 1015/side	703 (bottom & side) 201 (reserve side) 904 /side 2X904=1808 (Dual System)	990 (bottom) 2129 (side) 3029 (single field)	1800 (side) 1620 (bottom) 3420	1350 (side) 608 (bottom) 1958 979/side	1000 (bottom) 1665 (side) 2665
Total Ft^2 (including reserve Area)	2X1321=2642	(2)	2(834-1000)= 1668-2000	2X2030= 4060	1808 (4)	2X3029= 6058	2X3420= 6840	2X1958= 3916	2X2665= 5330

Agency / Design (1)	SONOMA STANDARD	SONOMA DUAL	RECOMMENDED REVISIONS TO SONOMA CODE
Ft^2 required extra available Total (initial installation)	360 540 900	540 810 1350 675/side	(350/side) 2 = 750 bottom plus reserve side = 700 1450 (Dual System) 725/side
Total Ft^2 (including reserve area)	2X900= 1800	2X1350= 2700	2X1450=2900

(1) Assumptions:

- 3 bedroom home
- Field percolation rate of 10/min/in
- 150 gallons/bedroom/day of wastewater
- 12" backfill

(2) Discretion of Health Officer

(3) Based on 400 gallons/home

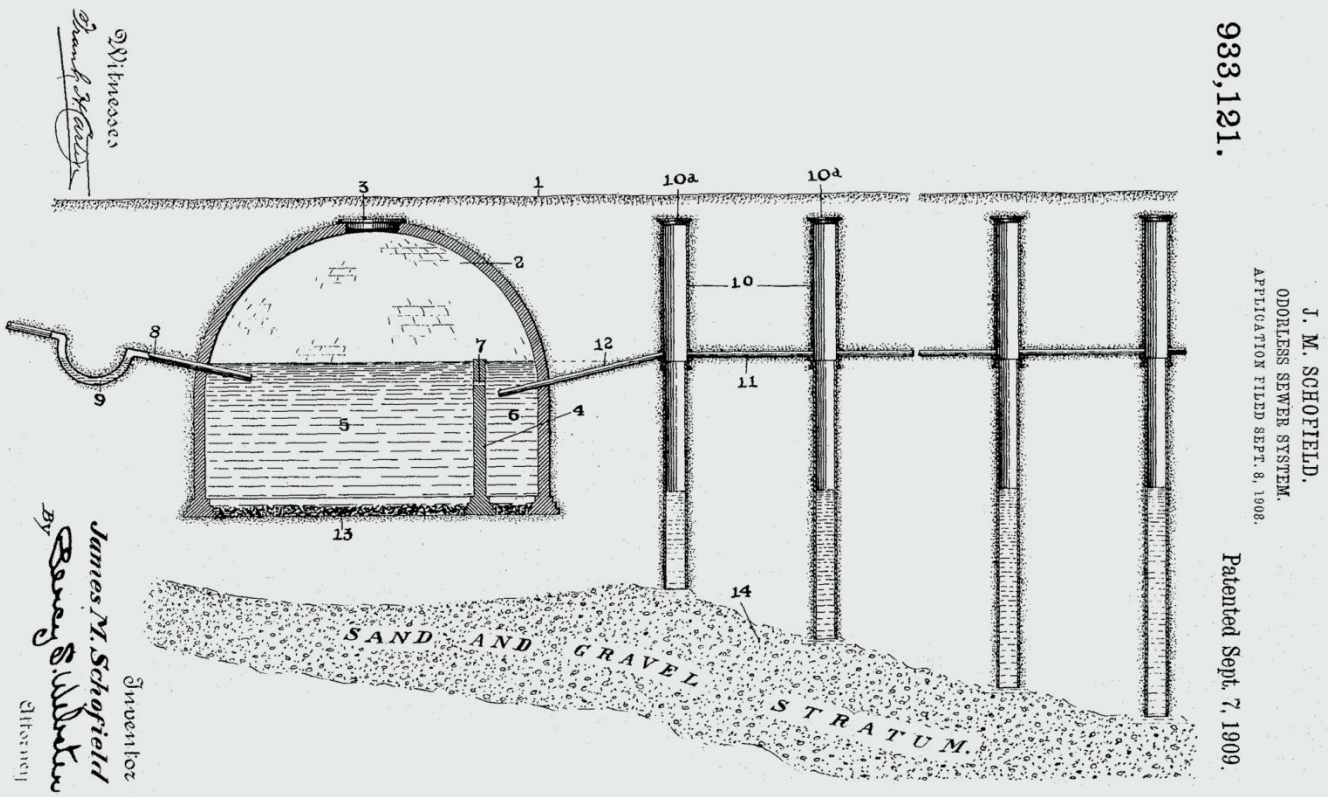
(4) Reserve area is not required where a dual system is used.

Example Calculation: Alameda*

- Code requires design using bottom area, therefore, sidewall area can be considered extra available infiltrative area. This allows for a relative comparison to be made between Regional Board staff recommendations which are based on both sidewall and bottom area.
- Alameda Code requires 165 sq. ft. bottom area per bedroom, therefore, 3 bedrooms X 165 equals 495 sq. ft. bottom area.
- Alameda Code allows the trench width to be 36", therefore, there is 3 sq. ft./ft. of trench of bottom area available which equals (496/3) 165 ft. of trench.
- Alameda code requires 30" of drain rock, therefore, there is 5 sq. ft./ft. of trench of sidewall available or (5 X 165) 825 sq. ft. of sidewall infiltrative surface.

Appendix D:

Water Quality Control Policy for Siting, Design, Operation, and Maintenance of Onsite Wastewater Treatment Systems (OWTS Policy)



OWTS POLICY

Water Quality Control Policy for Siting, Design, Operation, and Maintenance of Onsite Wastewater Treatment Systems

June 19, 2012

CALIFORNIA
Water Boards

STATE WATER RESOURCES CONTROL BOARD

REGIONAL WATER QUALITY CONTROL BOARDS

State of California
Edmund G. Brown Jr., Governor

California Environmental Protection Agency
Matthew Rodriquez, Secretary

State Water Resources Control Board
http://www.waterboards.ca.gov

Charles R. Hoppin, Chair
Frances Spivy-Weber, Vice Chair
Tam M. Doduc, Member
Steven Moore, Member

Thomas Howard, Executive Director
Jonathan Bishop, Chief Deputy Director
Caren Trgovcich, Chief Deputy Director

Adopted by the State Water Resources Control Board on June 19, 2012
Approved by the Office of Administrative Law on November 13, 2012
Effective Date of the Policy: May 13, 2013

Preamble – Purpose and Scope – Structure of the Policy

Preamble

Onsite wastewater treatment systems (OWTS) are useful and necessary structures that allow habitation at locations that are removed from centralized wastewater treatment systems. When properly sited, designed, operated, and maintained, OWTS treat domestic wastewater to reduce its polluting impact on the environment and most importantly protect public health. Estimates for the number of installations of OWTS in California at the time of this Policy are that more than 1.2 million systems are installed and operating. The vast majority of these are functioning in a satisfactory manner and meeting their intended purpose.

However there have been occasions in California where OWTS for a varied list of reasons have not satisfactorily protected either water quality or public health. Some instances of these failures are related to the OWTS not being able to adequately treat and dispose of waste as a result of poor design or improper site conditions. Others have occurred where the systems are operating as designed but their densities are such that the combined effluent resulting from multiple systems is more than can be assimilated into the environment. From these failures we must learn how to improve our usage of OWTS and prevent such failures from happening again.

As California's population continues to grow, and we see both increased rural housing densities and the building of residences and other structures in more varied terrain than we ever have before, we increase the risks of causing environmental damage and creating public health risks from the use of OWTS. What may have been effective in the past may not continue to be as conditions and circumstances surrounding particular locations change. So necessarily more scrutiny of our installation of OWTS is demanded of all those involved, while maintaining an appropriate balance of only the necessary requirements so that the use of OWTS remains viable.

Purpose and Scope of the Policy

The purpose of this Policy is to allow the continued use of OWTS, while protecting water quality and public health. This Policy recognizes that responsible local agencies can provide the most effective means to manage OWTS on a routine basis. Therefore as an important element, it is the intent of this policy to efficiently utilize and improve upon where necessary existing local programs through coordination between the State and local agencies. To accomplish this purpose, this Policy establishes a statewide, risk-based, tiered approach for the regulation and management of OWTS installations and replacements and sets the level of performance and protection expected from OWTS. In particular, the Policy requires actions for water bodies specifically identified as part this Policy where OWTS contribute to water quality degradation that adversely affect beneficial uses.

This Policy only authorizes subsurface disposal of domestic strength, and in limited instances high strength, wastewater and establishes minimum requirements for the permitting, monitoring, and operation of OWTS for protecting beneficial uses of waters

of the State and preventing or correcting conditions of pollution and nuisance. And finally, this Policy also conditionally waives the requirement for owners of OWTS to apply for and receive Waste Discharge Requirements in order to operate their systems when they meet the conditions set forth in the Policy. Nothing in this Policy supersedes or requires modification of Total Maximum Daily Loads or Basin Plan prohibitions of discharges from OWTS.

This Policy also applies to OWTS on federal, state, and Tribal lands to the extent authorized by law or agreement.

Structure of the Policy

This Policy is structured into ten major parts:

Definitions
Definitions for all the major terms used in this Policy are provided within this part and wherever used in the Policy the definition given here overrides any other possible definition.
[Section 1]

Responsibilities and Duties
Implementation of this Policy involves individual OWTS owners; local agencies, be they counties, cities, or any other subdivision of state government with permitting powers over OWTS; Regional Water Quality Control Boards; and the State Water Resources Control Board.
[Sections 2, 3, 4, and 5]

Tier 0 – Existing OWTS
Existing OWTS that are properly functioning, and do not meet the conditions of failing systems or otherwise require corrective action (for example, to prevent groundwater impairment) as specifically described in Tier 4, and are not determined to be contributing to an impairment of surface water as specifically described in Tier 3, are automatically included in Tier 0.
[Section 6]

Tier 1 – Low-Risk New or Replacement OWTS
New or replacement OWTS that meet low risk siting and design requirements as specified in Tier 1, where there is not an approved Local Agency Management Program per Tier 2.
[Sections 7 and 8]

Tier 2 – Local Agency Management Program for New or Replacement OWTS
California is well known for its extreme range of geological and climatic conditions. As such, the establishment of a single set of criteria for OWTS would either be too restrictive so as to protect for the most sensitive case, or would have broad allowances that would not be protective enough under some circumstances. To accommodate this

extreme variance, local agencies may submit management programs ("Local Agency Management Programs") for approval, and upon approval then manage the installation of new and replacement OWTS under that program.

Local Agency Management Programs approved under Tier 2 provide an alternate method from Tier 1 programs to achieve the same policy purpose, which is to protect water quality and public health. In order to address local conditions, Local Agency Management Programs may include standards that differ from the Tier 1 requirements for new and replacement OWTS contained in Sections 7 and 8. As examples, a Local Agency Management Program may authorize different soil characteristics, usage of seepage pits, and different densities for new developments. Once the Local Agency Management Program is approved, new and replacement OWTS that are included within the Local Agency Management Program may be approved by the Local Agency. A Local Agency, at its discretion, may include Tier 1 standards within its Tier 2 Local Agency Management Program for some or all of its jurisdiction. However, once a Local Agency Management Program is approved, it shall supersede Tier 1 and all future OWTS decisions will be governed by the Tier 2 Local Agency Management Program until it is modified, withdrawn, or revoked.
[Section 9]

Tier 3 – Impaired Areas
Existing, new, and replacement OWTS that are near impaired water bodies may be addressed by a TMDL and its implementation program, or special provisions contained in a Local Agency Management Program. If there is no TMDL or special provisions, new or replacement OWTS within 600 feet of impaired water bodies listed in Attachment 2 must meet the specific requirements of Tier 3.
[Section 10]

Tier 4 – OWTS Requiring Corrective Action
OWTS that require corrective action or are either presently failing or fail at any time while this Policy is in effect are automatically included in Tier 4 and must follow the requirements as specified.
[Section 11]

Conditional Waiver of Waste Discharge Requirements
The requirement to submit a report of waste discharge for discharges from OWTS that are in conformance with this policy is waived.
[Section 12]

Effective Date
When this Policy becomes effective.
[Section 13]

Financial Assistance
Procedures for local agencies to apply for funds to establish low interest loan programs for the assistance of OWTS owners in meeting the requirements of this Policy.
[Section 14]

Attachment 1
AB 885 Regulatory Program Timelines.

Attachment 2

Tables 4 and 5 specifically identify those impaired water bodies that have Tier 3 requirements and must have a completed TMDL by the date specified.

Attachment 3

Table 6 shows where one Regional Water Board has been designated to review and, if appropriate, approve new Local Agency Management Plans for a local agency that is within multiple Regional Water Boards' jurisdiction.

What Tier Applies to my OWTS?

Existing OWTS that conform to the requirements for Tier 0 will remain in Tier 0 as long as they continue to meet those requirements. An existing OWTS will temporarily move from Tier 0 to Tier 4 if it is determined that corrective action is needed. The existing OWTS will return to Tier 0 once the corrective action is completed if the repair does not qualify as major repair under Tier 4. Any major repairs conducted as corrective action must comply with Tier 1 requirements or Tier 2 requirements, whichever are in effect for that local area. An existing OWTS will move from Tier 0 to Tier 3 if it is adjacent to an impaired water body listed on Attachment 2, or is covered by a TMDL implementation plan.

In areas with no approved Local Agency Management Plan, new and replacement OWTS that conform to the requirements of Tier 1 will remain in Tier 1 as long as they continue to meet those requirements. A new or replacement OWTS will temporarily move from Tier 1 to Tier 4 if it is determined that corrective action is needed. The new or replacement OWTS will return to Tier 1 once the corrective action is completed. A new or replacement OWTS will move from Tier 1 to Tier 3 if it is adjacent to an impaired water body, or is covered by a TMDL implementation plan.

In areas with an approved Local Agency Management Plan, new and replacement OWTS that conform to the requirements of the Tier 2 Local Agency Management Plan will remain in Tier 2 as long as they continue to meet those requirements. A new or replacement OWTS will temporarily move from Tier 2 to Tier 4 if it is determined that corrective action is needed. The new or replacement OWTS will return to Tier 2 once the corrective action is completed. A new or replacement OWTS will move from Tier 2 to Tier 3 if it is adjacent to an impaired water body, or is covered by a TMDL implementation plan, or is covered by special provisions for impaired water bodies contained in a Local Agency Management Program.

Existing, new, and replacement OWTS in specified areas adjacent to water bodies that are identified by the State Water Board as impaired for pathogens or nitrogen and listed in Attachment 2 are in Tier 3. Existing, new, and replacement OWTS covered by a TMDL implementation plan, or covered by special provisions for impaired water bodies contained in a Local Agency Management Program are also in Tier 3. These OWTS will temporarily move from Tier 3 to Tier 4 if it is determined that corrective action is needed. The new or replacement OWTS will return to Tier 3 once the corrective action is completed.

Existing, new, and replacement OWTS that do not conform with the requirements to receive coverage under any of the Tiers (e.g., existing OWTS with a projected flow of more than 10,000 gpd) do not qualify for this Policy's conditional waiver of waste discharge requirements, and will be regulated separately by the applicable Regional Water Board.

Definitions

1.0 Definitions. The following definitions apply to this Policy:

"303 (d) list" means the same as "**Impaired Water Bodies.**"

"At-grade system" means an OWTS dispersal system with a discharge point located at the preconstruction grade (ground surface elevation). The discharge from an at-grade system is always subsurface.

"Average annual rainfall" means the average of the annual amount of precipitation for a location over a year as measured by the nearest National Weather Service station for the preceding three decades. For example the data set used to make a determination in 2012 would be the data from 1981 to 2010.

"Basin Plan" means the same as "water quality control plan" as defined in Division 7 (commencing with Section 13000) of the Water Code. Basin Plans are adopted by each Regional Water Board, approved by the State Water Board and the Office of Administrative Law, and identify surface water and groundwater bodies within each Region's boundaries and establish, for each, its respective beneficial uses and water quality objectives. Copies are available from the Regional Water Boards, electronically at each Regional Water Boards website, or at the State Water Board's *Plans and Policies* web page (http://www.waterboards.ca.gov/plans_policies/).

"Bedrock" means the rock, usually solid, that underlies soil or other unconsolidated, surficial material.

"CEDEN" means California Environmental Data Exchange Network and information about it is available at the State Water Boards website or http://www.ceden.org/index.shtml.

"Cesspool" means an excavation in the ground receiving domestic wastewater, designed to retain the organic matter and solids, while allowing the liquids to seep into the soil. Cesspools differ from seepage pits because cesspool systems do not have septic tanks and are not authorized under this Policy. The term cesspool does not include pit-privies and out-houses which are not regulated under this Policy.

"Clay" means a soil particle; the term also refers to a type of soil texture. As a soil particle, clay consists of individual rock or mineral particles in soils having diameters <0.002 mm. As a soil texture, clay is the soil material that is comprised of 40 percent or more clay particles, not more than 45 percent sand and not more than 40 percent silt particles using the USDA soil classification system.

"Cobbles" means rock fragments 76 mm or larger using the USDA soil classification systems.

"Dispersal system" means a leachfield, seepage pit, mound, at-grade, subsurface drip field, evapotranspiration and infiltration bed, or other type of system for final wastewater treatment and subsurface discharge.

Definitions

"Domestic wastewater" means wastewater with a measured strength less then high-strength wastewater and is the type of wastewater normally discharged from, or similar to, that discharged from plumbing fixtures, appliances and other household devices including, but not limited to toilets, bathtubs, showers, laundry facilities, dishwashing facilities, and garbage disposals. Domestic wastewater may include wastewater from commercial buildings such as office buildings, retail stores, and some restaurants, or from industrial facilities where the domestic wastewater is segregated from the industrial wastewater. Domestic wastewater may include incidental RV holding tank dumping but does not include wastewater consisting of a significant portion of RV holding tank wastewater such as at RV dump stations. Domestic wastewater does not include wastewater from industrial processes.

"Dump Station" means a facility intended to receive the discharge of wastewater from a holding tank installed on a recreational vehicle. A dump station does not include a full hook-up sewer connection similar to those used at a recreational vehicle park.

"Domestic well" means a groundwater well that provides water for human consumption and is not regulated by the California Department of Public Health.

"Earthen material" means a substance composed of the earth's crust (i.e. soil and rock).

"EDF" see "electronic deliverable format."

"Effluent" means sewage, water, or other liquid, partially or completely treated or in its natural state, flowing out of a septic tank, aerobic treatment unit, dispersal system, or other OWTS component.

"Electronic deliverable format" or **"EDF"** means the data standard adopted by the State Water Board for submittal of groundwater quality monitoring data to the State Water Board's internet-accessible database system Geotracker (http://geotracker.waterboards.ca.gov/).

"Escherichia coli" means a group of bacteria predominantly inhabiting the intestines of humans or other warm-blooded animals, but also occasionally found elsewhere. Used as an indicator of human fecal contamination.

"Existing OWTS" means an OWTS that was constructed and operating prior to the effective date of this Policy, and OWTS for which a construction permit has been issued prior to the effective date of the Policy.

"Flowing water body" means a body of running water flowing over the earth in a natural water course, where the movement of the water is readily discernible or if water is not present it is apparent from review of the geology that when present it does flow, such as in an ephemeral drainage, creek, stream, or river.

"Groundwater" means water below the land surface that is at or above atmospheric pressure.

Definitions

"High-strength wastewater" means wastewater having a 30-day average concentration of biochemical oxygen demand (BOD) greater than 300 milligrams-per-liter (mg/L) or of total suspended solids (TSS) greater than 330 mg/L or a fats, oil, and grease (FOG) concentration greater than 100 mg/L prior to the septic tank or other OWTS treatment component.

"IAPMO" means the International Association of Plumbing and Mechanical Officials.

"Impaired Water Bodies" means those surface water bodies or segments thereof that are identified on a list approved first by the State Water Board and then approved by US EPA pursuant to Section 303(d) of the federal Clean Water Act.

"Local agency" means any subdivision of state government that has responsibility for permitting the installation of and regulating OWTS within its jurisdictional boundaries; typically a county, city, or special district.

"Major repair" means either: (1) for a dispersal system, repairs required for an OWTS dispersal system due to surfacing wastewater effluent from the dispersal field and/or wastewater backed up into plumbing fixtures because the dispersal system is not able to percolate the design flow of wastewater associated with the structure served, or (2) for a septic tank, repairs required to the tank for a compartment baffle failure or tank structural integrity failure such that either wastewater is exfiltrating or groundwater is infiltrating.

"Mottling" means a soil condition that results from oxidizing or reducing minerals due to soil moisture changes from saturated to unsaturated over time. Mottling is characterized by spots or blotches of different colors or shades of color (grays and reds) interspersed within the dominant color as described by the USDA soil classification system. This soil condition can be indicative of historic seasonal high groundwater level, but the lack of this condition may not demonstrate the absence of groundwater.

"Mound system" means an aboveground dispersal system (covered sand bed with effluent leachfield elevated above original ground surface inside) used to enhance soil treatment, dispersal, and absorption of effluent discharged from an OWTS treatment unit such as a septic tank. Mound systems have a subsurface discharge.

"New OWTS" means an OWTS permitted after the effective date of this Policy.

"NSF" means NSF International (a.k.a. National Sanitation Foundation), a not for profit, non-governmental organization that develops health and safety standards and performs product certification.

"Oil/grease interceptor" means a passive interceptor that has a rate of flow exceeding 50 gallons-per-minute and that is located outside a building. Oil/grease interceptors are used for separating and collecting oil and grease from wastewater.

Definitions

"Onsite wastewater treatment system(s)" (**OWTS**) means individual disposal systems, community collection and disposal systems, and alternative collection and disposal systems that use subsurface disposal. The short form of the term may be singular or plural. OWTS do not include "graywater" systems pursuant to Health and Safety Code Section 17922.12.

"Percolation test" means a method of testing water absorption of the soil. The test is conducted with clean water and test results can be used to establish the dispersal system design.

"Permit" means a document issued by a local agency that allows the installation and use of an OWTS, or waste discharge requirements or a waiver of waste discharge requirements that authorizes discharges from an OWTS.

"Person" means any individual, firm, association, organization, partnership, business trust, corporation, company, State agency or department, or unit of local government who is, or that is, subject to this Policy.

"Pit-privy" (a.k.a. outhouse, pit-toilet) means self-contained waterless toilet used for disposal of non-water carried human waste; consists of a shelter built above a pit in the ground into which human waste falls.

"Policy" means this Policy for Siting, Design, Operation and Management of OWTS.

"Pollutant" means any substance that alters water quality of the waters of the State to a degree that it may potentially affect the beneficial uses of water, as listed in a Basin Plan.

"Projected flows" means wastewater flows into the OWTS determined in accordance with any of the applicable methods for determining average daily flow in the *USEPA Onsite Wastewater Treatment System Manual, 2002,* or for Tier 2 in accordance with an approved Local Agency Management Program.

"Public Water System" is a water system regulated by the California Department of Public Health or a Local Primacy Agency pursuant to Chapter 12, Part 4, California Safe Drinking Water Act, Section 116275 (h) of the California Health and Safety Code.

"Public Water Well" is a ground water well serving a public water system. A spring which is not subject to the California Surface Water Treatment Rule (SWTR), CCR, Title 22, sections 64650 through 64666 is a public well.

"Qualified professional" means an individual licensed or certified by a State of California agency to design OWTS and practice as professionals for other associated reports, as allowed under their license or registration. Depending on the work to be performed and various licensing and registration requirements, this may include an individual who possesses a registered environmental health specialist certificate or is currently licensed as a professional engineer or professional geologist. For the purposes of performing site evaluations, Soil Scientists certified by the Soil Science Society of America are considered qualified professionals. A local agency may modify this definition as part of its Local Agency Management Program.

Definitions

"Regional Water Board" is any of the Regional Water Quality Control Boards designated by Water Code Section 13200. Any reference to an action of the Regional Water Board in this Policy also refers to an action of its Executive Officer, including the conducting of public hearings, pursuant to any general or specific delegation under Water Code Section 13223.

"Replacement OWTS" means an OWTS that has its treatment capacity expanded, or its dispersal system replaced or added onto, after the effective date of this Policy.

"Sand" means a soil particle; this term also refers to a type of soil texture. As a soil particle, sand consists of individual rock or mineral particles in soils having diameters ranging from 0.05 to 2.0 millimeters. As a soil texture, sand is soil that is comprised of 85 percent or more sand particles, with the percentage of silt plus 1.5 times the percentage of clay particles comprising less than 15 percent.

"Seepage pit" means a drilled or dug excavation, three to six feet in diameter, either lined or gravel filled, that receives the effluent discharge from a septic tank or other OWTS treatment unit for dispersal.

"Septic tank" means a watertight, covered receptacle designed for primary treatment of wastewater and constructed to:

1. Receive wastewater discharged from a building;
2. Separate settleable and floating solids from the liquid;
3. Digest organic matter by anaerobic bacterial action;
4. Store digested solids; and
5. Clarify wastewater for further treatment with final subsurface discharge.

"Service provider" means a person capable of operating, monitoring, and maintaining an OWTS in accordance to this Policy.

"Silt" means a soil particle; this term also refers to a type of soil texture. As a soil particle, silt consists of individual rock or mineral particles in soils having diameters ranging from between 0.05 and 0.002 mm. As a soil texture, silt is soil that is comprised as approximately 80 percent or more silt particles and not more than 12 percent clay particles using the USDA soil classification system.

"Single-family dwelling unit" means a structure that is usually occupied by just one household or family and for the purposes of this Policy is expected to generate an average of 250 gallons per day of wastewater.

"Site" means the location of the OWTS and, where applicable, a reserve dispersal area capable of disposing 100 percent of the design flow from all sources the OWTS is intended to serve.

"Site Evaluation" means an assessment of the characteristics of the site sufficient to determine its suitability for an OWTS to meet the requirements of this Policy.

Definitions

"Soil" means the naturally occurring body of porous mineral and organic materials on the land surface, which is composed of unconsolidated materials, including sand-sized, silt-sized, and clay-sized particles mixed with varying amounts of larger fragments and organic material. The various combinations of particles differentiate specific soil textures identified in the soil textural triangle developed by the United States Department of Agriculture (USDA) as found in Soil Survey Staff, USDA; *Soil Survey Manual, Handbook 18,* U.S. Government Printing Office, Washington, DC, 1993, p. 138. For the purposes of this Policy, soil shall contain earthen material of particles smaller than 0.08 inches (2 mm) in size.

"Soil Structure" means the arrangement of primary soil particles into compound particles, peds, or clusters that are separated by natural planes of weakness from adjoining aggregates.

"Soil texture" means the soil class that describes the relative amount of sand, clay, silt and combinations thereof as defined by the classes of the soil textural triangle developed by the USDA (referenced above).

"State Water Board" is the State Water Resources Control Board

"Supplemental treatment" means any OWTS or component of an OWTS, except a septic tank or dosing tank, that performs additional wastewater treatment so that the effluent meets a predetermined performance requirement prior to discharge of effluent into the dispersal field.

"SWAMP" means Surface Water Ambient Monitoring Program and more information is available at: http://www.waterboards.ca.gov/water_issues/programs/swamp/

"Telemetric" means the ability to automatically measure and transmit OWTS data by wire, radio, or other means.

"TMDL" is the acronym for "total maximum daily load." Section 303(d)(1) of the Clean Water Act requires each State to establish a TMDL for each impaired water body to address the pollutant(s) causing the impairment. In California, TMDLs are usually adopted as Basin Plan amendments and contain implementation plans detailing how water quality standards will be attained.

"Total coliform" means a group of bacteria consisting of several *genera* belonging to the family *Enterobacteriaceae*, which includes Escherichia coli bacteria.

"USDA" means the U.S. Department of Agriculture.

"Waste discharge requirement" or **"WDR"** means an operation and discharge permit issued for the discharge of waste pursuant to Section 13260 of the California Water Code.

Responsibilities and Duties

2.0 OWTS Owners Responsibilities and Duties

2.1 All new, replacement, or existing OWTS within an area that is subject to a Basin Plan prohibition of discharges from OWTS, must comply with the prohibition. If the prohibition authorizes discharges under specified conditions, the discharge must comply with those conditions and the applicable provisions of this Policy.

2.2 Owners of OWTS shall adhere to the requirements prescribed in local codes and ordinances. Owners of new and replacement OWTS covered by this Policy shall also meet the minimum standards contained in Tier 1, or an alternate standard provided by a Local Agency Management Program per Tier 2, or shall comply with the requirements of Tier 3 if near an impaired water body and subject to Tier 3, or shall provide corrective action for their OWTS if their system meets conditions that place it in Tier 4.

2.3 Owners of OWTS shall comply with any and all permitting conditions imposed by a local agency that do not directly conflict with this Policy, including any conditions that are more stringent than required by this Policy.

2.4 To receive coverage under this Policy and the included waiver of waste discharges, OWTS shall only accept and treat flows of domestic wastewater. In addition, OWTS that accept high-strength wastewater from commercial food service buildings are covered under this Policy and the waiver of waste discharge requirements if the wastewater does not exceed 900 mg/L BOD and there is a properly sized and functioning oil/grease interceptor (a.k.a grease trap).

2.5 Owners of OWTS shall maintain their OWTS in good working condition including inspections and pumping of solids as necessary, or as required by local ordinances, to maintain proper function and assure adequate treatment.

2.6 The following owners of OWTS shall notify the Regional Water Board by submitting a Report of Waste Discharge for the following:

2.6.1 a new or replacement OWTS that does not meet the conditions and requirements set forth in either a Local Agency Management Program if one is approved, an existing local program if it is less than 60 months from the effective date of the Policy and a Local Agency Management Program is not yet approved, or Tier 1 if no Local Agency Management Program has been approved and it is more than 60 months after the effective date of this Policy;

2.6.2 any OWTS, not under individual waste discharge requirements or a waiver of individual waste discharge requirements issued by a Regional Water Board, with the projected flow of over 10,000 gallons-per-day;

2.6.3 any OWTS that receives high-strength wastewater, unless the waste stream is from a commercial food service building;

2.6.4 any OWTS that receives high-strength wastewater from a commercial food service building: (1) with a BOD higher than 900 mg/L, or (2) that does not have a properly sized and functioning oil/grease interceptor.

2.7 All Reports of Waste Discharge shall be accompanied by the required application fee pursuant to California Code of Regulations, title 23, section 2200.

3.0 Local Agency Requirements and Responsibilities

3.1 Local agencies, in addition to implementing their own local codes and ordinances, shall determine whether the requirements within their local jurisdiction will be limited to the water quality protection afforded by the statewide minimum standards in Tier 0, Tier 1, Tier 3, and Tier 4, or whether the local agency will implement a Local Agency Management Program in accordance with Tier 2. Except for Tier 3, local agencies may continue to implement their existing OWTS permitting programs in compliance with the Basin Plan in place at the effective date of the Policy until 60 months after the effective date of this Policy, or approval of a Local Agency Management Program, whichever comes first, and may make minor adjustments as necessary that are in compliance with the applicable Basin Plan and this Policy. Tier 3 requirements take effect on the effective date of this Policy. In the absence of a Tier 2 Local Agency Management Program, to the extent that there is a direct conflict between the applicable minimum standards and the local codes or ordinances (such that it is impossible to comply with both the applicable minimum standards and the local ordinances or codes), the more restrictive standards shall govern.

3.2 If preferred, the local agency may at any time provide the State Water Board and all affected Regional Water Board(s) written notice of its intent to regulate OWTS using a Local Agency Management Program with alternative standards as authorized in Tier 2 of this Policy. A proposed Local Agency Management Program that conforms to the requirements of that Section shall be included with the notice. A local agency shall not implement a program different than the minimum standards contained in Tier 1 and 3 of this Policy after 60 months from the effective date of this Policy until approval of the proposed Local Agency Management Program is granted by either the Regional Water Board or State Water Board. All initial program submittals desiring approval prior to the 60 month limit shall be received no later than 36 months from the effective date of this Policy. Once approved, the local agency shall adhere to the Local Agency Management Program, including all requirements, monitoring, and reporting. If at any time a local agency wishes to modify its Local Agency Management Program, it shall provide the State Water Board and all affected Regional Water Board(s) written notice of its intended modifications and will continue to implement its existing Local Agency Management Program until the modifications are approved.

3.3 All local agencies permitting OWTS shall report annually to the Regional Water Board(s). If a local agency's jurisdictional area is within the boundary of multiple Regional Water Boards, the local agency shall send a copy of the annual report to each Regional Water Board. The annual report shall include the following information (organized in a tabular spreadsheet format) and summarize whether any further actions are warranted to protect water quality or public health:

3.3.1 number and location of complaints pertaining to OWTS operation and maintenance, and identification of those which were investigated and how they were resolved;

3.3.2 shall provide the applications and registrations issued as part of the local septic tank cleaning registration program pursuant to Section 117400 et seq. of the California Health and Safety Code;

3.3.3 number, location, and description of permits issued for new and replacement OWTS and which Tier the permit is issued.

3.4 All local agencies permitting OWTS shall retain permanent records of their permitting actions and will make those records available within 10 working days upon written request for review by a Regional Water Board. The records for each permit shall reference the Tier under which the permit was issued.

3.5 A local agency shall notify the owner of a public well or water intake and the California Department of Public Health as soon as practicable, but not later than 72 hours, upon its discovery of a failing OWTS as described in sections 11.1 and 11.2 within the setbacks described in sections 7.5.6 through 7.5.10.

3.6 A local agency may implement this Policy, or a portion thereof, using its local authority to enforce the policy, as authorized by an approval from the State Water Board or by the appropriate Regional Water Board.

3.7 Nothing in the Policy shall preclude a local agency from adopting or retaining standards for OWTS in an approved Local Agency Management Program that are more protective of the public health or the environment than are contained in this Policy.

3.8 If at any time a local agency wishes to withdraw its previously submitted and approved Tier 2 Local Agency Management Program, it may do so upon 60 days written notice. The notice of withdrawal shall specify the reason for withdrawing its Tier 2 program, the effective date for cessation of the program and resumption of permitting of OWTS only under Tiers 1, 3, and 4.

4.0 Regional Water Board Functions and Duties

4.1 The Regional Water Boards have the principal responsibility for overseeing the implementation of this Policy.

4.2 Regional Water Boards shall incorporate the requirements established in this Policy by amending their Basin Plans within 12 months of the effective date of this Policy, pursuant to Water Code Section 13291(e). The Regional Water

Boards may also consider whether it is necessary and appropriate to retain or adopt any more protective standards. To the extent that a Regional Water Board determines that it is necessary and appropriate to retain or adopt any more protective standards, it shall reconcile those region-specific standards with this Policy to the extent feasible, and shall provide a detailed basis for its determination that each of the more protective standards is necessary and appropriate.

4.2.1 Notwithstanding 4.2 above, the North Coast Regional Water Board will continue to implement its existing Basin Plan requirements pertaining to OWTS within the Russian River watershed until it adopts the Russian River TMDL, at which time it will comply with section 4.2 for the Russian River watershed.

4.3 The Regional Water Board designated in Attachment 3 shall review, and if appropriate, approve a Local Agency Management Program submitted by the local agency pursuant to Tier 2 in this Policy. Upon receipt of a proposed Local Agency Management Program, the Regional Water Board designated in Attachment 3 shall have 90 days to notify the local agency whether the submittal contains all the elements of a Tier 2 program, but may request additional information based on review of the proposed program. Approval must follow a noticed hearing with opportunity for public comment. If a Local Agency Management Program is disapproved, the Regional Water Board designated in Attachment 3 shall provide a written explanation of the reasons for the disapproval. A Regional Water Board may approve a Local Agency Management Program while disapproving any proposed special provisions for impaired water bodies contained in the Local Agency Management Program. If no action is taken by the respective Regional Water Board within 12 months of the submission date of a complete Local Agency Management Program, the program shall be forwarded to the State Water Board for review and approval pursuant to Section 5 of this Policy.

4.3.1 Where the local agency's jurisdiction lies within more than one Regional Water Board, staff from the affected Regional Water Boards shall work cooperatively to assure that water quality protection in each region is adequately protected. If the Regional Water Board designated in Attachment 3 approves the Local Agency Management Program over the written objection of an affected Regional Water Board, that Regional Water Board may submit the dispute to the State Water Board under Section 5.3.

4.3.2 Within 30 days of receipt of a proposed Local Agency Management Program, a Regional Water Board will forward a copy to and solicit comments from the California Department of Public Health regarding a Local Agency Management Program's proposed policies and procedures, including notification to local water purveyors prior to OWTS permitting.

4.4 Once a Local Agency Management Program has been approved, any affected Regional Water Board may require modifications or revoke authorization of a local agency to implement a Tier 2 program, in accordance with the following:

4.4.1 The Regional Water Board shall consult with any other Regional Water Board(s) having jurisdiction over the local agency before providing the notice described in section 4.4.2.

4.4.2 Written notice shall be provided to the local agency detailing the Regional Water Board's action, the cause for such action, remedies to prevent the action from continuing to completion, and appeal process and rights. The local agency shall have 90 days from the date of the written notice to respond with a corrective action plan to address the areas of non-compliance, or to request the Regional Water Board to reconsider its findings.

4.4.3 The Regional Water Board shall approve, approve conditionally, or deny a corrective action plan within 90 days of receipt. The local agency will have 90 days to begin implementation of a corrective action plan from the date of approval or 60 days to request reconsideration from the date of denial. If the local agency fails to submit an acceptable corrective action plan, fails to implement an approved corrective action plan, or request reconsideration, the Regional Water Board may require modifications to the Local Agency Management Program, or may revoke the local agency's authorization to implement a Tier 2 program.

4.4.4 Requests for reconsideration by the local agency shall be decided by the Regional Water Board within 90 days and the previously approved Local Agency Management Program shall remain in effect while the reconsideration is pending.

4.4.5 If the request for reconsideration is denied, the local agency may appeal to the State Water Board and the previously approved Local Agency Management Program shall remain in effect while the appeal is under consideration. The State Water Board shall decide the appeal within 90 days. All decisions of the State Water Board are final.

4.5 The appropriate Regional Water Board shall accept and consider any requests for modification or revocation of a Local Agency Management Program submitted by any person. The Regional Water Board will notify the person making the request and the local agency implementing the Local Agency Management Program at issue by letter within 90 days whether it intends to proceed with the modification or revocation process per Section 4.4 above, or is dismissing the request. The Regional Water Board will post the request and its response letter on its website.

4.6 A Regional Water Board may issue or deny waste discharge requirements or waivers of waste discharge requirements for any new or replacement OWTS within a jurisdiction of a local agency without an approved Local Agency Management Program if that OWTS does not meet the minimum standards contained in Tier 1.

4.7 The Regional Water Boards will implement any notifications and enforcement requirements for OWTS determined to be in Tier 3 of this Policy.

4.8 Regional Water Boards may adopt waste discharge requirements, or conditional waivers of waste discharge requirements, that exempt individual OWTS from requirements contained in this Policy.

5.0 State Water Board Functions and Duties

5.1 As the state agency charged with the development and adoption of this Policy, the State Water Board shall periodically review, amend and/or update this Policy as required.

5.2 The State Water Board may take any action assigned to the Regional Water Boards in this Policy.

5.3 The State Water Board shall resolve disputes between Regional Water Boards and local agencies as needed within 12 months of receiving such a request by a Regional Water Board or local agency, and may take action on its own motion in furtherance of this Policy. As part of this function, the State Water Board shall review and, if appropriate, approve Local Agency Management Programs in cases where the respective Regional Water Board has failed to consider for approval a Local Agency Management Program. The State Water Board shall approve Local Agency Management Programs at a regularly noticed board hearing and shall provide for public participation, including notice and opportunity for public comment. Once taken up by the State Water Board, Local Agency Management Programs shall be approved or denied within 180 days.

5.4 A member of the public may request the State Water Board to resolve any dispute regarding the Regional Water Board's approval of a Local Agency Management Program if the member of the public timely raised the disputed issue before the Regional Water Board. Such requests shall be submitted within 30 days after the Regional Water Board's approval of the Local Agency Management Program. The State Water Board shall notify the member of the public, the local agency, and the Regional Water Board within 90 days whether it intends to proceed with dispute resolution.

5.5 The State Water Board shall accept and consider any requests for modification or revocation of a Local Agency Management Program submitted by any person, where that person has previously submitted said request to the Regional Water Board and has received notice from the Regional Water Board of its dismissal of the request. The State Water Board will notify the person making the request and the local agency implementing the Local Agency Management Program at issue by letter within 90 days whether it intends to proceed with the modification or revocation process per Section 4.4 above, or is dismissing the request. The State Water Board will post the request and its response letter on its website.

5.6 The State Water Board or its Executive Director, after approving any Impaired Water Bodies [303 (d)] List, and for the purpose of implementing Tier 3 of this Policy, shall update Attachment 2 to identify those water bodies where: (1) it is likely that operating OWTS will subsequently be determined to be a contributing

source of pathogens or nitrogen and therefore it is anticipated that OWTS would receive a loading reduction, and (2) it is likely that new OWTS installations discharging within 600 feet of the water body would contribute to the impairment. This identification shall be based on information available at the time of 303 (d) listing and may be further updated based on new information. Updates to Attachment 2 will be processed as amendments to this Policy.

5.7 The State Water Board will make available to local agencies funds from its Clean Water State Revolving Fund loan program for mini-loan programs to be operated by the local agencies for the making of low interest loans to assist private property owners with complying with this Policy.

Tier 0 – Existing OWTS

Existing OWTS that are properly functioning and do not meet the conditions of failing systems or otherwise require corrective action (for example, to prevent groundwater impairment) as specifically described in Tier 4, and are not determined to be contributing to an impairment of surface water as specifically described in Tier 3, are automatically included in Tier 0.

6.0 Coverage for Properly Operating Existing OWTS

6.1 Existing OWTS are automatically covered by Tier 0 and the herein included waiver of waste discharge requirements if they meet the following requirements:

6.1.1 have a projected flow of 10,000 gallons-per-day or less;

6.1.2 receive only domestic wastewater from residential or commercial buildings, or high-strength wastewater from commercial food service buildings that does not exceed 900 mg/L BOD and has a properly sized and functioning oil/grease interceptor (a.k.a. grease trap);

6.1.3 continue to comply with any previously imposed permitting conditions;

6.1.4 do not require supplemental treatment under Tier 3;

6.1.5 do not require corrective action under Tier 4; and

6.1.6 do not consist of a cesspool as a means of wastewater disposal.

6.2 A Regional Water Board or local agency may deny coverage under this Policy to any OWTS that is:

6.2.1 Not in compliance with Section 6.1;

6.2.2 Not able to adequately protect the water quality of the waters of the State, as determined by the Regional Water Board after considering any input from the local agency. A Regional Water Board may require the submission of a report of waste discharge to receive Region specific waste discharge requirements or waiver of waste discharge requirements so as to be protective.

6.3 Existing OWTS currently under waste discharge requirements or individual waiver of waste discharge requirements will remain under those orders until notified in writing by the appropriate Regional Water Board that they are covered under this Policy.

Tier 1 – Low Risk New or Replacement OWTS

New or replacement OWTS meet low risk siting and design requirements as specified in Tier 1, where there is not an approved Local Agency Management Program per Tier 2.

7.0 Minimum Site Evaluation and Siting Standards

7.1 A qualified professional shall perform all necessary soil and site evaluations for all new OWTS and for existing OWTS where the treatment or dispersal system will be replaced or expanded.

7.2 A site evaluation shall determine that adequate soil depth is present in the dispersal area. Soil depth is measured vertically to the point where bedrock, hardpan, impermeable soils, or saturated soils are encountered or an adequate depth has been determined. Soil depth shall be determined through the use of soil profile(s) in the dispersal area and the designated dispersal system replacement area, as viewed in excavations exposing the soil profiles in representative areas, unless the local agency has determined through historical or regional information that a specific site soil profile evaluation is unwarranted.

7.3 A site evaluation shall determine whether the anticipated highest level of groundwater within the dispersal field and its required minimum dispersal zone is not less than prescribed in Table 2 by estimation using one or a combination of the following methods:

7.3.1 Direct observation of the highest extent of soil mottling observed in the examination of soil profiles, recognizing that soil mottling is not always an indicator of the uppermost extent of high groundwater; or

7.3.2 Direct observation of groundwater levels during the anticipated period of high groundwater. Methods for groundwater monitoring and determinations shall be decided by the local agency; or

7.3.3 Other methods, such as historical records, acceptable to the local agency.

7.3.4 Where a conflict in the above methods of examination exists, the direct observation method indicating the highest level shall govern.

7.4 Percolation test results in the effluent disposal area shall not be faster than one minute per inch (1 MPI) or slower than one hundred twenty minutes per inch (120 MPI). All percolation test rates shall be performed by presoaking of percolation test holes and continuing the test until a stabilized rate is achieved.

7.5 Minimum horizontal setbacks from any OWTS treatment component and dispersal systems shall be as follows:

7.5.1 5 feet from parcel property lines and structures;

7.5.2 100 feet from water wells and monitoring wells, unless regulatory or legitimate data requirements necessitate that monitoring wells be located closer;

7.5.3 100 feet from any unstable land mass or any areas subject to earth slides identified by a registered engineer or registered geologist; other setback distance are allowed, if recommended by a geotechnical report prepared by a qualified professional.

7.5.4 100 feet from springs and flowing surface water bodies where the edge of that water body is the natural or levied bank for creeks and rivers, or may be less where site conditions prevent migration of wastewater to the water body;

7.5.5 200 feet from vernal pools, wetlands, lakes, ponds, or other surface water bodies where the edge of that water body is the high water mark for lakes and reservoirs, and the mean high tide line for tidally influenced water bodies;

7.5.6 150 feet from a public water well where the depth of the effluent dispersal system does not exceed 10 feet;

7.5.7 Where the effluent dispersal system is within 1,200 feet from a public water systems' surface water intake point, within the catchment of the drainage, and located such that it may impact water quality at the intake point such as upstream of the intake point for flowing water bodies, the dispersal system shall be no less than 400 feet from the high water mark of the reservoir, lake or flowing water body.

7.5.8 Where the effluent dispersal system is located more than 1,200 feet but less than 2,500 feet from a public water systems' surface water intake point, within the catchment of the drainage, and located such that it may impact water quality at the intake point such as upstream of the intake point for flowing water bodies, the dispersal system shall be no less than 200 feet from the high water mark of the reservoir, lake or flowing water body.

7.6 Prior to issuing a permit to install an OWTS the permitting agency shall determine if the OWTS is within 1,200 feet of an intake point for a surface water treatment plant for drinking water, is in the drainage catchment in which the intake point is located, and located such that it may impact water quality at the intake point such as being upstream of the intake point for a flowing water body. If the OWTS is within 1,200 feet of an intake point for a surface water treatment plant for drinking water, is in the drainage catchment in which the intake point is located, and is located such that it may impact water quality at the intake point:

7.6.1 The permitting agency shall provide a copy of the permit application to the owner of the water system of their proposal to install an OWTS within 1,200 feet of an intake point for a surface water treatment. If the owner of the water system cannot be identified, then the permitting agency will notify California Department of Public Health Drinking Water Program.

7.6.2 The permit application shall include a topographical plot plan for the parcel showing the OWTS components, the property boundaries, proposed structures, physical address, and name of property owner.

7.6.3 The permit application shall provide the estimated wastewater flows, intended use of proposed structure generating the wastewater, soil data, and estimated depth to seasonally saturated soils.

7.6.4 The public water system owner shall have 15 days from receipt of the permit application to provide recommendations and comments to the permitting agency.

7.7 Natural ground slope in all areas used for effluent disposal shall not be greater than 25 percent.

7.8 The average density for any subdivision of property made by Tentative Approval pursuant to the Subdivision Map Act occurring after the effective date of this Policy and implemented under Tier 1 shall not exceed the allowable density values in Table 1 for a single-family dwelling unit, or its equivalent, for those units that rely on OWTS.

Table 1: Allowable Average Densities per Subdivision under Tier 1.

Average Annual Rainfall (in/yr)	Allowable Density (acres/single family dwelling unit)
0 - 15	2.5
>15 - 20	2
>20 - 25	1.5
>25 - 35	1
>35 - 40	0.75
>40	0.5

8.0 Minimum OWTS Design and Construction Standards

8.1 OWTS Design Requirements

8.1.1 A qualified professional shall design all new OWTS and modifications to existing OWTS where the treatment or dispersal system will be replaced or expanded. A qualified professional employed by a local agency, while acting in that capacity, may design, review, and approve a design for a proposed OWTS, if authorized by the local agency.

8.1.2 OWTS shall be located, designed, and constructed in a manner to ensure that effluent does not surface at any time, and that percolation of effluent will not adversely affect beneficial uses of waters of the State.

8.1.3 The design of new and replacement OWTS shall be based on the expected influent wastewater quality with a projected flow not to exceed 3,500 gallons per day, the peak wastewater flow rates for purposes of sizing hydraulic components, the projected average daily flow for purposes of sizing the dispersal system, the characteristics of the site, and the required level of treatment for protection of water quality and public health.

8.1.4 All dispersal systems shall have at least twelve (12) inches of soil cover, except for pressure distribution systems, which must have at least six (6) inches of soil cover.

8.1.5 The minimum depth to the anticipated highest level of groundwater below the bottom of the leaching trench, and the native soil depth immediately below the leaching trench, shall not be less than prescribed in Table 2.

Table 2: Tier 1 Minimum Depths to Groundwater and Minimum Soil Depth from the Bottom of the Dispersal System

Percolation Rate	Minimum Depth
Percolation Rate ≤1 MPI	Only as authorized in a Tier 2 Local Agency Management Program
1 MPI< Percolation Rate ≤ 5 MPI	Twenty (20) feet
5 MPI< Percolation Rate ≤ 30 MPI	Eight (8) feet
30 MPI< Percolation Rate ≤ 120 MPI	Five (5) feet
Percolation Rate > 120 MPI	Only as authorized in a Tier 2 Local Agency Management Program
MPI = minutes per inch	

8.1.6 Dispersal systems shall be a leachfield, designed using not more than 4 square-feet of infiltrative area per linear foot of trench as the infiltrative surface, and with trench width no wider than 3 feet. Seepage pits and other dispersal systems may only be authorized for repairs where siting limitations require a variance. Maximum application rates shall be determined from stabilized percolation rate as provided in Table 3, or from soil texture and structure determination as provided in Table 4.

8.1.7 Dispersal systems shall not exceed a maximum depth of 10 feet as measured from the ground surface to the bottom of the trench.

Tier 1 – Low Risk New or Replacement OWTS

Table 3: Application Rates as Determined from Stabilized Percolation Rate

Percolation Rate (minutes per Inch)	Application Rate (gallons per day per square foot)		Percolation Rate (minutes per Inch)	Application Rate (gallons per day per square foot)		Percolation Rate (minutes per Inch)	Application Rate (gallons per day per square foot)
<1	Requires Local Manage-ment Program		31	0.522		61	0.197
1	1.2		32	0.511		62	0.194
2	1.2		33	0.5		63	0.19
3	1.2		34	0.489		64	0.187
4	1.2		35	0.478		65	0.184
5	1.2		36	0.467		66	0.18
6	0.8		37	0.456		67	0.177
7	0.8		38	0.445		68	0.174
8	0.8		39	0.434		69	0.17
9	0.8		40	0.422		70	0.167
10	0.8		41	0.411		71	0.164
11	0.786		42	0.4		72	0.16
12	0.771		43	0.389		73	0.157
13	0.757		44	0.378		74	0.154
14	0.743		45	0.367		75	0.15
15	0.729		46	0.356		76	0.147
16	0.714		47	0.345		77	0.144
17	0.7		48	0.334		78	0.14
18	0.686		49	0.323		79	0.137
19	0.671		50	0.311		80	0.133
20	0.657		51	0.3		81	0.13
21	0.643		52	0.289		82	0.127
22	0.629		53	0.278		83	0.123
23	0.614		54	0.267		84	0.12
24	0.6		55	0.256		85	0.117
25	0.589		56	0.245		86	0.113
26	0.578		57	0.234		87	0.11
27	0.567		58	0.223		88	0.107
28	0.556		59	0.212		89	0.103
29	0.545		60	0.2		90	0.1
30	0.533					>90 - 120	0.1

Tier 1 – Low Risk New or Replacement OWTS

Table 4: Design Soil Application Rates

(Source: USEPA Onsite Wastewater Treatment Systems Manual, February 2002)

Soil Texture (per the USDA soil classification system)	Soil Structure Shape	Grade	Maximum Soil Application Rate(gallons per day per square foot) [1]
Coarse Sand, Sand, Loamy Coarse Sand, Loamy Sand	Single grain	Structureless	0.8
Fine Sand, Very Fine Sand, Loamy Fine Sand, Loamy Very Fine Sand	Single grain	Structureless	0.4
Coarse Sandy Loam, Sandy Loam	Massive	Structureless	0.2
	Platy	Weak	0.2
		Moderate, Strong	Prohibited
	Prismatic, Blocky, Granular	Weak	0.4
		Moderate, Strong	0.6
Fine Sandy Loam, very fine Sandy Loam	Massive	Structureless	0.2
	Platy	Weak, Moderate, Strong	Prohibited
	Prismatic, Blocky, Granular	Weak	0.2
		Moderate, Strong	0.4
Loam	Massive	Structureless	0.2
	Platy	Weak, Moderate, Strong	Prohibited
	Prismatic, Blocky, Granular	Weak	0.4
		Moderate, Strong	0.6
Silt Loam	Massive	Structureless	Prohibited
	Platy	Weak, Moderate, Strong	Prohibited
	Prismatic, Blocky, Granular	Weak	0.4
		Moderate, Strong	0.6
Sandy Clay Loam, Clay Loam, Silty Clay Loam	Massive	Structureless	Prohibited
	Platy	Weak, Moderate, Strong	Prohibited
	Prismatic, Blocky, Granular	Weak	0.2
		Moderate, Strong	0.4
Sandy Clay, Clay, or Silty Clay	Massive	Structureless	Prohibited
	Platy	Weak, Moderate, Strong	Prohibited
	Prismatic, Blocky, Granular	Weak	Prohibited
		Moderate, Strong	0.2

[1] Soils listed as prohibited may be allowed under the authority of the Regional Water Board, or as allowed under an approved Local Agency Management Program per Tier 2.

8.1.8 All new dispersal systems shall have 100 percent replacement area that is equivalent and separate, and available for future use.

8.1.9 No dispersal systems or replacement areas shall be covered by an impermeable surface, such as paving, building foundation slabs, plastic sheeting, or any other material that prevents oxygen transfer to the soil.

8.1.10 Rock fragment content of native soil surrounding the dispersal system shall not exceed 50 percent by volume for rock fragments sized as cobbles or larger and shall be estimated using either the point-count or line-intercept methods.

8.1.11 Increased allowance for IAPMO certified dispersal systems is not allowed under Tier 1.

8.2 OWTS Construction and Installation

8.2.1 All new or replacement septic tanks and new or replacement oil/grease interceptor tanks shall comply with the standards contained in Sections K5(b), K5(c), K5(d), K5(e), K5(k), K5(m)(1), and K5(m)(3)(ii) of Appendix K, of Part 5, Title 24 of the 2007 California Code of Regulations.

8.2.2 All new septic tanks shall comply with the following requirements:

8.2.2.1 Access openings shall have watertight risers, the tops of which shall be set at most 6 inches below finished grade; and

8.2.2.2 Access openings at grade or above shall be locked or secured to prevent unauthorized access.

8.2.3 New and replacement OWTS septic tanks shall be limited to those approved by the International Association of Plumbing and Mechanical Officials (IAPMO) or stamped and certified by a California registered civil engineer as meeting the industry standards, and their installation shall be according to the manufacturer’s instructions.

8.2.4 New and replacement OWTS septic tanks shall be designed to prevent solids in excess of three-sixteenths (3/16) of an inch in diameter from passing to the dispersal system. Septic tanks that use a National Sanitation Foundation/American National Standard Institute (NSF/ANSI) Standard 46 certified septic tank filter at the final point of effluent discharge from the OWTS and prior to the dispersal system shall be deemed in compliance with this requirement.

8.2.5 A Licensed General Engineering Contractor (Class A), General Building Contractor (Class B), Sanitation System Contractor (Specialty Class C-42), or Plumbing Contractor (Specialty Class C-36) shall install all new OWTS and replacement OWTS in accordance with California Business and Professions Code Sections 7056, 7057, and 7058 and Article 3, Division 8, Title 16 of the California Code of Regulations. A property owner may also install his/her own OWTS if the as-built diagram and the installation are inspected and approved by the Regional Water Board or local agency at a time when the OWTS is in an open condition (not covered by soil and exposed for inspection).

Tier 2 – Local Agency OWTS Management Program

Local agencies may submit management programs for approval, and upon approval then manage the installation of new and replacement OWTS under that program. Local Agency Management Programs approved under Tier 2 provide an alternate method from Tier 1 programs to achieve the same policy purpose, which is to protect water quality and public health. In order to address local conditions, Local Agency Management Programs may include standards that differ from the Tier 1 requirements for new and replacement OWTS contained in Sections 7 and 8. As examples, a Local Agency Management Program may authorize different soil characteristics, usage of seepage pits, and different densities for new developments. Once the Local Agency Management Program is approved, new and replacement OWTS that are included within the Local Agency Management Program may be approved by the Local Agency. A Local Agency, at its discretion, may include Tier 1 standards within its Tier 2 Local Agency Management Program for some or all of its jurisdiction. However, once a Local Agency Management Program is approved, it shall supersede Tier 1 and all future OWTS decisions will be governed by the Tier 2 Local Agency Management Program until it is modified, withdrawn, or revoked.

9.0 Local Agency Management Program for Minimum OWTS Standards

The Local Agency Management Program for minimum OWTS Standards is a management program where local agencies can establish minimum standards that are differing requirements from those specified in Tier 1 (Section 7 and Section 8), including the areas that do not meet those minimum standards and still achieve this Policy's purpose. Local Agency Management Programs may include any one or combination of the following to achieve this purpose:

- Differing system design requirements;
- Differing siting controls such as system density and setback requirements;
- Requirements for owners to enter monitoring and maintenance agreements; and/or
- Creation of an onsite management district or zone.

9.1 Where different and/or additional requirements are needed to protect water quality the local agency shall consider the following, as well as any other conditions deemed appropriate, when developing Local Agency Management Program requirements:

9.1.1 Degree of vulnerability to pollution from OWTS due to hydrogeological conditions.

9.1.2 High Quality waters or other environmental conditions requiring enhanced protection from the effects of OWTS.

9.1.3 Shallow soils requiring a dispersal system installation that is closer to ground surface than is standard.

9.1.4 OWTS is located in area with high domestic well usage.

9.1.5 Dispersal system is located in an area with fractured bedrock.

9.1.6 Dispersal system is located in an area with poorly drained soils.

9.1.7 Surface water is vulnerable to pollution from OWTS.

9.1.8 Surface water within the watershed is listed as impaired for nitrogen or pathogens.

9.1.9 OWTS is located within an area of high OWTS density.

9.1.10 A parcel's size and its susceptibility to hydraulic mounding, organic or nitrogen loading, and whether there is sufficient area for OWTS expansion in case of failure.

9.1.11 Geographic areas that are known to have multiple, existing OWTS predating any adopted standards of design and construction including cesspools.

9.1.12 Geographic areas that are known to have multiple, existing OWTS located within either the pertinent setbacks listed in Section 7.5 of this Policy, or a setback that the local agencies finds is appropriate for that area.

9.2 The Local Agency Management Program shall detail the scope of its coverage, such as the maximum authorized projected flows for OWTS, as well as a clear delineation of those types of OWTS included within and to be permitted by the program, and provide the local site evaluation, siting, design, and construction requirements, and in addition each of the following:

9.2.1 Any local agency requirements for onsite wastewater system inspection, monitoring, maintenance, and repairs, including procedures to ensure that replacements or repairs to failing systems are done under permit from the local governing jurisdiction.

9.2.2 Any special provisions applicable to OWTS within specified geographic areas near specific impaired water bodies listed for pathogens or nitrogen. The special provisions may be substantive and/or procedural, and may include, as examples: consultation with the Regional Water Board prior to issuing permits, supplemental treatment, development of a management district or zone, special siting requirements, additional inspection and monitoring.

9.2.3 Local Agency Management Program variances, for new installations and repairs in substantial conformance, to the greatest extent practicable. Variances are not allowed for the requirements stated in sections 9.4.1 through 9.4.9.

9.2.4 Any educational, training, certification, and/or licensing requirements that will be required of OWTS service providers, site evaluators, designers, installers, pumpers, maintenance contractors, and any other person relating to OWTS activities.

9.2.5 Education and/or outreach program including informational materials to inform OWTS owners about how to locate, operate, and maintain their

OWTS as well as any Water Board order (e.g., Basin Plan prohibitions) regarding OWTS restrictions within its jurisdiction. The education and/or outreach program shall also include procedures to ensure that alternative onsite system owners are provided an informational maintenance or replacement document by the system designer or installer. This document shall cite homeowner procedures to ensure maintenance, repair, or replacement of critical items within 48 hours following failure. If volunteer well monitoring programs are available within the local agency's jurisdiction, the outreach program shall include information on how well owners may participate.

9.2.6 An assessment of existing and proposed disposal locations for septage, the volume of septage anticipated, and whether adequate capacity is available.

9.2.7 Any consideration given to onsite maintenance districts or zones.

9.2.8 Any consideration given to the development and implementation of, or coordination with, Regional Salt and Nutrient Management Plans.

9.2.9 Any consideration given to coordination with watershed management groups.

9.2.10 Procedures for evaluating the proximity of sewer systems to new or replacement OWTS installations.

9.2.11 Procedures for notifying the owner of a public water system prior to issuing an installation or repair permit for an OWTS, if the OWTS is within 1,200 feet of an intake point for a surface water treatment plant for drinking water, is in the drainage area catchment in which the intake point is located, and is located such that it may impact water quality at the intake point such as upstream of the intake point for a flowing water body, or if the OWTS is within a horizontal sanitary setback from a public well.

9.2.12 Policies and procedures that will be followed when a proposed OWTS dispersal area is within the horizontal sanitary setback of a public well or a surface water intake point. These policies and procedures shall either indicate that supplemental treatment as specified in 10.9 and 10.10 of this policy are required for OWTS that are within a horizontal sanitary setback of a public well or surface water intake point, or will establish alternate siting and operational criteria for the proposed OWTS that would similarly mitigate the potential adverse impact to the public water source.

9.2.13 Any plans for the phase-out or discontinuance of cesspool usage.

9.3 The minimum responsibilities of the local agency for management of the Local Agency Management Program include:

9.3.1 Maintain records of the number, location, and description of permits issued for OWTS where a variance is granted.

9.3.2 Maintain a water quality assessment program to determine the general operation status of OWTS and to evaluate the impact of OWTS discharges, and assess the extent to which groundwater and local surface water quality may be adversely impacted. The focus of the assessment should be areas with characteristics listed under section 9.1. The assessment program will include monitoring and analysis of water quality data, review of complaints, variances, failures, and any information resulting from inspections. The assessment may use existing water quality data from other monitoring programs and/or establish the terms, conditions, and timing for monitoring done by the local agency. At a minimum this assessment will include monitoring data for nitrates and pathogens, and may include data for other constituents which are needed to adequately characterize the impacts of OWTS on water quality. Other monitoring programs for which data may be used include but are not limited to any of the following:

9.3.2.1. Random well samples from a domestic well sampling program.

9.3.2.2. Routine real estate transfer samples if those are performed and reported.

9.3.2.3. Review of public system sampling reports done by the local agency or another municipality responsible for the public system.

9.3.2.4. Water quality testing reports done at the time of new well development if those are reported.

9.3.2.5. Beach water quality testing data performed as part of Health and Safety Code Section 115885.

9.3.2.6. Receiving water sampling performed as a part of a NPDES permit.

9.3.2.7. Data contained in the California Water Quality Assessment Database.

9.3.2.8. Groundwater sampling performed as part of Waste Discharge Requirements.

9.3.2.9. Groundwater data collected as part of the Groundwater Ambient Monitoring and Assessment Program and available in the Geotracker Database.

9.3.3 Submit an annual report by February 1 to the applicable Regional Water Board summarizing the status of items 9.3.1 through 9.3.2 above. Every fifth year, submit an evaluation of the monitoring program and an assessment of whether water quality is being impacted by OWTS, identifying any changes in the Local Agency Management Program that will be undertaken to address impacts from OWTS. The first report will commence one year after approval of the local agency's Local Agency Management Program. In addition to summarizing monitoring data collected per 9.3.2 above, all groundwater monitoring data generated by the local agency shall be submitted in EDF format for inclusion into

Geotracker, and surface water monitoring shall be submitted to CEDEN in a SWAMP comparable format.

9.4 The following are not allowed to be authorized in a Local Agency Management Program:

9.4.1 Cesspools of any kind or size.

9.4.2 OWTS receiving a projected flow over 10,000 gallons per day.

9.4.3 OWTS that utilize any form of effluent disposal that discharges on or above the post installation ground surface such as sprinklers, exposed drip lines, free-surface wetlands, or a pond.

9.4.4 Slopes greater than 30 percent without a slope stability report approved by a registered professional.

9.4.5 Decreased leaching area for IAPMO certified dispersal systems using a multiplier less than 0.70.

9.4.6 OWTS utilizing supplemental treatment without requirements for periodic monitoring or inspections.

9.4.7 OWTS dedicated to receiving significant amounts of wastes dumped from RV holding tanks.

9.4.8 Separation of the bottom of dispersal system to groundwater less than two (2) feet, except for seepage pits, which shall not be less than 10 feet.

9.4.9 Installation of new or replacement OWTS where public sewer is available. The public sewer may be considered as not available when such public sewer or any building or exterior drainage facility connected thereto is located more than 200 feet from any proposed building or exterior drainage facility on any lot or premises that abuts and is served by such public sewer. This provision does not apply to replacement OWTS where the connection fees and construction cost are greater than twice the total cost of the replacement OWTS and the local agency determines that the discharge from the OWTS will not affect groundwater or surface water to a degree that makes it unfit for drinking or other uses.

9.4.10 Except as provided for in sections 9.4.11 and 9.4.12, new or replacement OWTS with minimum horizontal setbacks less than any of the following:

9.4.10.1 150 feet from a public water well where the depth of the effluent dispersal system does not exceed 10 feet in depth.

9.4.10.2 200 feet from a public water well where the depth of the effluent dispersal system exceeds 10 feet in depth.

9.4.10.3 Where the effluent dispersal system is within 600 feet of a public water well and exceeds 20 feet in depth the horizontal setback required to achieve a two-year travel time for microbiological contaminants shall be evaluated. A qualified professional shall conduct this evaluation. However in no case shall the setback be less than 200 feet.

9.4.10.4 Where the effluent dispersal system is within 1,200 feet from a public water systems' surface water intake point, within the catchment of the drainage, and located such that it may impact water quality at the intake point such as upstream of the intake point for flowing water bodies, the dispersal system shall be no less than 400 feet from the high water mark of the reservoir, lake or flowing water body.

9.4.10.5 Where the effluent dispersal system is located more than 1,200 feet but less than 2,500 feet from a public water systems' surface water intake point, within the catchment area of the drainage, and located such that it may impact water quality at the intake point such as upstream of the intake point for flowing water bodies, the dispersal system shall be no less than 200 feet from the high water mark of the reservoir, lake or flowing water body.

9.4.11 For replacement OWTS that do not meet the above horizontal separation requirements, the replacement OWTS shall meet the horizontal separation to the greatest extent practicable. In such case, the replacement OWTS shall utilize supplemental treatment and other mitigation measures, unless the permitting authority finds that there is no indication that the previous system is adversely affecting the public water source, and there is limited potential that the replacement system could impact the water source based on topography, soil depth, soil texture, and groundwater separation.

9.4.12 For new OWTS, installed on parcels of record existing at the time of the effective date of this Policy, that cannot meet the above horizontal separation requirements, the OWTS shall meet the horizontal separation to the greatest extent practicable and shall utilize supplemental treatment for pathogens as specified in section 10.8 and any other mitigation measures prescribed by the permitting authority.

9.5 A Local Agency Management Program for OWTS must include adequate detail, including technical information to support how all the criteria in their program work together to protect water quality and public health.

9.6 A Regional Water Board reviewing a Local Agency Management Program shall consider, among other things, the past performance of the local program to adequately protect water quality, and where this has been achieved with criteria differing from Tier 1, shall not unnecessarily require modifications to the program for purposes of uniformity, as long as the Local Agency Management Program meets the requirements of Tier 2.

Tier 3 – Advanced Protection Management Programs for Impaired Areas

Existing, new, and replacement OWTS that are near impaired water bodies may be addressed by a TMDL and its implementation program, or special provisions contained in a Local Agency Management Program. If there is no TMDL or special provisions, new or replacement OWTS within 600 feet of impaired water bodies listed in Attachment 2 must meet the applicable specific requirements of Tier 3.

10.0 Advanced Protection Management Program

An Advanced Protection Management Program is the minimum required management program for all OWTS located near a water body that has been listed as impaired due to nitrogen or pathogen indicators pursuant to Section 303(d) of the Clean Water Act. Local agencies are authorized to implement Advanced Protection Management Programs in conjunction with an approved Local Agency Management Program or, if there is no approved Local Agency Management Program, Tier 1. Local agencies are encouraged to collaborate with the Regional Water Boards by sharing any information pertaining to the impairment, provide advice on potential remedies, and regulate OWTS to the extent that their authority allows for the improvement of the impairment.

10.1 The geographic area for each water body's Advanced Protection Management Program is defined by the applicable TMDL, if one has been approved. If there is not an approved TMDL, it is defined by an approved Local Agency Management Program, if it contains special provisions for that water body. If it is not defined in an approved TMDL or Local Agency Management Program, it shall be 600 linear feet [in the horizontal (map) direction] of a water body listed in Attachment 2 where the edge of that water body is the natural or levied bank for creeks and rivers, the high water mark for lakes and reservoirs, and the mean high tide line for tidally influenced water bodies, as appropriate. OWTS near impaired water bodies that are not listed on Attachment 2, and do not have a TMDL and are not covered by a Local Agency Management Program with special provisions, are not addressed by Tier 3.

10.2 The requirements of an Advanced Protection Management Program will be in accordance with a TMDL implementation plan, if one has been adopted to address the impairment. An adopted TMDL implementation plan supersedes all other requirements in Tier 3. All TMDL implementation plans adopted after the effective date of this Policy that contain load allocations for OWTS shall include a schedule that requires compliance with the load allocations as soon as practicable, given the watershed-specific circumstances. The schedule shall require that OWTS implementation actions for OWTS installed prior to the TMDL implementation plan's effective date shall commence within 3 years after the TMDL implementation plan's effective date, and that OWTS implementation actions for OWTS installed after the TMDL implementation plan's effective date shall commence immediately. The TMDL implementation plan may use some or all of the Tier 3 requirements and shall establish the applicable area of

implementation for OWTS requirements within the watershed. For those impaired water bodies that do have an adopted TMDL addressing the impairment, but the TMDL does not assign a load allocation to OWTS, no further action is required unless the TMDL is modified at some point in the future to include actions for OWTS. Existing, new, and replacement OWTS that are near impaired water bodies and are covered by a Basin Plan prohibition must also comply with the terms of the prohibition, as provided in Section 2.1.

10.3 In the absence of an adopted TMDL implementation plan, the requirements of an Advanced Protection Management Program will consist of any special provisions for the water body if any such provisions have been approved as part of a Local Agency Management Program.

10.4 The Regional Water Boards shall adopt TMDLs for impaired water bodies identified in Attachment 2, in accordance with the specified dates.

10.4.1 If a Regional Water Board does not complete a TMDL within two years of the time period specified in Attachment 2, coverage under this Policy's waiver of waste discharge requirements shall expire for any OWTS that has any part of its dispersal system discharging within the geographic area of an Advanced Protection Management Program. The Regional Water Board shall issue waste discharge requirements, general waste discharge requirements, waivers of waste discharge requirements, or require corrective action for such OWTS. The Regional Water Board will consider the following when establishing the waste discharge requirements, general waste discharge requirements, waivers of waste discharge requirements, or requirement for corrective action:

10.4.1.1 Whether supplemental treatment should be required.

10.4.1.2 Whether routine inspection of the OWTS should be required.

10.4.1.3 Whether monitoring of surface and groundwater should be performed.

10.4.1.4 The collection of a fee for those OWTS covered by the order.

10.4.1.5 Whether owners of previously-constructed OWTS should file a report by a qualified professional in accordance with section 10.5.

10.4.1.6 Whether owners of new or replacement OWTS should file a report of waste discharge with additional supporting technical information as required by the Regional Water Board.

10.5 If the Regional Water Board requires owners of OWTS to submit a qualified professional's report pursuant to Section 10.4.1.5, the report shall include a determination of whether the OWTS is functioning properly and as designed or requires corrective actions per Tier 4, and regardless of its state of function, whether it is contributing to impairment of the water body.

10.5.1 The qualified professional's report may also include, but is not limited to:

10.5.1.1 A general description of system components, their physical layout, and horizontal setback distances from property lines, buildings, wells, and surface waters.

10.5.1.2 A description of the type of wastewater discharged to the OWTS such as domestic, commercial, or industrial and classification of it as domestic wastewater or high-strength waste.

10.5.1.3 A determination of the systems design flow and the volume of wastewater discharged daily derived from water use, either estimated or actual if metered.

10.5.1.4 A description of the septic tank, including age, size, material of construction, internal and external condition, water level, scum layer thickness, depth of solids, and the results of a one-hour hydrostatic test.

10.5.1.5 A description of the distribution box, dosing siphon, or distribution pump, and if flow is being equally distributed throughout the dispersal system, as well as any evidence of solids carryover, clear water infiltration, or evidence of system backup.

10.5.1.6 A description of the dispersal system including signs of hydraulic failure, condition of surface vegetation over the dispersal system, level of ponding above the infiltrative surface within the dispersal system, other possible sources of hydraulic loading to the dispersal area, and depth of the seasonally high groundwater level.

10.5.1.7 A determination of whether the OWTS is discharging to the ground's surface.

10.5.1.8 For a water body listed as an impaired water body for pathogens, a determination of the OWTS dispersal system's separation from its deepest most infiltrative surface to the highest seasonal groundwater level or fractured bedrock.

10.5.1.9 For a water body listed as an impaired water body for nitrogen, a determination of whether the groundwater under the dispersal field is reaching the water body, and a description of the method used to make the determination.

10.6 For new, replacement, and existing OWTS in an Advanced Protection Management Program, the following are not covered by this Policy's waiver but may be authorized by a separate Regional Water Board order:

10.6.1 Cesspools of any kind or size.

10.6.2 OWTS receiving a projected flow over 10,000 gallons per day.

10.6.3 OWTS that utilize any form of effluent disposal on or above the ground surface.

10.6.4 Slopes greater than 30 percent without a slope stability report approved by a registered professional.

10.6.5 Decreased leaching area for IAPMO certified dispersal systems using a multiplier less than 0.70.

10.6.6 OWTS utilizing supplemental treatment without requirements for periodic monitoring or inspections.

10.6.7 OWTS dedicated to receiving significant amounts of wastes dumped from RV holding tanks.

10.6.8 Separation of the bottom of dispersal system to groundwater less than two (2) feet, except for seepage pits, which shall not be less than 10 feet.

10.6.9 Minimum horizontal setbacks less than any of the following:

10.6.9.1 150 feet from a public water well where the depth of the effluent dispersal system does not exceed 10 feet in depth;

10.6.9.2 200 feet from a public water well where the depth of the effluent dispersal system exceeds 10 feet in depth:

10.6.9.3 Where the effluent dispersal system is within 600 feet of a public water well and exceeds 20 feet in depth the horizontal setback required to achieve a two-year travel time for microbiological contaminants shall be evaluated. A qualified professional shall conduct this evaluation. However in no case shall the setback be less than 200 feet.

10.6.9.4 Where the effluent dispersal system is within 1,200 feet from a public water systems' surface water intake point, within the catchment of the drainage, and located such that it may impact water quality at the intake point such as upstream of the intake point for flowing water bodies, the dispersal system shall be no less than 400 feet from the high water mark of the reservoir, lake or flowing water body.

10.6.9.5 Where the effluent dispersal system is located more than 1,200 feet but less than 2,500 feet from a public water systems' surface water intake point, within the catchment of the drainage, and located such that it may impact water quality at the intake point such as upstream of the intake point for flowing water bodies, the dispersal system shall be no less than 200 feet from the high water mark of the reservoir, lake or flowing water body.

10.6.9.6 For replacement OWTS that do not meet the above horizontal separation requirements, the replacement OWTS shall meet the horizontal separation to the greatest extent practicable. In such case, the replacement OWTS shall utilize supplemental treatment and other mitigation measures.

10.6.9.7 For new OWTS, installed on parcels of record existing at the time of the effective date of this Policy, that cannot meet the above horizontal separation requirements, the OWTS shall meet the horizontal separation to the greatest extent practicable and shall

utilize supplemental treatment for pathogens as specified in section 10.10 and any other mitigation measures as prescribed by the permitting authority.

10.7 The requirements contained in Section 10 shall not apply to owners of OWTS that are constructed and operating, or permitted, on or prior to the date that the nearby water body is added to Attachment 2 who commit by way of a legally binding document to connect to a centralized wastewater collection and treatment system regulated through WDRs as specified within the following timeframes:

10.7.1 The owner must sign the document within forty-eight months of the date that the nearby water body is initially listed on Attachment 2.

10.7.2 The specified date for the connection to the centralized community wastewater collection and treatment system shall not extend beyond nine years following the date that the nearby water body is added to Attachment 2.

10.8 In the absence of an adopted TMDL implementation plan or Local Agency Management Program containing special provisions for the water body, all new or replacement OWTS permitted after the date that the water body is initially listed in Attachment 2 that have any discharge within the geographic area of an Advanced Protection Management Program shall meet the following requirements:

10.8.1 Utilize supplemental treatment and meet performance requirements in 10.9 if impaired for nitrogen and 10.10 if impaired for pathogens,

10.8.2 Comply with the setback requirements of Section 7.5.1 to 7.5.5, and

10.8.3 Comply with any applicable Local Agency Management Program requirements.

10.9 Supplemental treatment requirements for nitrogen

10.9.1 Effluent from the supplemental treatment components designed to reduce nitrogen shall be certified by NSF, or other approved third party tester, to meet a 50 percent reduction in total nitrogen when comparing the 30-day average influent to the 30-day average effluent.

10.9.2 Where a drip-line dispersal system is used to enhance vegetative nitrogen uptake, the dispersal system shall have at least six (6) inches of soil cover.

Tier 3 – Impaired Areas

10.10 Supplemental treatment requirements for pathogens

10.10.1 Supplemental treatment components designed to perform disinfection shall provide sufficient pretreatment of the wastewater so that effluent from the supplemental treatment components does not exceed a 30-day average TSS of 30 mg/L and shall further achieve an effluent fecal coliform bacteria concentration less than or equal to 200 Most Probable Number (MPN) per 100 milliliters.

10.10.2 The minimum soil depth and the minimum depth to the anticipated highest level of groundwater below the bottom of the dispersal system shall not be less than three (3) feet. All dispersal systems shall have at least twelve (12) inches of soil cover.

10.11 OWTS in an Advanced Protection Management Program with supplemental treatment shall be designed to meet the applicable performance requirements above and shall be stamped or approved by a Qualified Professional.

10.12 Prior to the installation of any proprietary treatment OWTS in an Advanced Protection Management Program, all such treatment components shall be tested by an independent third party testing laboratory.

10.13 The ongoing monitoring of OWTS in an Advanced Protection Management Program with supplemental treatment components designed to meet the performance requirements in Sections 10.9 and 10.10 shall be monitored in accordance with the operation and maintenance manual for the OWTS or more frequently as required by the local agency or Regional Water Board.

10.14 OWTS in an Advanced Protection Management Program with supplemental treatment components shall be equipped with a visual or audible alarm as well as a telemetric alarm that alerts the owner and service provider in the event of system malfunction. Where telemetry is not possible, the owner or owner's agent shall inspect the system at least monthly while the system is in use as directed and instructed by a service provider and notify the service provider not less than quarterly of the observed operating parameters of the OWTS.

10.15 OWTS in an Advanced Protection Management Program designed to meet the disinfection requirements in Section 10.10 shall be inspected for proper operation quarterly while the system is in use by a service provider unless a telemetric monitoring system is capable of continuously assessing the operation of the disinfection system. Testing of the wastewater flowing from supplemental treatment components that perform disinfection shall be sampled at a point in the system after the treatment components and prior to the dispersal system and shall be conducted quarterly based on analysis of total coliform with a minimum detection limit of 2.2 MPN. All effluent samples must include the geographic coordinates of the sample's location. Effluent samples shall be taken by a service provider and analyzed by a California Department of Public Health certified laboratory.

Tier 3 – Impaired Areas

10.16 The minimum responsibilities of a local agency administering an Advanced Protection Management Program include those prescribed for the Local Agency Management Programs in Section 9.3 of this policy, as well as monitoring owner compliance with Sections 10.13, 10.14,and 10.15.

Tier 4 – OWTS Requiring Corrective Action

OWTS that require corrective action or are either presently failing or fail at any time while this Policy is in effect are automatically included in Tier 4 and must follow the requirements as specified. OWTS included in Tier 4 must continue to meet applicable requirements of Tier 0, 1, 2 or 3 pending completion of corrective action.

11.0 Corrective Action for OWTS

11.1 Any OWTS that has pooling effluent, discharges wastewater to the surface, or has wastewater backed up into plumbing fixtures, because its dispersal system is no longer adequately percolating the wastewater is deemed to be failing, no longer meeting its primary purpose to protect public health, and requires major repair, and as such the dispersal system must be replaced, repaired, or modified so as to return to proper function and comply with Tier 1, 2, or 3 as appropriate.

11.2 Any OWTS septic tank failure, such as a baffle failure or tank structural integrity failure such that either wastewater is exfiltrating or groundwater is infiltrating is deemed to be failing, no longer meeting its primary purpose to protect public health, and requires major repair, and as such shall require the septic tank to be brought into compliance with the requirements of Section 8 in Tier 1 or a Local Agency Management Program per Tier 2.

11.3 Any OWTS that has a failure of one of its components other than those covered by 11.1 and 11.2 above, such as a distribution box or broken piping connection, shall have that component repaired so as to return the OWTS to a proper functioning condition and return to Tier 0, 1, 2, or 3.

11.4 Any OWTS that has affected, or will affect, groundwater or surface water to a degree that makes it unfit for drinking or other uses, or is causing a human health or other public nuisance condition shall be modified or upgraded so as to abate its impact.

11.5 If the owner of the OWTS is not able to comply with corrective action requirements of this section, the Regional Water Board may authorize repairs that are in substantial conformance, to the greatest extent practicable, with Tiers 1 or 3, or may require the owner of the OWTS to submit a report of waste discharge for evaluation on a case-by-case basis. Regional Water Board response to such reports of waste discharge may include, but is not limited to, enrollment in general waste discharge requirements, issuance of individual waste discharge requirements, or issuance of waiver of waste discharge requirements. A local agency may authorize repairs that are in substantial conformance, to the greatest extent practicable, with Tier 2 in accordance with section 9.2.3 if there is an approved Local Agency Management Program, or with an existing program if a Local Agency Management Program has not been approved and it is less than 5 years from the effective date of the Policy.

Tier 4 – OWTS Requiring Corrective Action

11.6 Owners of OWTS will address any corrective action requirement of Tier 4 as soon as is reasonably possible, and must comply with the time schedule of any corrective action notice received from a local agency or Regional Water Board, to retain coverage under this Policy.

11.7 Failure to meet the requirements of Tier 4 constitute a failure to meet the conditions of the waiver of waste discharge requirements contained in this Policy, and is subject to further enforcement action.

Waiver – Effective Date – Financial Assistance

Conditional Waiver of Waste Discharge Requirements

12.0 In accordance with Water Code section 13269, the State Water Board hereby waives the requirements to submit a report of waste discharge, obtain waste discharge requirements, and pay fees for discharges from OWTS covered by this Policy. Owners of OWTS covered by this Policy shall comply with the following conditions:

12.0.1 The OWTS shall function as designed with no surfacing effluent.

12.0.2 The OWTS shall not utilize a dispersal system that is in soil saturated with groundwater.

12.0.3 The OWTS shall not be operated while inundated by a storm or flood event.

12.0.4 The OWTS shall not cause or contribute to a condition of nuisance or pollution.

12.0.5 The OWTS shall comply with all applicable local agency codes, ordinances, and requirements.

12.0.6 The OWTS shall comply with and meet any applicable TMDL implementation requirements, special provisions for impaired water bodies, or supplemental treatment requirements imposed by Tier 3.

12.0.7 The OWTS shall comply with any corrective action requirements of Tier 4.

12.1 This waiver may be revoked by the State Water Board or the applicable Regional Water Board for any discharge from an OWTS, or from a category of OWTS.

Effective Date

13.0 This Policy becomes effective six months after its approval by the Office of Administrative Law, and all deadlines and compliance dates stated herein start at such time.

Waiver – Effective Date – Financial Assistance

Financial Assistance

14.0 Local Agencies may apply to the State Water Board for funds from the Clean Water State Revolving Fund for use in mini-loan programs that provide low interest loan assistance to private property owners with costs associated with complying with this Policy.

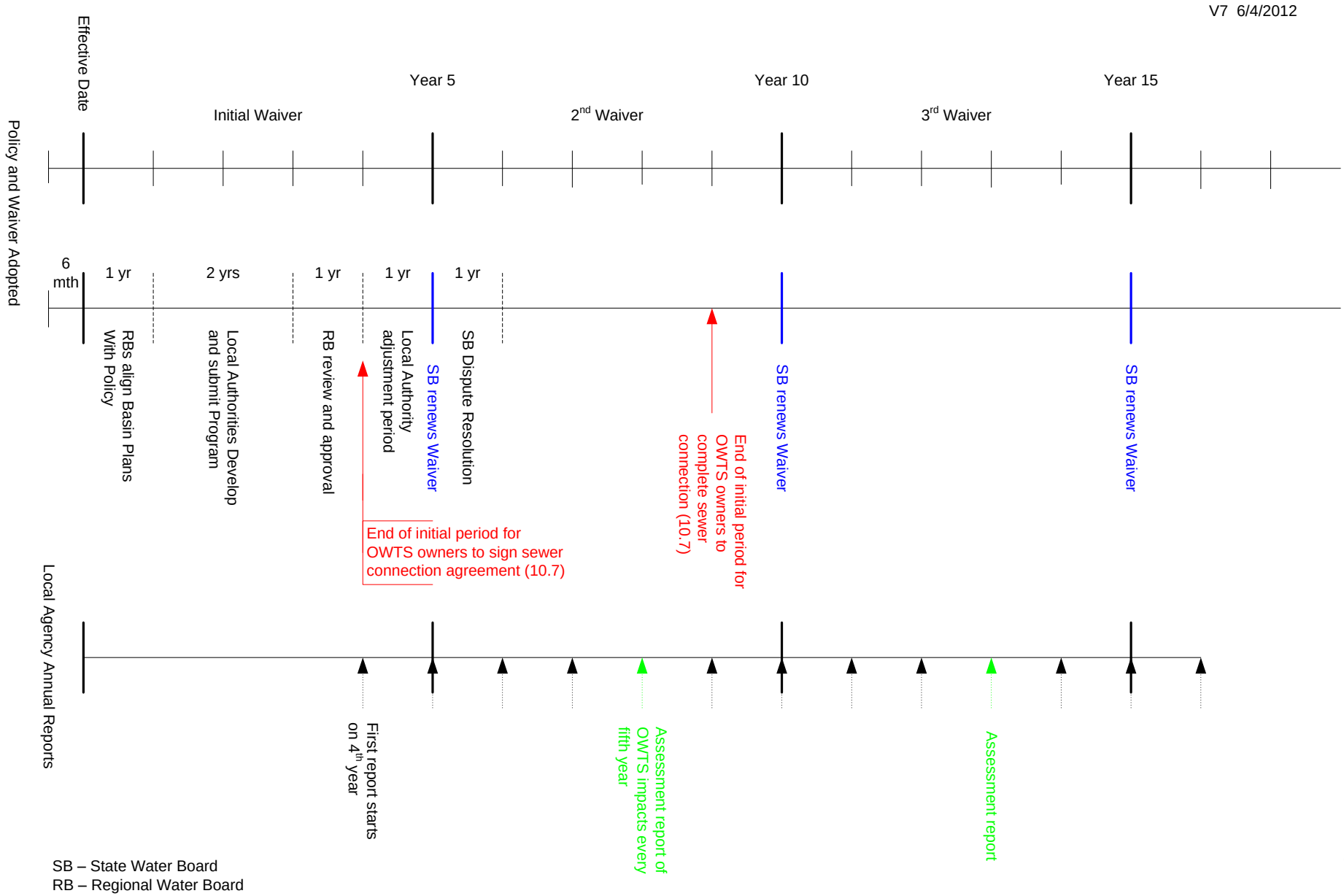
14.1 Loan interest rates for loans to local agencies will be set by the State Water Board using its policies, procedures, and strategies for implementing the Clean Water State Revolving Fund program, but will typically be one-half of the States most recent General Obligation bond sale. Historically interest rates have ranged between 2.0 and 3.0 percent.

14.2 Local agencies may add additional interest points to their loans made to private entities to cover their costs of administering the mini-loan program.

14.3 Local agencies may submit their suggested loan eligibility criteria for the min-loan program they wish to establish to the State Water Board for approval, but should consider the legislative intent stated in Water Code Section 13291.5 is that assistance is encouraged for private property owners whose cost of complying with the requirements of this policy exceeds one-half of one percent of the current assessed value of the property on which the OWTS is located.

Attachment 1

OWTS Policy Time Lines



SB – State Water Board
RB – Regional Water Board

Attachment 2

The tables below specifically identify those impaired water bodies where: (1) it is likely that operating OWTS will subsequently be determined to be a contributing source of pathogens or nitrogen and therefore it is anticipated that OWTS would receive a loading reduction, and (2) it is likely that new OWTS installations discharging within 600 feet of the water body would contribute to the impairment. Per this Policy (Tier 3, Section 10) the Regional Water Boards must adopt a TMDL by the date specified in the table. The State Water Board, at the time of approving future 303 (d) Lists, will specifically identify those impaired water bodies that are to be added or removed from the tables below.

Table 5. Water Bodies impaired for pathogens that are subject to Tier 3 as of 2012.

REGION NO.	REGION NAME	WATERBODY NAME	COUNTIES	TMDL Completion Date
1	North Coast	Clam Beach	Humboldt	2020
1	North Coast	Luffenholtz Beach	Humboldt	2020
1	North Coast	Moonstone County Park	Humboldt	2020
1	North Coast	Russian River HU, Lower Russian River HA, Guerneville HSA, mainstem Russian River from Fife Creek to Dutch Bill Creek	Sonoma	2016
1	North Coast	Russian River HU, Lower Russian River HA, Guerneville HSA, Green Valley Creek watershed	Sonoma	2016
1	North Coast	Russian River HU, Middle Russian River HA, Geyserville HSA, mainstem Russian River at Healdsburg Memorial Beach and unnamed tributary at Fitch Mountain	Sonoma	2016
1	North Coast	Russian River HU, Middle Russian River HA, mainstem Laguna de Santa Rosa	Sonoma	2016
1	North Coast	Russian River HU, Middle Russian River HA, mainstem Santa Rosa Creek	Sonoma	2016
1	North Coast	Trinidad State Beach	Humboldt	2020
2	San Francisco Bay	China Camp Beach	Marin	2014
2	San Francisco Bay	Lawsons Landing	Marin	2015
2	San Francisco Bay	Pacific Ocean at Bolinas Beach	Marin	2014

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REGION NO.	REGION NAME	WATERBODY NAME	COUNTIES	TMDL Completion Date
2	San Francisco Bay	Pacific Ocean at Fitzgerald Marine Reserve	San Mateo	2016
2	San Francisco Bay	Pacific Ocean at Muir Beach	Marin	2015
2	San Francisco Bay	Pacific Ocean at Pillar Point Beach	San Mateo	2016
2	San Francisco Bay	Petaluma River	Marin, Sonoma	2017
2	San Francisco Bay	Petaluma River (tidal portion)	Marin, Sonoma	2017
2	San Francisco Bay	San Gregorio Creek	San Mateo	2019
3	Central Coast	Pacific Ocean at Point Rincon (mouth of Rincon Cr, Santa Barbara County)	Santa Barbara	2015
3	Central Coast	Rincon Creek	Santa Barbara, Ventura	2015
4	Los Angeles	Canada Larga (Ventura River Watershed)	Ventura	2017
4	Los Angeles	Coyote Creek	Los Angeles, Orange	2015
4	Los Angeles	Rincon Beach	Ventura	2017
4	Los Angeles	San Antonio Creek (Tributary to Ventura River Reach 4)	Ventura	2017
4	Los Angeles	San Gabriel River Reach 1 (Estuary to Firestone)	Los Angeles	2015
4	Los Angeles	San Gabriel River Reach 2 (Firestone to Whittier Narrows Dam	Los Angeles	2015
4	Los Angeles	San Gabriel River Reach 3 (Whittier Narrows to Ramona)	Los Angeles	2015
4	Los Angeles	San Jose Creek Reach 1 (SG Confluence to Temple St.)	Los Angeles	2015
4	Los Angeles	San Jose Creek Reach 2 (Temple to I-10 at White Ave.)	Los Angeles	2015
4	Los Angeles	Sawpit Creek	Los Angeles	2015
4	Los Angeles	Ventura River Reach 3 (Weldon Canyon to Confl. w/ Coyote Cr)	Ventura	2017
4	Los Angeles	Walnut Creek Wash (Drains from Puddingstone Res)	Los Angeles	2015
5	Central Valley	Wolf Creek (Nevada County)	Nevada, Placer	2020
5	Central Valley	Woods Creek (Tuolumne County)	Tuolumne	2020
7	Colorado River	Alamo River	Imperial	2017

Attachment 2

REGION NO.	REGION NAME	WATERBODY NAME	COUNTIES	TMDL Completion Date
7	Colorado River	Palo Verde Outfall Drain and Lagoon	Imperial, Riverside	2017
8	Santa Ana	Canyon Lake (Railroad Canyon Reservoir)	Riverside	2019
8	Santa Ana	Fulmor, Lake	Riverside	2019
8	Santa Ana	Goldenstar Creek	Riverside	2019
8	Santa Ana	Los Trancos Creek (Crystal Cove Creek)	Orange	2017
8	Santa Ana	Lytle Creek	San Bernardino	2019
8	Santa Ana	Mill Creek Reach 1	San Bernardino	2015
8	Santa Ana	Mill Creek Reach 2	San Bernardino	2015
8	Santa Ana	Morning Canyon Creek	Orange	2017
8	Santa Ana	Mountain Home Creek	San Bernardino	2019
8	Santa Ana	Mountain Home Creek, East Fork	San Bernardino	2019
8	Santa Ana	Silverado Creek	Orange	2017
8	Santa Ana	Peters Canyon Channel	Orange	2017
8	Santa Ana	Santa Ana River, Reach 2	Orange, Riverside	2019
8	Santa Ana	Temescal Creek, Reach 6 (Elsinore Groundwater sub basin boundary to Lake Elsinore Outlet)	Riverside	2019
8	Santa Ana	Seal Beach	Orange	2017
8	Santa Ana	Serrano Creek	Orange	2017
8	Santa Ana	Huntington Harbour	Orange	2017

Attachment 2

Table 6. Water Bodies impaired for nitrogen that are subject to Tier 3.

REGION NO.	REGION NAME	WATERBODY NAME	COUNTIES	TMDL Completion Date
1	North Coast	Russian River HU, Middle Russian River HA, mainstem Laguna de Santa Rosa	Sonoma	2015
2	San Francisco Bay	Lagunitas Creek	Marin	2016
2	San Francisco Bay	Napa River	Napa, Solano	2014
2	San Francisco Bay	Petaluma River	Marin, Sonoma	2017
2	San Francisco Bay	Petaluma River (tidal portion)	Marin, Sonoma	2017
2	San Francisco Bay	Sonoma Creek	Sonoma	2014
2	San Francisco Bay	Tomales Bay	Marin	2019
2	San Francisco Bay	Walker Creek	Marin	2016
4	Los Angeles	Malibu Creek	Los Angeles	2016
4	Los Angeles	San Antonio Creek (Tributary to Ventura River Reach 4)	Ventura	2013
8	Santa Ana	East Garden Grove Wintersburg Channel	Orange	2017
8	Santa Ana	Grout Creek	San Bernardino	2015
8	Santa Ana	Rathbone (Rathbun) Creek	San Bernardino	2015
8	Santa Ana	Summit Creek	San Bernardino	2015
8	Santa Ana	Serrano Creek	Orange	2017

Attachment 3

Regional Water Boards, upon mutual agreement, may designate one Regional Water Board to regulate a person or entity that is under the jurisdiction of both (Water Code Section 13228). The following table identifies the designated Regional Water Board for all counties within the State for purposes of reviewing and, if appropriate, approving new Local Agency Management Plans.

Table 7. Regional Water Board designations by County.

County	Regions with Jurisdiction	Designated Region
Alameda	2,5	2
Alpine	5,6	6
Amador	5	5
Butte	5	5
Calaveras	5	5
Colusa	5	5
Contra Costa	2,5	2
Del Norte	1	1
El Dorado	5,6	5
Fresno	5	5
Glenn	5,1	5
Humboldt	1	1
Imperial	7	7
Inyo	6	6
Kern	3,4,5,6	5
Kings	5	5
Lake	5,1	5
Lassen	5,6	6
Los Angeles	4,6	4
Madera	5	5
Marin	2,1	2
Mariposa	5	5
Mendocino	1	1
Merced	5	5
Modoc	1,5,6	5
Mono	6	6
Monterey	3	3
Napa	2,5	2
Nevada	5,6	5
Orange	8,9	8

County	Regions with Jurisdiction	Designated Region
Placer	5,6	5
Plumas	5	5
Riverside	7,8,9	7
Sacramento	5	5
San Benito	3,5	3
San Bernardino	6,7,8	6
San Diego	9,7	9
San Francisco	2	2
San Joaquin	5	5
San Luis Obispo	3,5	3
San Mateo	2,3	2
Santa Barbara	3	3
Santa Clara	2,3	2
Santa Cruz	3	3
Shasta	5	5
Sierra	5,6	5
Siskiyou	1,5	1
Solano	2,5	5
Sonoma	1,2	1
Stanislaus	5	5
Sutter	5	5
Tehama	5	5
Trinity	1	1
Tulare	5	5
Tuolumne	5	5
Ventura	4,3	4
Yolo	5	5
Yuba	5	5