Town of Woodside Cycle 6 Housing Element Draft 3 Public Comments

On March 7, 2024, the Town of Woodside posted Cycle 6 Housing Element Draft 3 to the Town's website based on responses to HCD staff comments, dated January 11, 2024. The Cycle 6 Housing Element Draft 3 was made available for a seven-day public comment period between March 7, 2024, and March 13, 2024, pursuant to California Government Code Section 65585. During the seven-day comment period, the Town received the following 13 comments listed in the order received:

ATTACHMENTS

1. Hank Upton, received March 8, 2024
2. Cailean Sherman, received March 9, 2024
3. Hilleary, Hoskinson, received March 10, 2024
4. Toni Donaldson, received March 11, 2024
5. Paul Goeld (Councilmember, submitted as private citizen), received March 11, 2024
6. Wendy and Evan Ellis, received March 12, 2024
7. Steve Lubin, received March 12, 2024
8. Anne Paulson, received March 12, 2024
9. Sam Maslak, received March 13, 2024
10. Erica Malozsak, received March 13, 2024
11. Jackie Hendy, received March 13, 2024
12. John and Renee Hughs, received March 13, 2024
13. David Mittelman, received March 14, 2024

Town of Woodside

03/08/24

Received

From: hank upton
To: Sage Schaan
Subject: Re: Town of Woodside Draft 3 Housing Element for 7-day Public Comment Period
Date: Friday, March 8, 2024 9:09:48 AM
Attachments: image001.png

Thank you Sage. I reviewed my submission and have nothing more to add except to emphasize all the points, particularly the impossibility of Todo El Mundo parking. With 16 units there will almost certainly be 32 cars, and I doubt if parking facilities will be available. If they are, that will probably still mean at least 16 cars on the road, making it very constricted for travel or for emergency vehicles such as fire trucks. The road can't be widened due to proximity of the creek on one side and a gas line on the other. Also, the road narrows after the first 3 houses, so there wouldn't be sufficient space for all the parked cars. Putting housing there will make it an impossible situation

Thank you,

Hank and Joan Upton
230 Todo el Mundo

On Thu, Mar 7, 2024 at 12:33 PM Sage Schaan <SSchaan@woodsideca.gov> wrote:

> Dear all,
>
> You have received this email based on your request to be on the email list for correspondence related to the Town's Housing Element review. The revised Draft 3 of the Woodside Housing Element is posted on the Town's website. See the link below:
>
> https://www.woodsideca.gov/418/Draft-3-Housing-Element-for-Housing-Comm
>
> The 7-day public review period will run between 3-7-24 and 3-13-24, before submitting Draft 3. Any comments received by 3-14-24, will be forwarded to HCD for consideration during their review of Draft 3
>
> The Town continues to maintain the weblink for Draft 1 and "Draft 2, which is referenced on the Draft 3 webpage.
>
> Pease let me know if you have any questions. You may email comments directly to me or drop off hard copies at Town Hall. If you provide hard copies, please include your email

Attachment 1

address to ensure you are included on any future email correspondence.

Kindest Regards,

Sage

Sage Schaan, AICP CEP

Planning Director

Town of Woodside

650-530-3432

sschaan@woodsideca.gov

From: Cailean Sherman
To: Sage Schaan
Subject: Woodside Draft 3 Objection
Date: Saturday, March 9, 2024 8:54:25 AM

Dear Mr. Schaan:

I recently reviewed Draft 3 of the Woodside Housing Element and am writing to object to this proposal. It does not seem logical or sensical to have all the sites proposed for intense development to be located at the periphery of the town. I don't understand why the town would object to development closer to the town center where people would have access to the school, restaurants, post office, grocery store and feel part of the community.

You have picked the most remote outskirts of the town (which have not been developed before now for good reasons) where you are clustering multiple units. Out of site, out of mind.

When my husband Bob was Principal at Woodside Elementary School, he proposed that the school build housing for teachers on-site. There is room there, as well as near Town Hall, Behind Bucks and along Woodside Road across from the Village Pub where I expect you could build attractive units for our teachers, firefighters and local support staff. They would feel welcomed to Woodside, not an afterthought.

Best regards,

Cailean Sherman
150 Lynn Way, Woodside

Hilleary C Hoskinson
1031 High Road
Woodside CA, 94062

March 10, 2024

Town of Woodside

C/O Sage Schaan, Planning Director

Town Hall Woodside

2955 Woodside Road, Woodside, CA, 94062

RE: Draft 3 Housing Element for Housing & Community Development (HCD) Review: Public Comment Period through March 13, 2024

To Whom it May Concern,

We are writing in strong opposition to this latest draft includes plans for multi-family housing developments at four locations including the very controversial site on High Road.

I believe the town selected these sites with the intention to place these multi-family dwelling units as far away from the town center as possible. They have clustered them all in the northwest corner of the town. We believe this is a highly discriminatory process designed to keep these units and their residents out of sight, and out of mind for some privileged Woodside residents.

These four sites are also directly adjacent to (one site) or on the "other side of" (three sites) Highway 280 from the town's commercial district, effectively placing them metaphorically on the "other side of the tracks" and far from, the town's center. Selecting these sites all but guarantees that the new residents will not be using the town's shops, parks and services. These sites would be a part of Woodside in name only, and not supporting the objective to give more Californian's access to better local resources.

I am strongly opposed to the selection of the High Road Site for the following reasons:

- This section of Woodside containing the High Road site is somehow outside of the Woodside school district. **Members of this community in the High Road Location would not have the opportunity for their children to go to the local Woodside elementary school, a further discriminatory practice to keep members of this community, isolated from the rest of Woodside**. Selecting the High Road site would unfairly put additional education pressure on Redwood City schools and tax base.

- This site is located on the far edge of town, disconnected from the town center, parks and separated by route 280. New Residents would be discouraged from accessing that the town's services shops, parks and becoming members of the community. This site encourages new Woodside residents to use the services provided by Redwood City, and

not of Woodside. Its selection appears to be a clever attempt to discourage use of the town's amenities, **which is in clear opposition to the intent of AB686**

- This site abuts the only 4-6 lane street in the town. (other than RT280). It has the greatest volume of traffic and noise of any road in town. This site is grossly inferior to almost any other parcel of land in the town because of typography, traffic noise, and automotive congestion impacting overall quality of life. I drive this corner every day and personally believe that there are significant safety challenges by increased pressure on the High Road/Woodside Road intersection for current and future residents. The town is simply offering the "worst" of all locations for community housing with respect to quality of life, safety, and discouraging new residents to be a part of the Woodside community.

- In conclusion. The selection. of the High Road site is an unfortunate effort by members of the community to select a vastly inferior site for low and moderate income families and further discourage them from accessing the parks, services and amenities of Woodside, Selecting this site also **eliminates t**he opportunity for children living there to attend Woodside Elementary, the town's public school, a farther practice of discrimination. **Other sites that fully meet all the intent of AB686, for instance the substantial acreage part of Woodside Elementary and near the heart of the town have been summarily dismissed.** We believe that the current recommendation is explicitly unfair and inequitable, and we ask that sites like the Woodside Elementary acreage and other sites that meet the intention of AB686 be revisited.

I have also attached a letter written by a neighbor, **Paul Goeld to** Mr. Paul McDougall dated March 17, 2023. This letter outlines the specific challenges of the High Road site., and the conflict of selecting this site with the intentions set forth in AB686.

Sincerely

Hilleary C Hoskinson

Barbara G Hoskinson

Attachment: Letter from **Paul Goeld to** Mr. Paul McDougall dated March 17, 2023

A t t a c h m e n t

Paul Goeld
280 Cinnabar Road
Woodside, California 94062

March 17, 2023

Mr. Paul McDougall
Senior Program Manager
DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
Division of Housing Policy Development
2020 West El Camino Avenue, Suite 500
Sacramento, CA 95833

RE: Town of Woodside's 6th Cycle (2023-2031) Draft Housing Element

Dear Mr. McDougall:

This letter is my[1] statement of opposition to Draft 2 of the Town of Woodside's 6th Cycle (2023-2031) Housing Element. I believe Woodside's Housing Element violates the AB 686 requirement prohibiting the "clustering" of multi-family residential sites into a single section of the town.

AB 686 was passed by the California legislature in 2018 and requires jurisdictions to overcome patterns that restrict access for some members of the community. This law requires jurisdictions to promote inclusive communities, further housing choices, and address racial, social, and economic disparities that exist in government programs, policies, and operations.

For the first time, Cycle 6 requires jurisdictions to remove barriers to integration and create housing opportunities, *especially for the low- and moderate-income families targeted for these new multi-family residential housing sites, so they can benefit from "high opportunity resources" such as good schools, parks, services, and other amenities that exist in the town*. These provisions are referred to as "Affirmatively Further Fair Housing" or AFFH. HCD has made it very clear that compliance with AFFH is a critical requirement for Housing Element submissions.

When identifying sites for affordable housing, AFFH requires that sites either (i) be located throughout the community to prevent the creation of new low-income housing neighborhoods; or (ii) if clustering is recommended, it is because the proposed sites are close to good schools, libraries, parks, and other facilities in the town.

[1] Although I am a member of Woodside's Town Council, I am writing this letter to HCD as a private citizen and the views expressed herein are my own.

Not a single one of the four development sites selected by Woodside officials are near "good schools, parks, services, and other amenities that exist in the town." NOT ONE. ***In fact, none of those services or amenities can be found anywhere near any of Woodside's four site***s.

HCD' s best practices for selecting sites to accommodate the lower income RHNA include the following considerations:

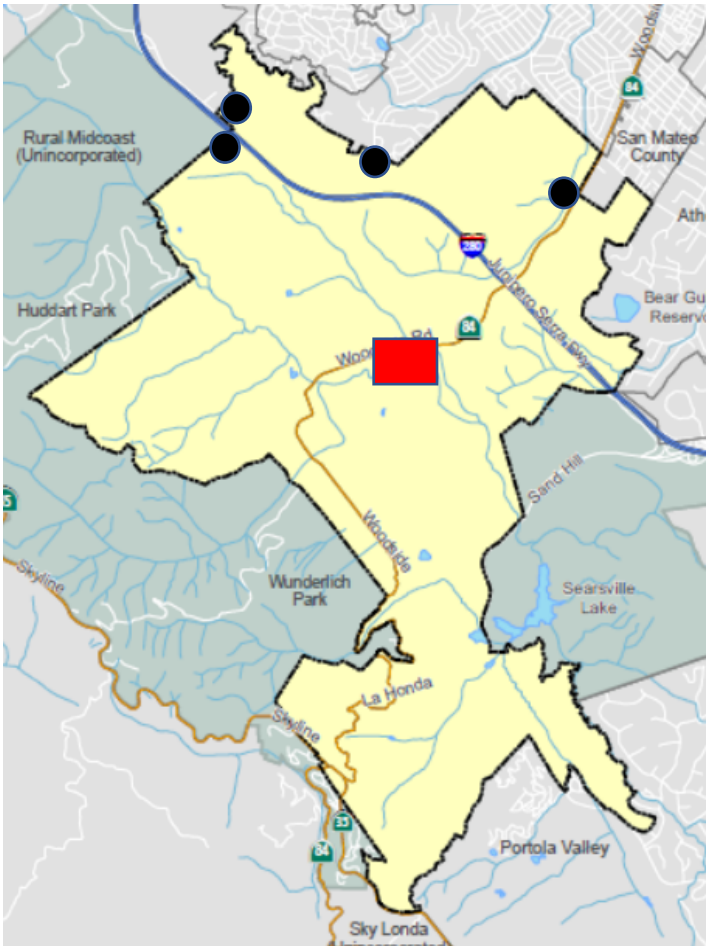
- Proximity to transit;
- Access to high performing schools and jobs;
- Access to amenities, such as parks and services;
- Access to health care facilities and grocery stores;
- Locational scoring criteria for Low-income Housing Tax Credit Program funding;
- Proximity to available infrastructure and utilities;
- Sites that do not require environmental mitigation; and,
- Presence of development streamlining processes, environmental exemptions, and other development incentives.

Again, not a single one of the eight rationales cited above are present for any of Woodside's four multi-family development sites.

In direct violation of the AFFH provisions, all four of Woodside's multi-family development sites are located at the most extreme northern end of its town limit. This clustering of sites appears to be intended to "spare" the Town's affluent central neighborhoods from having to support any multi-family development.

A map of Woodside is shown below. The four multi-family development sites are shown as black dots. It is easy to see that all four sites are located as far from the town's center as possible on the town's northernmost border. In fact, if any of these sites were shifted just a few feet further away, they would be in another city.

Woodside's business center and commercial corridor is indicated by the red rectangle. This is where the Town's only business district, main intersection, only grocery store, only school (and a *very* high performing school), only library, only government services, only fire station, only police substation, all emergency services, church, restaurants and shopping, recreational facilities, main access to transportation and most community gathering places can be found. This commercial corridor is clearly the most desirable location for multi-family development and where the AFFH requirement for nearby resources, services and amenities can be easily satisfied.



Woodside's commercial corridor is also the only "pedestrian friendly" location in the entire town where residents are easily able to walk to shopping, parks, schools, church, recreation and community services. In fact, a person can easily walk the *entire* red rectangle (that is, the half mile from Town Hall at 2955 Woodside Road to the school at 3195 Woodside Road) in ten minutes.

Woodside officials ignored these HCD required elements and deliberately located all four sites as far as possible from its town center to remote locations offering none of these essential services and resources.

Referencing Table 3.4 in Woodside's Housing Element (at Page 3-40), of the 124 multi-family units that have been proposed, 107 units or 86% of the total number of housing units are located on the *northern* side of Interstate 280. Compare this distribution with the fact that three-fourths of Woodside's population and a similar land area are located on the *southern* side of Interstate 280. Interstate 280 is a ten-lane super highway that effectively isolates approximately 20% of Woodside's residents from the town center. It is already extremely challenging for those living on the northern side of Interstate 280 to access Woodside services or to have a sense of

"belonging" to the Woodside community. Other than a small park, Woodside does not offer a single community service (school, library, community center, etc.) nor is there a single store located on the north side of the freeway in Woodside. Zero. It should not be a surprise at residents on the north side of the freeway frequently complain about being marginalized ("being on 'the wrong side' of the 280 freeway…").

The fact that Woodside officials have deliberately located every one of its low- and moderate-income multi-family developments **exclusively** in the northernmost region *will only further that alienation*. *These remote locations will not help new residents access, participate in or feel part of the Woodside community* ***which is the entire objective of AFFH***. Moreover, 91 (73%) of the proposed 124 housing units aren't even part of the Woodside School District and children living there will attend schools in another city. These remote locations will have exactly the opposite of HCD's intended impact – marginalization.

Another negative impact caused by these remote locations will be the increased dependence on cars and fossil fuels as even more vehicle miles will have to be driven by these new residents who will be forced to travel greater distances from these distant locations. One of the objectives of Cycle 6 is to reduce dependence on vehicles and reduce the number of vehicle miles driven by residents by 15%. With these remote locations, not only will it be impossible to achieve that objective, Woodside is moving in the opposite direction.

Woodside officials have claimed that this clustering is because "that's where the sites are." This disingenuous answer ignores the fact that Woodside is blessed with one of the largest land areas of any municipality in San Mateo County. Woodside's 7,500 acres is more than double that of nearby Atherton (3,200 acres) or San Carlos (3,500 acres).

Woodside officials have proudly stated the Town's principal asset is being "land rich" with hundreds, even thousands of acres of undeveloped land. It is true that some of this acreage is privately-owned, heavily forested, or part of the San Mateo County parks system. But there are hundreds of acres available and much of that land can be found in or near Woodside's commercial corridor inside that red rectangle on the map above. Yet the only acreage officials could identify for multi-family development is located at the most extreme northern edge of its city limits, far from Woodside's desirable town center and commercial corridor where all of the required services and resources are already present.

Ironically, there are many suitable properties within Woodside's commercial corridor near its school, library and fire department, near the Canada Corners shopping area (Woodside's only shopping area), and near the Town's government facility at Independence Hall. These sites have either been ignored or quickly and conveniently dismissed by Woodside officials. Officials have clearly failed to make a bonafide effort to identify more appropriate locations in or near its town center. Instead, officials have decided to select inconvenient sites far from its town center in a half-hearted, insincere attempt to "check boxes" and satisfy HCD with as little impact as possible.

This clustering is clearly in direct violation of the AFFH provisions of AB 686. This is a key provision of Cycle 6 and Woodside's transparent attempt to defy this critical requirement should not be permitted. Woodside should locate its multi-family development sites near existing resources within its commercial corridor *so future residents of these developments will be able to easily access and fully participate in the community*.

California's Department of Housing and Community Development should reject Woodside's Housing Element for failing to meet this essential requirement by clustering multi-family development sites into a single, remote section of its town. Such a transparent, obvious attempt to defy state law and ignore HCD's clear direction should not be permitted.

Respectfully submitted,

cc: Molivann Phlong, Housing Policy Analyst, HCD

ADDENDUM

Below is a map showing the approximate locations of Woodside's government and community services and commercial businesses. These are shown as red dots – all within a few hundred yards of the intersection of Woodside Road and Canada Road. They are so closely clustered that it is difficult to locate them precisely without overlapping (they are even closer to each other than this map indicates). <u>This is Woodside's only "commercial corridor" and the only part of the town with commerce, government and social services</u>. A list of the buildings is shown to the left of the map.

This corridor is just ½ mile long and in most places about 100 yards wide. As noted above, it is just a ten minute walk from one end to the other and is a very pedestrian-friendly area. Outside of this small area, the rest of Woodside is decidedly pedestrian *unfriendly*.

Note there are zero services or stores located north of Interstate 280 where almost 90% of Woodside's multi-family residential units have been proposed.

1 School

2 Library

3 Church

4 Village Hub
Community Center

5 Fire Station

6 Shopping Center

7 Hardware Store

8 Grocery Store

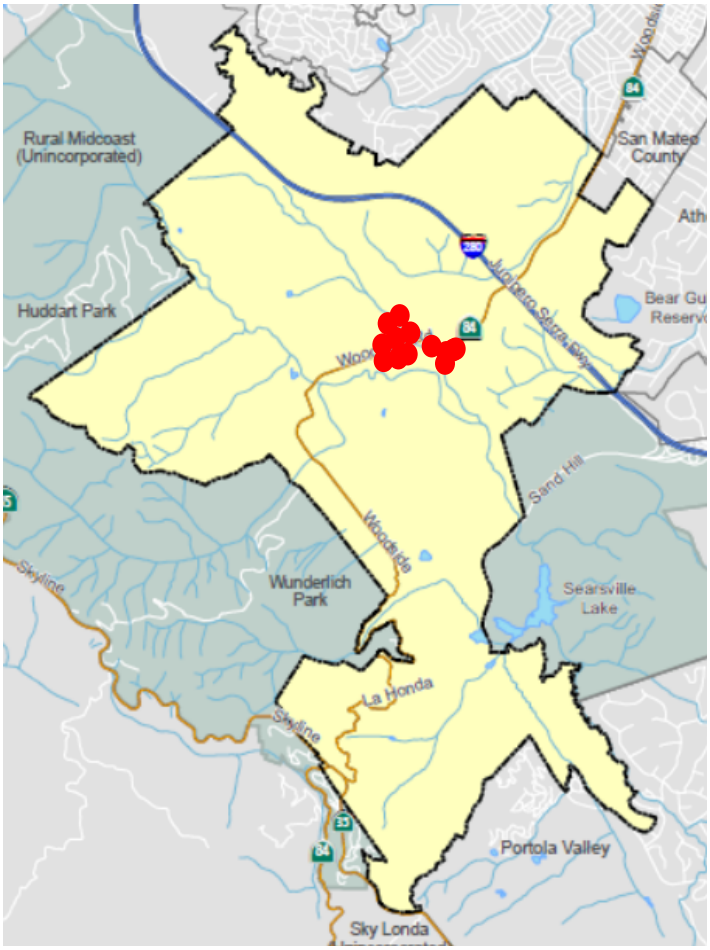
9 Village Pub

10 Pioneer Saloon

11 Government Center

12 Police Substation

13 Post Office



From: Toni Donaldson
To: Sage Schaan
Subject: Comments to be included to the HCD agency on March 14, 2024
Date: Monday, March 11, 2024 3:29:06 PM

March 11, 2024

To: Sage Schaan, Planning Director

I would like to add some comments to the Town of Woodside on their Draft 3 of its Housing Element and have it added to the submission to HCD.

Without going back into detail of all the objections stated in the past several months (as they have been or I hope they have been already viewed and submitted), I would like to state:

> that I wish this process had been handled quite differently from the beginning. Sites were identified without clearly looking at the site itself and restrictions that had been placed on the site. Then one site had to be withdrawn well into the process due to lack of due diligence from the beginning.
>
> I don't think that all of the people in charge of this task ever all got together and went together to the sites identified to actually look at and talk about the sites and what impact they might have on the areas or if they were actually appropriate.

That being said, my concerns are:

<!--[if !supportLists]--><!--[endif]-->Some of these sites are not in the Woodside School District, but in the Redwood City school district. This seems to be quite different from what the state is trying to do.

<!--[if !supportLists]--><!--[endif]-->The traffic issue, especially on the High Road site, would be significant. This is already a congested area with a huge amount of traffic in the mornings and afternoons.

<!--[if !supportLists]--><!--[endif]-->There is no public transportation at many of these sites, if at any of them at all.

<!--[if !supportLists]--><!--[endif]-->For the High Road site, the entrance would be on Todo el Mundo which is a very small, quiet, and peaceful road, with a very dangerous curve as its entrance. To have to widen this road, especially with gas and PG&E lines running through the property, would be extremely difficult, as well as having to deal with the curve that is at its entrance.

<!--[if !supportLists]--><!--[endif]-->It is my understanding that the new housing should not be clustered into one area….BUT if you look at the proposed sites, they are all clustered fairly close together, and well away from the town center.

<!--[if !supportLists]--><!--[endif]-->The town center has cafes, a library, grocery store, restaurants, a church, and the elementary school that serves the Town of Woodside (other than some parts of Woodside that are in the now proposed sites (they are in the Redwood City school district).

<!--[if !supportLists]--><!--[endif]-->It was my understanding that a town center with all of these accommodations is exactly the type of area where the housing should be situated or at least have a site identified within this area.

I understand that this process has been a long one and will continue for some time, but in the fairness to everyone, shouldn't the plan include sites that actually meet the goals of the California Housing and Community
Development agency?

Thank you for your consideration of my comments.

Toni Donaldson
1061 High Road
Woodside, CA. 94062

Paul Goeld
280 Cinnabar Road
Woodside, CA 94062

March 8, 2024

Sage Schaan, Planning Director
Town of Woodside
2995 Woodside Road
Woodside, CA 94062

Dear Mr. Schaan:

I am writing [1]to express my opposition to Draft 3 of the Town of Woodside's Housing Element. Woodside's plan violates AB 686's Affirmatively Furthering Fair Housing (AFFH) requirement which prohibits the "clustering" of multi-family residential sites in a single section of the town.

AFFH requires sites are either located *throughout the community* to prevent the creation of low-income housing neighborhoods or if clustered, *it is because proposed sites are close to good schools, libraries, parks, and other facilities in the town*.

Woodside's proposed sites are NOT located "throughout the community." All four sites are located on the extreme northern border of the town as far from the town's center (its "commercial corridor") as possible. This clustering of sites is transparently intended to spare the Town's affluent central neighborhoods from having to support *any* multi-family development. This clustering blatantly defies the spirit and letter of the AFFH code.

Clustering is only permitted if the proposed sites are close to good schools, libraries, parks and other facilities in the town. In Woodside's case, *not a single site is anywhere close to ANY of these resources*. These resources are located within the Town's commercial corridor.

Woodside officials should be required to comply with AFFH by finding sites within the town's commercial corridor. Every other city and town in our state has managed to do this. Why should Woodside be exempt? Is it too much to ask Woodside to find sites within the Town's center where these resources are already available?

Woodside's commercial corridor is the location of the town's only grocery store, only school (and a very high performing school), only library, only government services, only fire station, only police substation, emergency services, church, restaurants, shopping, recreational facilities, main access to transportation and where community gathering places are found. Moreover, 91 (73%) of the proposed 124 housing units aren't even part of the Woodside School District and those children will be attending school *in another city*. These remote locations will have exactly the opposite of AFFH's intended impact – marginalization, isolation, alienation.

[1] Although I am a member of Woodside's Town Council, I am writing this letter as a private citizen.

Woodside's transparent attempt to defy state law should not be permitted. Woodside should locate its multi-family development sites near existing resources within its commercial corridor so future residents of these developments will be able to easily access and fully participate in the community... ***as required by AFFH***.

HCD should reject Woodside's Draft 3 Housing Element for failing to meet this essential requirement. Woodside can do better.

Sincerely,

From: Wendy Ellis
To: Sage Schaan
Cc: Paul Goeld; Evan Ellis
Subject: Housing Site Feedback
Date: Tuesday, March 12, 2024 12:35:04 PM

Dear Mr Schaan,

My husband and I have lived at 1040 High Road for twenty years. We have reviewed the recently published third draft of the Woodside housing plan. We are not in favor of building housing at the High Road site.

Traffic issues there are our primary concern, given the site's proximity to Woodside Road. Woodside High School's transportation needs currently block the in and out access to Woodside Hills at least twice a day, and more frequently for football games, graduation, and other school wide events. And, as you know, there have been a number of fatal accidents at the intersection. Although Woodside Road is marked for a 45 mph speed limit, it is much more common for drivers to travel at 60mph, all hours of the day. Adding many vehicles from the new housing site feels very dangerous for residents and the general public. We believe the Town could be held liable for accidents that occur in this stretch of road if the Town chooses the High Road location for so many new vehicles.

Also, the proposed High Road site is not adjacent to any commercial areas. It's hard to imagine anyone, especially a child, walking or biking to buy food, for example, from such a hazardous location.

In addition, we are concerned about the damage that will surely be done to the creek that currently runs under High Road. How will this natural waterway be protected?

Finally, the very large gas line now installed on Todo el Mundo is an essential component to the neighborhood's power needs. It is our understanding that it cannot be moved safely, and it is very dangerous for any digging and construction efforts.

We strongly urge you to reconsider High Road site as a solution for the town's housing needs. The commercial corridor is a far superior location for such construction, and for the convenience and well-being of new residents.

Regards,

Wendy and Evan Ellis
1040 High Road
Woodside CA 94062

March 12, 2024
Woodside Town Council
Comments on Draft 3 Housing Element

Dear Woodside Town Council,

I have reviewed the Town's third try at its 2023-2031 Housing Element and the housing distribution concerns I expressed in my previous letter (see below) have not been addressed.

Addressing these issues is necessary to comply with the following HCD request:

4. Promote and affirmatively further fair housing opportunities and promote housing throughout the community or communities for all persons regardless of race, religion, sex, marital status, ancestry, national origin, color, familial status, or disability, and other characteristics... (Gov. Code, § 65583, subd. (c)(5).)
As noted in Finding B1, the element requires a complete affirmatively furthering fair housing (AFFH) analysis. Depending upon the results of that analysis, the Town may need to revise or add programs. Goals and actions must specifically respond to the analysis and to the identified and prioritized contributing factors to fair housing issues and must be significant and meaningful enough to overcome identified patterns and trends. Actions must have specific commitment, milestones, geographic targeting and metrics or numerical targets and, as appropriate, address housing mobility enhancement, new housing choices and affordability in higher opportunity or higher income areas, place-based strategies for community revitalization and displacement protection. Particularly, the element must include significant and meaningful action to enhance housing mobility. HCD will send examples under separate cover.

- The establishment of a policy of placing higher density near freeway access proves my point. "We'll just stick *those people* on the edge where they can hop on the freeway and get out of town without bothering *real Woodsiders*"

- The selected high-density sites are almost completely lacking in the Policy H2.1 amenities. No safe or practical pedestrian or bicycle access. Limited transit access.

- Goal H1.3(a) (Expand Public Transit) contains a statement that the Town will discuss connection of SamTrans Route 85 to a Woodside Road through-route. This once-a-day Portola Valley School route would not provide significant coverage of Woodside and the diversion would not be consistent with the route's purpose of taking Portola Valley School students home. The only reason the route even goes to Tripp Road is that the bus cannot negotiate the Portola Rd./ Hwy 84 intersection.

There is no response to my recommendation to modify the path of Route 278 to include central Woodside. Route 278 currently serves Cañada College and runs 24 times/day during the week. It could easily run from Cañada College down Cañada Road and Woodside Road rather than

exiting the college and taking I-280 to Woodside Road as it currently does. This new route would serve the center of Town, and the prime area appropriate for denser development.

- The draft Housing Element anticipates significant infill development in high-risk portions of the Town (see below). These areas include Very High Fire Hazard Severity Zones, earthquake fault zones and lands in the western hills which are highly susceptible to landslides. The building code measures the Town suggests will make these areas safe and encourage more building will not make these high-risk areas more appropriate for denser building. It is unlikely that many of these sites will be more densely developed. Developing these sites will be contrary to long standing Town policy and will expose new and existing residents to unnecessary hazards. The Town was incorporated in response to the County approving inappropriate development in the western hills. The provision of housing is not a reason to abandon the founding principles of the Town. We can maintain these principles and provide housing by planning for higher density in the central portion of the Town.

Here is what the revised element says:

Above Moderate Income RHNA Sites

The inventory identifies 149 sites with current zoning that permits single-family residential development, including 105 vacant sites and 44 non-vacant sites. The non-vacant sites typically have animal enclosures, paved parking areas, solar panels, or smaller outbuildings that do not represent a significant barrier to housing development. None of the non-vacant sites have active winery or animal keeping uses on them. The location of these sites is shown on Figure G-2.

Zoning districts applicable to these sites include Rural Residential (RR), Residential (R-1), Suburban Residential (SR), and Special Conservation Planning (SCP -5, SCP-7.5, and SCP-10), which have a minimum lot size requirement that ranges from 20,000 square feet to 10 acres. The majority of the 149 sites are of substandard lot size; however, all of the lots were legally formed and therefore the owners are allowed to develop one housing unit on each site. Between 2015 and 2022, the Town permitted 53 new single-family homes, many of which were on lots of substandard size. The Town has already revised development standards in The Glens to reduce setback requirements and allow for increased floor area ratio, and through Program H6.2c in Chapter 3, the Town will evaluate a similar revision to development standards, including minimum lot size, in the Western Hills to help facilitate development of vacant and underutilized residential parcels as needed to meet RHNA obligations.

As shown in Figure G-2, vacant and underutilized residential sites in the western and northern parts of Woodside are located within the Very High Fire Hazard Severity Zone, as delineated by the Office of the State Fire Marshall. Additionally, several vacant and underutilized residential G-10 sites are located within Alquist Priolo Special Study Zones. To address wildfire risk, the Town has adopted Chapter 7A of the California Building Code into the Municipal Code (Sec. 150.01(G)through (H)), including standards for materials and construction methods for exterior wildfire exposure; roofing requirements; and automatic fire-extinguisher systems into the Town Code and made these standards applicable townwide. To address seismic risk, the Town has adopted standards into the Town Code (Sec. 153.423- Sec. 153.424), which require special

measures recommended by a soils engineer and geologist to mitigate the hazards and which establish building setback requirements from known and inferred fault traces. While mitigation to address wildfire and seismic risk adds to the cost of development, as evidenced by the development trend for single-family housing in Woodside between 2015 and 2022, this has not proven to be a major development constraint. Therefore, based on past performance trends and the implementation of Program H6.2c, the inventory projects a total of 149 housing units for above moderate-income households as the realistic capacity for these sites.

After many years and three unsuccessful attempts, the Town has yet to craft a serious housing element. The citizens of Woodside expect the Town Council to take the lead on an element which maintains our natural setting and plans for a compact town center. Surely, we can all agree that a more pedestrian friendly town center with places for people who work in town to live is possible. With some real planning we can do it.

Regards,

Steve Lubin

My Comments on Housing Element, Draft 2

------- Forwarded Message --------
Subject: Woodside Housing Element
Date: Sun, 12 Mar 2023 16:53:40 -0700
From: Steve Lubin <steve@stlubin.net>
To: Woodside Council Members <council.members@woodsidetown.org>, HousingElements@hcd.ca.gov

Dear Woodside Town Council,

I have reviewed the Town's second try at its 2023-2031 Housing Element.

Again, it seems to be an insincere attempt to placate the HCD rather than a real effort to provide housing.

Woodside's trend toward producing large estates continues to generate more employment per resident so provision of a range of housing opportunities is important for the Town in order to avoid creating additional traffic and climate impact.

The three sites chosen for high density housing are all on the periphery of the Town, two hard up against the Town limit.

This is clear indication that the Town does not want to include the residents of these sites in the life of the Town. It would be far more appropriate to select sites close to the town center where residents could walk or ride to daily activities. Placing them at the periphery creates more traffic and makes it more dangerous and less attractive for those who want to walk or ride to town center. This is a viscous cycle that can be broken by good planning.

I am not aware of any serious attempts by the Town to get SamTrans to expand its routes in Woodside. It would be a simple matter for SamTrans to modify its Route 278 so it returns from Cañada College to Redwood City via Cañada Road rather than I-280. This would create 1/2 hour frequency bus service available to a large portion of the Town's populace and to future housing placed close to the town center.

In addition to being remote, the Cañada Road and Raymundo sites are in Extremely High Fire Risk zones. Last June's Edgewood Fire was perilously close to these sites. They were spared by the almost windless day and the intense response of CalFire involving an attack by multiple air tankers and helicopters. The Raymundo site is heavily impacted by the Hermit earthquake fault. Sewer access to the Raymundo site is difficult and sewer access for the Cañada Road site runs contrary to the Emerald Lakes Hills Specific Plan which prohibits sewers from serving new development.

The High Road site is very close to an existing PG&E high pressure gas transmission line. This

is the same line whose explosion killed 8 people in the 2010 San Bruno explosion and fire. The narrow and restricted shape of the lot makes it impossible to build on the site with any significant setback from the gas line. This is also a very difficult site to ride or walk from and would leave its occupants isolated from the life of the Town.

The latest Housing Element draft also anticipates development of 149 vacant and non vacant properties. My quick count finds over 60 of these sites to be located in the Western Hills. This part of Woodside is extremely susceptible to landslides and fire. The Town has rightly been very restrictive to development in this area. A principal reason for the Town's Incorporation was the poorly considered approval of development of this area by San Mateo County. It is a very bad place to encourage additional development, both for its hazards and for its lack of accessibility. Many of these sites now have difficult access because of the closure of Hwy 84 by a landslide.

Whether HCD accepts the latest draft or not I contunue to encourage the Town to come up with a realistic housing element which encorporates better planning for a sustainable future of Woodside.

Sincerely,

Steve Lubin

Here is what I said about housing in Woodside when running for Council in 2022

from <steveforwoodside.com>

Allowing inclusive housing in Woodside

Since my childhood Woodside has experienced continuously decreasing economic diversity. When I was growing up many of those employed in Town lived here. Now very few live in or even near Town. We see the result in the traffic jam leading into town every morning.

The Town's draft housing element indicates there has been a large increase in employment in town. It also indicates that the biggest gap in housing is for middle income workers. The state is trying to impose an apartment building standard for housing in town. We should demonstrate that we are taking on the challenge of providing more varied housing consistent with our local esthetic and serving people who are employed here. We can change our zoning to allow individual property owners, especially those near the town center, to build more living spaces consistent with our existing coverage allowances.

The current Council has chosen to locate affordable housing on the edges of town rather than finding a way to infill close to town center. This will lead to more traffic and destruction of open space. The policies will result in the Town becoming a kind of mega-Atherton with dense, isolated clusters of affordable housing around the edges. A far more attractive future would be planning for a compact village surrounded by the rustic-residential areas we have enjoyed for decades.

The traffic jam coming into town every morning could be diminished if we found a way for some of the many people who are employed in town to live here.

Property owners who are now allowed to build large houses could be allowed to use the same coverage to build similar buildings with multiple dwellings. The dwellings could provide housing for those who are employed here rather than generate traffic from out-of-town worker as large estates do.

There is wide support for allowing ADU's in town. There are many multi-generational and combined households in town. We should facilitate this trend by allowing more accessory units and co-housing.

Planning for housing on the periphery as the current Council has done is only creating more sprawl and traffic. It will create projects isolated from the life of the Town. It also reduces opportunities for the rustic, equestrian oriented environment the Town was created to protect.

By allowing and encouraging many small projects we can accommodate more housing incrementally while learning what adjustments need to be made along the way.

The State has and will continue to impose housing requirements on the Town. Some aspects of these requirements conflict with many of our traditional planning concepts and promote sprawl and traffic. We should resist the State's actions to tell us how to provide housing but we should see too it that people who are employed in Woodside can live here. Not out of sight but in the heart of the community. If we are not proactive on this issue, we will have no defense against more onerous mandates from the State.

More about the Town's Housing Element

Did the State really give a positive review of the Draft Housing Element?

10/4/2022

At a recent neighborhood candidates event Councilmember Brian Dombrowski stated that the HCD's (California Department of Housing Community Development) verbal review of the Town's draft housing element was positive. He went on to say that the element is really just a place holder and the Council is working on a better plan.

The staff report to the Council contains a summary of the verbal review. The summary starts on page 2, under *HCD Comment Call:*
https://www.woodsidetown.org/sites/default/files/fileattachments/town_council/meeting/33047/item_c_...
Updated link: <https://portal.laserfiche.com/Portal/DocView.aspx?id=55214&repo=r-5ff89a64>

HCD doesn't believe that Woodside can up its ADU production and has serious concerns about the practicality of using the sites selected by the Town, including legal restrictions and AFFH. AFFH is the state's way of saying affordable housing should be integrated into the community, not stuck on the edges.

Significantly the Town doesn't think it will meet the January 31 deadline for completing the element but will need the 120 day grace period to get the analysis done.

After January 31 the Town will not have a housing element compliant with State requirements. California's Housing Accountability Act (HAA) provides a so-called builder's remedy that allows developers of affordable housing projects to bypass the zoning code and general plan of cities that are out of compliance with the Housing Element Law. The grace period does not apply here.

It is a shame that the Town wasn't working on its better plan earlier, rather than counting on the mountain lions to bail us out, then presenting the hail-Mary Shawkowski proposal to the state.

Given the huge job of evaluating and updating the Housing Element and the (well deserved) retirement of Planning Director Jackie Young I can't image a sane person wanting to be a Council member!
ps:
At this same meeting Brian was asked why the Town removed the Hacienda Drive site for

affordable housing but kept the Cañada Road site, even though the Hacienda site is far superior with regard to AFFH and the Cañada site is in the only Very High Fire Hazard Severity Zone outside of the western hills <~~https://osfm.fire.ca.gov/media/5989/woodside.pdf~~>.
Updated link with expanded VHFHSZ < https://34c031f8-c9fd-4018-8c5a-4159cdff6b0d-cdn-endpoint.azureedge.net/-/media/osfm-website/what-we-do/community-wildfire-preparedness-and-mitigation/fire-hazard-severity-zones/fire-hazard-severity-zones-map/upload-4/woodside.pdf>
His response involved discussion of how the Town has control of affordability on Town owned sites, even though both the Cañada and Hacienda sites are both privately owned. By the same owner no less!

Update 10/18/2022:
Here is the State's letter rejecting the Town's Housing Element.

Subject: Woodside's Third Draft Housing Element
From: Anne Paulson
To: Planning Director Sage Schaan <sschaan@woodsidetown.org>
cc: council.members@woodsidetown.org, HousingElements@hcd.ca.gov, housingelements@yimbylaw.org
Date: March 13, 2024

Dear Mr. Schaan,

Woodside has put forward its third draft Housing Element. Unfortunately the town has not done enough to remedy the deficiencies of the previous drafts. The draft Housing Element projects housing which will not be built this cycle, including a low income project at Cañada College and market rate houses on vacant lots. In addition, Woodside projects an unrealistic 60% of its ADUs will be available to low or very low income residents. Woodside must develop a new draft to fulfill its obligations to create its share of the housing the Bay Area needs.

Cañada College will not build housing in the planning period

Woodside projects 75 Low and Very Low Income homes at Cañada College. This will not happen in the planning period. The town justifies this projection by asserting the college district Facilities Master Plan "envisions the construction of affordable faculty and staff housing units on the Cañada College site" and "the District is in the process of applying for a State grant to support housing [at a different campus not in Woodside]." Neither of these statements is true at this point in the planning period. Cañada College is not going to build housing in the next seven years.

The college district Facilities Master Plan does not plan for housing at Cañada College during the RHNA planning period

The San Mateo Community College District Facilities Master Plan[1] is a planning document looking far into the future. As we discussed in our previous letter [attached] on Woodside's second Housing Element draft, while the Master Plan shows where housing could be built at Cañada College in the future, it does not propose housing projects there in the college's ten

[1] https://www.smccd.edu/facilities/documents/SMCCCD_Districtwide_%20FMP_July_2022_v3.pdf

year planning period. “While the [Facilities Master Plan] does not yet propose new housing projects or provide detailed recommendations for programming, the selected sites will allow stakeholders to evaluate challenges, opportunities, assets, and trade-offs when future projects come forward.” The Facilities Master Plan is not evidence that Cañada College will build housing in the planning period.

San Mateo Community College District is not in the process of applying for a State grant for student housing

Woodside’s previous Housing Element draft included references to the San Mateo Community College District (SMCCD) applying for State grants for housing, for the College of San Mateo (not for Cañada College). This was true at the time. SMCCD did apply, twice, to the state Higher Education Student Housing Grant Program for housing at College of San Mateo (which is not in Woodside). Both times, the district was rejected. Since those applications, the grant program has been canceled due to state budget deficits. SMCCD cannot now be applying for state grants for housing for community colleges, because the state grant program no longer exists to apply to. Woodside continues in this third draft to state (now incorrectly) that the College District is still applying for a grant from this now-canceled program.

Further, SMCCD never applied to the now-canceled grant program for money for Cañada College. Woodside posits a rickety plan, never publicly espoused by SMCCD, to first apply for a grant for College of San Mateo, then if that succeeded, apply for Skyline Community College, then if that succeeded, apply for Cañada College. The rickety plan has now collapsed. Nevertheless, Woodside’s RHNA plan is still based on a grant SMCCD didn’t get and didn’t apply for, a grant that is no longer available.

Cañada College cannot build housing; they don’t have the money

Last fall, when SMCCD was rejected for a student housing grant for $56 million for College of San Mateo, the state authorized the district to instead issue revenue bonds for that $56 million for College of San Mateo.[2] Several other community colleges were also authorized to issue revenue bonds.

[2] Cal. Ed. Code § 17201(n)

The trouble with revenue bonds is, they have to be paid back from revenue. Community college leaders, including SMCCD Chancellor Melissa Moreno, wrote to the legislature [letter attached], explaining that revenue bonds won't work for community colleges: Community colleges don't have the revenue to pay the bondholders.

> Absence of Revenue to Secure Bonds. The social value the community college student housing program brings to the state is its commitment to affordability. Maintaining low-cost rents is essential to the program and the students it is intended to serve. That is why rents for state funded beds are capped at affordable rates for the life of the project, based on Area Median Income. Unfortunately, recent change to the student housing program undermines its viability since revenue bonds are supported with revenue generated, yet community college student housing projects will not generate revenue. Due to the commitment to affordable, below-market rates, rents are not sufficient to fund both construction costs and operating expenses…

Even if SMCCD could somehow find the money to pay back the bondholders for a College of San Mateo revenue bond, they would have nothing left for a second housing project at Cañada College.[3]

Woodside needs programs with actions to replace the 75 Cañada College units that will not be developed in the planning period

On Woodside's second draft, HCD wrote:

> Cañada College Site: As noted in the prior review, given the element's reliance on this site to accommodate the RHNA, and its inclusion in the previous 5th cycle housing

[3] Or a third housing project, if Cañada College is the third priority for the district, as described on page G-7 of the Housing Element: "The District is in the process of applying for a State grant to support housing at the College of San Mateo campus. If successful, the District would move to second and third phases to obtain grant funding to support student and family housing at its two other college campuses, including Cañada College. The second phase application will seek funding for Skyline College and could take place as soon as July 2023. The third phase application for grant funding for Cañada College is anticipated to occur during the RHNA planning period." It is odd for a March 2024 document to include references to an event that could take place as soon as July 2023. In any case, the grant program was canceled and San Mateo Community College District did not get the housing grants for any of the three campuses.

element, the element must include programs with actions to monitor the progress in development, including rezoning or identifying alternative sites if the development does not proceed as anticipated.

In its third draft, the present draft, Woodside does not satisfy HCD's requirement of a backup plan for the likely event that Cañada College could not develop housing. That likely event has now occurred. The state grant program was canceled. The Cañada College development is not going to proceed, because the college doesn't have money to build housing. Woodside needs to find those 75 units somewhere else.

Woodside is projecting far too many homes on vacant/underutilized lots

Woodside projects 149 homes on 105 vacant lots and 44 "underutilized sites" in the Site Inventory, justifying the claim by pointing at new homes replacing demolished existing homes.

On p. 2-4 of this third Housing Element draft, Woodside notes that they exceeded their Fifth Cycle RHNA allocation of 11 Above Moderate homes, by permitting 54 single family houses. They achieved this feat by counting replacement houses as new houses. Now they are attempting to use production of replacement houses, built on non-vacant lots by first demolishing an existing house, to justify their claim that they will permit 105 new (not replacement) houses on vacant lots and 44 new homes on underutilized sites. This claim cannot be accepted.

In our May 17, 2022 letter [attached] to Woodside's planning department [attached], we examined the Annual Progress Report data from 2018-2021, using publicly available data[4], discovering that only 9 new homes were permitted in that period; the rest of the permitted homes were replacements of existing homes. We have now used the list of all permitted single family homes in 2015-2021 from Appendix I of the third draft Housing Element to look at the permitted homes for 2015-2018, where we found two more new homes[5]; the other 14 are

[4] We searched the web to find various mentions of previously existing homes at the addresses, and looked at Planning Commission and Architectural and Site Review Board minutes. For example, 70 Valley Court/Road had a 1500 sq foot 3 bedroom house when it was sold in 2015. The 12,000 square foot mansion now permitted at the address in 2017 is not a new home.

[5] 30 Sand Hill Court and 65 Robles Drive

replacements. We looked at the 2022 Annual Progress Report, and found two further homes permitted on vacant lots.

Therefore, of the 54 single family homes permitted in Woodside in the entire Fifth RHNA Cycle, only 13 were new homes on vacant/underutilized lots; the rest were replacements on non-vacant lots. Woodside is now saying they'll get 105 homes on vacant lots, and attempting to justify this claim by saying they permitted 54 new homes in the Fifth Cycle. Replacing modest homes with enormous mansions is not creating new housing, and more relevantly, permitting dozens of replacement homes on non-vacant lots in the last cycle does not predict how many new homes will be built on vacant lots in this cycle.

"Underutilized sites" are parcels with sheds, barns, driveways, corrals, solar panels, driveways, etc. In other words, they are people's yards; Woodside projects 44 new single family homes in people's yards. The town does not supply any reason why the very wealthy residents of Woodside would choose to sell their backyards for housing. The trend in Woodside is the opposite: homeowners buying adjacent lots and demolishing the houses on them, to create bigger lots for themselves.

Program H6.2(c) commits to evaluating opportunities to relax development standards in the Western Hills, the steep western part of Woodside, but it doesn't commit to actually doing anything other than adopting some unspecified ordinance. But even substantial relaxation of the development rules will not change the fact that many of the lots, particularly those in the steep, very high fire risk, landslide prone Western Hills, are not good candidates for building, as can easily be ascertained by looking at the notes. "Active landslide," says one. For another candidate site, Woodside notes: "Steep uphill, heavily wooded, red line stream, active landslide," yet this collection of calamities is still listed in the Site Inventory. Woodside reports that it requires applicants to satisfy fire-safety and seismic standards, a wise practice but one that makes building houses in the Western Hills more expensive and more time-consuming, making the development of one of these parcels even more unattractive.

For these reasons, the realistic capacity for the 149 vacant/underutilized sites is about the same as the rate of building in the last cycle on vacant and underutilized sites: about 13 units for the whole cycle, 1 or 2 per year. Woodside is, instead, inexplicably, predicting all 149 will be redeveloped, about 19 a year.

The projection of 149 new homes from vacant and underutilized sites is too high by a factor of ten. Mansions replacing existing houses are not housing for the purpose of a Housing Element. The real projection of new single family homes should be 13, or maybe as many as 20 if the Town significantly reduces development standards.

The ADU income allocation assumptions need to be better justified

In our last letter we wrote:

> Woodside is projecting that 60% of its new ADUs will be available to low income residents, which is higher than the low income allocation recommended for wealthy suburbs by the ABAG ADU study included in the third draft Housing Element appendices. As comments on the previous draft Housing Element pointed out, the Town needs to provide evidence, such as a mandatory rent registry, to justify this projection, or change the ADU income allocation to match the ABAG ADU recommendation for wealthier jurisdictions.

Woodside has not even attempted to address this.

Woodside must commit to allowing dense housing at the Town Center

Program H2.1(k) proposes to "determine areas within the Town Center that could accommodate different housing types, such as mixed-use, medium or high-density housing." Indeed, the Woodside Town Center has sewer and water infrastructure, and would be the most logical place for allowing denser housing in Woodside. For that reason, while preparing the first draft of this Housing Element, the Woodside Town Council considered allowing a small amount of multi-family development in the Town Center. But the plan was rejected in the face of community opposition. While preparing the second draft, the Town Council again considered development in the Town Center, and again rejected it because of community opposition. WIthout any commitment to actually allowing housing, the third attempt will likely have the same result: no denser housing allowed. Program H2.1(k) is meaningless without a commitment to action. Woodside should commit to allowing some modestly more dense housing in the Town Center, rather than "determining" if it could allow denser housing types.

Conclusion

The Town of Woodside's third draft Housing Element is making implausible and unjustified assumptions about where its RHNA will be built. Woodside is counting on replacement homes, homes at a college that has no money to build housing units and no indication it plans to, "Low Income" ADUs that will actually be home offices and yoga studios, new houses on steep, fire-prone sites, and a noncommittal nod at housing in the Town Center at some future date. The Town must identify better, more plausible sites before its Housing Element is deemed compliant.

Sincerely,
Anne Paulson
Campaign for Fair Housing Elements

Attachments

Public comment on Woodside's second draft housing element, March 12, 2023
Letter on replacement houses counted as new, May 7, 2022
Letter from community colleges about revenue bonds, August 16, 2023

ATTACHMENT 1: March 12, 2023 Public comment on second draft housing element

12 March 2023

Dear Planning Director Schaan, Mayor, Woodside Town Council, and HCD,

The town of Woodside's first draft of its Housing Element did not identify adequate sites for housing to satisfy its RHNA, as was pointed out in several public comments and confirmed in HCD's letter of determination. Unfortunately, this defect has not been remedied in the second draft: The 75 units of Low Income housing on the Cañada College campus will almost certainly not be built; one of the town-owned sites is infeasible because it lacks sewers; and the ADU income level projections are implausible. Moreover, the projected number of homes to be built on vacant sites is ten times too big.

Woodside must show where 75 units of Low Income housing will be produced in the likely event that the Cañada College grant doesn't come through

In the current version of Woodside's Housing Element, half of the low income RHNA, 75 units, is to come from student or faculty housing at Cañada College. Woodside's previous Housing Element draft also included those units, justifying them by appealing to the San Mateo Community College District Facilities Master Plan[6].

Woodside is misrepresenting the Facilities Master Plan. It does not in fact contain a proposal to build any units of student or employee housing in the next eight years at Cañada College, let alone 75 units. Instead, the Facilities Master Plan proposes upgrading certain classrooms and the performing arts building, and replacing the turf on the athletic fields. It identifies some potential sites for housing, but only as a future wish, not as a plan to be relied on: "While the [Facilities Master Plan] does not yet propose new housing projects or provide detailed recommendations for programming, the selected sites will allow stakeholders to evaluate challenges, opportunities, assets, and trade-offs when future projects come forward."

The current Housing Element draft says in Appendix G[7], "As described in Chapter 3 [of the Housing Element], the [Community College] District intends to proceed with Phase 2 of the [Facilities Master Plan] as early as July 2023, and the faculty/staff housing would be constructed during this phase." The Facilities Master Plan identifies no such phases or intentions.

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[6] San Mateo Community College District Facilities Master Plan, https://www.smccd.edu/facilities/documents/SMCCCD_Districtwide_%20FMP_July_2022_v3.pdf

[7] Woodside Housing Element Appendices, G-7

For this draft, Woodside hypothesizes a scenario for development at Cañada College: a state grant to build housing. Appendix D of the Housing Element says, "As a first phase, the District is in the process of applying for a State grant to support housing at the College of San Mateo campus. If successful, the District would move to a second phase to obtain grant funding to support student and family housing at one of its other two campuses, including Cañada College. The second phase application submittal could take place as soon as July 2023. The District has indicated that 75-80 units at Cañada College is a reasonable assumption."[8].

There is at most thin justification to include these units in the Housing Element. The grant in question is the state Higher Education Student Housing Grant Program[9], which awards construction grants to build housing on public college campuses. It is a competitive grant program, with the grants disbursed in three rounds. The first round of this program is complete; 22 community colleges applied, including College of San Mateo. Only four colleges received construction grants, and College of San Mateo was not among the recipients.[10] The District applied again for College of San Mateo in the second round of applications, which recently closed in January 2023. The program has not yet announced the recipients of that round. Applications for the third and final round are due this summer.

So this scenario depends on everything going right:

- College of San Mateo has to win the pending current competitive grant, which most applicants won't win;
- The grant awards, currently scheduled for July 15, 2023, have to be announced before the application deadline, currently scheduled for July 3, 2023, so that the District knows it's getting the College of San Mateo funds before it applies for funding for a second campus;[11]
- The district has to then pick Cañada College instead of Skyline College for the next housing project;
- The district has to apply for grant funding for apartments, rather than for all dorm housing, which wouldn't count for RHNA;
- Cañada College has to win a second competitive grant that most applicants don't win.

This scenario has a low probability of success. If Woodside wants to rely on it, the Town must supply a backup. Fortunately, if the plan does fail, it will fail quickly, early in the planning period:

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[8] Woodside Housing Element, p. 3-35

[9] Student Housing Grant Program Update: Guidance & DRAFT Application Materials - Community College Facility Coalition, https://caccfc.org/news/621871/Student-Housing-Grant-Program-Update-Guidance--DRAFT-Application-Materials.htm

[10] Changes to the Higher Education Student Housing Grant Program - Community College Facility Coalition, https://caccfc.org/news/614211/Changes-to-the-Higher-Education-Student-Housing-Grant-Program.htm

[11] Student Housing Grant Program Update: Guidance & DRAFT Application Materials https://caccfc.org/news/621871/Student-Housing-Grant-Program-Update-Guidance--DRAFT-Application-Materials.htm

the second round applications have already closed, and the third round applications close in July of 2023. Woodside can find out whether Cañada College is getting any money very soon, probably by the end of 2023.

Woodside must identify, in the Housing Element, an alternate site or sites for the 75 units of low income housing, should this grant scenario at Cañada not play out. The Town must include a program to monitor all three steps of the grant process (the second round awards mid-2023, the third round applications July 3, 2023, and the third round awards sometime around the end of 2023) and it must include a program to promptly rezone the alternate site or sites if any of these steps fails and the Cañada College grant is no longer possible.

The Runnymede/Raymundo site is infeasible; the High Road site needs plans and schedules

Woodside lists two town-owned sites for Low Income housing, Runnymede/Raymundo and High Road. The site at the corner of Runnymede and Raymundo does not have sewer access, and the Town estimates it would cost $2.6 million to connect the parcel to sewers. That comes to $150,000 per unit at the planned zoned density. That cost makes this parcel infeasible for low income housing at the planned zoned density.

The High Road parcel needs more details. The Town must not only rezone this parcel, but must present the plans and schedules to develop it. When will the RFP be issued? How will the Town make this project financially feasible? Will the Town donate the land?

The ADU income allocation assumptions need to be better justified

Woodside is projecting that 60% of its new ADUs will be available to low income residents, which is higher than the low income allocation recommended for wealthy suburbs by the ABAG ADU study. As comments on the previous draft Housing Element pointed out, the Town needs to provide evidence, such as a mandatory rent registry, to justify this projection, or change the ADU income allocation to match the ABAG ADU recommendation for wealthier jurisdictions.

Woodside is claiming an order of magnitude too many houses from vacant/underutilized parcels

Woodside's Fifth Cycle Housing Element had a long list of "Vacant Parcels" that might be developed for housing. Single family houses ended up being built on 11 of these parcels. Now, the Town has taken the remaining Vacant Parcels, pruned away the obviously undevelopable ones[12], and put the 106 remaining parcels on the Site Inventory, claiming that *almost every one*

[12] Parcels removed included, but were not limited to, the Town Hall, two Town museums, one or two parcels that had just had new houses built on them in the fourth RHNA cycle, several parcels far from any road that could be reached only by an hours-long grueling offtrail hike through the rugged Santa Cruz Mountains, several parcels that are 20 feet wide, and Forest View Road—not a parcel on the road, but the road itself. It appears the Fifth Cycle Housing Element's Vacant Parcel list was not vetted rigorously.

of them will be developed for single family housing, resulting in 101 new single family homes this cycle[13].

Removing undevelopable parcels from a list doesn't make the remaining parcels more likely to be developed. It would be questionable for any jurisdiction to take a list of a hundred parcels and assert that almost all of them would be developed in this cycle, when only 11 of them were developed in the last cycle. But it is particularly questionable for Woodside.

By the Town's own admission on the site inventory, these are difficult sites. Many of the sites are very steep[14]. Many of the sites lack infrastructure, in an area where permits for septic are frequently refused. "Active landslide," comments the Town on one site. "Steep uphill, heavily wooded, red line stream, active landslide," is the comment on another. Another site "appears to have unstable slopes." The site on Harcross with APN 69010070 is a long narrow site with a creek running the length of it, with steeply cut banks 10-15 feet below the rest of the land—there's no obvious place to put a house there. There is good reason why these sites have not been developed yet. Not all of these sites will be developed in the next cycle; a number of them can't be developed at all.

Woodside cannot expect over a hundred new homes from a list that developed eleven homes last cycle. Eleven houses were developed on vacant or underutilized sites last cycle, and about eleven houses should be expected to be developed from the same list this cycle.

Conclusion

The Town of Woodside's second draft Housing Element is making implausible and unjustified assumptions about where its RHNA will be built. Woodside is counting on homes at a college that has no money to build housing units, a site where an affordable housing developer would have to shell out $150K per unit just for the sewer, and sites with active landslides. The Town must identify better, more plausible sites before its Housing Element is deemed compliant.
Sincerely,

Anne Paulson

[13] Plus four more single family homes from the four parcels added to the list: 73011360, 73011400, 75103050, and 73132250, all of which are also deemed virtually certain to be developed. That makes a total of 105.
[14] Woodside is on the slope of the Santa Cruz Mountains, rising from the foothills to the crest. The lowest elevation is about 360 feet above sea level, and the highest is about 2000 feet above sea level. There's a lot of steep terrain.

ATTACHMENT 2: May 7, 2022 Letter on replacement houses counted as new

Subject: Woodside's Annual Progress Reports
From: Anne Paulson
To: Acting Planning Director Sage Schaan <sschaan@woodsidetown.org>
cc: council.members@woodsidetown.org, ComplianceReview@hcd.ca.gov , HousingElements@hcd.ca.gov, sonja@yimbylaw.org

Dear Mr. Schaan:

The Campaign for Fair Housing Elements is a coalition dedicated to ensuring that every city in California produces a Housing Element which complies with the California Department of Housing and Community Development's requirements. We have some concerns about the City of Woodside's previous reporting of their housing production.

The City of Woodside has been reporting production numbers of single family houses in their Annual Progress Reports that include replacement houses. That is, when someone buys a house, demolishes it, and builds a new house, that's being reported as a net new home.

There may have been a misunderstanding. HCD's instructions explicitly require the number of **net** new units be reported,[15] which would be 0 in the case of a new home replacing a demolished home. But there is also a field in the spreadsheet for the number of units demolished, and Woodside may have thought that reporting 1 unit created and 1 unit destroyed was correct.

Nevertheless, the numbers are incorrect. Net new homes, not replacement homes, must be reported. Most of the permits Woodside issues for single family homes are for replacements, so this has resulted in Annual Progress Reports that report considerably more net new homes than are actually being built. Woodside is planning to use these incorrect numbers as a basis for its 6th Cycle Housing Element. This would be an error.

It is contrary to state law to count the replacement of an existing house as housing production. Please update your Annual Progress Reports and adjust your projections accordingly.

The following is the data for the 2018-2021 reports. Woodside reported 33 net new single family homes, but only 9 were actually new homes. The rest were teardowns followed by rebuilds. The

[15] https://www.hcd.ca.gov/community-development/housing-element/docs/housing-element-annual-progress-report-instructions.pdf, page 9: "*Net new units*: If a building is being demolished to build the new units, the APR should report net new units. For example, if 10 units are being demolished on a site to build a 100-unit building, the APR should report 100 new units and 10 units in the demolished/destroyed column."

data for earlier years is not publicly available, but looking at the totals, it appears that teardown/rebuilds were counted as new in earlier years of the 5th RHNA cycle as well. The following homes were actual net new homes.

New SFHs on Woodside's Annual Progress Report		
2018-2021		
110 Stadler	new	2018
205 Mountain Wood	new	2018
90 Roan Place	new	2018
187 Crest Road	new	2018
7 Blue Ridge Lane	new	2019
4219 Jefferson	new	2020
153 Marva Oaks	new	2020
308 Olive Hill Lane	new	2021
327 Hillside	new	2021

The following homes were teardown-and-rebuilds.

Replacement SFHs on Woodside's Annual Progress Report		
2018-2021		
3577 tripp rd	replacement	2018
455 maple way	replacement	2018
3793 woodside road	replacement	2019
890 mountain home road	replacement	2019
970 mountain home road	replacement	2019
255 mountain wood lane	replacement	2019
151 mountain home road	replacement	2019
3450 tripp road	replacement	2019
167 eleanor	replacement	2019
151 eleanor	replacement	2019
2195 greenways	replacement	2019
2150 ward way	replacement	2019
122 maybury	replacement	2020
1660 fernside	replacement	2020

3575 tripp road	replacement	2020
2150 greenways	replacement	2020
210 woodside drive	replacement	2020
349 Manuella	replacement	2020
1040 Canada	replacement	2021
4105 woodside road	replacement	2021
115 harcross	replacement	2021
60 prospect st	replacement	2021
410 whiskey hill road	replacement	2021
119 croydon	replacement	2021

The Campaign for Fair Housing Elements assumes this error was inadvertent. We look forward to seeing it promptly fixed. We expect Woodside will send corrected data to HCD, and no longer use the incorrect numbers as a basis for the projection of future production in the 6th RHNA Cycle.

Sincerely,

Anne Paulson
Campaign for Fair Housing Elements

August 16, 2023

The Honorable Toni Atkins
Senate President Pro Tempore
1021 O Street, Room 8518
Sacramento, CA 95814

The Honorable Robert Rivas
Speaker of the Assembly
1021 O Street, Room 8330
Sacramento, CA 95814

The Honorable Nancy Skinner, Chair
Senate Budget and Fiscal Review Committee
1020 N Street, Room 502
Sacramento, CA 95814

The Honorable Phil Ting, Chair
Assembly Budget Committee
1021 O Street, Room 8230
Sacramento, CA 95814

The Honorable John Laird, Chair
Senate Budget and Fiscal Review Committee
Subcommittee #1 on Education
1020 N Street, Room 502
Sacramento, CA 95814

The Honorable Kevin McCarty, Chair
Assembly Budget Committee
Subcommittee #2 on Education Finance
State Capitol, Room 6026
Sacramento, CA 95814

Dear Senators and Assembly Members:

On behalf of the coalition of community colleges in this letter, we are writing to express our concerns with changes enacted in the 2023-24 State Budget to the Higher Education Student Housing Grant Program. As amended, the revised program structure jeopardizes the viability of affordable student housing projects across the state and our opportunity to address growing housing insecurity among community college students.

Concerns with Shifting to Local Lease Revenue Bonds

The 2023-24 budget agreement and Senate Bill 117 transition the Higher Education Student Housing Grant Programs to locally secured lease revenue bonds. This drastic change would apply to both new projects and those already under construction. Notably, the sudden change creates an acute impact on projects that have begun construction, including one which is set to open in two weeks. Lease revenue bonds are a type of municipal bond that public institutions can use to finance capital projects. These bonds are typically backed by lease payments from the institution to the bondholders. Lease revenue bonds are often secured by the physical assets being financed, which means the bondholders have a claim to those assets if the lease payments are not made.

Affordable student housing projects at community colleges will not provide sufficient collateral as they are not revenue-generating assets. As a result, the transition to lease revenue bonds presents the following issues and concerns:

Budget Bill Language Creates an Uncertain Revenue Stream. AB 102, the 2023 Budget Bill Junior, provided $78.5 million in General Fund dollars to support community college affordable student housing projects. However, while colleges have been verbally assured these resources are

for ongoing debt service payments on the local revenue bonds, the language as written does not provide the statutory and ongoing reassurance for districts to secure a 30-year interest-bearing loan. Without statutory language clearly identifying the state's ongoing commitment to a specific revenue stream for community colleges affordable student housing, colleges face a high-risk of default or the need to secure these loans to core operating resources that support students, academic programs, faculty, and staff.

Absence of Revenue to Secure Bonds. The social value the community college student housing program brings to the state is its commitment to affordability. Maintaining low-cost rents is essential to the program and the students it is intended to serve. That is why rents for state-funded beds are capped at affordable rates for the life of the project, based on Area Median Income. Unfortunately, recent change to the student housing program undermines its viability since revenue bonds are supported with revenue generated, yet community college student housing projects will not generate revenue. Due to the commitment to affordable, below-market rates, rents are not sufficient to fund both construction costs and operating expenses. More concerning is that community college do not have other sources of revenue to use to secure these loans. Unlike our partner four-year systems, California's community colleges do not have tuition revenue or enterprises services to use as collateral for these loans. It's also important to note that the issuance of bonds relies on an infrastructure and expertise community colleges do not employ in-house and would need to outsource. We are deeply concerned these projects will not pencil out for districts and therefore limit community college students' access to affordable student housing.

<u>Proposed Amendments</u>

Amend Budget Bill Language. Community colleges remain committed to the affordable student housing program and seek amendments to Budget Bill language which reinforces the state's long-term commitment to these projects, address identified risks, and recognize the system's structural difference as compared to the University of California and California State University. We propose a solution that identifies ongoing general funds as subsidies for affordable rents.

Proposed Amendments:

> *"The funds appropriated in this item shall be allocated by the California Community Colleges Chancellor's Office to local community college districts ~~to~~ **for ongoing** support **and subsidies for the provision of affordable student housing rental rates at** approved community college projects authorized by the Higher Education Student Housing Grant Program pursuant to Chapter 18.5 (commencing with Section 17200) of Part 10 of Division 1 of Title 1 of the Education Code."*

Establish a Partnership for State-Issued Lease Revenue Bonds. California Community Colleges propose the use of state-issued lease revenue bonds. Under this structure, community college districts would enter into agreements with the State Treasurer's Office or the Public Works Board to secure lease revenue bonds. This mechanism was previously used for community college capital outlay projects, prior to the routine use of state General Obligation bonds. The approach leverages state expertise in revenue bonds and economies of scale. More importantly, this approach would provide a streamlined mechanism for the state to pay all debt service and

below-market rent revenues would cover operating costs, preserving the program's goal of affordability.

We appreciate the opportunity to present a viable path forward and thank you for your consideration of these proposed amendments. We look forward to working collaboratively with you toward a solution that preservation the community college student housing program and it's committed to affordability.

Sincerely,

Jose Fierro
Superintendent/President
Cerritos College

Angélica Garcia
Superintendent/President
Santa Rosa Junior College

Char Perlas
Superintendent/President
College of the Siskiyous

Matt Wetstein
Superintendent/President
Cabrillo College

Keith Curry
President/CEO
Compton College

Carole Goldsmith
Chancellor
State Center Community College District

Dianne Van Hook
Chancellor
College of the Canyon

Jeff DeFranco
Superintendent/President
Lake Tahoe Community College District

Keith Flamer
Superintendent/President
Redwoods Community College District

Ricky Shabazz
President
San Diego City College

Wolde-Ab Isaac
Chancellor
Riverside Community College District

Lennor M. Johnson
Superintendent/President
Imperial Valley College

Tom Burke
Chancellor
Kern Community College District

Brian King
Chancellor
Los Rios Community College District

Torence Powel
Superintendent/President
Napa Valley College

William Duncan
Superintendent/President
Sierra College

Rick MacLennan
Chancellor
Ventura County College District

Chris Vitelli
Superintendent/President
Merced College

Melissa Moreno
Chancellor
San Mateo County College District

Sonya Christian
Chancellor
California Community Colleges

cc:

Members, Senate Budget and Fiscal Review Committee
Members, Assembly Budget Committee
Ben Chida, Governor's Office
Nichole Munoz-Murillo, Governor's Office
Chris Ferguson, Department of Finance
Michelle Nguyen, Department of Finance
Chris Woods, Office of the Senate President Pro Tempore
Andrew Medina, Office of the Senate President Pro Tempore
Chris Francis, Senate Budget and Fiscal Review Committee
Jason Sisney, Office of the Speaker of the Assembly
Monica Henestroza, Office of the Speaker of the Assembly
Mark Martin, Assembly Budget Committee
Jennifer Pacella, Legislative Analyst's Office
Paul Steenhausen, Legislative Analyst's Office

Samuel H. Maslak
961 High Road
Woodside, CA 94062
Email: smaslak@ieee.org
Tel: 650-207-6755

March 13, 2024

Town of Woodside
C/O Sage Schaan, Planning Director
2955 Woodside Road
Woodside, CA 94062

Re: Draft 3 Housing Element for Housing and Community Development (HCD): Public Comment

To Whom it may concern,

I am writing to oppose the choice of the Todo El Mundo/High Road site for multi-family housing development. This site is unsuitable for multi-family housing for the reasons discussed below. Conversely, there are available sites within easy walking distance of the Woodside town center that are well-suited for this type of development and should be chosen instead.

Traffic Hazard

Todo El Mundo Drive intersects High Road only a few yards from the intersection of High Road and Woodside Road. This latter intersection is one of the most hazardous intersections in Woodside. There are no commercial services on Todo El Mundo or within 1 mile of this location, and there is no public transportation available near Todo El Mundo Drive. As a result, considerable automobile traffic would be generated by multi-family housing in this location, intensifying the congestion and hazard at the High Road-Woodside Road intersection.

Handicapped and Aging Residents

There are no Woodside commercial services or community facilities on or near Todo El Mundo Drive. All of these facilities are found within the Woodside town center. Since there are available locations for multi-family housing within easy walking distance of the Woodside town center, which would make these services and facilities available to residents with limited walking ability or limited access to private transportation, one of these sites should be chosen instead.

In summary, choosing the Todo El Mundo/High Road location for multi-family housing contradicts the aims of AFFH, Affirmatively Furthering Fair Housing.

Respectfully,

Samuel H. Maslak

Samuel H. Maslak

I am writing to you to oppose Draft 3 of the Town of Woodside's Housing Element, in particular I am wiring against building the multi-family housing development on HIGH ROAD.

We are the property owners 2360 Woodside Rd, entrance on High Road, living across from the proposed site on High Road.

We are opposing for various **general** reasons like: traffic, noise, safety, fire, lack of schools, grocery stores, transportation, church, recreation, library, parks etc. None of these resources are close to this particular site.

Building more homes would damage the Town's rural look. Where would be the rural character of our town? It would not preserve the Town's large lots, single family character. The whole nature of our town that we are living in since 1995 would be changed; it also would damage the character of our neighborhood.

We are opposing for various **personal** reasons like building height.

How would the building height protect our privacy living across from the proposed development? People could just look out of their windows into our yard??

How would the additional traffic, noise, safety issues, parking etc. impact our way of living from that point on? We moved here in 1995 thinking and hoping to live a nice, quiet life by the time we get old, but it looks like our dream it will not become a reality any more, it will remain a dream, nothing else but a dream!

Our biggest concern and worry will be the Value of our property, by putting a multifamily housing across from our property would diminish the value; It means that you took away the value of our property, which is shame, because we worked hard for it!

Sincerely,

Erica Malozsak

Louis Malosak

Town of Woodside

03/13/24

Received

From: Jacqueline Hendy
To: Sage Schaan
Cc: uptonhj2020@gmail.com; Hank Upton
Subject: Town of Woodside Draft 3 Housing Element for 7-day Public Comment Period.
Date: Wednesday, March 13, 2024 8:29:43 PM

Hi Sage. Hank Upton is my neighbor and has been keeping me up-to-date on the new housing proposal in the immediate are where I live.

Like Hank, I have grave concerns about this plan. Frankly, I was surprised to hear it was still being considered.

Important to this the matter, as a resident, is congestion. Traffic congestion, parking congestion , noise congestion and garbage/litter congestion.

One of the reasons I live in this area is for the peace and quiet of the beautiful open outdoors. As Hank indicated we are already dealing with traffic challenges on Todo el Mundo /High Road/Woodside Road. Adding more housing will make this situation worse.

As of right now garbage/litter gets thrown out as people park. With housing there litter will be an increasing issue. I have made a few complaints about the type of litter left there
(food, dog feces, a lit candle, empty beer bottles/cups and food wrappers). I expect the litter will increase making the area far less desirable.

Lastly, the road is already quite narrow and with the potential of additional cars parked, I would be very concerned about emergency vehicles being able to make it on Todo el Mundo (or up High Road) when needed.

Overall, I'm not in opposition to housing but it's hard to believe that this small lot on a rather quiet and beautiful natural street is the best option without impacting the existing way of life and property values.

Thank you,
Jackie Hendy
Resident at Todo el Mundo

Attachment 11

Town of Woodside

03/13/24

Received

From: jihuhs@gmail.com
To: Sage Schaan
Cc: "Renee (Stillings) Huhs"
Subject: RE: Town of Woodside Draft 3 Housing Element for 7-day Public Comment Period
Date: Wednesday, March 13, 2024 9:21:29 PM

Dear Mr. Schaan:

I (John I. Huhs) am currently in Europe without my files and only with my laptop. So please excuse the lower-than-usual quality of this response.

Background Information: I lived in Woodside (Moore Road) during graduate school at Stanford in the late 60's and then moved to the East for a 37-year career in New York City and Washington, DC. I am 79, my wife, Renee J. Huhs, is considerably younger, and we have two teenage children in local schools. We acquired our property at 117 Marva Oaks Drive in 2006 and moved into our newly constructed home there in 2008.

We reviewed the Town's latest Draft 3 Housing Element and were astounded to see that Raymundo Drive (500 yards downslope from us) is now officially included as a site to be rezoned High Density, with development to begin no later than yearend 2028. Previously we were informed, and previous drafts articulated, that this site might possibly be included much later and only if necessary to meet the Town's goals at the end of the current cycle! We have orally protested the possible inclusion of this wholly inadequate site at numerous Town Housing Element meetings and made many detailed written submissions. Nobody informed us of this recent change, and we feel we have been ignored and stabbed in the back!

This is not the forum to reiterate all our objections previously submitted, except to emphasize that Raymundo Drive meets very few of the County's and State's minimum standards for high-density development. The nearest commercial services are in the Town Center, which is beyond easy walking distance (especially with groceries) for our neighbors-to-be. There is no transit service; and development will require a minimum of $2.6 million (likely much more) to connect with existing sewer service along the east side of I-280. Etc.

In addition, Draft 3 amply validates our previous objections due to the wildfire and seismic hazards in the area. Imagine an earthquake or wildfire, with the residents of Raymundo Drive/Marva Oaks (many of whom are senior citizens like myself) fleeing in terror down narrow/windy Raymundo Drive, only to collide with up to 119 (at the maximum of 7 per unit) equally terrified residents of the new development! Including Raymundo Drive is a recipe for an unnecessary deadly disaster.

Please reconsider including the 17 units projected for high-density development on Raymundo Drive. This would be the wrong project on the wrong place. Its only positive aspect is bureaucratic convenience to the Town and HCD because the Town owns the land! Your voters (ourselves and our neighbors) have been totally ignored!!

Very truly yours,

Attachment 12

John I. Huhs
Renee J. Huhs
117 Marva Oaks Drive
Woodside, California 94062 USA
(O): +1 650 851 3500
(M): +1 917 498 3451
jihuhs@gmail.com

From: Sage Schaan <SSchaan@woodsideca.gov>
Sent: Thursday, March 7, 2024 9:33 PM
To: Sage Schaan <SSchaan@woodsideca.gov>
Cc: Kevin Bryant <KBryant@woodsideca.gov>
Subject: Town of Woodside Draft 3 Housing Element for 7-day Public Comment Period

Dear all,

You have received this email based on your request to be on the email list for correspondence related to the Town's Housing Element review. The revised Draft 3 of the Woodside Housing Element is posted on the Town's website. See the link below:

https://www.woodsideca.gov/418/Draft-3-Housing-Element-for-Housing-Comm

The 7-day public review period will run between 3-7-24 and 3-13-24, before submitting Draft 3. Any comments received by 3-14-24, will be forwarded to HCD for consideration during their review of Draft 3

The Town continues to maintain the weblink for Draft 1 and "Draft 2, which is referenced on the Draft 3 webpage.

Pease let me know if you have any questions. You may email comments directly to me or drop off hard copies at Town Hall. If you provide hard copies, please include your email address to ensure you are included on any future email correspondence.

Kindest Regards,

Sage

Sage Schaan, AICP CEP
Planning Director
Town of Woodside
650-530-3432
sschaan@woodsideca.gov

To Whom It May Concern, Wednesday, March 13, 2024

Two issues need to be addressed for Woodside to meet its stated goals in the housing element concerning ADU production:

1) Alternative Septic must be allowed without the encumbrance of proving a traditional system will work first.

The San Mateo County Department of Environmental Health regulates onsite wastewater systems. They require that a Traditional Septic system be shown to work before considering an Alternate System such as drip dispersal. The problem is that most lots were sized for a traditional system. Our lot, for example, has a four-bedroom conventional septic system and two accessory structures that could be converted into ADUs. However, we would have to have a septic system that could handle 6-8 bedrooms. We could potentially install a drip dispersal system that would have that system capacity in the footprint of the current system. However, the County restricts the system capacity of **any** system installed to the maximum capacity of the traditional system that can fit on the site.

In other words, regardless of what technologies we choose to use, the traditional system capacity restricts the buildability of our lot, even if we don't use one. The following is a discussion of the issue and solutions.

County and Water Board Collaboration on Onsite Wastewater Treatment Systems Management Introduction

The San Mateo County Environmental Health Services Division (County) regulates onsite wastewater treatment systems (OWTS) throughout the County's unincorporated areas. The County has historically operated its onsite wastewater management program under the authority granted to it by the San Francisco Bay and Central Coast Regional Water Quality Control Boards.

Requirements for the installation, use, and maintenance of OWTS in San Mateo County are contained in the Onsite Wastewater Ordinance and Onsite Systems Manual, which forms the basis for their Local Agency Management Program (LAMP). The LAMP is intended to apply to all OWTS within San Mateo County, having wastewater design flows of up to 10,000 gallons per day (gpd).

The County **Onsite Wastewater Ordinance**, effective February 4, 2016, establishes standards for the approval, installation, and operation of OWTS within San Mateo County consistent with the County's overall responsibility to prevent the creation of health hazards and nuisance conditions and the protection of surface and groundwater quality.

The **Onsite Systems Manual** provides the policy, procedural, and technical details for implementing the Ordinance.

The **Local Agency Management Program** applies to the oversight of OWTS within the County. The LAMP was prepared in accordance with the requirements of the State Water Resources Control Board's Water Quality Control Policy for Siting, Design, Operation, and Maintenance of Onsite Wastewater Treatment Systems, dated June 19, 2012, also referred to as the "OWTS Policy." The County submitted their LAMP to the San Francisco Bay Regional Water Quality Control Board (Water Board) on May 11, 2016. The County prepared the LAMP to obtain approval for OWTS management under Tier 2 of the OWTS Policy.

Goal

Address barriers to the use of alternative OWTS and onsite subsurface drip dispersal.

1. The requirement to conduct perc testing again for drip dispersal in areas that have already been perc tested for a traditional system
2. The requirement to design for a traditional system first and conduct the additional perc tests
3. The restriction of design capacity to the maximum allowed by the traditional system

Issue 1: The following is stated on LAMP page 24, item 6 and in the Onsite Systems Manual section 4, page 23: Alternative OWTS utilizing shallow subsurface drip dispersal may be permitted by Environmental Health for new construction on any legally-created parcel where Environmental Health determines such system would provide equal or greater protection to public health and the environment than a conventional or pressure-dosed trench dispersal field system. However, **both a primary and reserve leaching system for a conventional or pressure-dosed trench dispersal system shall be designed, and the area shall be reserved.** Such a system could still be installed, if required. The location of the installed shallow subsurface drip dispersal system and the reserved conventional or pressure-dosed trench dispersal system can overlap as long as the operation of the shallow drip dispersal system will not affect the potential future function of the trench dispersal system.

Clarification Topic: Clarification on why an Environmental Impact Report (EIR) is required to demonstrate that an alternative system is more protective than a traditional system when such systems are allowed per the LAMP and the Onsite Systems Manual section 4.A.3, which is referenced in Ordinance 4.84.145.a.

Housing – ADU

The additional requirements make it nearly impossible for a broad swath of property owners to add ADUs to their properties. San Mateo County includes many residential parcels in the Santa Cruz Mountains. These parcels were initially subdivided to support a single-family home, and a traditional septic system was sized to support it.

To add an ADU, that system would have to be expanded, but many parcels are sized in such a way that this is impossible. Alternative septic systems that have less expansive sizing requirements, solve this problem. However, as the code is written, it doesn't matter, as the property owner is restricted to sizing such a system to the maximum possible with a traditional system.

There are even properties with existing accessory buildings that could be converted to ADUs without additional expansion of the finished floor area. However, the same problem exists, and these buildings cannot be converted without expanding septic capacity.

This is very problematic, as nearly 29% of the Town of Woodside's Regional Housing Needs Allocation (RHNA) Plan for this cycle relies on the assumption that 120 ADUs will be constructed. However, most of the town is on Septic, and the parcels connected to sewer service are much smaller, making the proposal of ADUs there quite difficult. This leaves 29% of the Town of Woodside's housing element contingent on relief that is solely in the purview of San Mateo County.

Solution Ideas

1. Amend the Onsite Systems Manual: (Reference section to be amended)

Section 1.P.2.a: **Design and Installation Permit**. Alternative OWTS require design by a licensed professional and completion of site evaluation and installation permitting as required for conventional OWTS. Additional engineering and design requirements applicable to different types of alternative OWTS are contained in Section 4 of this Manual.

2. Apply for a variance from the Onsite Systems Manual. (Reference section for variance and confirm that the variance is from the Manual rather than the Ordinance)

3. Concurrence from San Francisco Bay Regional Water Quality Control Board staff on the implementation of alternative OWTS and subsurface drip dispersal systems.

Alternative OWTS and Subsurface Drip Dispersal San Mateo County Regulatory Resources

1. Ordinance Article 5 Alternative OWTS, Chapter 4.84.145 Alternative OWTS; use of

2. Onsite Systems Manual, May 2016
   Section 4 addresses **Alternative OWTS**
   Alternative OWTS definition: as a type of OWTS that utilizes either a method of wastewater treatment other than a conventional septic tank to produce a higher quality wastewater effluent or a method of wastewater dispersal other than a gravity-fed drain field trench for effluent dispersal. By this definition, any OWTS that includes the use of a pump system for effluent treatment and/or dispersal is considered to be an Alternative OWTS.

3. **LAMP** allows for alternative OWTS.
   Section 3, page 23 addresses Alternative OWTS Requirements

4. San Mateo County **Ordinance** sections that address alternative OWTS

4.84.145 Alternative OWTS; Use of	States terms under which alternative OWTS may be used
4.84.150 Alternative OWTS; Installation Permits and Review Requirements	Specifies site evaluation, design and permitting requirements for alternative OWTS
4.84.155 Alternative OWTS; Operating Permits	Describes operating permits and requirements
4.84.160 Alternative OWTS; Performance Monitoring and Reporting	Describes performance monitoring & reporting requirement
4.84.165 Alternative OWTS; Siting Criteria, Design and Construction Requirements	Details siting criteria, design and construction requirements for alternative OWTS; references OSM

5. **Onsite Systems Manual**
    a. Section 1.P. *Policies and Administrative Procedures* states that alternative systems may be allowed in accordance with certain general provisions and specific requirements.
    b. Section 4 *Alternative OWTS Requirements* includes requirements and guidelines for the design and construction of alternative treatment and dispersal systems permitted and/or required under the Ordinance, including: system description and applications, siting, design and construction requirements, typical details, and monitoring and maintenance requirements.
    c. Section 4.E. Alternative OWTS Requirements-**Subsurface Drip Dispersal Requirements**

    Section 4.E.4. *Wastewater Application Rates*: Wastewater application rates used for sizing drip dispersal fields shall be based on soil percolation rates as measured in the field by appropriate percolation testing. Wastewater application rates should be in accordance with the criteria in Table DD-1.

    d. Section 4.A.3. Only those supplemental treatment systems (also termed "advanced" treatment) as listed in the Onsite Systems Manual shall be approved for use in San Mateo County. Requirements are provided for the following **alternative treatment systems**:

- Intermittent Sand Filters
- Proprietary Treatment Units
    - Section 4.C.3. NSF Standard 40. The proprietary treatment unit shall be listed by the National Sanitation Foundation (NSF) as meeting the NSF Standard 40, Class 1 performance evaluation, or have certification by a third-party listing agency as complying with NSF Standard 40 performance requirements. This specification is applicable to treatment units for wastewater flows of up to 1,500 gpd. (pdf pg 99)
    e. Alternative Dispersal Systems

Section 4.A.4. Requirements are provided for the following types of alternative dispersal systems.

- Pressure Distribution Trench Systems
- Subsurface Drip Dispersal

2) The restriction of 2 ADUs per parcel should be lifted in favor of the Total Allowable Floor area.

While there is not an upward limit on total structures in Woodside, we have ample code around Total Floor Area (TFA) relating to lot size to maintain the density of structures on the property in the pursuit of that goal. For example, if I understand the code correctly, if a parcel has a Total Floor Area allowance of 10,000 ft^2, I could build four 2,500 ft^2 structures or ten 1,000 ft^2 structures.

Based on my reading of the code, these are our current allowances and discounts:

Zone District	Minimum Lot Area Required for Subdivision (acre)	Minimum Lot Area Required for Subdivision (sqft)	Equation for Total Floor Area, % is of lot area	Maximum Total Floor Area Allowed	Allowed ADUs	Current TFA Discounts for ADUs	Max Residence Size without exception	Max Residence Size with exception	Barn & Stables	Accessory Structures
R-1	0.46	20,000.00	(1.4) (10% of lot area +1000 sq. ft, up to a maximum of 3,000 sq. ft.), up to a maximum of 4,200 sq. ft.	4200	1	800	3,000	4,200	2,500	1,500
SR	1.00	43,560.19	18%	7,841	1	800	4,000	5,500	2,500	1,500
RR	3.00	130,680.58	9%	11,761	2	1,600	6,000	8,800	2,500	1,500
SCP-5	5.00	217,800.96	5.5%	11,979	2	1,600	6,000	8,800	3,000	1,500
SCP-7.5	7.50	326,701.45	3.5%	11,435	2	1,600	6,000	8,800	3,000	1,500
SCP-10	10.00	435,601.93	2.75%	11,979	2	1,600	6,000	8,800	3,000	1,500

With these current TFA allowances, it is possible for lots in the RR, SCP-5, SCP-7.5, and SCP-10 districts to have leftover TFA before you build any ADUs.

Zone	Residence Size (ft^2)	Barn & Stables (ft^2)	Accessory Structures (ft^2)	TFA (ft^2)	Maximum Total Floor Area Allowed (ft^2)	Leftover TFA (ft^2)
R-1	3,000	2,500	1,500	7,000	4,200	-2,800
SR	4,000	2,500	1,500	8,000	7,841	-159

RR	6,000	2,500	1,500	10,000	11,761	1,761
SCP-5	6,000	3,000	1,500	10,500	11,979	1,479
SCP-7.5	6,000	3,000	1,500	10,500	11,435	935
SCP-10	6,000	3,000	1,500	10,500	11,979	1,479

If we removed the maximum ADU limit per lot and instead enforced the TFA for a given lot, we would see a dramatic increase in the number of ADUs allowed on lots that are already allowed to have multiple structures on them. Here are some scenarios:

Max. Residence Size + Barn

Zone	Residence Size (ft^2)	Barn & Stables (ft^2)	ADU size	# of ADUs	Current Allowed ADUs	Increase in allowance
R-1	3,000	2,500	800	0	1	0x
SR	4,000	2,500	800	3	1	3x
RR	6,000	2,500	800	0	2	0x
SCP-5	6,000	3,000	800	5	2	3x
SCP-7.5	6,000	3,000	800	6	2	3x
SCP-10	6,000	3,000	800	5	2	3x

Max Res. Size - with exception

Zone	Residence Size (ft^2)	ADU size (ft^2)	# of ADUs	Current Allowed ADUs	Increase in allowance
R-1	4,200	800	1	1	1x
SR	5,500	800	4	1	4x
RR	8,800	800	6	2	3x
SCP-5	8,800	800	6	2	3x
SCP-7.5	8,800	800	5	2	3x
SCP-10	8,800	800	6	2	3x

Max Res. Size - No Exception

Zone	Residence Size (ft^2)	ADU size (ft^2)	# of ADUs	Current Allowed ADUs	Increase in allowance
R-1	3,000	800	3	1	3x
SR	4,000	800	6	1	6x
RR	6,000	800	9	2	5x
SCP-5	6,000	800	9	2	5x
SCP-7.5	6,000	800	9	2	5x
SCP-10	6,000	800	9	2	5x

3000 ft^2 residence

Zone	Residence Size (ft^2)	ADU size (ft^2)	# of ADUs	Current Allowed ADUs	Increase in allowance
R-1	3,000	800	3	1	3x
SR	3,000	800	7	1	7x
RR	3,000	800	13	2	7x
SCP-5	3,000	800	13	2	7x
SCP-7.5	3,000	800	13	2	7x
SCP-10	3,000	800	13	2	7x

This change would allow six ADUs to be built on the same lot as an 8,800 ft^2 house in the SCP-10 Zoning District where the **minimum lot size is 10 Acres.**

Additionally, there is a section of the code that requires an attached ADU not exceed 50% of the size of the main residence. There are still plenty of residences in Woodside that are smaller houses, 2,000 ft^2 or less. In these instances, with this requirement, it would be extremely difficult to add an ADU to the structure without expanding the main residence as well. This seems counter intuitive if we are trying to increase livable units while trying to minimize total floor area used.

Thank you for your time.

Respectfully,

David B Mittelman

ARTICLE 5. - ALTERNATIVE OWTS

4.84.145 - Alternative OWTS; use of.

a. Types of alternative OWTS permitted, consisting of supplemental treatment systems and/or alternative dispersal systems, shall be limited to those systems identified in the Onsite Systems Manual, and which have been approved by Environmental Health and the appropriate CRWQCB.
b. Supplemental treatment systems may be used to produce higher quality of wastewater effluent beyond that provided by a conventional septic tank and improve the performance of and siting options for the dispersal system.
c. Alternative OWTS, utilizing supplemental treatment of effluent, may be required by Environmental Health for any new construction or repair within designated impaired areas as described in article 6 of this chapter.
d. Alternative OWTS, including supplemental treatment of effluent and/or pressure-dosing distribution, may be required by Environmental Health for any new construction or repair where three (3)-foot separation from base of distribution to groundwater was previously investigated and approved by Environmental Health prior to the effective date of this chapter, as described in section 4.84.165 of this chapter.
e. Alternative OWTS consisting of pressure-dosing distribution dispersal systems shall be required on slopes exceeding thirty-five percent (35%), and for areas with average soil percolation rate between 0.75 and 1.0 inches per hour.
f. All alternative dispersal systems installed in San Mateo County must be below-grade systems.
g. Alternative OWTS may be permitted by Environmental Health for the repair or upgrading of any existing OWTS where it is determined that sewage cannot be disposed of in a sanitary manner by a conventional septic tank and gravity flow dispersal field system.
h. All alternative systems shall be installed by a contractor duly licensed by the Contractors State License Board of the State of California to install OWTS. Where the installation includes a proprietary treatment system, the contractor shall also possess any required manufacturer certifications, as applicable.
i. Notwithstanding any other provisions of this section, Environmental Health shall have the authority to deny and/or require modifications to any alternative OWTS proposal where it

determines that such proposal poses an unacceptable threat to public health and/or water quality. Any such denial of a Permit shall be in accordance with section 4.84.085 of this chapter.

j. Alternative OWTS utilizing shallow subsurface drip dispersal may be permitted by Environmental Health for new construction on any legally-created parcel where Environmental Health determines such system would provide equal or greater protection to public health and the environment than a conventional or trench-based pressure-dosing distribution dispersal system. However, both a primary and reserve dispersal system for a conventional or trench-based pressure-dosing distribution dispersal system shall be designed, area reserved and such system could still be installed, if required. The area of the installed shallow subsurface drip dispersal system and the reserved conventional or trench-based pressure-dosing distribution dispersal system can overlap as long as the operation of the shallow drip dispersal system will not affect the potential future function of trench-based dispersal system.

k. All Alternative OWTS must comply with the specific requirements set forth in this section and the Onsite Systems Manual.

(Ord. No. 04754, § 1, 1-5-2016)

4.84.150 - Alternative OWTS; installation permits and review requirements.

a. Engineering plans and site data for alternative OWTS shall be submitted in accordance with application procedures prescribed in the Onsite Systems Manual.

b. Site evaluations, including soil profile inspection, soil percolation testing and groundwater evaluation, shall be conducted in accordance with procedures as prescribed in the Onsite Systems Manual.

c. Engineering plans for alternative OWTS shall be prepared and signed by a qualified OWTS design professional who is knowledgeable and experienced in the field of onsite wastewater treatment and dispersal. The qualified OWTS design professional shall also be responsible for inspection of system installation to assure conformance with approved plans, and shall provide an "as-built" drawing of the installation to Environmental Health and the property owner. The construction inspection by the qualified OWTS design professional shall be in addition to standard County inspection work carried out in accordance with section 4.84.070 of this chapter and the Onsite Systems Manual.

d. Engineering plans will be reviewed by Environmental Health and, where warranted,

Environmental Health may refer the plans to the applicable CRWQCB staff and/or external third-party consultant(s) for additional review, the costs for which will be the responsibility of the applicant.

e. Upon completion of installation of alternative OWTS, a release letter shall be submitted by the system designer that the system has been installed and is functioning as designed.

f. Installation permits issued for alternative OWTS are subject to the same expiration and extension time frames as specified in section 4.84.080 of this chapter.

(Ord. No. 04754, § 1, 1-5-2016)

4.84.155 - Alternative OWTS; operating permits.

a. In addition to an installation permit, an operating Permit is required for all alternative OWTS, including those installed in connection with the repair or upgrade of existing OWTS as well as those for new construction. General requirements pertaining to operating permits are as follows:

1. The operating Permit will be issued by Environmental Health following: (a) completion of construction of the alternative OWTS; (b) satisfactory compliance with the installation Permit requirements; and (c) payment of applicable fees. Operating permits are non-transferable. Operating permits must also be renewed at the time of change in property ownership.

2. After initial issuance, the operating Permit is required to be renewed periodically with the standard renewal period being one year. Environmental Health may establish conditions allowing the time period between renewals to be extended for certain types of OWTS based on a record of favorable performance or other factors warranting a reduction in system oversight by Environmental Health. Provisions for adjusting the Operating Permit renewal period shall be prescribed in the Onsite Systems Manual.

3. Operating permits are intended to serve as the basis for verifying the adequacy of alternative OWTS performance and ensuring on-going maintenance. Permit conditions shall include monitoring and inspection requirements, Permit duration, and other provisions as prescribed in the Onsite Systems Manual or as deemed appropriate by Environmental Health on a case-by-case basis.

4. Renewal of an operating Permit requires: (a) payment of the applicable fees, upon receipt of notice from Environmental Health; and (b) submission of the results of required system

inspection and monitoring.

5. Failure to pay the required fee or submit the specified monitoring and inspection information, or failure to undertake any required corrective work specified by Environmental Health may be cause for issuance of a citation, penalty fees, non-renewal and/or revocation of the Operating Permit by Environmental Health. Environmental Health may place a lien on the property for recovery of any associated abatement costs and unpaid fees.

b. An operating Permit may also be utilized for circumstances other than alternative OWTS, such as for larger flow OWTS (>2,500 gpd), or where, in the opinion of Environmental Health, the type, size, location or other aspects of a particular OWTS installation or portable toilet installation warrant the additional level of oversight provided by an operating permit. In such cases, the issuance and scope of operating permits will be issued in accordance with the general requirements listed in subsections a.1. through a.5. above, and any additional requirements prescribed in the Onsite Systems Manual for particular circumstances.

(Ord. No. 04754, § 1, 1-5-2016)

4.84.160 - Alternative OWTS; performance monitoring and reporting.

a. A monitoring program will be established for each alternative OWTS as a condition of the operating Permit at the time of Permit issuance, and may be amended at the time of Permit renewal. Said monitoring shall be performed to ensure that the alternative OWTS is functioning satisfactorily to protect water quality and public health and safety. The monitoring program will be in accordance with guidelines prescribed in the Onsite Systems Manual.

b. Inspection and monitoring results shall be submitted to Environmental Health in accordance with reporting guidelines as prescribed in the Onsite Systems Manual.

c. Environmental Health will compile and review monitoring and inspection results for alternative OWTS and periodically provide a summary of results to the San Francisco Bay and Central Coast Regional Water Quality Control Boards. Based on this review, Environmental Health may require corrective action for specific properties or certain types of alternative OWTS, or general changes in monitoring and inspection requirements.

(Ord. No. 04754, § 1, 1-5-2016)

4.84.165 - Alternative OWTS; siting criteria, design and construction requirements.

All requirements specified in section 4.84.120 of this chapter shall also apply to alternative OWTS. However, vertical separation distance between trench bottom and groundwater may be reduced from five (5) feet to three (3) feet by utilizing supplemental treatment OWTS or pressure-dosing distribution dispersal system in compliance with criteria as prescribed in the Onsite Systems Manual. In addition, pressure-dosing distribution dispersal systems shall be required on slopes exceeding thirty-five percent (35%), and for areas with average soil percolation rate between 0.75- and one (1.0-) inches per hour. Design and construction of Alternative OWTS shall be in conformance with requirements as prescribed in the Onsite Systems Manual.

(Ord. No. 04754, § 1, 1-5-2016)

Local Agency Management Program

for

Onsite Wastewater Treatment Systems

San Mateo County, California

San Mateo County
Environmental Health Services Division

May 11, 2016

Table of Contents

Section 1:
Introduction and Background

Introduction

This document presents the proposed Local Agency Management Program (LAMP) pertaining to the oversight of onsite wastewater treatment systems (OWTS) within the County of San Mateo, California. This LAMP has been prepared in accordance with the requirements of the State Water Resources Control Board's (SWRCB) *Water Quality Control Policy for Siting, Design, Operation, and Maintenance of Onsite Wastewater Treatment Systems*, dated June 19, 2012, also referred to as the "OWTS Policy".

The SWRCB OWTS Policy provides a multi-tiered strategy for management of OWTS in California. This LAMP has been prepared by San Mateo County to obtain approval for OWTS management under Tier 2 of the OWTS Policy. As such, it is intended to allow the County to continue providing local oversight of OWTS by implementing practices that: (a) are suited to the conditions in San Mateo County; (b) meet or exceed the environmental protections of the "default" siting and design requirements for OWTS identified in Tier 1 of the SWRCB OWTS Policy; and (c) ensure the best opportunity for coordinated and comprehensive management of OWTS, public health and water quality in San Mateo County.

This LAMP is intended to apply to all OWTS within San Mateo County having wastewater design flows of up to 10,000 gpd. Any OWTS with a design flow exceeding 10,000 gpd would be regulated by the San Francisco Bay or Central Coast Regional Water Quality Control Board, as applicable.

In San Mateo County, the Health Officer has designated the Director of the Environmental Health Services Division (EHSD) as a County Health Officer for the purpose of enforcing State and local environmental health law. All cities within the County have designated the County's Health Officer as their jurisdictions' health officer.

Physical Setting

Located directly south of the City and County of San Francisco, San Mateo County completes the peninsula between the Pacific Ocean and the southern San Francisco Bay, and borders Santa Clara County to the southeast and Santa Cruz County to the south. The Santa Cruz Mountains run the entire north-south length of the county, as shown in **Figure 1-1**. Northern and northeastern parts of the county are densely populated with largely urban and suburban development, with many of its cities bordering San Francisco Bay. South and west central parts of the county are rural and coastal. There are broad swaths of flat land along the Bay, and to a lesser extent along the Pacific coastline, both of which transition sharply into the interior of the Santa Cruz Mountains of the Coastal Range.

San Mateo County Local Agency Management Program		**San Mateo County Geographical Features**	FIGURE **1-1**

Regulation of Onsite Wastewater Treatment Systems

The San Mateo County Environmental Health Services Division (EHSD) is responsible for regulating OWTS throughout the unincorporated areas of the County. The EHSD also administers OWTS regulations in the various cities and towns in the County. OWTS are used almost exclusively for properties located outside of municipal sewer service boundaries, which includes portions of the Towns of Portola Valley, Woodside and Half Moon Bay, and unincorporated areas of Los Trancos Woods, Redwood Terrace, La Honda, Kings Mountain, rural development in the Santa Cruz mountains, and coastal areas of Tunitas, San Gregorio, and Pescadero. Countywide there are currently estimated to be approximately 4,400 OWTS.

The County has historically operated its onsite wastewater management program under the authority granted to it by the San Francisco Bay and Central Coast Regional Water Quality Control Boards. **Figure 1-1** is a map of San Mateo County, showing the unincorporated areas, the heaviest concentration of OWTS, major watersheds, RWQCB jurisdiction boundaries, and other notable geographical features.

In response to the SWRCB OWTS Policy, beginning in 2013 the County started taking measures to modify and update the County's onsite wastewater system management program to meet provisions of the Policy. This effort has included enforcement of OWTS Policy Tier 3 requirements upon the effective date of the Policy, comprehensive review, update and revisions to the applicable sections of the County Code pertaining to OWTS and development of an "Onsite Systems Manual" containing various policies, procedures and technical information for implementation of the Ordinance.

San Mateo County OWTS Requirements

Requirements for the installation, use and maintenance of OWTS in San Mateo County are contained in two primary documents (summarized below), which accompany and form the basis for this LAMP.

Onsite Wastewater Ordinance

The County Onsite Wastewater Ordinance, as updated effective February 4, 2016, establishes standards for the approval, installation, and operation of OWTS within San Mateo County consistent with the County's overall responsibility to prevent the creation of health hazards and nuisance conditions and the protection of surface and groundwater quality. A copy of the Ordinance accompanies and is an integral part of this LAMP. Any change to the Ordinance requires approval by the San Mateo County Board of Supervisors. **Table 1-1** presents a brief synopsis of various sections of the Ordinance.

Table 1-1. San Mateo County Onsite Wastewater Ordinance Summary

CHAPTER __. ONSITE WASTEWATER TREATMENT	
Section	**Synopsis**
4.84.010 Purpose and Authority	To establish stds for OWTS & protect health and water quality
4.84.015 Administration and Enforcement	Authorizes EHSD to administer and enforce Code
4.84.020 Onsite Systems Manual	Creates Onsite Systems Manual (OSM) for implementation
4.84.025 Definitions	Defines key terms used in the Code
4.84.030 Scope and Application	Applies to OWTS for domestic sewage up to 10,000 gpd
4.84.035 County Not Responsible for Damages	Releases County from liability re OWTS construction
4.84.040 Public Sanitary Sewer; Connection to	Requires connection to sanitary sewer if within 200 ft
4.84.045 Certification of Soil Percolation Testers	Details requirements for certification of percolation testers
4.84.050 Certification of OWTS Installers	Details requirements for certification of OWTS installers
4.84.055 Certification for Septage Pumping and Cleaning, OWTS, Holding Tanks and Portable Toilets	Details requirements for certification of septic tank pumpers
4.84.060 Suspension or Revocation of Soil Percolation Tester, OWTS Installer or Septage Pumper Certifications	Defines procedures for suspension or revocation of certifications, and provisions for appeal
4.84.065 OWTS; When Used	Buildings require flush toilet w/OWTS or sewer
4.84.070 Applications, Plot Plans, Inspections & Other Requirements	Requirements pertaining to permits for site evaluation, repairs, and destruction
4.84.075 Fees	Requires payment of permit fees
4.84.080 Expiration and transfer of permits	Permit valid for 1 yr, 1-yr extension; can't be transferred
4.84.085 Denial, Suspension or Revocation of OWTS Permit	EHSD may deny or suspend permit; appeal process
4.84.090 Issuance of Building Permit	Bldg permit requires EHSD clearance for OWTS/sewer
4.84.095 Issuance of Certificate of Occupancy	Bldg occupancy/cert. requires OWTS/sewer clearance
4.84.100 Violations; Public Nuisance	Defines OWTS failure and nuisance conditions
4.84.105 Prohibition of Installation of Cesspools & Seepage Pits	Cesspools and seepage pits not allowed
4.84.110 Prohibition of Holding Tanks; Portable Toilets; Exemptions	Holding tanks not allowed except in certain cases; limits usage of vault toilets
4.84.115 OWTS; Minimum Requirements	States general OWTS requirements, as well as rqts per OSM
4.84.120 OWTS; Minimum Siting Criteria	Details siting requirements, such as soils, slope, setbacks
4.84.125 OWTS Subject to CRWQCB Waste Discharge Requirements; County Permit Required	Defines cases requiring OWTS review/approval by RWQCB
4.84.130 OWTS; Repairs or Alterations	OWTS repairs must comply to max extent practicable
4.84.135 OWTS; Destruction	OWTS no longer in use must be destroyed under permit
4.84.140 OWTS; Subsurface Dispersal Systems Requirements	States general dispersal rqts, as well as rqts per OSM
4.84.145 Alternative OWTS; Use of	States terms under which alternative OWTS may be used
4.84.150 Alternative OWTS; Installation Permits and Review Requirements	Specifies site evaluation, design and permitting requirements for alternative OWTS
4.84.155 Alternative OWTS; Operating Permits	Describes operating permits and requirements
4.84.160 Alternative OWTS; Performance Monitoring and Reporting	Describes performance monitoring & reporting requirement
4.84.165 Alternative OWTS; Siting Criteria, Design and Construction Requirements	Details siting criteria, design and construction requirements for alternative OWTS; references OSM
4.84.170 Advanced Protection Management Program; Applicability	Describes applicability of additional protection measures for OWTS near impaired water bodies.
4.84.175 Advanced Protection Management Program; Requirements for	Details requirements applicable to OWTS located in Advanced Protection Management Areas
4.84.180 Cumulative Impacts and Areas of Environ Concern	Requires assessment of OWTS cumulative impacts, per OSM
4.84.185 Exemptions (Variance)	Provisions for granting OWTS exemptions by EHSD; not allowed for subdivisions
4.84.190 Abatement of Hazards	Procedures for abatement of OWTS hazards per EHSD findings
4.84.195 Enforcement and Penalties	Criminal penalties and admin fines for violations of Code

Onsite Systems Manual

The Onsite Systems Manual provides the policy, procedural and technical details for implementation of the Ordinance. It includes permitting forms and procedures, site evaluation requirements and methods, guidelines for cumulative impact studies and geotechnical reports, design details and guidelines related to both conventional and alternative systems, OWTS performance evaluation procedures, operation and monitoring requirements, and related technical and procedural information. The Onsite Systems Manual will be reviewed and updated from time-to-time, typically annually, to keep pace with new issues, policies, procedures, and technologies affecting the use and management of onsite systems in San Mateo County. The Onsite Manual will be maintained by Environmental Health. The initial document submitted with this LAMP, as well as any substantive changes in the future, will require approval by the director and the S.F. Bay Regional Water Quality Control Board.

The Onsite Systems Manual is divided into six main sections as follows:

1. **Section 1: Policies and Administrative Procedures.** This covers EHSD policies developed for explanation and/or clarification of various Ordinance provisions along with administrative procedures, such as general requirements for subdivisions, new construction, remodels, and system repairs.

2. **Section 2: Site Investigation Requirements and Procedures.** This presents the procedures and requirements covering such items as soil and site evaluations, percolation testing, groundwater determinations, geotechnical report requirements, and guidelines for cumulative impact assessments.

3. **Section 3: Design and Construction Requirements for Conventional OWTS.** This section presents general requirements and technical specifications applicable to all OWTS and specific design and construction requirements for conventional OWTS. This includes, for example: siting and design criteria; wastewater flows for OWTS design; and design and construction requirements for septic tanks, and conventional dispersal trenches.

4. **Section 4: Alternative OWTS Requirements.** This presents requirements and guidelines for design and construction of alternative treatment and dispersal systems permitted and/or required under the Ordinance, including: system description and applications, siting, design and construction requirements, typical details, and monitoring and maintenance requirements.

5. **Section 5: OWTS Performance, Monitoring and Evaluation.** This presents guidelines and criteria for operation, monitoring and maintenance of conventional and alternative OWTS, including: (a) performance requirements for different components and types of OWTS; (b) monitoring requirements; and (c) guidelines for evaluating the functioning status and performance of OWTS.

6. **Section 6**: **Advanced Protection Management Program.** This section describes advanced protection management requirements applicable to lands located adjacent to water bodies designated as "impaired" under Section 303(d) of the Clean Water Act, as well as other geographical areas the County (Board of Supervisors) may find to be impaired based on cumulative impact evaluations or other findings.

Organization of this LAMP

This LAMP is organized to present a comprehensive explanation of the various requirements, policies, procedures and measures used to regulate and oversee the use of OWTS in San Mateo County. It is also structured as much as possible to address the items listed in the SWRCB OWTS Policy pertaining to Local Agency Requirements and Responsibilities (Section 3.0 of the OWTS Policy) and Local Agency Management Program for Minimum OWTS Standards (Section 9.0 of the OWTS Policy). Reference is made throughout this LAMP to the County's OWTS Ordinance and Onsite Systems Manual, which are attached as part of this LAMP. The following briefly summarize the contents of this document.

- ***Section 1 - Introduction and Background.*** This introductory section describes the overall purpose, scope, geographical coverage and overview of the key elements of the LAMP.

- ***Section 2 - Environmental Conditions, OWTS Usage and Water Quality Management in San Mateo County.*** This section provides background information on environmental conditions pertinent to the use and suitability for OWTS, extent of OWTS usage in the County, and summary of OWTS management approaches and requirements adopted for protection of water quality in San Mateo County, addressing items in OWTS Policy Section 9.1.

- ***Section 3 - OWTS Siting, Design, and Construction Requirements.*** This section summarizes key items of the County Ordinance and the Onsite Systems Manual pertaining to requirements for siting, design and construction of OWTS, per the requirement of Section 9.2 and covering applicable items listed under Tier 1 (Sections 7.0 and 8.0) of the OWTS Policy.

- **Section 4 – Special Management Issues.** This section describes the provisions contained in the San Mateo County LAMP corresponding with special OWTS management issues listed in Sections 9.2.1 through 9.2.12 of the SWRCB OWTS Policy.

- ***Section 5 - Prohibitions*.** This section describes the provisions contained in the San Mateo County LAMP corresponding with the required prohibitions set forth in Section 9.4 of the SWRCB OWTS Policy.

- ***Section 6 – Program Administration.*** This section presents the County's plan for addressing the administrative aspects of the LAMP, including record keeping, on-going assessment of water quality issues related to OWTS, and reporting to the RWQCB(s), as required under Sections 3.3 and 9.3, of the OWTS Policy.

- ***Appendix A – Supporting Rationale.*** This presents discussion of the supporting rationale (including literature sources) for the various San Mateo County siting and design requirements, focusing on vertical separation requirements for conventional and alternative OWTS, comparison with Tier 1 standards of the OWTS Policy, and highlighting the requirements and management practices that are more protective than the provisions of the OWTS Policy.

- ***Appendix B – OWTS Usage Estimates and Nitrate Loading.*** This presents the GIS-based methodology and resulting estimates of OWTS usage in San Mateo County and the distribution in different geographical and watershed area in the county. Also included are corresponding estimates of wastewater discharge volumes and nitrate loading contributions to watershed areas from the approximately 4,400 existing OWTS in the County, with emphasis on the areas of highest density of OWTS (Focus Areas). This will be part of the County's ongoing assessment of water quality impacts from OWTS.

Section 2:
Environmental Conditions, OWTS Usage and Water Quality Management in San Mateo County

This section provides background information on environmental conditions, OWTS usage and management approaches adopted for protection of water quality in San Mateo County.

Surface Water Hydrology

The surface hydrology of San Mateo County is influenced mainly by climate, topographical and land form conditions.

The climate of the region is generally temperate throughout the year with dry, mild summers and moist, cool winters. Temperatures are strongly influenced by large saltwater bodies on the east and the west, and the Santa Cruz Mountains running the north-south length of the county. Land form features combine to result in a variety of microclimates with hill and ridgetop areas, valley floors and coastal areas each experiencing different temperature and precipitation patterns.

Precipitation, mostly occurring as rainfall, is mainly concentrated in the winter months from December through March. Also, summer fog provides moisture and cool air for the coastal terraces. Mean annual precipitation generally increases with elevation, ranging from 15 inches at sea level to 50 inches in the mountains. Additionally, the Santa Cruz Mountains form a barrier to coastal fog and storm fronts approaching from the west, such that the majority of rainfall occurs on the Coastside of the watershed divide and in the mountains.

San Mateo County lies within two hydrological and Water Quality Control Board Regions: San Francisco Bay Region 2 (northern majority of the county) and Central Coast Region 3 (southern coastal tip of the county). Utilizing watershed boundaries established by the California Department of Water Resources (DWR), twenty-eight (28) hydrologic areas are delineated and labeled as shown in **Figure 2-1**. Twenty-four of the hydrologic areas are in the San Francisco Bay Region and four within the Central Coast Region. The boundaries match DWR delineations, except in some cases where smaller sub-regions are combined where they have a common outflow, e.g., to the Pacific Ocean or to the Crystal Springs Reservoir.

There are 10 major reservoirs and lakes, and many smaller man-made impoundments, which store water throughout the county. **Table 2-1** lists and summarizes the storage capacity of the major reservoirs and lakes which have more than 100 acre-feet of storage capacity. All of these reservoirs and lakes were originally natural lakes or depressions, and have been artificially expanded to increase their storage capacity.[1] There are also numerous springs found

[1] San Mateo County General Plan, 1986

San Mateo County Local Agency Management Program		**San Mateo County Watershed Areas Map**	FIGURE **2-1**

throughout the county that generally serve as small water sources. There are notable larger springs that occur at the headwaters of Purisima and Butano Creeks.

Table 2-1. Capacity of Major Reservoir and Lakes Unincorporated San Mateo County[1]

Lake/Reservoir	Storage Capacity (acre-feet)
Crystal Springs Reservoir	69,295
San Andreas Lake	18,996
Pilarcitos Lake	3,100
Bean Hollow Lakes	1,361
Searsville Lake	813
Lake Lucerne	455
Green Oaks	287
Pomponio	256
Lake Elizabeth	113
Coastways Ranch	112

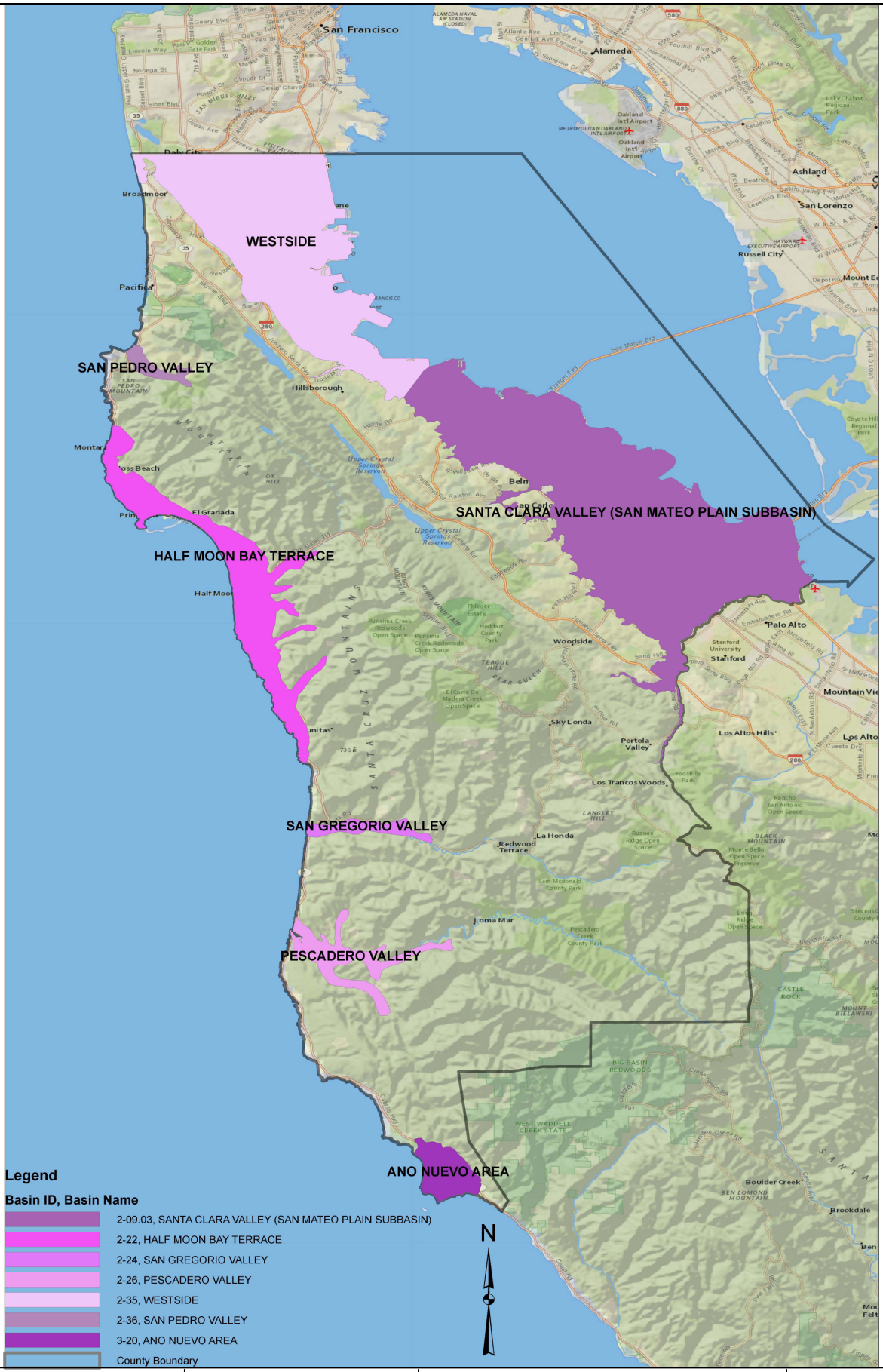
[1]San Mateo County General Plan, 1986.

Groundwater

Figure 2-2 identifies the boundaries of known groundwater basins in San Mateo County as identified by DWR[2], all composed of water-bearing younger alluvium deposits. The Westside Basin, spanning portions of San Francisco County and the northern end of San Mateo County, borders San Francisco Bay on the southeast side and opens to the Pacific Ocean on the northwest. To the south of the Westside Basin is the San Mateo Plain Subbasin, extending along the bay and forming the northern extent of the vast Santa Clara Valley Basin. These groundwater basins coincide with urban areas, having very little overlap or interaction with areas of OWTS usage. Only a very small part of the Santa Clara Valley Basin extends into the Woodside area (San Mateo Plain Sub-basin ID 2-09.03), where there are a small number of OWTS. The other groundwater basins in the county are all in the coastal region and include: (1) San Pedro Valley Basin, aligned with San Pedro Creek; (2) Half Moon Bay Terrace Basin, aligned with several coastal streams; (3) San Gregorio Valley Basin, aligned with San Gregorio Creek; (4) Pescadero Valley Basin, aligned with Pescadero Creek; and (5) Ano Nuevo Area Basin, the only basin in San Mateo County situated in RWQCB Central Coast Region 3, near Cascade Creek.

According to the DWR Bulletin 118, all basins except Half Moon Bay Terrace Basin are recharged by stream and tributary flow emanating higher up in the Santa Cruz Mountains. Half Moon Bay Terrace Basin is predominantly recharged by direct precipitation at its higher elevations. Limited data available for the coastal groundwater basins indicate wide variation, but relatively shallow depth to groundwater along the coast, as high as 2 to 6 feet below

[2] California Department of Water Resources (DWR). California's Groundwaters. Bulletin 118. 2004 Update.



San Mateo County Local Agency Management Program		**San Mateo County Groundwater Basin Map**	FIGURE **2-2**

ground surface (bgs); further inland groundwater depths up to 60 feet bgs are indicated. All wells reported by DWR for the six basins indicated groundwater levels at 30 feet or deeper.

The few studies conducted of the five Coastside groundwater basins in general indicate most wells to be adequate for domestic use, with mineral, chemical and physical constituents found generally in conformance with drinking water standards. DWR Bulletin 118, 2014 Update, cites information from the San Mateo County General Plan (1986), indicating a high percentage of wells around the community of Pescadero (Pescadero Valley Groundwater Basin), have been impacted by fecal coliform bacteria, and the groundwater also has high concentrations of nitrate. Historical data from four (4) wells in the basin indicate total dissolved solids values range from 403 to 1,790 milligrams per liter (mg/L), averaging about 900 mg/L.

Soils and OWTS Suitability Mapping

General Soils Map

Figure 2-3 presents a General Soils Map of San Mateo County compiled from information contained in two soil surveys and mapping published by the U.S. Department of Agriculture, which include: (1) Soil Survey of San Mateo Area, California, 1961; (2) Soil Survey San Mateo County, Eastern Part and San Francisco County, California, 1990; and (3) Online soils data base maintained by the Natural Resources Conservation Service (NRCS). The General Soils Map contained in the 1990 Soil Survey of San Mateo County, Eastern Part provided the baseline groupings of general soil associations, which were extended to cover other portions of the County, as shown in **Figure 2-3**.

Soils in the County can be grouped into general landform classifications as follows:

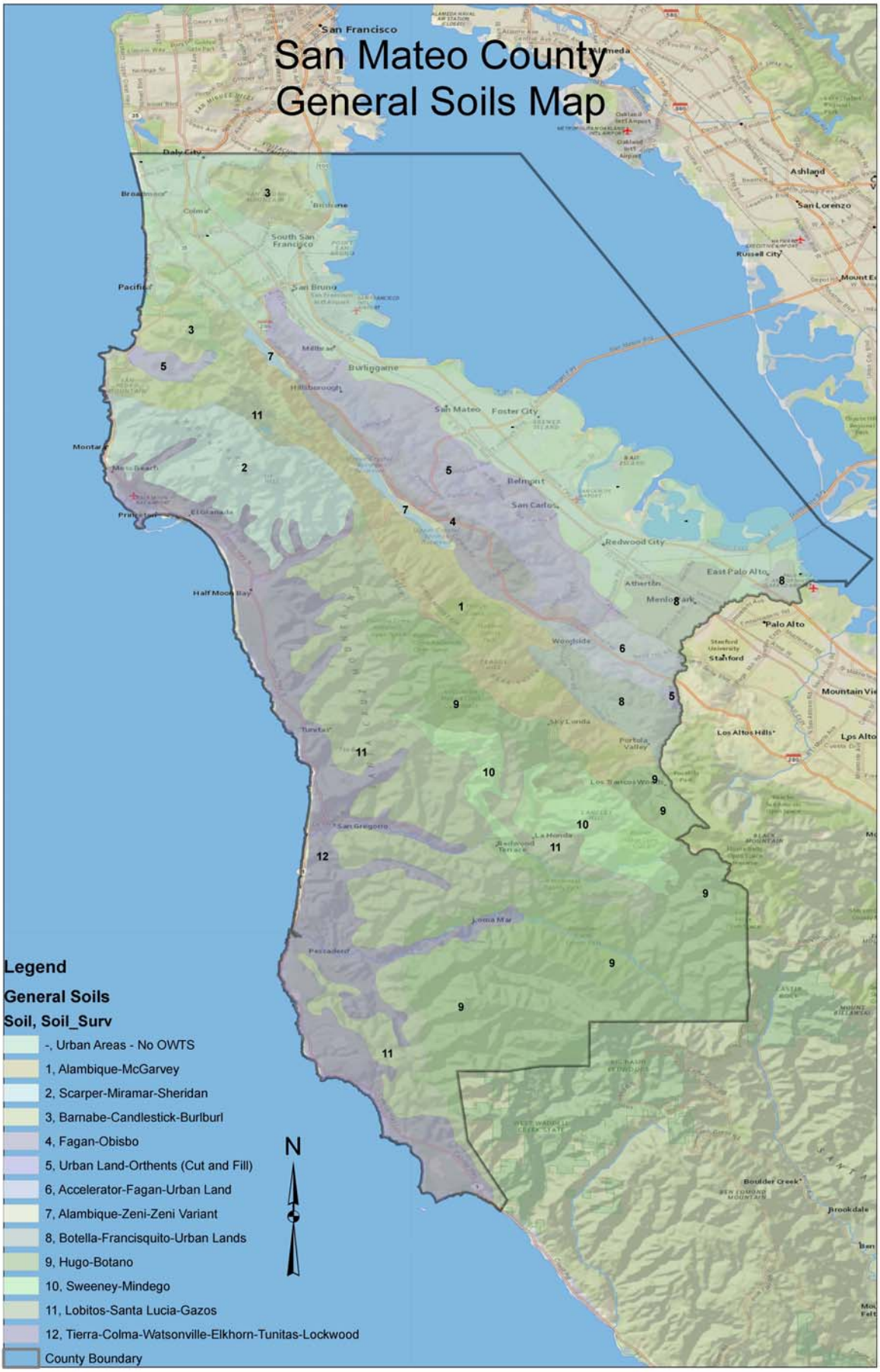
1990 Soil Survey of San Mateo County, Eastern Part

- **Uplands (1-7).** The soils of the Santa Cruz Mountains are generally moderately deep and well drained loams situated on gently rolling to steep slopes. Most OWTS development in the upland is located in 1, 4, 5 & 6 soil associations, in the vicinity of Woodside, and can have local constraints of steep slopes and/or shallow soils.

- **Bottom Lands (8).** Most soils associations found along the San Francisco Bay side of the county are all situated in urban, sewered areas, and hence are not part of this OWTS analysis. However, included in this landform classification is the Botella-Francisquito-Urban soil association located near Portola Valley where there is significant development utilizing OWTS.

1961 Soil Survey of San Mateo Area

- **Uplands (9-11).** Soils found in the rural mountainous portions of the county, west of the Santa Cruz Mountains divide, are well drained soils to excessively drained soils derived mostly from sedimentary parent material and formed in upland regions between the ridgetops and marine terraces near the coast. The loamy soils in these areas are well



San Mateo County Local Agency Management Program		**San Mateo County General Soils Map**	FIGURE **2-3**

suited for conventional OWTS, mostly found near Kings Mountain Road, Skylonda, Redwood Terrace and La Honda and scattered throughout mountainous rural areas to the central and southern parts of the county. Local constraints of shallow soils and/or steep slopes can potentially be overcome with shallow and/or pressure-dosed systems.

- **Marine Terraces, Alluvial Fans and Floodplains (12).** Soils found on the coastal terraces and coastal stream valleys are generally deep, well drained and suitable for conventional OWTS.

Soil-OWTS Suitability

The general mapping of soil conditions takes into account location and landform conditions, depth to bedrock, slope, subsurface texture, and drainage conditions of the soils, which are all key factors that can affect the suitability of the soils for onsite wastewater treatment. **Table 2-2** was developed from the published soil survey information, summarizing the soil characteristics of the general soil associations mapped in **Figure 2-3.**

The second to last right-hand column in **Table 2-2** highlights the key constraints and overall suitability designation for OWTS for each general soil association. The designations were developed and assigned based on the USDA soils information and best professional judgment. This is provided as a general assessment tool and is not a substitute for site-specific investigation of and planning for onsite wastewater treatment systems. It provides a general indication of the management and design issues likely to be encountered in each area. It does not take into account local constraints such as steep slopes, setback or other anomalous conditions that may be found on particular sites. The last column gives the estimated number of residential OWTS within each general soil area, determined by merging the GIS parcel data with the soil mapping boundaries, as discussed further below.

OWTS Usage Estimates

Parcel Development Status

Since a comprehensive inventory of existing OWTS usage in San Mateo County does not exist, estimates were made by Questa Engineering in connection with studies supporting the development of this LAMP. This included a systematic GIS-based inventory to determine the development status (i.e., developed or vacant) of all parcels in non-sewered areas of the County, which was taken as the best estimate of the current number of OWTS in the county. Description of the methodology, assumptions and results is provided in **Appendix B**.

The geographic area covered in the analysis included the unincorporated area of San Mateo County, plus those portions of the Towns of Portola Valley and Woodside which do not have municipal sewer service and instead rely on the use of OWTS. All incorporated property within the remaining cities and sanitary districts was excluded, under the assumption that municipal sewer systems either serve or are available to all of these parcels. Some “islands” of unincorporated parcels were found to exist in the urban areas, and in most cases were

Table 2-2: San Mateo County General Soil Associations

General Soil Association Number	Soil Association Name	Description	Soil Depth	Slope	Drainage	Soil Texture	Suitability and Constraints for OWTS	Estimated Number of OWTS
1	**Alambique-McGarvey**	Soils formed in material weathered from sandstone found west of the San Andreas fault and south of California Highway 92	moderately deep	moderately steep to very steep (30-75%)	well drained	gravelley loam to clay loam underlain by sandstone	Generally suitable conditions for conventional OWTS; some inclusions of low permeability and perched groundwater favoring shallow dispersal designs	832
2	**Scarper-Miramar-Sheridan**	Soils formed in material weathered from quartz-diorite or acid igneous rock found on the coast from Devil's slide to Montara	moderately deep	steep and very steep	well drained	gravelley course sandy loam and clay loam underlain by quartz-diorite	Moderately constrained by steep slopes and shallow soils, potentially requiring alternative treatment and/or shallow dispersal designs	7
3	**Barnabe-Candlestick-Burlburl**	Soils formed in material weathered from sandstone found on San Bruno Mountain; Sweeny Ridge, west of Pacifica; and Skyline Boulevard, south of California Highway 92	very shallow to moderately deep	moderately steep to very steep (15-75%)	well drained	very gravelley sandy laom and sandy clay loam underlain by hard, fractured sandstone	Moderately constrained by steep slopes and shallow soils, potentially requiring alternative treatment and/or shallow dispersal designs	2
4	**Fagan-Obisbo**	Soils formed in material weathered from sandstone, shale and serpentine found along California Highway 92, on the eastern side of the San Andreas Fault	shallow and deep	gently sloping to steep (5-50%)	well drained	clay to sandy clay loam underlain by sandtone shale, or hard, sepentinitic rock	Moderately constrained by steep slopes and shallow soils, potentially requiring alternative treatment and/or shallow dispersal designs	180
5	**Urban Land-Orthents, Cut and Fill**	Soils formed in residuum derived from sandstone found east of California Highway 280 extending from San Bruno to Redwood City	very shallow to very deep	gently rolling to very steep	well drained	Urban Land, graded and mixed soils, or covered with fill material	Generally suitable conditions for conventional OWTS; some inclusions of low permeability and perched groundwater favoring shallow dispersal designs	297
6	**Accellerator-Fagan-Urban land**	Soils formed in residuum derived from sandstone, shale or siltstone found along California Highway 280, north of San Franciquito Creek	deep	gently rolling and rolling	well drained	loam to clay loam and clay	Suitable conditions for conventional OWTS	138
7	**Alambique-Zeni-Zeni Variant**	Soils formed in material weathered from sandstone and metasedimentary rock on Sawer Ridge and Cahill Ridge, in the San Francisco Water District	moderately deep	moderately steep to very steep (15-75%)	well drained	loam and sandy loam, and gravelley loam to gravelley clay loam	Moderately constrained by steep slopes and shallow soils, potentially requiring alternative treatment and/or shallow dispersal designs	0

General Soil Association Number	Soil Association Name	Description	Soil Depth	Slope	Drainage	Soil Texture	Suitability and Constraints for OWTS	Estimated Number of OWTS
8	**Botella-Francisquito-Urban Lands**	Soils formed on alluvial fans, flood plains and stream terraces along San Francisquito Creek, and in Menlo Park, Palo Alto, Woodside and Portola Valley	very deep	gently sloping to rolling	well drained, restricted permeability of the subsoils	clay loam to loam	Generally suitable conditions for conventional OWTS; some inclusions of low permeability and perched groundwater favoring shallow dispersal designs	1,112
9	**Hugo-Butano**	Soils formed in material weathered from sedimmentary rock found in the southern county, including nearly all of the Skyline crest	deep	steep and very steep	well drained to somewhat excessively drained	sandy loam to loam	Moderately to severely constrained by steep slopes and shallow soils, potentially requiring alternative treatment and/or shallow dispersal designs	1,022
10	**Sweeney-Mindego**	Soils developed from basic igneous rock on rounded, sloping and moderately steep ridgetops found mainly in the central eastern uplands Mindego and Langley Hills, and La Honda	moderately deep and shallow	steep and very steep	well drained to somewhat excessively drained	clay loam to sandy loam	Moderately to severely constrained by steep slopes and shallow soils, potentially requiring alternative treatment and/or shallow dispersal designs	158
11	**Lobitos-Santa Lucia-Gazos**	Soils formed in material weathered from sedimmentary rock and siliceous shale found in the western county between the ridgetops and the marine terraces near the coast	moderately deep and shallow	steep and very steep	well drained to excessively drained	loam and silt loam	Moderately to severely constrained by steep slopes and shallow coarse-textured soils, potentially suitable for supplemental treatment and/or shallow dispersal designs	323
12	**Tierra-Colma-Watsonville-Elkhorn-Tunitas-Lockwood**	Soils formed ins alluvium of mixed sources, some of which was reworked by the ocean and redeposited on marine terraces found along the majority of the county's coast	deep	nearly level with steep inclusions	well drained to imperfectly drained	sandy loam to clay loam	Moderately to severely constrained by steep slopes and shallow coarse-textured soils, potentially suitable for supplemental treatment and/or shallow dispersal designs	351

determined to be connected to a sewage treatment facility. There may be some additional isolated cases within sanitary district boundaries where individual lots or small pockets of development are not connected to the municipal sewer system; and these findings will be added to the inventory in the future as the information becomes available.

OWTS Distribution by Watershed Areas

To assist with present and future management of OWTS and water quality assessments, the GIS parcel status data were merged with watershed boundaries, providing useful information on the distribution of OWTS according to geographical and watershed areas in the county. The results are presented in **Tables 2-3** and **2-4** for the San Francisco Bay and Central Coast regions of the county, respectively. Shown in the tables for each watershed are the total land acreage comprising each basin, the lot area developed with OWTS, the estimated number of OWTS, and the average lot size for the developed parcels. As indicated, about 99% of the OWTS are located in the San Francisco Bay Region and 1% in the Central Coast Region.

Table 2-3. OWTS Usage and Distribution by Watershed, San Mateo County
San Francisco Bay Region 2

Watershed	Total Watershed Area (acres)	Developed Lot Area (acres)	Number of Developed Parcels	Average Developed Lot Size (acres)
Bear Gulch Reservoir	7,633	659	345	1.91
Butano Creek	13,836	327	113	2.89
Crystal Springs Reservoir	18,323	38	40	0.95
Denniston Creek	10,335	0	0	0
La Honda Creek	7,324	1,082	547	1.98
Lobitos Creek	3,942	325	9	36.13
Millbrae	2,996	2	4	0.62
Mills Creek	5,339	717	70	10.25
Oyster Point	11,843	0.25	1	0.25
Pescadero Creek	34,939	3494	347	10.07
Pilarcitos Creek	7,340	138	21	6.55
Pomponio Creek	5,648	83	4	20.66
Purisima Creek	9,597	1,640	251	6.54
San Francisquito Creek	13,440	5,896	1,578	3.74
San Gregorio Creek	25,951	1,371	193	7.10
San Pedro Creek	8,784	0.6	1	0.6
Tunitas Creek	7,871	928	36	25.79
West Union Creek	7,627	2,317	809	2.86
TOTAL	202,768	19,017	4,369	

Table 2-4. OWTS Usage & Distribution by Watershed, San Mateo County Central Coast Region 3

Watershed	Total Watershed Area (acres)	Developed Lot Area (acres)	Number of Developed Parcels	Average Developed Lot Size (acres)
Arroyo De los Frijoles	6,698	1,626	47	34.6
Gazos, Whitehouse, Cascade Creeks	10,501	304	3	101.23
Green Oaks Creek	2,102	98	2	48.94
Waddell Creek	815	1.96	1	1.96
TOTAL	20,116	2,030	53	

OWTS Focus Areas

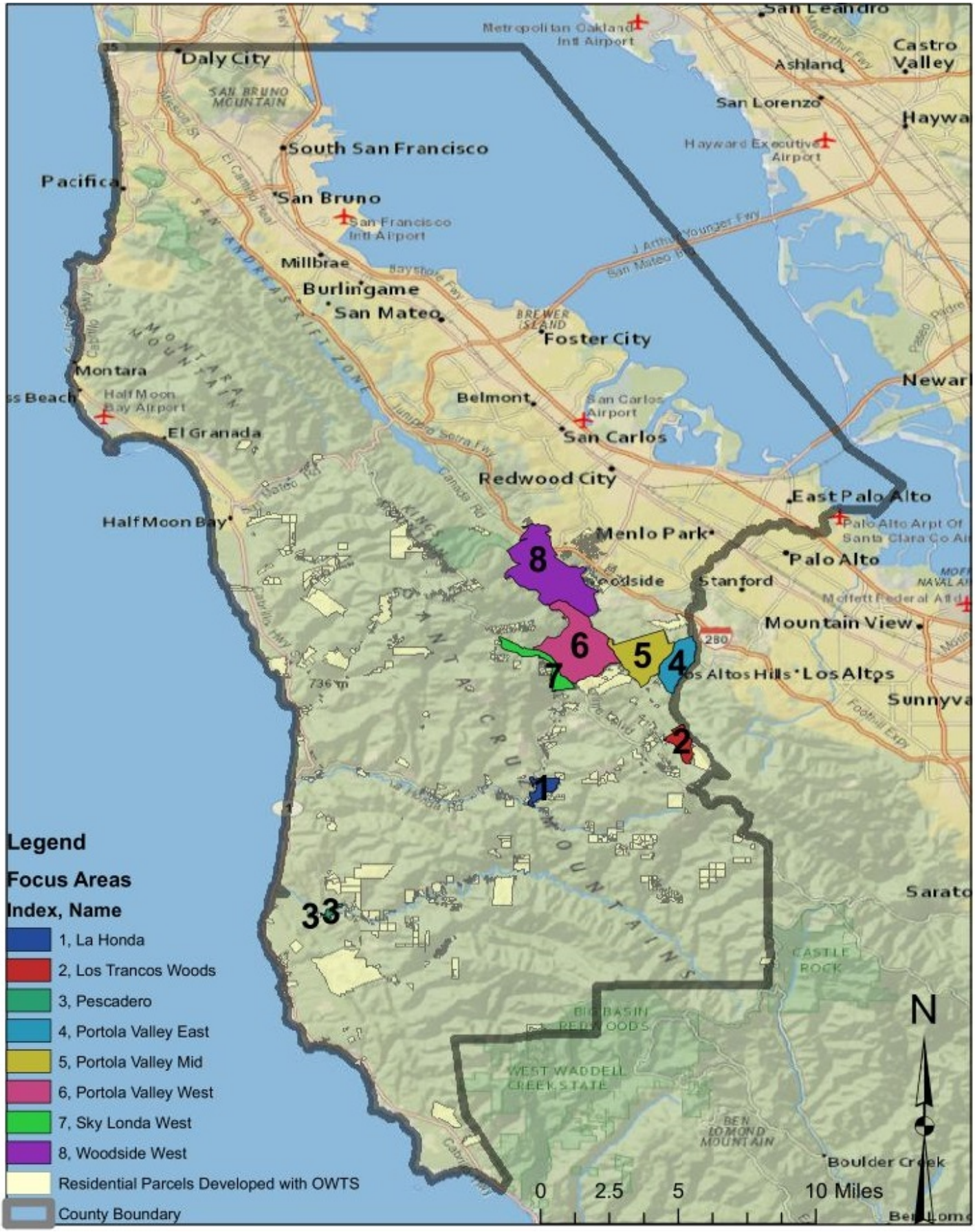
Table 2-5 summarizes OWTS development and wastewater loading information for eight (8) localized "OWTS Focus Areas", chosen for a more in-depth analysis based on the number and/or density of OWTS or other factors. These areas account for about 65% of the total number of OWTS in the county. All of the Focus Areas are within the S.F. Bay Region, including five (5) that drain to San Francisco Bay, and three that drain to the Pacific Ocean. The locations of these areas are shown in **Figure 2-4**. Detailed maps and wastewater loading information, including nitrate-nitrogen estimates developed for these Focus Areas is provided in **Appendix B**.

Table 2-5. Focus Areas – OWTS Usage and Wastewater Loading

Name	Primary Receiving Waters Surface & Groundwater	Overall Area (ac)	Number of Developed Parcels/OWTS	Median Parcel Size (ac)	Estimated OWTS Discharge (gpd)
1. La Honda	La Honda Creek	301	336	0.3	50,400
2. Los Trancos Woods	Los Trancos Creek	357	254	0.8	38,100
3. Pescadero	Pescadero Creek, Pescadero Valley GW Basin	73	73	0.3	10,950
4. Portola Valley East	Los Trancos Creek	791	235	1.2	35,250
5. Portola Valley Mid	Corte Madera Creek, Searsville Lake	1,341	464	2.2	69,600
6. Portola Valley West	Sausal Creek, Searsville Lake	2,256	560	1.6	84,000
7. Skylonda West	La Honda Creek	513	158	0.5	23,700
8. Woodside West	West Union Creek	2,763	787	1.7	118,050
Total		-	2,867	-	430,050

Water Quality Management Measures

The following summarizes how key site suitability, land use and development factors have been addressed in the OWTS requirements of San Mateo County's LAMP for protection of water



San Mateo County Local Agency Management Program		**San Mateo County Focus Areas Map**	FIGURE **2-4**

quality. This summary is organized to correspond with the elements listed under Section 9.1 of the SWRCB OWTS Policy.

Groundwater Quality Protection

1. **Soil Conditions.** Soil suitability is the single most critical aspect of onsite wastewater treatment and dispersal. The soil provides the medium for the absorption and treatment of wastewater discharged through sub-surface dispersal systems. This is accomplished mainly through a combination of physical filtering, biological and chemical processes, and dilution. Protection of underlying groundwater relies on provision of an adequate depth of permeable soil below the dispersal field (zone of aeration) for absorption and treatment to occur. San Mateo County Onsite Wastewater Ordinance requires detailed site evaluation to document suitable soil characteristics and depth for each OWTS installation consistent with industry practices and appropriate for the conditions and requirements in San Mateo County (see **Section 3**). The observed depth and percolation characteristics of the soil are used to select the appropriate location, sizing and design of the OWTS to achieve proper effluent dispersal and groundwater protection.

2. **Geologic Factors.** Geology is important to the suitability and performance of OWTS due to its influence on topography and landforms, the type and characteristics of soils that develop at the surface, the occurrence and movement of sub-surface water, and slope stability. A large percentage of OWTS usage in San Mateo County occurs in the mountainous regions where the rock formations may influence the suitability for and effects of OWTS. Geologic factors are addressed for new OWTS based on: (a) information from basic site evaluations for all installations; and (b) for systems located on slopes over 20% or near areas of unstable land masses, the completion of a geotechnical study, including assessment of hydrogeologic conditions, water movement and slope stability.

3. **Groundwater Conditions.** Groundwater conditions are of importance for OWTS usage in San Mateo County due to the generally high rainfall conditions, hilly terrain and interactions between groundwater and numerous coastal streams. Also, while most of the county is served by public water systems, certain parts of the coastal and mountainous areas of the county rely on local aquifers for both public and private water supplies in areas where OWTS discharges may be within the contributing watershed/recharge area. Site evaluation practices include requirements for documenting groundwater conditions, which include procedures for wet weather observations (see Onsite Systems Manual – Sections 2.1 and 2.3). Documentation of groundwater levels, in combination with soil permeability (percolation rate), provide the basis for selection of the appropriate OWTS design and maintenance of an appropriate vertical separation distance between the point of effluent dispersal and the water table for protection against pathogen impacts. Siting and design criteria addressing groundwater separation requirements have been developed to provide the following:

- Vertical separation distance of 5 feet for conventional OWTS, increased from the prior historical 3-ft requirement;
- Reduced vertical separation distance of 3 feet, based on inclusion of supplemental treatment and/or alternative dispersal designs (e.g., pressure distribution, drip dispersal) found to provide more effective use of the shallow unsaturated soil zones for improved absorption and biodegradation of wastewater constituents, including pathogens.
- No provision for vertical separation distance of less than 3 feet.

Appendix A provides further discussion of the supporting rationale, including literature sources, for the OWTS groundwater separation requirements adopted by San Mateo County.

4. **Areas with High Usage of Domestic Wells.** Most development in San Mateo County is served by public water systems. Domestic wells are used to a moderate extent in the more rural areas of the county. The higher concentrations of domestic wells and OWTS tend to be on larger parcels within the Santa Cruz Mountains in areas outside of housing concentrations. Measures to assure protection of existing and new domestic water supply wells from the effects of OWTS include the following:

    - Minimum horizontal setback distances between OWTS and water wells consistent with requirements of the SWRCB OWTS Policy;
    - Water well testing, review and approval by EHSD for any new development;
    - Provision in County Ordinance (Section 4.84.180) for EHSD to require completion of cumulative impact studies for new OWTS proposals in areas of water quality concern (see additional discussion below). This may include areas of high domestic well usage.
    - Availability of alternative treatment and dispersal technologies to mitigate documented or potential impacts to groundwater in areas of high domestic well usage.
    - The EHSD anticipates giving special attention to ongoing review of OWTS and water quality data in areas of high domestic well usage as part the Water Quality Assessment Program under this LAMP (see **Section 6**).

Surface Water Quality Protection

1. **Minimum watercourse/water body setback requirements.** The primary measure for protection of surface water quality is the establishment of safe horizontal setback buffers between OWTS components (treatment tanks and dispersal fields) and various water and landscape features. The requirements contained in the San Mateo County Onsite Wastewater Ordinance are consistent with current and historical policies and guidelines of the San Francisco Bay and Central Coast Regional Water Quality Control

Boards. They address setbacks to springs, drainage ditches/swales, watercourses, and reservoirs.

2. **Alternative treatment and dispersal technologies.** The County's updated Ordinance includes alternative treatment and dispersal technologies that provide greater flexibility and options for system repairs than have historically been available in San Mateo County. This will have two positive effects for surface water quality protection: (1) the use of alternative treatment technologies, producing higher quality effluent, can compensate for reduced amount of soil absorption area where the repair system on an older non-conforming development site encroaches within the normal setback buffer; and (2) alternative dispersal methods and sizing criteria can reduce the amount of encroachment into the setback area by making more portions of the property (e.g., shallow soil areas) potentially feasible for wastewater dispersal.

3. **Erosion control measures.** Depending upon site conditions and system design, construction of an OWTS may pose a threat of soil erosion and impacts on downstream receiving waters from excavations for tanks, trenching for pipelines and dispersal trenches, and associated clearing and grading activities. The County's new Onsite Systems Manual requires that erosion control measures be implemented in connection with the installation of OWTS.

4. **Flood protection measures.** Proximity to the floodplain is considered in the siting and design of OWTS. The County Ordinance requires that OWTS be located outside of low-lying areas that experience annual flooding. OWTS designers also routinely take into consideration and incorporate measures to ensure against flooding impacts from extreme events, including for example: (a) protection for OWTS supplemental treatment and mechanical/electrical components from flood damage, such as structural tie-downs and/or elevating critical components above the 100-year flood level; (b) prevention of discharge of wastewater into flooded dispersal areas from pump systems (e.g., using flood-activated float switches to override/disable pump operation during high water conditions); and (c) additional emergency storage capacity for flood periods.

5. **Enhanced Protection for Water Supply Watersheds.** Areas of San Mateo County warranting special concern and enhanced water quality protection are the reservoirs and creeks that serve as a local source of supply for drinking water, along with the land uses and activities in the source watershed areas. These include portions of Tunitas Creek, San Gregorio (and Alpine) Creek, La Honda Creek, Pescadero Creek and Butano Creek watersheds. In accordance with the requirements of SWRCB OWTS Policy, San Mateo County has adopted increased setback standards for any OWTS located in an area tributary to and within 1,200 feet and within 2,500 feet of a public water supply (and State Small water supply) surface water intake. The provisions for identifying and notifying public water system owners of pending OWTS applications are discussed in **Sections 4** and **5** of this LAMP, along with the applicable requirements for OWTS design

when the dispersal system must be located within the prescribed setback buffer, e.g., for a replacement system or pre-existing lot of record.

Impaired surface waters (nitrogen or pathogens)

There are no water bodies in San Mateo County currently listed as impaired for nitrogen. However, the following are listed as impaired for pathogens and are located in areas where there may be contributions to the impairment from OWTS:

- Pacific Ocean at Fitzgerald Marine Reserve (proposed to be de-listed during 2016)
- San Vicente Creek
- Pacific Ocean at Pillar Point Beach (no known OWTS within setback)
- San Gregorio Creek
- Pomponio Creek

Figure 2-5 provides a map showing the location and extent of the above-listed impaired water bodies. Detailed maps including parcel boundaries and identification of 600-ft management boundaries are provided in Section 6 of the Onsite Systems Manual. The County's updated Ordinance and Onsite Systems Manual include provisions implementing Advanced Protection Management requirements consistent with Tier 3 of the SWRCB Policy, including the following:

(1) Compliance with OWTS requirements of any applicable Total Maximum Daily Load (TMDL) implementation plan, if and when adopted (Note: No relevant TMDLs issued to date);

(2) Operating permit for any new, replacement or expanded OWTS within 600 feet of an impaired water body;

(3) Supplemental treatment for pathogens or nitrogen, as applicable, for any new, replacement or expanded OWTS within 600 feet of an impaired water body.

Items (2) and (3) above will be implemented on an interim basis for the above-listed water bodies until such time as the requirements are replaced by those specified in an adopted TMDL or the water body is de-listed.

High Density of OWTS, Parcel Size and Cumulative Impacts

Consideration of OWTS density, parcel size and potential cumulative OWTS impact issues (e.g., groundwater mounding, nitrate loading) is addressed in San Mateo County primarily through Ordinance requirements under Section 4.84.180 that call for the completion of cumulative impact assessments for certain types of projects or locations, including consideration of such factors as the constituent levels (e.g., nitrogen content) in the wastewater, the volume of wastewater flow, the density of OWTS discharges in a given area, and/or the sensitivity and

San Mateo County Local Agency Management Program		**San Mateo County Impaired Water Bodies**	FIGURE **2-5**

beneficial uses of water resources in the discharge area. Guidelines for such studies are contained in the Onsite Systems Manual (Section 2.E and Attachment A). The guidelines identify circumstances requiring cumulative impact studies, minimum qualifications of those conducting the work, typical data needs and assumptions, analytical methods, and evaluation criteria. The Ordinance also allows for the County to designate areas of special environmental concern for OWTS that may be identified from the results of cumulative impact studies. Any new subdivision utilizing OWTS with lot sizes smaller than 2.5 acres requires cumulative impact assessment to evaluate nitrogen loading.

Additionally, the new Ordinance provisions allowing the use of alternative treatment and dispersal technologies provide opportunities to mitigate nitrate loading (e.g., with supplemental treatment systems) and hydraulic mounding (e.g., with pressure distribution or drip dispersal designs).

Geographic areas with many older non-conforming OWTS installations and setbacks

Older, non-conforming OWTS are common throughout the mountain regions of the county. Some of the highest concentration of these OWTS is in areas such as La Honda and Loma Mar, where properties were originally developed for seasonal/recreational cabins and have converted over the years to year-round residences. Many of the properties are very small (e.g., less than one-third acre), with OWTS constructed prior to adoption of modern codes. Some systems may consist of cesspools, and repairs/replacement systems tend to be very challenging. Non-conformance with adopted setback requirements (e.g., from structures, water features, etc.) may also be encountered.

Measures contained in the County's updated Ordinance that will aid significantly in addressing problems of older, non-conforming OWTS are:

1. Availability of alternative treatment and dispersal system designs to provide more effective upgrades and repairs for lots having limited area, soil limitations or other constraints for conventional OWTS; and

2. The new requirements for septic tank pumper inspections, which will aid in identifying and bringing about the correction of existing cesspools, system failures, and impending problems that might otherwise go unnoticed or unattended.

Section 3:
OWTS Siting, Design, and Construction Requirements

Site Evaluations for Onsite Wastewater Treatment Systems

(a) For all locations where an OWTS is proposed to be installed, a site evaluation shall be conducted prior to permit approval to verify conformance with applicable horizontal setbacks, ground slope, soils and groundwater requirements as prescribed in County Code, Section 4.84.120.

(b) Site evaluation methods shall include soil profiles, percolation tests and other exploratory tests, as necessary, to verify adequate depth and permeability of soil, and vertical separation between dispersal field and groundwater for both primary and reserve dispersal areas.

(c) Testing shall be conducted in accordance with standards and guidelines provided in the Onsite Systems Manual.

(d) For new divisions of land, soil profiles, percolation tests and groundwater determinations are required on every parcel

Siting Criteria for OWTS

Siting criteria for OWTS are specified in County Code, Section 4.84.120 and restated in the Onsite Systems Manual (Section 3). The siting criteria address the following:

(a) **Within property boundaries.** Placement of all OWTS components within the boundaries of the property served;

(b) **Soil depth.** Minimum soil depth below dispersal field;

(c) **Soil cover.** Minimum soil cover over dispersal field; no placement in fill soil;

(d) **Soil percolation rates**. Minimum and maximum soil percolation rates;

(e) **Underground utilities.** Avoidance of underground utility trenches;

(f) **Depth to groundwater**. Minimum required vertical separation to groundwater below dispersal field;

(g) **Areas of flooding.** Avoid locating OWTS in areas subject to flooding;

(h) **Accessible.** Accessibility for maintenance and repairs;

(i) **Traffic areas.** Avoid locating OWTS in areas subject to vehicular traffic or other compaction;

(j) Ground slope. Maximum ground slope in the dispersal field area and geotechnical report requirements;

(k) Horizontal setbacks. Minimum horizontal setback distances between OWTS components and wells, water bodies, and various other site features;

Wastewater Flows for OWTS Design

- **Single Family Residences and Second Units:** Based on a factor of 150 gal/day per bedroom. For a primary residence and secondary dwelling unit flows determined independently, regardless of whether the flows are treated separately or combined in a single OWTS.

- **Multiunit Residences and Non-residential Facilities:** Based on full consideration of projected activities, occupancy, and facilities. Primary references are guidelines provided in the 2002 US EPA Onsite Wastewater Treatment Systems Manual (Chapter 3). Where not covered in EPA, may be based on other appropriate literature references or (b) documented wastewater flow for a comparable facility. Minimum design flow for any OWTS shall not be less than 150 gpd.

- **Flow Equalization.** Flow equalization may be used for non-residential and mixed use facilities that experience significant, regular and predictable fluctuations in wastewater flows, such as churches, schools, and special event venues. Flow equalization is the process of controlling the rate of wastewater flow through an OWTS by providing surge capacity storage and timed-dosing of the incoming flow. It allows peak surges (e.g., weekend usage) to be spread out over several subsequent days to aid in overall OWTS performance. Where used, OSM requires:

    - septic tank capacity be sized for peak daily flow;
    - design flow supplemental treatment unit(s) and/or the dispersal field may be based on the equalized (“average”) flow rate;
    - supporting engineering calculations and operational specifications must be provided; and
    - operating permit (per OWTS Ordinance section 4.84.170) will be required.

Conventional OWTS Requirements

Where an OWTS is required, it shall, at a minimum, consist of a septic tank and subsurface dispersal system for absorption and leaching of the effluent into the soil (Conventional OWTS). The septic tank and effluent dispersal system must be designed, permitted, and so constructed as to meet the requirements prescribed by the County OWTS Ordinance and accompanying rules, regulations and guidelines prescribed by Environmental Health and contained in the Onsite Systems Manual.

Key design and construction requirements detailed in the Onsite Systems Manual include the following.

Septic Tank Requirements

(1) Ma**terials for Construction –** concrete or alternative durable material.
(2) **Size of tank -** 1,500 gal minimum; increased capacity per bedroom count or daily design flow;
(3) **Design –** 2-compartment; IAPMO or equal; traffic-rated as needed; access risers; effluent filter.
(4) **Location and Installation –** accessible for pumping; in driveways/parking if traffic-rated; gravity flow from house plumbing; 8-inches minimum soil cover; water-tightness testing in place.

Dispersal System Requirements

(1) **Trench Specifications -** Width, spacing, diversion valve, on contour, piping, min/max length, materials.
(2) **Drain Field Sizing, Residential -** Based on number of bedrooms and percolation rate; standard up to 8-feet deep; 100% reserve area required.
(3) **Drain Field Sizing, Multifamily and Non-Residential –** Based on peak daily flow, effective trench sidewall area, and wastewater application rates related to percolation rate per **Table 3-1**; dual 200% dispersal system required.
(4) **Trench Construction -** level trenches, on contour, dry soil conditions, inspection standpipes.
(5) **Construction Inspection by EHSD -** Pre-construction staking; open trench dimensions; drain rock and pipe materials/placement; diversion valves(s); septic tank connections; final inspection and as-builts.

Table 3-1
Wastewater Application Rates for Drain Field Trench Sizing[1]
For Multifamily and Non-residential Installations

Percolation Rate		Wastewater Application Rate (gpd/ft^2)
Inches /Hr	Min per Inch	
> 12	< 5	Not Permitted
12.0	5	1.20
6.0	10	0.80
2.5	24	0.60
2.0	30	0.56
1.5	40	0.49
1	60	0.35
0.75	80	0.20
< 0.75	> 80	Not Permitted

[1] Interpolate between reference values for other percolation rates;

Alternative OWTS Requirements

San Mateo County Onsite Wastewater Ordinance defines "Alternative OWTS" as a type of OWTS that utilizes either: (a) a method of wastewater treatment other than a conventional septic tank for the purpose of producing a higher quality wastewater effluent; or (b) a method of wastewater dispersal other than a gravity fed drain field trench for effluent dispersal. "Supplemental treatment systems", as defined in the SWRCB OWTS Policy fall into the category of alternative OWTS. Additionally, by definition, any OWTS that includes the use of a pump system for effluent treatment and/or distribution is also considered to be an alternative OWTS in San Mateo County. The following summarize San Mateo County OWTS Ordinance requirements pertaining to the use of alternative OWTS.

Principles and General Requirements

The use of alternative systems in San Mateo County will be guided by the following principles and general requirements:

1. Supplemental treatment systems may be used to produce higher quality of wastewater effluent beyond that provided by a conventional septic tank and improve the performance of and siting options for the dispersal system.

2. Only those supplemental treatment systems (also termed “advanced” treatment) as listed in the Onsite Systems Manual shall be approved for use in San Mateo County.

3. All alternative dispersal systems installed in San Mateo County must be below-grade systems. Only those alternative dispersal systems as listed in the Onsite Systems Manual shall be approved for use in San Mateo County.

4. Alternative OWTS consisting of pressure-distribution dispersal methods shall be required on slopes exceeding thirty five percent (35%), and for areas with average soil percolation rate between 0.75 and 1.0 inches per hour.

5. Alternative OWTS may be permitted by Environmental Health for the repair or upgrading of any existing OWTS where it is determined that sewage cannot be disposed of in a sanitary manner by a conventional septic tank and gravity flow dispersal field system.

6. Alternative OWTS utilizing shallow subsurface drip dispersal may be permitted by Environmental Health for new construction on any legally-created parcel where Environmental Health determines such system would provide equal or greater protection to public health and the environment than a conventional or pressure-dosed trench dispersal field system. However, both a primary and reserve leaching system for a conventional or pressure-dosed trench dispersal system shall be designed, area reserved and such system could still be installed, if required. The area of the installed shallow subsurface drip dispersal system and the reserved conventional or pressure-dosed trench dispersal system can overlap as long as the operation of the shallow drip dispersal system will not affect the potential future function of trench dispersal system.

7. Alternative OWTS, including supplemental treatment of effluent, may be required by Environmental Health for any new construction or repair where three (3)-foot separation from base of distribution to groundwater was previously investigated and approved by Environmental Health prior to the effective date of the San Mateo County OWTS Ordinance.

8. Alternative OWTS, utilizing supplemental treatment of effluent, may be required by Environmental Health for any new construction or repair within designated impaired areas as described in the OWTS Ordinance Article 6.

9. All alternative systems must be installed by a contractor duly licensed by the Contractors State Licensing Board of the State of California to install OWTS. Where the installation includes a proprietary treatment system, the contractor shall also possess any required manufacturer certifications, as applicable.

10. Notwithstanding any other provisions of the OWTS Ordinance, Environmental Health shall have the authority to deny and/or require modifications to any alternative OWTS proposal where, in their opinion, such proposal poses an unacceptable threat to public health and/or water quality.

Permitting and Review Requirements

1. Engineering plans and site evaluation data for alternative OWTS shall be submitted in accordance with application procedures prescribed in the OSM.

2. Engineering plans for alternative OWTS shall be prepared and signed by a California Registered Civil Engineer, Professional Geologist, or Registered Environmental Health Specialist who is knowledgeable and experienced in the field of onsite wastewater treatment and dispersal. The designer shall also be responsible for inspection of system installation to assure conformance with approved plans, and shall provide an "As-Built" drawing of the installation to Environmental Health and the property owner.

3. Engineering plans will be reviewed by Environmental Health and, where warranted, Environmental Health may refer the plans to the applicable California Regional Water Quality Control Board staff and/or external third-party consultant(s) for additional review, the costs for which would be the responsibility of the applicant.

4. Upon completion of installation, a release letter shall be submitted by the system designer that the system has been installed and is functioning as designed.

Operating permits

A County-issued operating permit is required for all alternative systems. Operating permits are intended to serve as the basis for verifying the adequacy of alternative system performance and ensuring on-going maintenance, including requirements for system inspection, monitoring and reporting of results to Environmental Health, along with the requirement for permit renewal, typically on an annual basis. An OWTS operating permit gives Environmental Health right of inspection. In addition, failure to comply with requirements of an OWTS operating permit may subject the system owner or user to administrative enforcement and fines.

Alternative OWTS Performance Monitoring and Reporting

A monitoring program will be established for each alternative OWTS as a condition of the operating permit at the time of permit issuance, and may be amended at the time of permit renewal. Monitoring shall be performed to ensure that the alternative OWTS is functioning satisfactorily to protect water quality and public health and safety. The monitoring program will be in accordance with guidelines prescribed in the OSM.

Environmental Health will compile and review monitoring and inspection results for alternative OWTS and periodically provide a summary of results to the San Francisco Bay and Central Coast Regional Water Quality Control Boards. Based on this review, Environmental Health may require corrective action for specific properties or certain types of alternative OWTS, or general changes in monitoring and inspection requirements.

Alternative OWTS Siting Criteria, Design and Construction Requirements

All requirements specified in the OWTS Ordinance for conventional OWTS also apply to alternative OWTS with the following exceptions:

- **Reduced vertical separation distance to groundwater**. Vertical separation distance between trench bottom and groundwater may be reduced from five (5) feet to three (3) feet by utilizing supplemental treatment OWTS or pressure distribution dispersal system in compliance with criteria as prescribed in the Onsite Systems Manual.

- **Required use on slopes over 35% and percolation slower than 0.75 in/hr.** Alternative distribution systems shall be required on slopes exceeding thirty five percent (35%), and for areas with average soil percolation rate between 0.75- and one (1.0-) inches per hour.

Design and construction of alternative OWTS shall be in conformance with requirements as prescribed in the Onsite Systems Manual.

Section 4:
Special OWTS Management Issues

The following describe the provisions contained in the San Mateo County LAMP corresponding with special OWTS management issues listed in sections 9.2.1 through 9.2.12 of the SWRCB OWTS Policy.

OWTS Inspection, Monitoring, Maintenance and Repair

San Mateo County Ordinance requirements pertaining to operational inspections, monitoring, maintenance and repair of OWTS are summarized in **Table 4-1** below.

Table 4-1. Summary of San Mateo County Provisions for OWTS Inspection, Monitoring, Maintenance and Repairs

Activity	Code or OSM* Section	Inspections	Monitoring	Maintenance & Repairs**
Building Additions & Remodels	OSM: Sec 1, 5	OWTS performance inspection required at time of application for building addition or remodel (OSM Section 1); procedures specified in OSM, Section 5.	May involve water sampling, dye testing or other monitoring	Maintenance and/or repair work may be required as a result of inspection findings.
Septic Tank Pumper Inspections	OSM: Sec 1	Basic walk-through inspection of OWTS conducted by septic tanks pumper in conjunction with pump-out of any septic tank.	N/A	Maintenance and/or repair work may be recommended or required as a result of inspection findings.
Operating Permits	Code: 4.84.155 OSM: Sec 1, 4, 5	Regular inspections of OWTS according to terms of operating permit for (a) alternative systems; (b) large flow OWTS, >2,500 gpd; (c) holding tanks; and (d) other OWTS at EH discretion.	Monitoring of OWTS under terms of operating permit, including flows, water levels, pump-out volumes, and water quality sampling, as applicable	Maintenance and/or repair work may be required from time-to-time based on observations during routine inspections or as part of normal system servicing.
Property Transactions (Voluntary)	N/A	Basic walk-through inspection of OWTS conducted by independent maintenance provider or professional in conjunction with sale of a property or re-financing.	May involve water sampling, dye testing or other monitoring	Maintenance and/or repair work may be recommended or required as a result of inspection findings.
Complaint Investigations (Abatement)	Code: 4.84.190	Inspections of OWTS by EH staff in response to complaints or observed violation(s).	May involve water sampling, dye testing or other monitoring	Maintenance and/or repair work may be required as a result of inspection findings.

*OSM=Onsite Systems Manual **Repairs addressed in Code Section 4.84.130

OWTS Near Impaired Water Bodies

There are no water bodies in San Mateo County currently listed as impaired for nitrogen; however, the following are listed as impaired for pathogens:

- Pacific Ocean at Fitzgerald Marine Reserve (proposed to be de-listed during 2016)
- San Vicente Creek
- Pacific Ocean at Pillar Point Beach (no known OWTS within setback)
- San Gregorio Creek
- Pomponio Creek

The County's updated Ordinance and Onsite Systems Manual include provisions implementing Advanced Protection Management requirements consistent with Tier 3 of the SWRCB Policy, including the following:

(1) Compliance with OWTS requirements of any applicable TMDL implementation plan, if and when adopted (Note: No TMDLs issued to date);

(2) Supplemental treatment for pathogens or nitrogen, as applicable, for any new, replacement or expanded OWTS within 600 feet of an impaired water body.

(3) Operating permit for any new, replacement or expanded OWTS within 600 feet of an impaired water body;

Variances and Exceptions

Provisions for granting of exemptions to OWTS Ordinance requirements are summarized below:

A. Exemption Process. Code Section 4.84.185 addresses the process for EHSD to grant an exemption (variance) to any requirements of the Code or Onsite Systems Manual (OSM) and stipulates the following conditions must be met:

1. The exemption will not harm the public health, safety and welfare of the people or the environment of San Mateo County;
2. The basis for the exemption does not result from an intent to avoid the requirements of the Code or OSM.
3. The exemption will not have any adverse environmental effect on the use of the subject and adjoining properties.

The decision by EHSD may be appealed to the Board of Supervisors

B. Exemptions Prohibited.

1. No exemptions (variances) are permitted to prohibitions 1 through 9 listed in Section 5 of this LAMP.
2. No exemptions will be considered for the following:
   a. OWTS installation on slopes of 50% or greater, unless an OWTS Failure exists such that Environmental Health determines that the repair of the OWTS cannot be made in any other manner and the repair can be made in a way that still safeguards public health and the environment;
   b. OWTS installation for new development on property other than the property being served;
   c. In connection with land division application;
   d. Where there is a conflict with any other applicable State statute, regulation County ordinance, or local municipal code, ordinance or operating rules, without concurrence of the enforcing authority.

C. OWTS Repairs. Code Section 4.84.130 specifies repairs or alterations to OWTS must comply with applicable requirements of the County OWTS ordinance and Onsite Systems Manual "… to the maximum extent practicable." This may include the need for the processing of an exemption in accordance with Section 4.84.185, as outlined in (A) above. While all potential exemptions would be evaluated and documented by EHSD, in the case of repairs the formal exemption process may only be required where additional investigation is needed which would necessitate collection of additional fees to cover EHSD time, or where significant additional documentation or processing time is needed in review of the proposed repair or exemption.

D. Appeals. Code Section 4.84.085 allows for any applicant to appeal the decision of EHSD regarding action taken on a permit (e.g., denial, suspension or revocation) related to an element of the OWTS design, installation, repair or destruction. Such appeals are made to the Board of Supervisors, who may reject, affirm or modify the Environmental Health decision at issue.

Professional, Contractor and Maintenance Provider Qualifications

San Mateo County Ordinance requirements pertaining to qualifications for OWTS professionals, contractors and maintenance providers are summarized in **Table 4-2**.

The qualification notations and terminology in **Table 4-2** have the following meanings:

- RCE: Registered Civil Engineer
- REHS: Registered Environmental Health Specialist
- PG: Professional Geologist
- CEG: Certified Engineering Geologist

- Certified Septic Tank Pumper: Certified by San Mateo County EHSD in accordance with Ordinance Code Section 4.84.055 and Onsite Systems Manual Section 1.
- Wastewater Maintenance Provider: An individual registered having experience in the construction and/or operation of OWTS as evidenced by the either of the following:
  - Possession of a valid contractor's license (A, C-36 or C-42)
  - Completion of an onsite wastewater certification training course by a third-party entity, such as the California Onsite Wastewater Association (COWA), National Association of Waste Transporters (NAWT), National Sanitation Foundation (NSF), or other acceptable training program as determined by the Director.

Table 4-2. Qualifications for OWTS Practitioners

OWTS Activity	Required Work	Code or OSM* Section	Minimum Qualifications
Site Evaluation	Conduct field studies and evaluation of geology, soils, percolation, groundwater, slopes and other factors for design and use of OWTS	Code: 4.84.015 OSM: Sec 1, 2	EHSD staff RCE, REHS, PG EHSD-Certified Soil Percolation Tester
System Design	Prepare plans and supporting design analysis required for permitting and installation of OWTS	Code: 4.84.025, 4.84.165 OSM: Sec 1, 2	Qualified OWTS Design Professional (RCE, REHS, PG)
System Installation	Install OWTS in accordance with approved plans and permit conditions issued by EHSD	Code: 4.84.050 OSM: Sec 1	• General Engineering License, Class A • Class C-36 (Plumbing) • Class C-42 (Sanitation) Exception: Homeowner may install a conventional OWTS on their own property.
Cumulative Impact Assessment	Assess nitrate loading, groundwater mounding or other cumulative impacts of OWTS for flows >2,500 gpd or as otherwise required by EHSD	Code: 4.84.180 OSM: Sec 2	RCE, PG
Geotechnical Assessment	Assess slope stability, drainage and other geotechnical issues for OWTS located on slopes over 20%	Code: 4.84.120 OSM: Sec 2	RCE or PG (with CEG certificate or equivalent experience)
Performance Evaluation	Conduct performance evaluation of OWTS for building addition/remodel project, failure investigation or as otherwise required by EHSD	OSM: Sec 1, 5	RCE, REHS, PG Onsite Wastewater Provider, or EHSD-Certified Septic Tank Pumper
Septic Tank Pumping & Report	Pump and haul septage;	Code: 4.84.055 OSM: Sec 1	EHSD-Certified Septic Tank Pumper
Alternative System Inspection and Monitoring	Perform inspection, monitoring and reporting of alternative OWTS in accordance with conditions of operating permit issued by EHSD	Code: 4.84.160 OSM: Sec 1, 5	RCE, REHS, PG or Onsite Wastewater Provider

*OSM=Onsite Systems Manual

Education and Outreach

San Mateo County's LAMP includes the following provisions for education and outreach regarding OWTS:

A. **Website - Informational Material.** The EHSD maintains a website including up-to-date information on various OWTS matters, such as: (a) regulatory issues; (b) permitting requirements, procedures, fees, forms, etc; (c) meetings and other announcements; and (d) OWTS user information, guidelines and references.

B. **OWTS Operation and Maintenance Guidelines.** San Mateo County Onsite Systems Manual requires operation and maintenance guidelines to be provided to the OWTS owner (and EHSD) for each new or replacement OWTS by either the system designer or installer. This applies to both conventional and alternative OWTS. Final approval of system installation is contingent upon confirmation that the required operation and maintenance guidelines have been provided.

C. **Alternative Systems Operating Permits.** Owners of alternative OWTS will be issued an ongoing operating permit that specifies ongoing inspection, monitoring and reporting requirements for the system. Although the work will be conducted substantially by qualified maintenance providers, the system owner is ultimately responsible for compliance under the operating permit, which will indirectly promote an improved level of education and understanding of the OWTS operational requirements.

Septage Management

Based on an average pumping frequency of once every five (5) years and a pump-out volume of 1,500 gallons per tank, the estimated annual volume of septage generated by the approximately 4,400 OWTS in San Mateo County is on the order of 1.3 million gallons. This equates to an average of two to three pump-outs per day.

There are about a half-dozen septic tank pumping companies that service septic tanks in the county. Septage is hauled for disposal primarily at five municipal wastewater facilities: (1) Palo Alto Wastewater Treatment Plant; (2) Silicon Valley Clean Water facility in Redwood City; (3) East Bay Municipal Utility District (EBMUD) Wastewater Treatment Plant in Oakland; (4) Santa Cruz Wastewater Treatment Plant; and (5) San Jose/Santa Clara Regional Water Pollution Control Plant in San Jose.

Onsite Maintenance Districts

Presently there are no onsite wastewater maintenance districts in San Mateo County and none are currently under consideration. Some of the key functions of an onsite wastewater management district are already covered on a county-wide basis by requirements and activities

under the newly adopted Onsite Wastewater Treatment Systems Ordinance and within the provisions of this LAMP, including: (a) operating permits for alternative OWTS and certain other OWTS based on system size or other factors; and (b) requirements for water quality assessment and reporting to the RWQCB. In the future, should a need arise for additional focused OWTS management activities or community-type wastewater solutions in given geographical areas of the County, it is anticipated that feasibility studies would include (as a project alternative) consideration of the formation of an onsite wastewater maintenance district ("zone"), in accordance with the provisions of Health and Safety Code (Sections 6950-6982.

Of note is a related type of onsite wastewater management program operated by West Bay Sanitary District, which provides sewer service to the Portola Valley, Woodside, Menlo Park, Atherton and East Palo Alto areas. The sanitary district has aided the extension of sewer connections for properties served by existing OWTS, especially in the hilly Portola Valley area, by allowing and facilitating the installation of STEP (septic tank effluent pump) sewers. The STEP sewers are less expensive and more suited to the hilly terrain than conventional gravity sewers, allowing properties distant from the sanitary sewer main to be connected when the onsite system is no longer functional and replacement or expansion is infeasible.

Regional Salt and Nutrient Management Plans

Groundwater resources of greatest significance in San Mateo County are the Westside Basin and the San Mateo Plain, which coincides almost entirely with the urban areas. The other groundwater basins are relatively small coastal basins. Regional salt and nutrient management is not a significant concern for the groundwater basins in the county, and there is no indication from the RWQCB of any planning effort underway or anticipated in the foreseeable future. Estimates have been made of wastewater discharge volumes, and nitrate loading contributions to groundwater from the approximately 4,400 existing OWTS in San Mateo County and are provided in **Appendix B**. Estimates have been developed for each of the watershed areas in the county where there are significant numbers of OWTS. This information will be made available for use in nutrient management studies in the future.

Watershed Management Coordination

The Environmental Health Services Division has been a key participant in the San Mateo County Stormwater Pollution Prevention Project (STOPP), as well as Beach Monitoring under a grant agreement with the SWRCB, primarily in the sampling and analysis of surface water samples at ocean, bay, and creek locations for assessment of bacteriological conditions and impacts to recreational uses. **Table 4-3** provides a list of creek mouth locations where EHSD conducts weekly sampling for total coliform and E. coli.

Additionally, with the development and implementation of this LAMP, the EHSD will be maintaining GIS-based information on OWTS densities, wastewater loading, functioning status

and water quality factors that will be a useful reference for watershed management activities in the future.

Table 4-3.
Creek Mouth Bacteriological Sampling Locations,
San Mateo County*

Calera Creek
San Pedro Creek, Linda Mar
Martini Creek (at Montara Beach)
San Vicente Creek (at Fitzgerald)
North Roosevelt Ditch (Naples Creek)
South Roosevelt Ditch
Frenchman's Creek (at Venice-North)
Pilarcitos Creek (at Venice-South)
San Gregorio Creek
Pomponio Creek
Pescadero Creek
Bean Hollow Creek
Gazos Creek

***sampled weekly by EHSD for total coliform and E. coli

Evaluating Proximity to Public Sewers

Evaluating the proximity to public sewers for new and replacement OWTS is accomplished by the following:

(1) OWTS permit instructions advise applicants of the code requirement (Section 4.84.040) for connection to public sanitary sewer where the property is within 200 feet of an available sewer.

(2) Permit application form to be completed and filed by the system designer and/or contractor includes an entry related to sewer line proximity.

(3) EHSD permit review includes sewer proximity as a checklist item for certain geographical areas of the County.

OWTS Notification to Public Water System Owner(s)

Under San Mateo County Onsite Wastewater Ordinance (Section 4.84.120) special horizontal setback requirements apply to OWTS located in the proximity of public water supply wells and public water system surface water intakes. Providing adequate notification to the owner(s) of

public water systems about OWTS installations near their facilities will be accomplished by the following procedures:

(1) EHSD will rely upon the following information to determine the locations and respective owner(s) of water wells and public water system surface water intake locations in San Mateo County:

a. **State Small Drinking Water Systems.** San Mateo County Environmental Health regulates small systems under the State Small Water Systems Program. A State Small Water System is a system that serves water to 5 to 14 service connections and fewer than 25 people daily for at least 60 days out of a year. Information on the location of public water wells and public water system surface water intakes for State Small Drinking Water Systems are maintained by EHSD and will be routinely available for review in connection with applications for new and replacement OWTS.

b. **State Large Drinking Water Systems.** The SWRCB Drinking Water Division (DDW) regulates small and large public drinking water systems. This includes water systems that serve 15 or more service connections or 25 people daily for at least 60 days out of the year. EHSD will rely on information provided by the DDW regarding the location of and respective owner(s) of public water wells and surface water intakes associated with large drinking water systems in the County.

(2) At the time of permit application for any new or replacement OWTS, EHSD staff will review the location of the proposed OWTS in relation to known public water wells and surface water intakes using information available per (1a) and (1b) above.

(3) Where EHSD staff determines the proposed OWTS dispersal system is closer than 150 feet to a public water well, or closer than 1,200 feet to a public water system surface water intake in a location tributary to the intake, notification of the proposed OWTS application will be sent to the water system owner(s). The notification will be accompanied by a copy of the permit application and supporting OWTS design information, including documented soils, topography, groundwater and percolation data.

(4) The owner(s) receiving notification of proposed OWTS installations per (3) above will be afforded a 15-day period in which to submit comments on the proposed OWTS application.

(5) Prior to issuing an OWTS installation permit for any system per (3) above, EHSD will review and consider any comments and recommendations submitted by affected water system owner(s) per (4) above.

(6) Upon issuance and/or denial of an OWTS installation permit per (3) above, EHSD will provide notification to the affected water system owner(s) of the action taken.

Procedures for Dispersal Field Located Within Public Well/Intake Setback

New OWTS

In cases where a new OWTS is proposed on a lot created prior to the effective date of the SWRCB OWTS Policy (May 13, 2013), and the dispersal field does not meet the specified OWTS horizontal setbacks (per Section 4.84.120) from public water wells or public water supply intakes, the OWTS may be permitted subject to complying with the following requirements to address possible water source impacts.

(1) The dispersal field shall be sited to comply with the setback requirements to the maximum extent practicable;
(2) The OWTS shall incorporate supplemental treatment, including pathogen removal;
(3) Pathogen removal is defined as achieving an effluent fecal coliform bacteria concentration less than or equal to 200 Most Probable Number (MPN) per 100 milliliters;
(4) Minimum vertical separation to groundwater shall be three (3) feet below the bottom of the dispersal field;
(5) The minimum dispersal field soil cover shall be 12 inches;
(6) Completion of a cumulative impact analysis regarding nitrate loading effects (per Ordinance Section 4.84.185) if the setback issue involves a public water well; and
(7) Other measures as specified by EHSD.

On a case by case basis, EHSD may establish alternative OWTS siting and operational requirements to those listed above where it is determined by EHSD that the alternate requirements will provide a similar level of protection against adverse impact to the public water source.

Repair/Replacement OWTS

For repair or replacement of an existing OWTS where the dispersal field does not meet the specified OWTS horizontal setbacks (per Section 4.84.120) from public water wells or public water supply intakes, the OWTs may be permitted subject to complying with the following requirements to address possible water source impacts:

(1) The dispersal field shall be sited to comply with the setback requirements to the maximum extent practicable;

(2) The OWTS shall incorporate supplemental treatment or other mitigation measures specified by EHSD, unless EHSD finds no evidence of an existing or potential threat of impact to the public water source by the OWTS based on topography, soil depth and groundwater conditions.

Phase-Out of Cesspool Usage

The use of cesspools for sewage disposal is not authorized under San Mateo County Onsite Wastewater Ordinance (Section 4.84.105). However, due to the age of many homes in the County (>75 years old), especially in mountain and coastal areas, it is assumed that some cesspools may still exist and will be discovered from time-to-time. Historically, discovery and abandonment of existing cesspools has come about: (a) voluntarily by the property owner; (b) in response to complaints; or (c) through OWTS inspections associated with property transfers or building addition/remodeling projects. Newly adopted requirements related to septic tank servicing also provides an opportunity for septic pumping contractors to discover the existence of cesspools, report the findings to the County, and advise homeowners on abandonment requirements and options. Under the new ordinance, the expanded range of alternatives for system repairs/replacement is expected to provide some incentives and options to accelerate the gradual phase-out of the remaining cesspools in the County.

Section 5: Prohibitions

The following describe the provisions contained in the San Mateo County LAMP corresponding with the required prohibitions set forth in section 9.4 of the SWRCB OWTS Policy.

1. ***Cesspools.*** The use of cesspools for sewage disposal is not authorized under San Mateo County Onsite Wastewater Ordinance (Section 4.84.105).

2. ***OWTS over 10,000 gpd capacity.*** San Mateo County Onsite Wastewater Ordinance applies to any OWTS where the maximum daily flow volume of waste produced is 10,000 gpd or less (Section 4.84.030). If the amount of waste produced is more than 10,000 gpd or where a community system serving multiple discharges under separate ownership is proposed, the method of treatment and dispersal must be approved by either the San Francisco Bay RWQCB or Central Coast RWQCB, as applicable.

3. ***OWTS with surface discharge.*** Surface discharge of wastewater from an OWTS is not authorized under San Mateo County Onsite Wastewater Ordinance. Section 4.84.140 of the Ordinance defines dispersal systems as consisting only of "…an approved method for subsurface infiltration and absorption of wastewater effluent…" Additionally, Section 4.84.145 requires that "All alternative dispersal systems installed in San Mateo County must be below grade systems."

4. ***OWTS on steep slopes without slope stability report.*** San Mateo County Onsite Wastewater Ordinance Section 4.94.120(i) requires that any OWTS dispersal field located on slopes greater 20% shall require a geotechnical assessment and report addressing slope stability, drainage and other pertinent geotechnical factors affecting the operation and and/or impacts from the construction and use of the proposed OWTS.

5. ***Sizing reductions for IAPMO certified dispersal systems.*** San Mateo County Onsite Wastewater Ordinance Section 4.84.140(a) allows for the use of chambers or alternative filter material in place of standard drain rock in dispersal trenches. However, no reduction in drainfield sizing is permitted for such such methods/materials, regardless of whether or not they are certified by IAPMO.

6. ***Supplemental treatment systems without monitoring.*** Under the San Mateo County Onsite Wastewater Ordinance supplemental treatment is defined as an alternative system and, as such, is required to be inspected and monitored in accordance with an operating permit issued by the EHSD per Code Section 4.84.155(a).

7. ***OWTS for RV Dump Stations.*** San Mateo County Onsite Wastewater Ordinance pertains to the treatment and dispersal of domestic wastewater which, by definition in the SWRCB

OWTS Policy (included by reference in Ordinance Section 4.84.025) does not include wastewater from industrial processes or recreational vehicle (RV) dump stations. Domestic wastewater may include incidental RV holding tank discharges, e.g., at the owner's residence/storage location. Any proposals for RV Dump Stations will be referred to the appropriate RWQCB for permitting. This limitation does not apply to full hook-up sewer connections similar to those used at a recreational vehicle park.

8. ***Groundwater separation less than two (2) feet, or less than 10 feet for seepage pits.*** San Mateo County Onsite Wastewater Ordinance Section 4.84.120(b) sets forth minimum siting requirements for OWTS dispersal fields, which specifies a minimum vertical separation distance of three (3) feet to groundwater below the dispersal field, applicable to trenches or drip dispersal methods. Per Section 4.84.105 of the Ordinance, seepage pits are not allowed in San Mateo County.

9. ***Where public sewer connection is available.*** San Mateo County Onsite Wastewater Ordinance (Section 4.84.040) requires connection to an available public sewer, subject to approval by the sewer authority and the San Mateo County Local Agency Formation Commission, for: (a) newly proposed structures requiring sewage disposal that are within 200 feet of an available public sewer; and (b) developed property where structures served by an existing OWTS are within 200 feet of an available public sewer, at the time of OWTS failure or when replacement or addition to the OWTS is required.

10. ***Proximity to public water system wells and surface water intakes.*** San Mateo County Onsite Wastewater Ordinance Section 4.84.120(j) sets forth minimum horizontal setback requirements for OWTS that include the following restrictions for OWTS dispersal systems located in the proximity of public water supply wells and public water system surface water intakes.

    (a) Public water well:
    - 150 feet setback for any dispersal system no greater than 10-feet deep
    - 200 feet for any dispersal system greater that 10-feet deep.
    - Completion of 2-yr microbial transport study for any OWTS >20-ft deep and within 600 feet.

    (b) Public water system surface water intake:
    - 400 feet setback from edge of watercourse/water body where OWTS dispersal field is <1,200 feet to water supply intake
    - 200 feet setback from edge of watercourse/water body where OWTS dispersal field is >1,200 feet to water supply intake

    (c) Exceptions for replacement OWTS. For replacement OWTS unable to meet the horizontal setback requirements of (a) or (b) above, the replacement dispersal field shall meet the setback requirements to the greatest extent practicable.

Additionally, EHSD will require the replacement OWTS to incorporate supplemental treatment and other measures, as appropriate, unless EHSD finds no evidence of an existing or potential threat of impact to the public water source by the OWTS based on topography, soil depth and groundwater conditions.

(d) Exceptions for new OWTS. For new OWTS on parcels created prior to May 13, 2013, that are unable to meet the horizontal setback requirements of (a) or (b) above, the new dispersal field shall meet the setback requirements to the greatest extent practicable. Additionally, EHSD will require the new OWTS to incorporate supplemental treatment, including pathogen removal, plus other requirements noted below. In accordance with SWRCB OWTS Policy, pathogen removal in this case is defined as achieving an effluent fecal coliform bacteria concentration less than or equal to 200 Most Probable Number (MPN) per 100 milliliters. Other requirements include:

(1) providing a minimum vertical separation to groundwater of three (3) feet below the bottom of the dispersal field;
(2) providing a minimum dispersal field soil cover of 12 inches;
(3) completion of a cumulative impact analysis regarding nitrate loading effects (per Ordinance Section 4.84.180) if the setback issue involves a public water well; and
(4) other measures as specified by EHSD.

On a case-by-case basis, EHSD may establish alternative OWTS siting and operational requirements to those listed above where it is determined by EHSD that the alternate requirements will provide a similar level of protection against adverse impact to the public water source.

Section 6:
Program Administration

OWTS Permitting Records

The EHSD will retain permanent records of OWTS permitting actions and will make those records available within 10 working days upon written request for review by either the San Francisco Bay or Central Coast RWQCB. This includes:

- Installation permits issued for new, repair and replacement OWTS;
- OWTS variances and/or exemptions issued, including number, location and description;
- Operating permits issued for alternative systems, OWTS with flows >2,500 gpd, or other OWTS where EHSD has determined the need for an operating permit.

Water Quality Assessment Program

Objectives

The EHSD will maintain an OWTS water quality assessment program having three primary objectives: (1) to determine the general operational status of OWTS in the County; (2) assess possible impacts of OWTS on groundwater and surface water quality, and their associated beneficial uses; and (3) identify areas for changes to existing OWTS management practices.

Watershed and Focus Area Approach

It is anticipated that the OWTS-water quality assessment will be organized according to the various watershed areas and special Focus Areas, including La Honda, Los Trancos Woods, Pescadero, Portola Valley, Skylonda, and Woodside, delineated and presented in **Section 2** and **Appendix B** of this LAMP, and utilized in supporting GIS studies. This will allow the existing GIS-based mapping, OWTS inventories, and nitrate loading analyses to be utilized, updated and tracked over time. Other localized Focus Areas may be delineated in the future if warranted.

Operational Status of OWTS

The general operational status of OWTS will be assessed through compilation and review of the following types of information:

(1) Septic tank pumping/inspection reports;
(2) Complaints and abatement activities for failing OWTS;
(3) Exemptions issued for new and/or repair OWTS;
(4) Performance inspections of existing OWTS in connection with building additions/remodel projects, or property transactions;

(5) Monitoring reports for alternative systems or other OWTS with an operating permit.

The data review and assessment will focus on both positive and negative findings, apparent trends, and areas for changes in practices. The assessment will maintain and update the existing inventory of OWTS in the county.

Water Quality Assessment

The water quality assessment will include the following:

(1) **Water Quality Parameters of Concern.** The initial focus of the water quality assessment program will be on two key water quality parameters – pathogens and nitrate-nitrogen. Other parameters of concern may be added if warranted.

(2) **Wastewater Discharge Volumes.** Estimates of annual wastewater discharges from OWTS will be updated based upon the running inventory of OWTS per above.

(3) **Nitrate Loading.** Nitrate loading estimates (by watershed or focus area) will be maintained and updated based on the running inventory of OWTS in the County.

(4) **Water Quality Data Sources**. Relevant water quality monitoring data for (pathogens and nitrate-nitrogen) will be compiled from available sources, anticipated to include:

- Receiving water quality monitoring data reported under alternative systems operating permits;
- Water quality data from cumulative impact studies;
- Groundwater reports from water districts and others;
- Domestic water wells sampling from new wells or other;
- Public water system raw water quality data monitoring reports;
- Reservoir, stream, bay and ocean water quality sampling data for surface waters in the County and other special studies, such as recreational water quality sampling, weekly bacteriological sampling at creek mouths; sampling by Public Works related to Areas of Special Biological Significance, etc.
- Receiving water sampling performed as part of any NPDES permits**;**
- Groundwater sampling performed as part of Waste Discharge Requirements;
- Data from the California Water Quality Assessment Database; and
- Groundwater data collected as part of the Groundwater Ambient Monitoring and Assessment Program available in the Geotracker Database.

(5) **Assessment.** In addition to periodically updating the OWTS nitrate loading estimates for the county, it is anticipated that assessment of the data will include a review to: (a) determine relevance of the various data to OWTS; (b) identification of any obvious water quality degradation attributable to OWTS warranting follow-up investigation or

action; (c) identification of any water quality degradation where OWTS may be implicated as a possible source; and (d) identification of water quality data/areas indicating no apparent issues of concern related to OWTS.

Reporting to RWQCBs

Annual Report

An annual report pertaining to OWTS activities in San Mateo County for submission to the San Francisco Bay Regional Water Quality Control Board by February 1st of each year, with a copy also sent to the Central Coast Regional Water Quality Control Board. The annual report will, at a minimum, include the following information, organized in a tabular spreadsheet format:

(1) Number and location of complaints pertaining to OWTS operation and maintenance, and identification of those which were investigated and how they were resolved;

(2) Number, location and description of permits issued for new and replacement OWTS, including any variances and/or exemptions issued;

(3) Number, location and results of septic tank pumper inspection reports received per requirements of the County's Onsite Systems Manual; and

(4) List of applications and registrations issued as part of the local septic tank pumper registration program pursuant to Section 117400 et seq. of the California Health and Safety Code.

The report will include: (a) a summary of whether any further actions related to OWTS are warranted to protect water quality or public health; (b) status of water quality data collection and review; and (c) any other information deemed appropriate by Environmental Health.

5-Yr Water Quality Assessment Report to RWQCB

Every five (5) years the annual report to the RWQCB will be accompanied by a Water Quality Assessment Report that summarizes the information and findings from Environmental Health's Water Quality Assessment Program described above. The report will present an overall assessment regarding any evidence of water quality impact from OWTS along with any recommended changes in the LAMP to address the identified impacts. Additionally, any groundwater water quality data generated by the EH from monitoring activities will be submitted in electronic data format (EDF) for inclusion in Geotracker, and any surface water quality data will be submitted to CEDEN in A SWAMP comparable format[3].

[3] CEDN stands for California Electronic Data Exchange Network; SWAMP stands for Surface Water Ambient Monitoring Program

Appendix A

Supporting Rationale for
San Mateo County OWTS Siting and Design Criteria

Appendix A
Supporting Rationale
for
San Mateo County OWTS Siting and Design Criteria

Following is a discussion of the supporting rationale (including literature references) for the various siting and design requirements for OWTS contained in San Mateo County's LAMP for those items that differ from the Tier 1 requirements of the SWRCB OWTS Policy. The topic areas addressed include: (1) groundwater separation requirements beneath dispersal systems; (2) dispersal trench sizing; (3) horizontal setbacks; and (4) allowable OWTS densities (lot size) for new subdivisions. Additionally, highlighted at the end are the various requirements and management practices contained in San Mateo County's LAMP that constitute a higher level of water quality and environmental protection relative to OWTS than provided in the Tier 1 requirements.

1. Pathogen Removal and Groundwater Separation Requirements

Bacteria, viruses, and other pathogens are present in great numbers in sewage and represent an ongoing threat to public health. Preventing the transmission of disease is the foremost concern associated with the treatment and dispersal of sewage and is the basis for many of the established standards that dictate how, where and when wastewater treatment and dispersal can occur. Ground waters and surface waters are afforded protection from OWTS contamination through the establishment of specific criteria pertaining to the soil properties, vertical separation (i.e., the distance from the bottom of the dispersal trench to the seasonal high groundwater below), and horizontal (surface water) setback requirements. The level of wastewater treatment (prior to dispersal) and the design of the dispersal system can also play a role in pathogen removal. The soil is critical, but the factors are complex, and there is no simple rule for proper design and operation. Attenuation and removal of pathogens in the soil is accomplished through such mechanisms as microbial predation, filtration, adsorption, and die-off.[1] Related factors include the depth, texture, and structure of the soil, hydraulic loading rate, and other physicochemical properties such as moisture, temperature, oxygen and pH.

[1] "microbial predation" refers to consumption by other soil microbes; "filtration" refers to physical trapping between soil particles; "adsorption" refers to attachment to the surfaces of soil particles; "die-off" refers to degradation or inactivation due to the inability of the pathogen to sustain itself in the soil environment.

It is well known that soils have a tremendous capacity to remove bacteria from percolating wastewater. The retention and die-off of most, if not all, pathogenic bacteria occur within 2 to 3 feet of the soil infiltrative surface in a properly functioning OWTS (Anderson et al, 1994; Washington Dept. of Health, 1990). Viruses can also be retained and eliminated within a few feet, depending on the soil conditions; but it is generally accepted that they can persist longer and travel farther in the soil than bacteria (Anderson, et al, 1991; Ayres and Associates, 1993). Unlike bacteria, viruses are not always present in individual residential OWTS discharges, since it depends on the health status of the residents. Viruses are more likely to be consistently present at some level in commercial and community wastewater systems, which accept wastes from a broader segment of the population. Once reaching the water table, bacteria and viruses have been found to survive and travel significant distances with the groundwater (potentially hundreds of feet), depending on the rate of groundwater movement. Survival time in soil and groundwater is typically on the order of days to weeks for bacteria, and weeks to months for viruses.

Consistent with current knowledge and practices for preventing pathogen impacts from OWTS, the San Mateo County LAMP includes a combination of siting and design requirements including: soil depth and percolation characteristics, minimum vertical separation to groundwater, minimum horizontal setbacks to various water/landscape features, dispersal field design/sizing criteria based on percolation rates, and, for some situations, options for use of alternative treatment and dispersal designs. Horizontal setbacks are the same for all OWTS (conventional and alternative) and are consistent with long-standing criteria contained in the guidelines of the SF Bay and Central Coast Regional Water Quality Control Boards. The setback requirements also include more restrictive requirements for public water wells and public water system surface water intakes per the 2012 SWRCB OWTS Policy.

The key issue related to potential pathogen impacts from OWTS is the vertical separation below the dispersal trench to the seasonally high groundwater level (i.e., water table). **Table A-1** lists the depth to groundwater requirements for conventional OWTS in San Mateo County, along with the corresponding groundwater separation requirements contained in the historical guidelines of the San Francisco Bay and Central Coast RWQCB and the Tier 1 requirements in the SWRCB OWTS Policy.

Table A-1
Comparison of Depth to Groundwater Requirements for Conventional OWTS
(feet, below trench bottom)

Percolation Rate (min per inch)	San Mateo County	SF Bay RWQCB Guidelines (Historical)	Central Coast RWQCB Guidelines (Historical)	SWRCB OWTS Policy Tier 1 Requirements
1-<5	Not Permitted	20	20	20
5-30	5	3	8	8
31-80	5	3	5	5
81-120	Not Permitted	3	5	5

Under San Mateo County's updated OWTS Ordinance, the County will allow the groundwater separation distance to be reduced to 3 feet where either supplemental treatment and/or pressure distribution is provided. A minimum 3-ft separation to groundwater was the historical requirement in San Mateo County for many years until the recent Ordinance update was made to conform more closely to the SWRCB Policy, Tier 1 requirements. There is no evidence indicating any water quality or public health issue with the historical 3-ft groundwater separation requirement; the new requirement mandating either supplemental treatment or pressure distribution will be more conservative (safe). Note also that San Mateo County requirements are more restrictive than State Tier 1 requirements in regard to prohibition of OWTS for areas with percolation rates faster than 5 mpi, and slower than 80 mpi.

The supporting rationale for the allowing a 3-ft vertical separation requirement for alternative OWTS designs is derived from research studies done over the past 30 to 40 years, largely funded by the USEPA and referenced in the *On-site Wastewater Treatment Systems Manual* (US EPA, 2002). These studies have documented how various alternative treatment and dispersal methods can improve the operation and treatment effectiveness of OWTS as compared with conventional septic tank-gravity dispersal trench designs. A major focus of the research efforts has been on finding methods to augment or improve the natural pollutant removal processes in the soil (especially related to pathogens) to help overcome limited soil depth and high groundwater conditions, which are a common constraint virtually everywhere OWTS are used. The following is a review of some of the key findings and principles that have emerged from the research and have supported changes in OWTS siting and design criteria.

a. **Pressure Distribution.** There is strong evidence and agreement in the professional literature that pressure distribution improves the performance of any soil absorption system as compared with conventional gravity distribution, and should be the distribution method of choice (US EPA, 2002). This is due to two main factors: (1) pressure distribution disperses the wastewater flow uniformly over the entire available

soil infiltrative surface, which allows the maximum absorption potential to be realized for any given soil condition; and (2) creation of wetting and draining cycles (via effluent dosing) promotes the maintenance of aerobic soil conditions at the infiltrative surface, which improves biodegradation and reduces the potential for soil clogging caused by the buildup of organic matter. The professional literature also notes that uniform spreading of the effluent discharge to the soil with the use of pressure distribution (or drip dispersal), ideally with timed-dosing, is critical to assure effective pathogen reduction in situations where the vertical separation is reduced.

b. **Supplemental Treatment.** Pathogen removal efficiencies can vary greatly amongst the different types of supplemental treatment systems that would be permitted and used under the County Ordinance. The greatest removal efficiencies are generally attributed to intermittent sand filters. Crites and Tchobanoglous (1998) present data showing fecal coliform removal efficiencies of 97.9 percent to 99.9 percent for intermittent sand filters. Leverenz, et al (2002) estimate intermittent sand filters as having the ability to produce effluent with fecal coliform concentrations <800 MPN/100 ml. For comparison, the fecal coliform concentration in effluent from a conventional septic tank is similar to that in raw sewage, and typically ranges from about 10,000 to 100,000 MPN/100 ml. (Crites and Tchobanoglous, 1998). Additionally, however, an important purpose of the supplemental treatment unit in combination with the dispersal system design is to establish and maintain aerobic/unsaturated conditions in the soil absorption field. Maintenance of aerobic soil conditions is conducive to pathogen removal and an improvement over the operational conditions of conventional gravity dispersal fields, which are designed to allow a saturated (anaerobic) soil-infiltrative surface. Research has demonstrated that aerobic effluent: (a) promotes the growth of aerobic soil microflora that can have antagonistic effects on viruses; and (b) reduces the amount of organic compounds that compete for adsorption sites with viruses and bacteria (Potts, 2003).

c. **Pathogen Removal in Soils.** The retention and die-off of most, if not all, pathogenic bacteria occur within 2 to 3 feet of the soil infiltrative surface in a properly functioning OWTS (Anderson et al, 1994; Washington State DOH, 1990). Viruses can also be retained and eliminated within a few feet, depending on the soil conditions; but it is generally accepted that they can persist longer and travel farther in the soil than bacteria (Anderson et al, 1991; Ayres Associates, 1993). Studies have shown that vertical separation distances to groundwater of 12 to 18 inches are sufficient to achieve good fecal coliform removal where the wastewater receives supplemental treatment prior to soil application along with pressure distribution or drip dispersal methods (Converse and Tyler, 1998; Duncan et al, 1994). Additionally, most of the research studies of OWTS pathogen removal have focused on sandy soil types; and the results of these studies have formed the basis for the soil depth criteria, such as those contained in the EPA Design Manual (2 to 4 feet unsaturated soil depth). Consequently, the soil depth criteria are already oriented toward the “worst case” conditions (sandy,

permeable soils), and there is a built-in safety factor, with respect to pathogen removal, for finer textured soils with higher silt and clay fractions.

As previously noted, while there is no simple rule or absolute formula for OWTS-groundwater separation, the San Mateo County depth to groundwater criteria related to type of OWTS and percolation rates are similar to, and slightly more conservative (protective) than, standards adopted and followed in many other counties in Northern California over the past 10 to 20+ years (for example, Marin, Sonoma, Napa, Contra Costa, Mendocino, Placer, Nevada, among others). In several counties these criteria have been applied to new subdivisions as well as for existing lots of record. The San Mateo County LAMP only allows the use of alternative OWTS with 3-ft groundwater separation requirements for existing and future legal lots of record and for repair/replacement of existing OWTS; this option is not permitted to be used as the basis of new lot creation.

Additionally, an important aspect of siting and design of OWTS under these criteria is the process for determining seasonally high groundwater levels in the dispersal field area. The requirements in San Mateo County specify field observation methods for groundwater determination consistent with best industry practices. These requirements have been in effect for a number of years and will continue under the County LAMP.

Finally, the LAMP includes the establishment of an operating permit program for all alternative OWTS that will ensure ongoing inspection and monitoring of OWTS for verification of proper performance.

Based on the above considerations, the criteria relative to the depth to groundwater requirements and use of alternative treatment and dispersal methods are consistent with the current state of knowledge and best management practices and would provide suitable protection against pathogen impacts from onsite wastewater treatment systems.

2. Dispersal Trench Sizing

Dispersal trench sizing (i.e., length) is commonly based on three factors: (a) design wastewater flow; (b) trench infiltrative surface dimensions (width and depth); and (c) wastewater application rates (gpd/ft^2) related to percolation rate or soil type. San Mateo County requirements differ in some respects from the SWRCB Tier 1 criteria, but overall provide an equivalent design approach, as follows:

a. San Mateo County specifies the use of peak daily wastewater flow for dispersal system sizing; Tier 1 specifies the use of average daily wastewater flow (8.1.3). As a rule of

thumb, average daily flow is typically about 50% of peak wastewater flow, resulting in a significant safety factor in the San Mateo County design approach.

b. The standard allowance for infiltrative surface in San Mateo County requirements is 12 ft^2 per lineal foot of trench, which exceeds the Tier 1 requirement, but the total amount of effective trench infiltrative area in San Mateo County also exceeds the Tier 1 requirements.

c. **Table A-2** below shows a comparison of the wastewater application rate criteria based on percolation rate for a range of values, including San Mateo County requirements, Tier 1 criteria, US EPA and other SF Bay Area Counties, and the historical guidelines of the SF Bay and Central Coast RWQCB. As can be seen, there are similarities and differences among all of the criteria. San Mateo County requirements agree with Tier 1 in the lower (faster) percolation range, but differ for slower percolation rates. However, the difference in using peak flow rather than average flow (noted above) compensates for the difference in applications rate factor.

Table A-2
Wastewater Application Rates for OWTS Dispersal Field Sizing
(gpd/ft^2)

Percolation Rate (mpi)	San Mateo County LAMP	SWRCB OWTS Policy Tier 1	USEPA Design Manual & SF Bay Counties	SF Bay RWQCB Guidelines*	Central Coast RWQCB Guidelines*
1 - <5	Not Permitted	1.20	1.20 – 1.086	1.58 – 0.82	0.80
5	0.46	1.20	1.086	0.82	0.80
10	0.46	0.80	0.80	0.64	0.80
24	0.46	0.60	0.60	0.39	0.60
30	0.46	0.533	0.56	0.30	0.25
45	0.26	0.367	0.45	0.25	0.25
60	0.26	0.20	0.35	0.22	0.25
70	0.18**	0.10	0.20	0.22	0.10
80	0.18**	0.10	0.20	0.22	0.10
> 80	Not Permitted	0.10	0.20	0.22	0.10

*Former requirements contained in RWQCB Basin Plans, no longer in effect
**San Mateo County requires pressure distribution for soils with percolation rate >60 mpi

3. Horizontal Setbacks

San Mateo County's OWTS Ordinance includes horizontal setback distances that equal or exceed the SWRCB Tier 1 requirements in all respects except for Tier 1 item 7.5.5 which specifies a 200-ft setback from "… vernal pools, wetlands, lakes, ponds, or other surface waters…". San Mateo County requirements treat these water bodies the same as

"watercourses", with a 100-ft horizontal setback requirement, which is consistent with historical RWQCB guidelines and requirements found in all other jurisdictions reviewed. The SWRCB's rationale for the 200-ft setback distance is not known.

The County's 100-ft setback distance is meant to protect beneficial uses of both watercourses and water bodies, which primarily include contact and non-contact recreation and aquatic resources. Consistent with the SWRCB OWTS Policy, San Mateo County includes a 200-ft to 400-ft setback for surface waters in proximity to public water supply intakes – a beneficial use of water warranting a higher level of protection from waste sources.

The Tier 1 200-ft setback in 7.5.5 appears to be without substantial merit and at odds with other setback requirements – e.g., 100-ft setback from a domestic water supply well. The possible justification for a 200-ft setback from the Pacific Ocean (tidal water), stock watering ponds, golf course lakes, and wetlands (that may or may not have any surface water features) is not known.

4. Allowable Densities for New Subdivisions

Tier 1 (section 7.8) specifies that average development density (i.e., acres per dwelling unit/OWTS) be based on a sliding scale (0.5 to 2.5 acres) related to average rainfall. With average rainfall amounts ranging from 15 to 50 inches/year in San Mateo County, Tier 1 would allow new lot sizes as low as 0.5 to 0.75 acres in large portions of the county. County Subdivision Regulations (Section 7027) do not specify a minimum lot size for parcels served by OWTS, but rather require project and site specific determinations as stated below:

> "Each parcel created by a subdivision must be served by a sanitary sewer or individual sewage disposal system, and no tentative map or tentative parcel map shall be approved unless the Advisory Agency is assured that safe and adequate sewage disposal will be provided. The subdivider will be responsible for the design and installation of a sewage disposal system in accordance with County standards. The type of sewage disposal system to be installed by the subdivider will be established by the Advisory Agency, upon the recommendation of the Planning Director. The Planning Director's recommendation shall be based on the recommendation of the Environmental Health Division..."

The Environmental Health Division recommendations are guided by the OWTS Ordinance (Section 4.84.180) and accompanying Onsite Systems Manual, which include requirements for the completion of cumulative impact studies, such as nitrate loading assessment, for proposed development that may have water quality effects related to the constituents, volume or density of wastewater discharges in a given area. The Onsite Systems Manual specifies that a cumulative impact assessment for nitrate loading is required for any subdivision with less than 2.5 acre lot size density, and provides evaluation criteria to assure adequate protection of

public health and water quality. This ensures that OWTS densities for new subdivisions will be addressed in a manner consistent with the Tier 1 requirements, with greater emphasis on site specific analysis of nitrate loading issues.

5. More Protective Aspects of San Mateo County LAMP

The following highlight the more protective aspects of the San Mateo County LAMP as compared with the Tier 1 requirements of the SWRCB OWTS Policy.

- **Alternative OWTS.** Establishes requirements for alternative OWTS, providing better options, design guidance and a managed system for dealing with repairs/replacement for the approximately 4,400+ existing OWTS in the county.

- **Operating Permits.** Establishes operating permit program for alternative OWTS and some other OWTS (e.g, over 2,500 gpd flow) to ensure a higher level of performance monitoring and regular reporting to the County.

- **Cumulative Impact Assessments.** Includes requirements and guidelines for conducting cumulative impact assessments related to nitrate loading, groundwater mounding or other issues or locations of concern; mandatory for flows over 2,500 gpd. Tier 1 allows OWTS designs up to 3,500 gpd with no comparable requirements.

- **Septic Tank Pumper Inspection & Reporting Requirements.** Institutes a program for basic inspection of OWTS at the time of septic tank servicing, and reporting of results to the County.

- **Seepage Pits.** Prohibits the use of seepage pits; Tier 1 identifies seepage pits as an alternative for OWTS repairs (8.1.6).

- **Pump Systems.** Onsite Systems Manual includes design guidance and requirements for pump systems.

- **Pressure Distribution Systems.** Treats pressure distribution systems as an "alternative" OWTS, including requirements for operating permit and performance monitoring/reporting. Tier 1 (8.1.4) recognizes pressure distribution as a conventional trench design option.

- **Range of Acceptable Percolation Rates.** Limits OWTS to areas with percolation rates in the range of 5 to 80 mpi; Tier 1 percolation range is 1 to 120 mpi.

- **Cut Banks and Steep Slopes.** Includes horizontal setback requirement for cut banks and steep slopes, which represent potential avenues for effluent seepage.

- **Maximum Trench Depth.** Specifies maximum depth of 8 feet for dispersal trench, compared with 10 feet allowed by Tier 1.

- **Peak vs Average Flow.** Dispersal system design based on peak, rather than average wastewater flow as provided in Tier 1.

- **Erosion Control.** Includes erosion control requirements for OWTS installations.

- **Floodplains.** Includes avoidance and design requirements related to floodplains.

- **Performance Evaluation Guidelines.** Provides procedures and criteria to guide performance evaluations of OWTS in connection with building remodel projects, property transfers, abatement investigations, etc.

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Appendix B

OWTS Usage and Wastewater Loading Estimates for San Mateo County

Appendix B
OWTS Usage and Wastewater Loading Estimates for San Mateo County
May 2016
Prepared by Questa Engineering Corp

General Approach and Scope

The following describes the process used to develop an inventory of the total number and distribution of residential OWTS in San Mateo County, organized and integrated with soils mapping and hydrologic information. The analysis was completed by Questa Engineering using GIS parcel data supplied by County of San Mateo, along with soils and hydrological data primarily from the USDA National Resource Conservation Service (NRCS), California Department of Water Resources (DWR) and the US Geological Survey (USGS).

There were four basic elements of this analysis as follows:

1. **Parcel Development Status.** Conduct a systematic GIS-based inventory to determine the development status (i.e., developed or vacant) of all residential parcels in non-sewered areas of the County. (Note: the analysis did not address OWTS serving commercial occupancies, or other non-residential uses, which may be significant locally, but overall represent a relatively small percentage of total OWTS discharges in the County. This should be addressed for selected areas as an addendum to this analysis).

2. **General Soil/OWTS Suitability Mapping.** Define and construct GIS map of general soil associations for the County, focused on factors pertinent to the use of OWTS.

3. **Hydrologic Areas.** Delineate general hydrologic areas of the County, consistent with State databases, in a GIS format compatible with parcel and soils information.

4. **Groundwater Basins.** Identify and compile information on recognized groundwater basins in San Mateo County, including GIS map files compatible with parcel, soils and hydrological data.

5. **OWTS Focus Areas.** Identify "OWTS Focus Areas" within the County on the basis of the overall number and/or density of OWTS, and conduct more in-depth analysis of wastewater-nitrate loading in these areas.

The geographic area covered in the analysis includes all of San Mateo County, with the parcel data analysis focused only on the unincorporated lands within the county. All incorporated property within the various cities was excluded, under the assumption that municipal sewer

systems either serve or are available to all of these parcels. Some "islands" of unincorporated parcels were found to exist in the urban areas; and in most cases found these areas to be connected to a sewage treatment facility. If additional information reveals any of these parcels to be connected to municipal sewers corrections will be made to remove these parcels from OWTS status. Additionally, any other unincorporated parcels determined to be connected to community sewer systems in other parts of the County will be have their OWTS status corrected.

Parcel Development Status

The first step in the analysis was to identify and create an inventory of the non-sewered parcels in the County along with their development status (i.e., developed or vacant). It was found that this information is not readily available from any County department. Therefore, this was done according to the following process using the County GIS database.

1. **Identify Non-sewered Parcels**

- City and sanitary district boundaries were applied to the County-wide data base to exclude parcels located within areas known to be served by public sewers. This included mainly incorporated lands, but it also included some unincorporated areas of (e.g. sanitary districts) which are served by their own community wastewater facilities. NOTE: "islands" of unincorporated lands falling within city boundaries <u>were not excluded</u> during this step, however, an additional review of these "islands" was made to assess and identify parcels that are connected to municipal sewers. In particular, the "island" communities of Broadmoor and Country Club Park were confirmed to be connected to sewer, while a small "island" in the northern county was found to be an unconnected mobile home park.

  For this analysis, the city boundaries of Woodside and Portola Valley were not used, and sewered areas were only determined by the sanitary districts within their city boundaries.

- From the above analysis, the total number of non-sewered parcels in the County was determined to be 9,811.

2. **Determine Development Status.**

- County Assessor's information and other GIS parcel data were reviewed and found not to have any designation indicating whether or not a particular property is <u>developed</u> or <u>vacant.</u>

- The GIS parcel database field, PUC_DESC, contained reasonable indicators of residential development. A developed residential parcel was identified by such keywords in this field as "Duplex", "SFR", "Five or More Units", etc. Other keywords such as "Office", "Grazing", "Community Center" etc. were eliminated from analysis to focus solely on residential development. It was further determined that about one percent of the developed residential parcels were indicated as multi-family units.

- The indicators as derived above were then assigned to the County-wide GIS inventory of unincorporated non-sewered parcels, with the following findings:

    - Developed Parcels: 4,422
    - Vacant Parcels: 5,389
      Total Parcels: 9,811

Soils/ OWTS Suitability Mapping

General Soils Map. Figure B-1 presents a General Soils Map of San Mateo County compiled from information contained in two soil surveys and mapping published by the U.S. Department of Agriculture, which include: (1) Soil Survey of San Mateo Area, California, 1961; (2) Soil Survey San Mateo County, Eastern Part and San Francisco County, California, 1990; and (3) Online soils data base maintained by the Natural Resources Conservation Service (NRCS). The General Soils Map contained in the 1990 Soil Survey of San Mateo County, Eastern Part provided the baseline groupings of general soil associations, which were extended to cover other portions of the County, as shown in **Figure B-1**.

Soils in the County can be grouped into general landform classifications as follows:

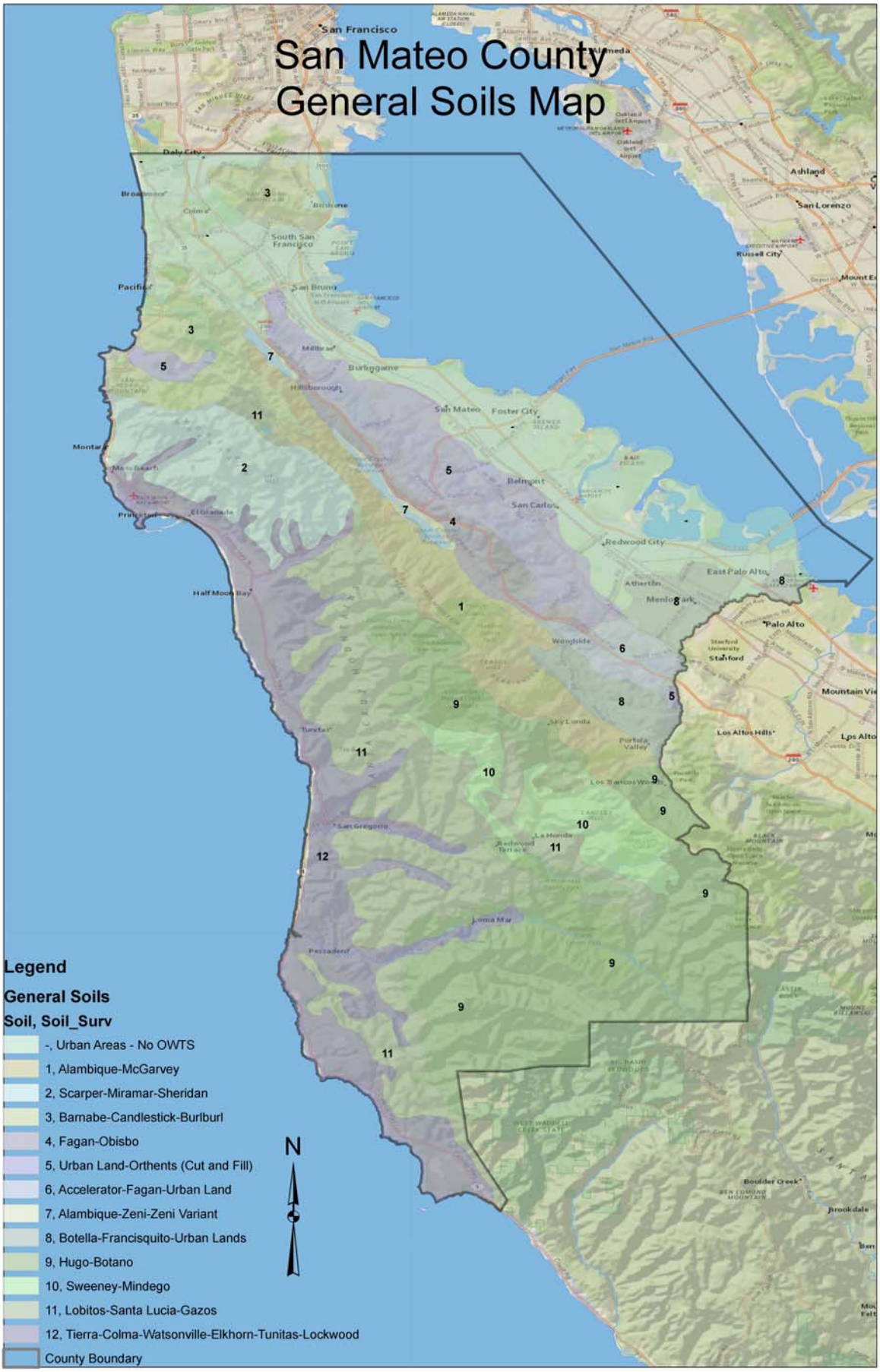
1990 Soil Survey of San Mateo County, Eastern Part

- **Uplands (1-7)** The soils of the Santa Cruz Mountains are generally moderately deep and well drained loams situated on gently rolling to steep slopes. Most OWTS development in the eastern uplands is located in 1, 4, 5 & 6 soil associations, in the vicinity of Woodside, and can have local constraints of steep slopes and/or shallow soils.

- **Bottom Lands (8).** Most soils associations found along the San Francisco Bay side of the county are all situated in urban sewered areas, and hence are not part of this OWTS analysis. However, included in this landform classification is the Botella-Francisquito-Urban soil association located near Portola Valley where there is significant development on OWTS.

1961 Soil Survey of San Mateo Area

- **Uplands (9-11).** Soils found in the rural mountainous portions of the county, west of the Santa Cruz Mountains divide, are well drained soils to excessively drained soils derived mostly from sedimentary parent material and formed in upland regions between the ridgetops and marine terraces near the coast. The loamy soils in these areas are well suited for conventional OWTS, mostly found near Kings Mountian Road, Sky Londa, Redwood Terrace and La Honda and scattered throughout mountainous rural areas to the



San Mateo County Local Agency Management Program		**San Mateo County General Soils Map**	FIGURE **B-1**

central and southern parts of the county. Local constraints of shallow soils and/or steep slopes can be potentially overcome with shallow drip/alternative systems.

- **Marine Terraces, Alluvial Fans and Floodplains (12).** Soils found on the coastal terraces and coastal stream valleys are generally deep, well drained and suitable for conventional OWTS.

Soil-OWTS Suitability. The general mapping of soil conditions takes into account location and landform conditions, depth to bedrock, slope, subsurface texture, and drainage conditions of the soils, which are all key factors that can affect the suitability of the soils for onsite wastewater treatment. **Table B-1** was developed from the published soil survey information, summarizing the soil characteristics of the general soil associations mapped in **Figure B-1.**

The second to last right-hand column in **Table B-1** highlights the key constraints and overall suitability designation for OWTS for each general soil association. The designations were developed and assigned based on the USDA soils information and Questa's best professional judgment (preliminary). This is provided as a general assessment tool and is not a substitute for site-specific investigation of and planning for onsite wastewater treatment systems. It provides a general indication of the management and design issues likely to be encountered in each area. It does not take into account local constraints such as steep slopes, setback or other anomalous conditions that may be found on particular sites. Included in **Table B-2** is the estimated number of residential OWTS within each general soil area, determined by merging the GIS parcel data with the soil mapping boundaries.

Table B-1: San Mateo County General Soil Associations

General Soil Association Number	Soil Association Name	Description	Soil Depth	Slope	Drainage	Soil Texture	Suitability and Constraints for OWTS	Estimated Number of OWTS
1	**Alambique-McGarvey**	Soils formed in material weathered from sandstone found west of the San Andreas fault and south of California Highway 92	moderately deep	moderately steep to very steep (30-75%)	well drained	gravelley loam to clay loam underlain by sandstone	Generally suitable conditions for conventional OWTS; some inclusions of low permeability and perched groundwater favoring shallow dispersal designs	832
2	**Scarper-Miramar-Sheridan**	Soils formed in material weathered from quartz-diorite or acid igneous rock found on the coast from Devil's slide to Montara	moderately deep	steep and very steep	well drained	gravelley course sandy loam and clay loam underlain by quartz-diorite	Moderately constrained by steep slopes and shallow soils, potentially requiring alternative treatment and/or shallow dispersal designs	7
3	**Barnabe-Candlestick-Burlburl**	Soils formed in material weathered from sandstone found on San Bruno Mountain; Sweeny Ridge, west of Pacifica; and Skyline Boulevard, south of California Highway 92	very shallow to moderately deep	moderately steep to very steep (15-75%)	well drained	very gravelley sandy laom and sandy clay loam underlain by hard, fractured sandstone	Moderately constrained by steep slopes and shallow soils, potentially requiring alternative treatment and/or shallow dispersal designs	2
4	**Fagan-Obisbo**	Soils formed in material weathered from sandstone, shale and serpentine found along California Highway 92, on the eastern side of the San Andreas Fault	shallow and deep	gently sloping to steep (5-50%)	well drained	clay to sandy clay loam underlain by sandtone shale, or hard, sepentinitic rock	Moderately constrained by steep slopes and shallow soils, potentially requiring alternative treatment and/or shallow dispersal designs	180
5	**Urban Land-Orthents, Cut and Fill**	Soils formed in residuum derived from sandstone found east of California Highway 280 extending from San Bruno to Redwood City	very shallow to very deep	gently rolling to very steep	well drained	Urban Land, graded and mixed soils, or covered with fill material	Generally suitable conditions for conventional OWTS; some inclusions of low permeability and perched groundwater favoring shallow dispersal designs	297
6	**Accellerator-Fagan-Urban land**	Soils formed in residuum derived from sandstone, shale or siltstone found along California Highway 280, north of San Franciquito Creek	deep	gently rolling and rolling	well drained	loam to clay loam and clay	Suitable conditions for conventional OWTS	138
7	**Alambique-Zeni-Zeni Variant**	Soils formed in material weathered from sandstone and metasedimentary rock on Sawer Ridge and Cahill Ridge, in the San Francisco Water District	moderately deep	moderately steep to very steep (15-75%)	well drained	loam and sandy loam, and gravelley loam to gravelley clay loam	Moderately constrained by steep slopes and shallow soils, potentially requiring alternative treatment and/or shallow dispersal designs	0

General Soil Association Number	Soil Association Name	Description	Soil Depth	Slope	Drainage	Soil Texture	Suitability and Constraints for OWTS	Estimated Number of OWTS
8	**Botella-Francisquito-Urban Lands**	Soils formed on alluvial fans, flood plains and stream terraces along San Francisquito Creek, and in Menlo Park, Palo Alto, Woodside and Portola Valley	very deep	gently sloping to rolling	well drained, restricted permeability of the subsoils	clay loam to loam	Generally suitable conditions for conventional OWTS; some inclusions of low permeability and perched groundwater favoring shallow dispersal designs	1,112
9	**Hugo-Butano**	Soils formed in material weathered from sedimmentary rock found in the southern county, including nearly all of the Skyline crest	deep	steep and very steep	well drained to somewhat excessively drained	sandy loam to loam	Moderately to severely constrained by steep slopes and shallow soils, potentially requiring alternative treatment and/or shallow dispersal designs	1,022
10	**Sweeney-Mindego**	Soils developed from basic igneous rock on rounded, sloping and moderately steep ridgetops found mainly in the central eastern uplands Mindego and Langley Hills, and La Honda	moderately deep and shallow	steep and very steep	well drained to somewhat excessively drained	clay loam to sandy loam	Moderately to severely constrained by steep slopes and shallow soils, potentially requiring alternative treatment and/or shallow dispersal designs	158
11	**Lobitos-Santa Lucia-Gazos**	Soils formed in material weathered from sedimmentary rock and siliceous shale found in the western county between the ridgetops and the marine terraces near the coast	moderately deep and shallow	steep and very steep	well drained to excessively drained	loam and silt loam	Moderately to severely constrained by steep slopes and shallow coarse-textured soils, potentially suitable for supplemental treatment and/or shallow dispersal designs	323
12	**Tierra-Colma-Watsonville-Elkhorn-Tunitas-Lockwood**	Soils formed ins alluvium of mixed sources, some of which was reworked by the ocean and redeposited on marine terraces found along the majority of the county's coast	deep	nearly level with steep inclusions	well drained to imperfectly drained	sandy loam to clay loam	Moderately to severely constrained by steep slopes and shallow coarse-textured soils, potentially suitable for supplemental treatment and/or shallow dispersal designs	351

Table B-2: San Mateo County OWTS Development by Soils

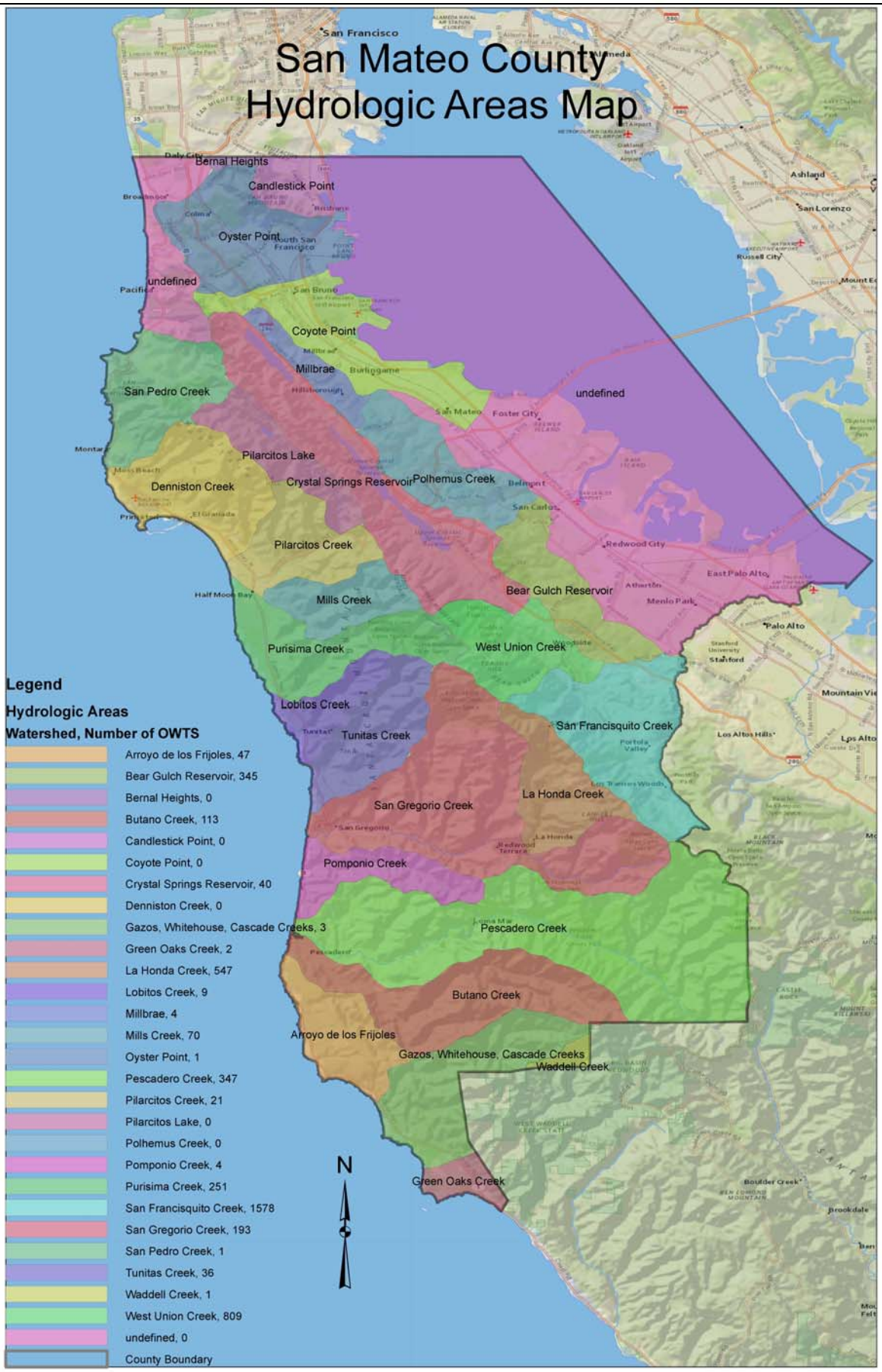
General Soil Association Map Index	Soil Association Name	Estimated Number of OWTS
1	Alambique-McGarvey	832
2	Scarper-Miramar-Sheridan	7
3	Barnabe-Candlestick-Burlburl	2
4	Fagan-Obisbo	180
5	Urban Land-Orthents, Cut and Fill	297
6	Accellerator-Fagan-Urban Land	138
7	Alambique-Zeni-Zeni Variant	0
8	Botella-Francisquito-Urban Lands	1,112
9	Hugo-Butano	1,022
10	Sweeney-Mindego	158
11	Lobitos-Santa Lucia-Gazos	323
12	Tierra-Colma-Watsonville-Elkhorn-Tunitas-Lockwood	351
	Total OWTS	**4,422**

Watershed Areas

Watershed Mapping. San Mateo County lies within two hydrological and Water Quality Control Board Regions: San Francisco Bay Region 2 (northern majority of the county) and Central Coast Region 3 (southern tip of the county). Utilizing watershed boundaries established by the California Department of Water Resources (DWR), twenty-eight (28) watershed areas were delineated and labeled as shown in **Figure B-2**. Twenty-four of the watersheds are in the San Francisco Bay Region and four within the Central Coast Region. The boundaries match DWR delineations, except in some cases smaller sub-regions were combined that either combined flow to the Pacific Ocean or to the Crystal Springs Reservoir. Some of the watersheds that drain to San Francisco Bay coincide with urban or otherwise sewered areas, and hence are not included in this OWTS analysis.

OWTS Distribution by Hydrologic Area. The hydrologic area information was merged with the GIS parcel status data to segregate the developed unincorporated parcels (i.e., OWTS) according to their location in different hydrologic areas in the county. The results are presented in **Tables B-3** and **B-4** for the San Francisco Bay and Central Coast regions of the county, respectively. Shown in the tables for each hydrologic area are the total land acreage comprising each hydrologic area, the lot area developed with OWTS, the number of OWTS, and the average lot size for the developed parcels. As indicated, about 99% of the OWTS are located in the San Francisco Bay Region and 1% in the Central Coast Region.

Cumulative Wastewater Loading by Hydrologic Area. Based on the estimated number and distribution of developed properties using OWTS determined above, estimates of the associated cumulative wastewater loading volumes were made for different geographical and hydrological regions of the County. This was done using an average daily wastewater flow of 150 per OWTS, which is typical for rural residences, equal to about one-third to one-half the peak daily design flow used for system sizing. **Tables B-5** and **B-6** present the estimated volume of wastewater generated for each of the 22 general hydrological areas in the County for existing development conditions. Estimated wastewater volumes are shown in gallons per day (gpd) and million gallons per year (Mgal/yr). Additionally, the average annual wastewater loadings, in gallons per acre, are calculated and presented based on the total acreage of non-sewered area within each hydrologic area. These estimates can be used subsequently to evaluate the nitrate and salt loading from OWTS for the different hydrologic areas of the county, and in the future provide a basis to track ongoing OWTS impacts from additional development.



San Mateo County Local Agency Management Program		**San Mateo County Watershed Areas Map**	FIGURE **B-2**

Table B-3. OWTS Distribution by Hydrologic Area, San Mateo County – San Francisco Bay Region 2

Hydrologic Area	Total Watershed Area (acres)	Developed Lot Area (acres)	Number of Developed Parcels	Average Developed Lot Size (acres)
Bear Gulch Reservoir	7,633	659	345	1.91
Butano Creek	13,836	327	113	2.89
Crystal Springs Reservoir	18,323	38	40	0.95
Denniston Creek	10,335	0	0	0
La Honda Creek	7,324	1,082	547	1.98
Lobitos Creek	3,942	325	9	36.13
Millbrae	2,996	2	4	0.62
Mills Creek	5,339	717	70	10.25
Oyster Point	11,843	0.25	1	0.25
Pescadero Creek	34,939	3494	347	10.07
Pilarcitos Creek	7,340	138	21	6.55
Pomponio Creek	5,648	83	4	20.66
Purisima Creek	9,597	1,640	251	6.54
San Francisquito Creek	13,440	5,896	1,578	3.74
San Gregorio Creek	25,951	1,371	193	7.10
San Pedro Creek	8,784	0.6	1	0.6
Tunitas Creek	7,871	928	36	25.79
West Union Creek	7,627	2,317	809	2.86
TOTAL	**202,768**	**19,017**	**4,369**	

Table B-4. OWTS Distribution by Hydrologic Area, San Mateo County – Central Coast Region 3

Hydrologic Area	Total Watershed Area (acres)	Developed Lot Area (acres)	Number of Developed Parcels	Average Developed Lot Size (acres)
Arroyo De los Frijoles	6,698	1,626	47	34.6
Gazos, Whitehouse, Cascade Creeks	10,501	304	3	101.23
Green Oaks Creek	2,102	98	2	48.94
Waddell Creek	815	1.96	1	1.96
TOTAL	**20,116**	**2,030**	**53**	

Table B-5. OWTS Wastewater Loading Volumes, San Mateo County – San Francisco Bay Region 2

Hydrologic Area	Developed Lot Area (acres)	Number of Developed Parcels	Discharge Volume (gpd)	Discharge Volume (Mgal/yr)	Average Wastewater Loading gal/ac-yr
Bear Gulch Reservoir	659	345	51,750	1.88	28,662
Butano Creek	327	113	16,950	6.19	18,919
Crystal Springs Reservoir	38	40	6,000	2.19	57,632
Denniston Creek	0	0	0	0	0
La Honda Creek	1,082	547	82,050	29.95	27,678
Lobitos Creek	325	9	1,350	0.49	1,516
Millbrae	2	4	600	0.22	109,500
Mills Creek	717	70	10,500	3.83	5,345
Oyster Point	0.25	1	150	0.05	219,000
Pescadero Creek	3494	347	52,050	19.00	5,437
Pilarcitos Creek	138	21	3,150	1.15	8,332
Pomponio Creek	83	4	600	0.22	2,639
Purisima Creek	1,640	251	37,650	13.74	8,379
San Francisquito Creek	5,896	1,578	236,700	86.40	14,653
San Gregorio Creek	1,371	193	28,950	10.57	7,707
San Pedro Creek	0.6	1	150	0.05	91,250
Tunitas Creek	928	36	5,400	1.97	2,124
West Union Creek	2,317	809	121,350	44.29	19,116
TOTAL	**19,017**	**4,369**	**655,350**	**239.20**	**12,578**

Table B-6. OWTS Wastewater Loading Volumes, San Mateo County – Central Coast Region 3

Hydrologic Area	Developed Lot Area (acres)	Number of Developed Parcels	Discharge Volume (gpd)	Discharge Volume (Mgal/yr)	Average Wastewater Loading gal/ac-yr
Arroyo De los Frijoles	1,626	47	7,050	2.57	1,583
Gazos, Whitehouse, Cascade Creeks	304	3	450	0.16	540
Green Oaks Creek	98	2	300	0.11	1,117
Waddell Creek	1.96	1	150	0.05	27,934
TOTAL	**2,030**	**53**	**7,950**	**2.89**	**1,429**

Groundwater Basins

Groundwater Basin Mapping. Utilizing boundaries established by the California Department of Water Resources (DWR), six (6) alluvial groundwater basins were delineated and labeled as shown in **Figure B-3**. The remaining basins are situated in urban areas, and thus not analyzed. There are also small portions of the vast Santa Clara Valley groundwater basin that lies predominantly in neighboring Santa Clara County, however, one of the Santa Clara Valley Basin sub-units was retained (2-09) for its location in Woodside, where there are known OWTS.

OWTS Distribution by Groundwater Basin. In an analysis similar to the one performed by hydrologic region, the groundwater basin boundaries were merged with the GIS parcel status data to obtain estimates of the number of developed unincorporated parcels/ OWTS overlying each of the recognized alluvial groundwater basins in the county. The results are presented in **Table B-7**.

Table B-7. OWTS Development, San Mateo County Groundwater Basins

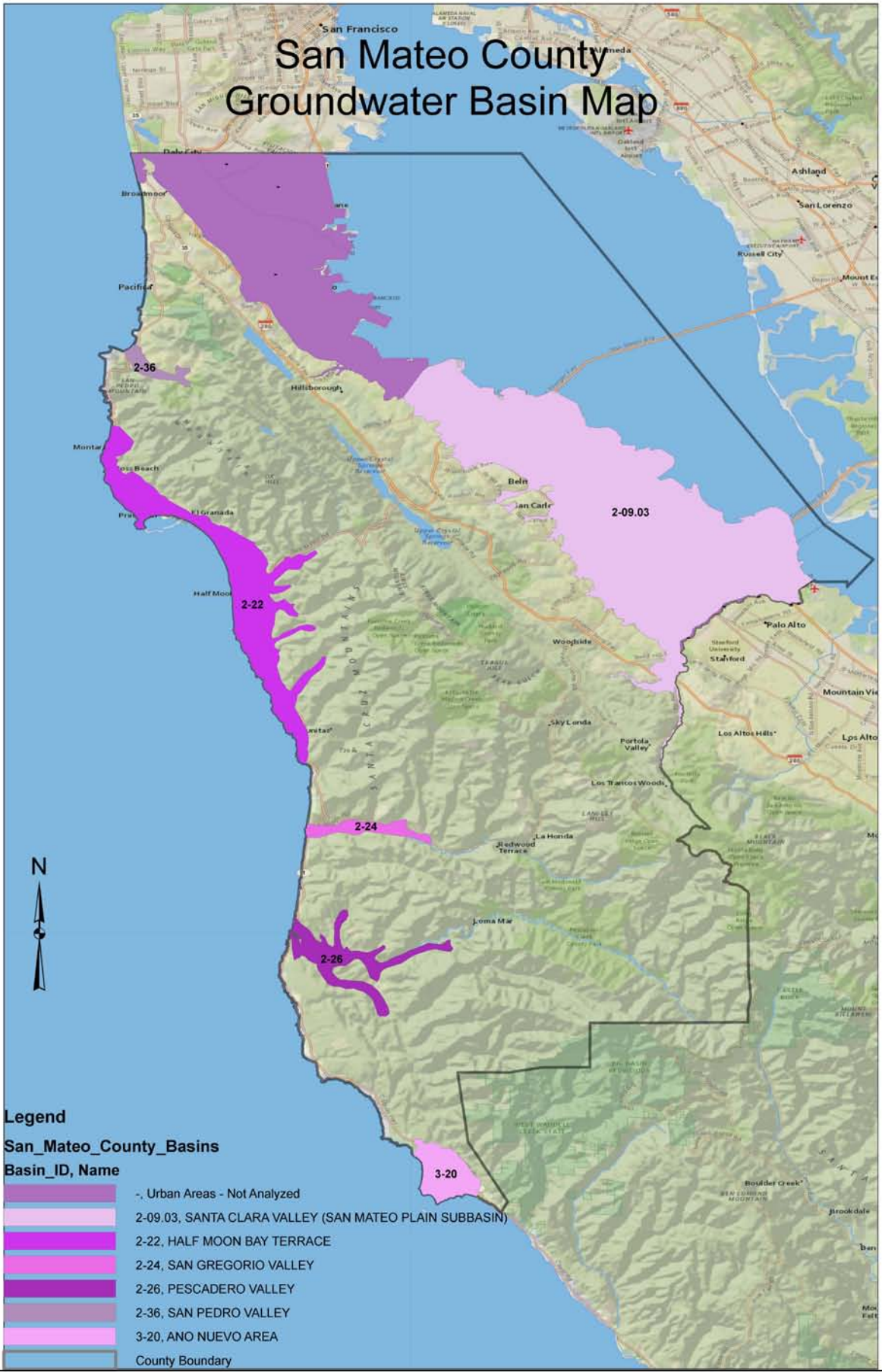
Groundwater Basin Name	Surface Area of Basin (ac)	Number of Developed Parcels with OWTS	Basin-wide OWTS Density (acres per OWTS)
Santa Clara Valley (San Mateo Plains Sub-basin)	48,100	12	4,008
Half Moon Bay Terrace	9,189	21	438
San Gregorio Valley	1,074	16	67
Pescadero Valley	2,904	106	27
San Pedro Valley	700	1	700
Ano Nuevo Area	2,032	0	n/a
Total		156	

As indicated, there is not a significant density of OWTS overlying any single basin, nor is there a significant total number of OWTS (156) overlying the groundwater basins in the county. Basins in San Mateo County coincide predominantly with sewered or sparsely populated areas.

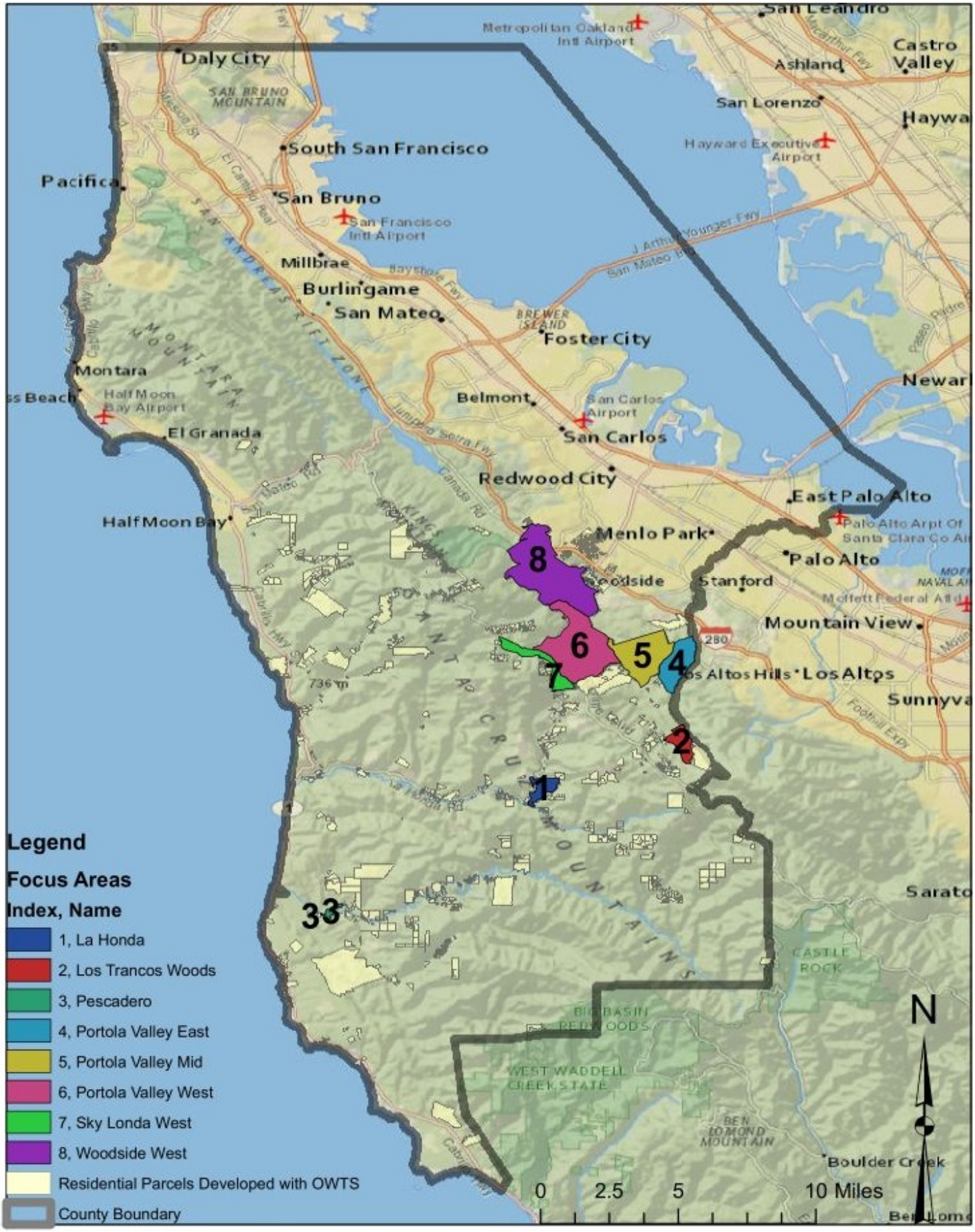
OWTS Focus Areas

Focus Areas. Table B-8 presents a list of eight (8) localized OWTS Focus Areas, chosen for a more in-depth analysis based on the number and/or density of OWTS or other factors. The table identifies the principal surface water and/or groundwater features in each area, and also a brief summary soils and OWTS suitability based on general soil mapping. The locations of the various OWTS Focus Areas are shown in **Figure B-4**; detailed GIS maps of each area are provided in **Attachment 1**. All of the Focus Areas are within the S.F. Bay Region, including five (5) that drain to San Francisco Bay, and three that drain to the Pacific Ocean.

San Mateo County Groundwater Basin Map



San Mateo County Local Agency Management Program		**San Mateo County Groundwater Basin Map**	FIGURE **B-3**



San Mateo County Local Agency Management Program		**San Mateo County Focus Areas Map**	FIGURE **B-4**

Table B-8. OWTS Focus Areas in San Mateo County

No.	Area Name	Drains To	Soils & OWTS Suitability
1	La Honda	La Honda Creek	**11** and some **10** - Moderately to severely constrained by steep slopes and shallow coarse-textured soils, potentially requiring supplemental treatment and/or shallow dispersal design
2	Los Trancos Woods	Los Trancos Creek	**9** - Moderately to severely constrained by steep slopes and shallow soils, potentially requiring alternative treatment and/or shallow dispersal designs
3	Pescadero	Pescadero Creek, Pescadero Valley GW Basin	**12** - Moderately to severely constrained by steep slopes and shallow coarse-textured soils, potentially requiring supplemental treatment and/or shallow dispersal designs
4	Portola Valley East	Los Trancos Creek	**8** and some **5** - Suitable conditions for conventional OWTS; some inclusions of low permeability and perched groundwater favoring shallow dispersal designs
5	Portola Valley Mid	Corte Madera Creek, Searsville Lake	**8** and some **9** – Mostly suitable conditions for conventional OWTS; some inclusions of low permeability and perched groundwater favoring shallow dispersal designs
6	Portola Valley West	Sausal, Alambique, Martin-Bull Run Creeks, Searsville Lake	**1** and some **8** - Suitable conditions for conventional OWTS; some inclusions of low permeability and perched groundwater favoring shallow dispersal designs
7	Sky Londa West	La Honda Creek	**1** and **9** - Suitable conditions for conventional OWTS; some inclusions of low permeability and perched groundwater favoring shallow dispersal designs; AND Moderately to severely constrained by steep slopes and shallow soils, potentially requiring alternative treatment and/or shallow dispersal designs
8	Woodside West	West Union Creek	Mostly **1 & 8,** some **4, 5 & 6** - Suitable conditions for conventional OWTS; some inclusions of low permeability and perched groundwater favoring shallow dispersal designs; inclusions of **4** -Moderately constrained by steep slopes and shallow soils, potentially requiring alternative treatment and/or shallow dispersal designs

OWTS Usage and Wastewater Loading Estimates. To assist with present and future management of OWTS and water quality assessments in these areas, GIS data were compiled to give estimates of the number of OWTS in each area, along with median and average parcel size, which are presented in **Table B-9.** These potential areas of concern account for an estimated 2,867 OWTS, approximately 65% of the total OWTS in the unincorporated areas of the county.

From the OWTS/parcel data, estimates were then made of the approximate wastewater discharge volumes from OWTS, based on the assumption of an average daily discharge of 150 gpd per OWTS (3 persons per dwelling @ 50 gpd/person). Using an assumed total nitrogen concentration of 70 mg-N/L appropriate for 50 gpd/person wastewater generation (Crites and Tchobanoglous, 1998), estimates of total loading of nitrogen to the soil and groundwater environment were developed for each area and also listed in **Table B-9**.

Table B-9. OWTS Discharges and Loading Estimates, San Mateo County Focus Areas

Name	Gross Acreage of Focus Area (ac)	Number of Developed Parcels	Median Parcel Size (ac)	Area-wide OWTS Density (ac/OWTS)	Daily OWTS Discharge (gpd)	Annual OWTS Discharge (Mgal/yr)	Annual Nitrogen Loading	
							Total (lbs)	Per Acre (lbs/ac)
1. La Honda	301	336	0.3	0.90	50,400	18.40	9,205	30.58
2. Los Trancos Woods	357	254	0.8	1.41	38,100	13.91	6,959	19.49
3. Pescadero	73	73	0.3	1.00	10,950	4.00	2,000	27.40
4. Portola Valley East	791	235	1.2	3.37	35,250	12.87	6,438	8.14
5. Portola Valley Mid	1,341	464	2.2	2.89	69,600	25.40	12,712	9.48
6. Portola Valley West	2,256	560	1.6	4.03	84,000	30.66	15,342	6.80
7. Sky Londa West	513	158	0.5	3.25	23,700	8.65	4,329	8.44
8. Woodside West	2,763	787	1.7	3.51	118,050	43.09	21,561	7.80
Total	-	2,867	-	-	430,050	156.97	78,547	-

Nitrate-Nitrogen Water Quality Impacts. Wastewater loading from OWTS can potentially degrade groundwater quality and contribute to nutrient enrichment of surface waters. Nitrogen occurs in high concentrations in domestic sewage, typically in the range of 50 to 90 mg-N/L. It occurs mostly as ammonia and organic forms, and is removed only partially through conventional septic tank treatment. Upon entering the unsaturated soil environment, these forms of nitrogen undergo transformation to nitrate. Nitrate is highly soluble in water and moves readily through the soil and groundwater with limited removal by the soil under most circumstances. High levels of nitrate in water supplies can cause methemoglobinemia (blue baby syndrome) in infants and pregnant women. The drinking water standard (MCL) for nitrate-nitrogen is 10 mg/L (as nitrogen, N), which is equivalent to 45 mg/L as nitrate, NO_3.

Nitrate loading is normally not an issue for individual residential OWTS, but can become a "cumulative impact" concern for large concentrations of OWTS in a given area or for larger commercial or community-type OWTS. Elevated groundwater-nitrate concentrations have been

documented in a few areas of San Mateo County, but no assessment has been made to determine the primary source(s), including the possible contributions from OWTS.

Using the estimates of existing OWTS densities and wastewater loading volumes (per above), calculations have been made to estimate the existing contribution in groundwater-nitrate concentrations due to residential OWTS in the eight OWTS Focus Areas. The estimated nitrate concentration contributions per this analysis are in addition to other sources of nitrate-nitrogen that might occur in each sub-basin, such as leaching of agricultural fertilizers, confined animal wastes, municipal wastewater discharges, etc.

1. Methodology

The nitrate loading analysis was completed using an annual chemical-water balance analysis. The methodology followed is described in the publication "Predicting Groundwater Nitrate-Nitrogen Impacts" (Hantzsche and Finnemore, *Groundwater*, Vol. 30, No. 4, July-August 1992). According to this methodology, the long-term concentration of nitrate as nitrogen (NO_3-N or nitrate-nitrogen) in the upper saturated groundwater zone can be closely approximated by the quality of percolating recharge waters. Considering only the contributions from OWTS and natural sources picked up by rainfall leaching of soil and vegetation, the average concentration of nitrate-nitrogen in recharge water, n_r, is estimated using the following equation:

$$n_r = \frac{Wn_w(1-d) + Rn_b}{(W+R)}$$

where:
- n_r = resultant average concentration of NO_3-N in recharge water, mg-N/l
- W = average annual volume of wastewater entering the soil, acre-ft/yr (AFY)
- n_w = total nitrogen concentration of wastewater, mg-N/l
- d = fraction of NO_3-N loss due to denitrification in the soil
- R = average annual volume of rainfall recharge in sub-basin area, AFY
- n_b = background NO_3-N concentration of rainfall recharge at the water table, exclusive of wastewater, agriculture or other development influences, mg-N/l

2. Data and Assumptions

Per the equation presented above, resultant nitrate concentration in the groundwater is estimated to be the weighted average or combined concentration due to wastewater loading and recharge of rainfall ("deep percolation") contributed from the watershed sub-basin within

the area of concern. For this analysis, calculations were made for each of the eight Focus Areas. The analysis includes nitrate-nitrogen contributions from the existing OWTS plus a factor representing background nitrate concentrations associated with percolating rainfall in the open space areas. The following summarize the various assumptions.

- **Recharge Area.** The recharge area for each sub-basin includes the total estimated acreage encompassing the OWTS parcels in each Focus Area, as delineated and shown on the attached figures and listed in **Table B-8**. The acreage includes the parcels currently developed with OWTS, vacant lands, intervening public rights-of-way, and bordering areas judged to contribute recharge waters that mix with the discharges from OWTS.

- **Wastewater Flows.** The nitrate loading analysis was completed for the existing estimated annual wastewater volumes presented in **Table B-9**, which are based on an average wastewater flow assumption of 150 gpd per residential OWTS (3 persons per residence at approximately 50 gpd per person).

- **Wastewater Nitrogen Concentrations.** Total nitrogen concentration in wastewater effluent was assumed to be 70 mg/L, which is typical for domestic wastewater discharges from conventional septic tank – dispersal trench systems, as previously discussed.

- **Background Nitrogen Concentration.** Limited water quality sampling data are available for local wells. Therefore, a nominal value of 0.5 mg-N/L was assumed as the background concentration associated with percolating rainfall.

- **Soil Denitrification.** Total nitrogen removal in the upper soil zones (via denitrification) was estimated to be 20 percent of the total nitrogen in the percolating OWTS effluent, which is an upper mid-range value within the common range of values (10% to 25%) normally attributed to soil denitrification. This value was selected based on the relatively permeable, deep upland soil conditions in most parts of San Mateo County.

- **Rainfall Recharge (Deep Percolation).** Deep percolation was estimated through completion of a water balance analysis, which takes into account rainfall, runoff, and evapotranspiration losses. Water balance calculations were made for three different geographic and climatic regions of the County covering the eight Focus Areas: (1) Woodside-Portola Valley (inland); (2) La Honda (mountains); (3) Pescadero (coast-side). Key data sources used in the water balance and the resulting estimates of annual recharge (inches per year) are as shown in **Table B-10**; calculation sheets are attached at the end of this appendix.

Table B-10. Water Balance Data Source and Estimates

Geographic Area	Rainfall Station	Reference Evapotranspiration Zone (ETo)*	Estimated Annual Recharge	
			inches/yr	ac-ft/yr-ac
Woodside-Portola Valley (inland)	Searsville Lake	3 – Coastal Valleys/Mountains	12.31	1.03
La Honda (coastal mountains)	La Honda	3 – Coastal Valleys/Mountains	13.98	1.17
Pescadero (coast-side)	Pescadero	1 – Coastal Plains Heavy Fog Belt	16.54	1.38

*per California Irrigation Management Information System (CIMIS)

Results

The results of the nitrate loading calculations analysis are summarized in **Table B-11** for the various Focus Areas. The detailed calculation worksheet is included in **Attachment 2.**

Table B-11. Estimated Groundwater-Nitrate Contribution from OWTS

Focus Area	Contributing Recharge Area (acres)	Number of Developed Parcels with OWTS	Median Parcel Size (ac)	Estimated Groundwater-Nitrate Contribution from OWTS, mg-N/L
1. La Honda	301	336	0.3	8.20
2. Los Trancos Woods	357	254	0.8	6.29
3. Pescadero	73	73	0.3	6.53
4. Portola Valley East	791	235	1.2	3.08
5. Portola Valley Mid	1,341	464	2.2	3.48
6. Portola Valley West	2,256	560	1.6	2.67
7. Sky Londa West	513	158	0.5	2.86
8. Woodside West	2,763	787	1.7	2.97

As can be seen in the above results, none of the Focus Areas has an estimated nitrate loading contribution above the drinking water limit (10 mg-N/L). However, the more densely developed areas (La Honda, Pescadero and Los Trancos Woods) all indicate a potential impact on groundwater quality in the range of about 6 to 8.5 mg-N/L. The other Focus Areas (Woodside-Portola Valley areas) have an indicated nitrate concentration effect about half as much, in the range of about 2.5 to 3.5 mg-N/L. This can be attributed to the larger lot sizes in these areas, typically on the order of 1.0 to 2+ acres or more in these areas.

The following should be noted and considered in reviewing these results:

- The results are generalized over each Focus Area and represent the average, integrated effect of all OWTS and rainfall-recharge contributions;

- The analysis and results do not account for the nitrogen contributions from other possible sources, such as agricultural and landscape fertilizer use, and animal wastes.

- The analysis assumes one "average" residence per developed parcel and does not account for second dwelling units or larger wastewater flows that might be associated with especially large residences. Adjustments to account for these differences, where warranted, can be made to refine the analysis and would entail more detailed OWTS inventories.

- Localized results for a specific parcel or group of parcels (e.g., neighborhood) within each sub-basin would most probably differ from the generalize results presented due to site specific conditions such as:, parcel size(s) and configuration, local rainfall, site development and landscape features, runoff rates, and wastewater system flows and design.

Finally, it should be emphasized that the results of this analysis are estimates, and have not been field verified or compared against actual groundwater quality sample results for any of the areas. The analysis and results provide baseline information to help understand the conditions and potential water quality concerns in these areas of greatest OWTS usage in San Mateo County. They form a starting point for ongoing water quality assessments that will be required under the LAMP, and should be updated and refined as additional information and findings become available. The results, on their own, are not a basis for designating any particular areas for special OWTS management measures or finding of water quality impairment.

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San Mateo County Website, GIS Download Data (Parcels)

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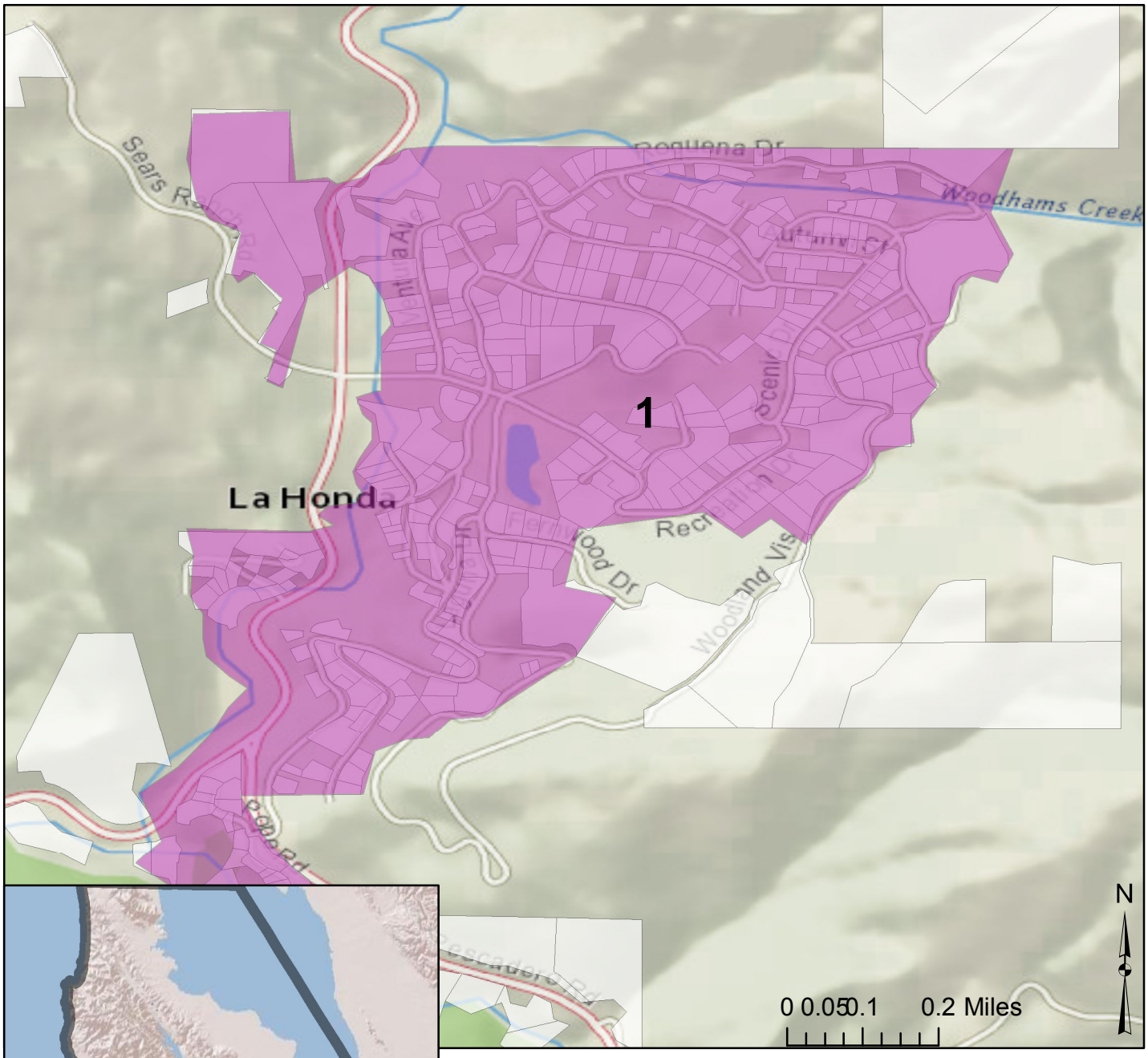
USDA, Natural Resources Conservation Service. 1990. Soil Survey of San Mateo County, Eastern Part, and San Francisco County, California.

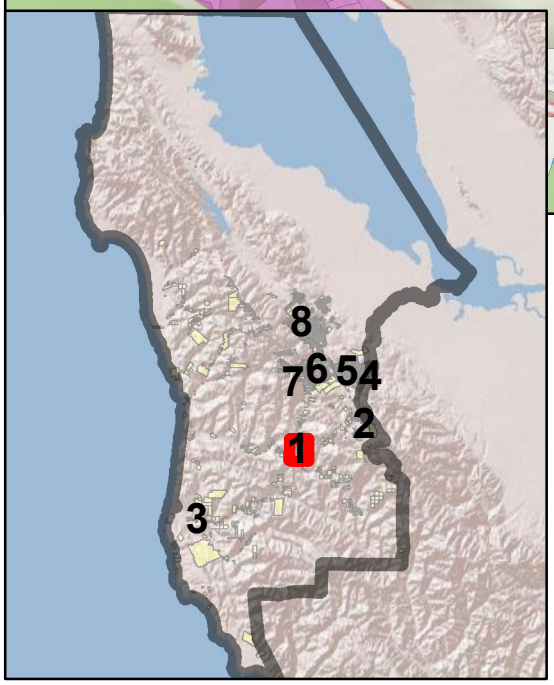
USDA, Natural Resources Conservation Service Online Soils Data Base.

Attachment 1

OWTS Focus Area Maps

La Honda 1





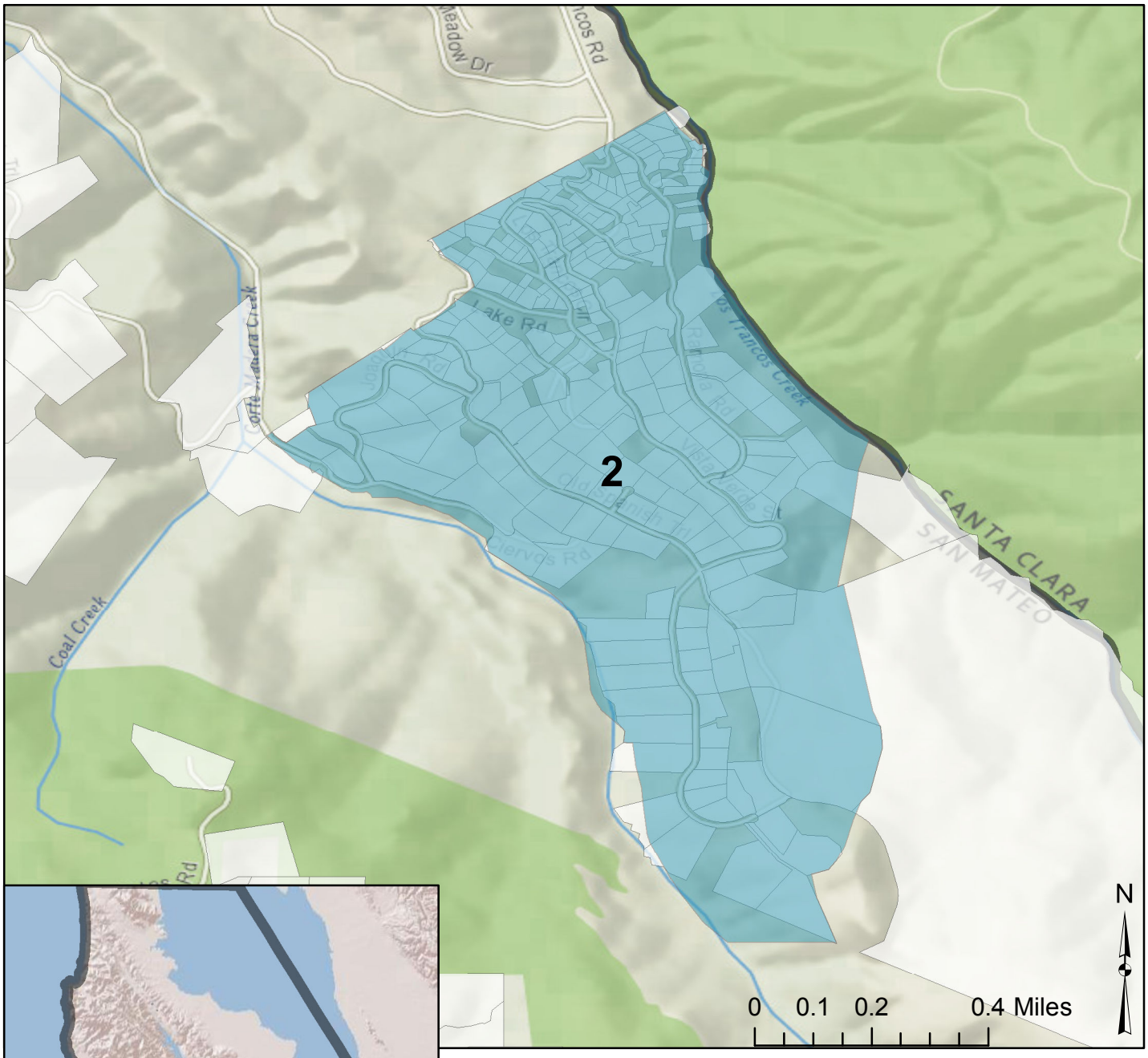
Legend

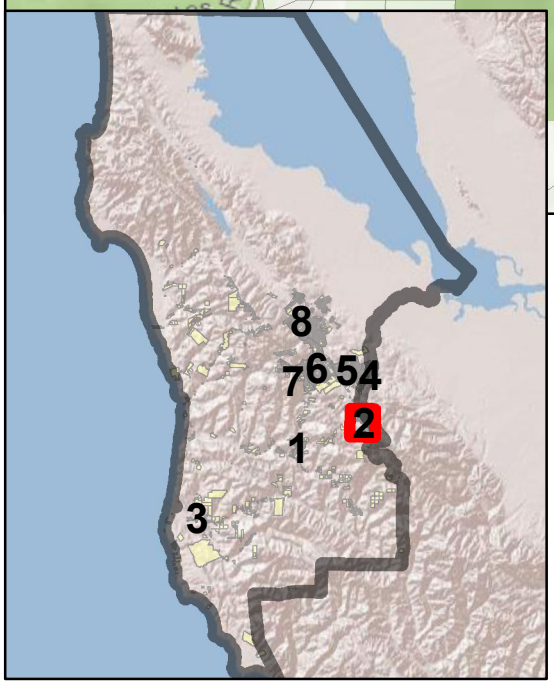
County Boundary

Residential Parcels Developed with OWTS

OWTS Focus Areas

Los Trancos Woods 2





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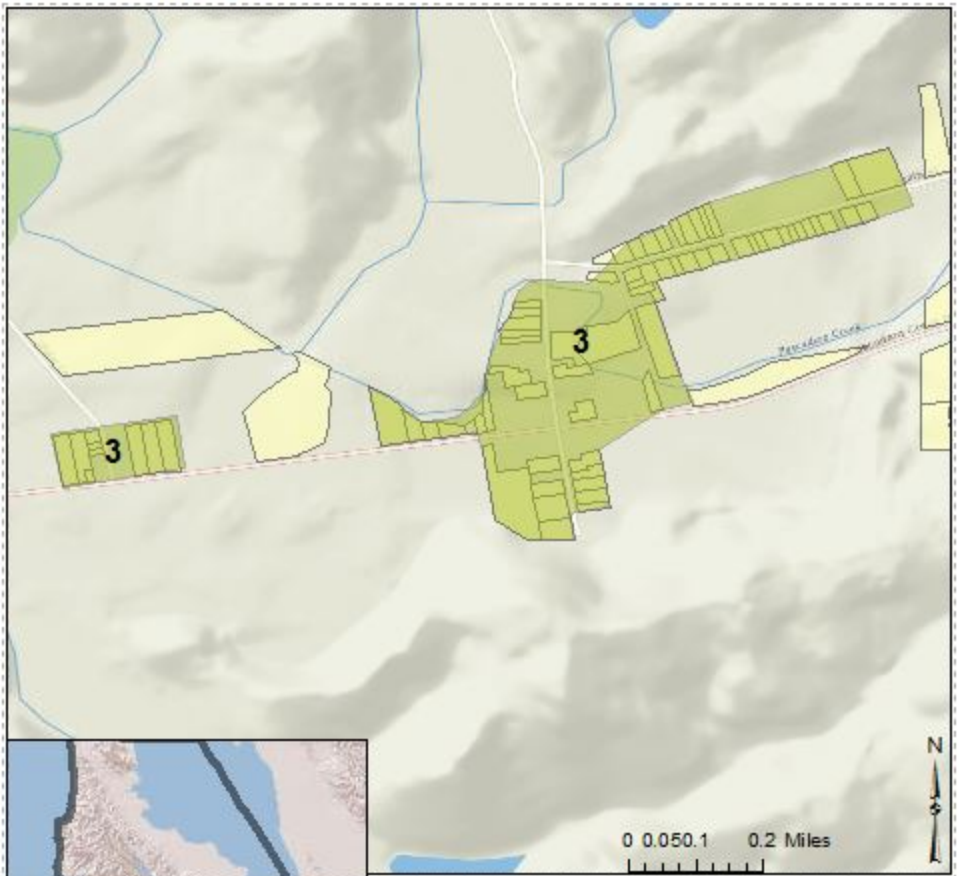
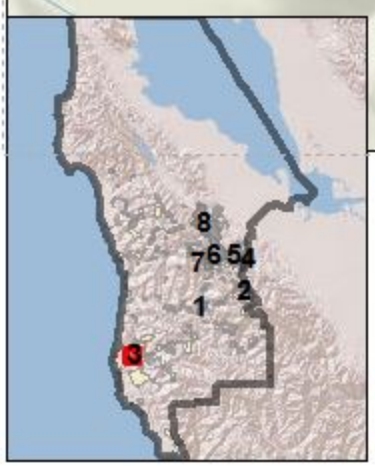
County Boundary

Residential Parcels Developed with OWTS

OWTS Focus Areas

Pescadero 3





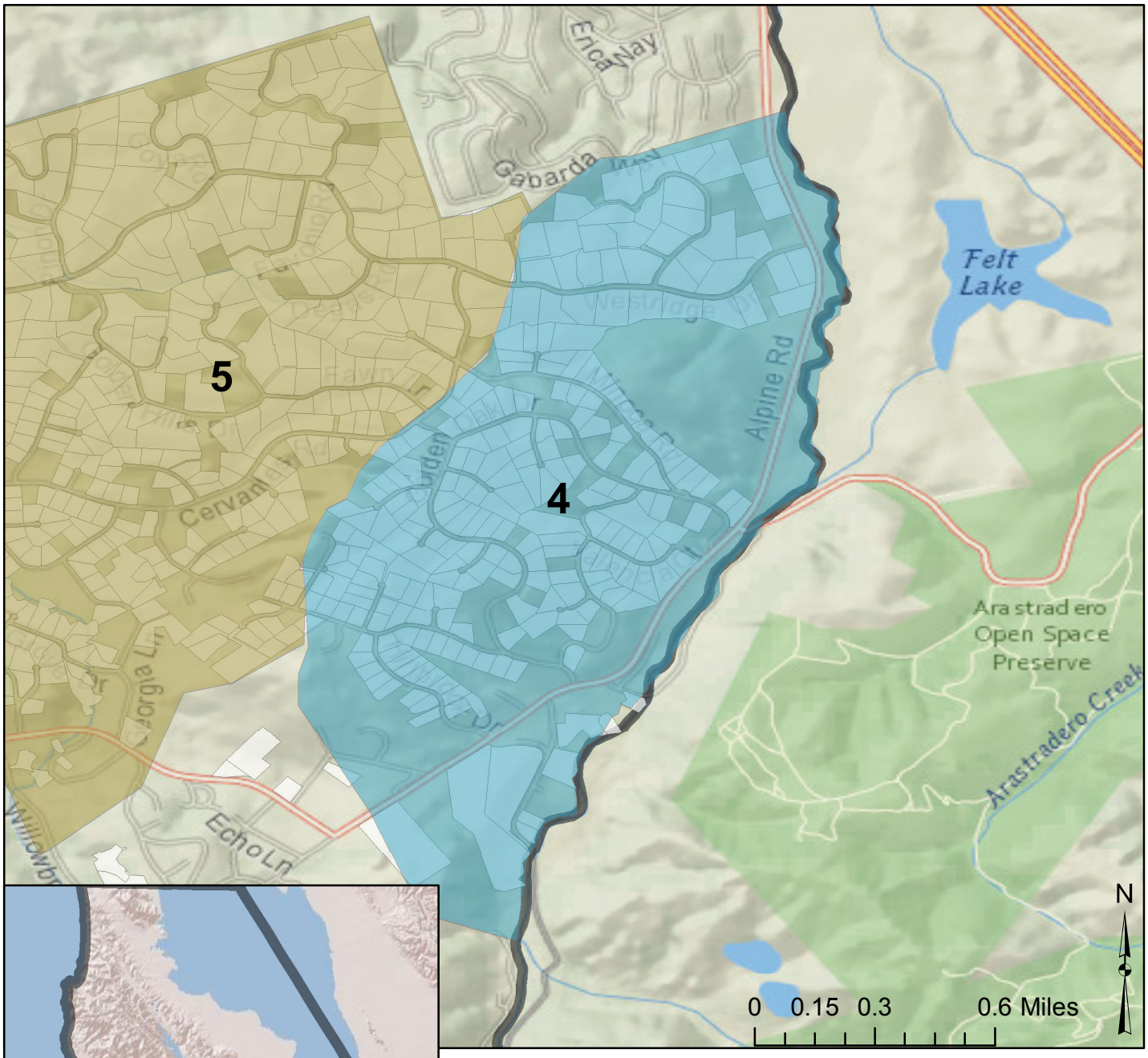
Legend

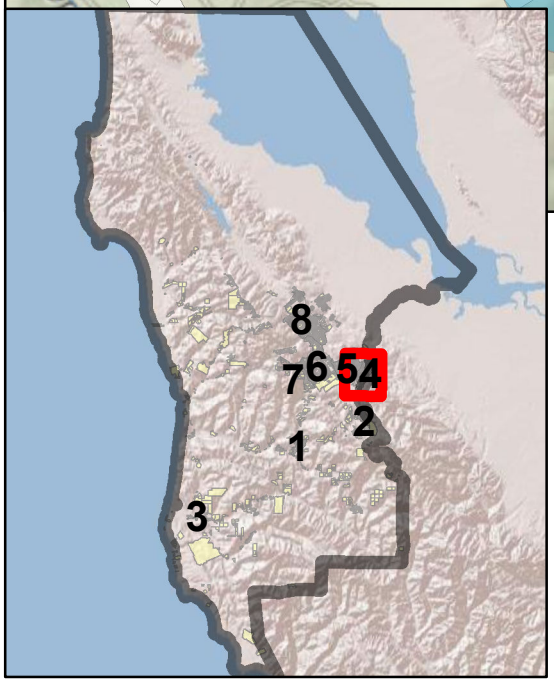
County Boundary

Residential Parcels Developed with OWTS

OWTS Focus Areas

Portola Valley East 4





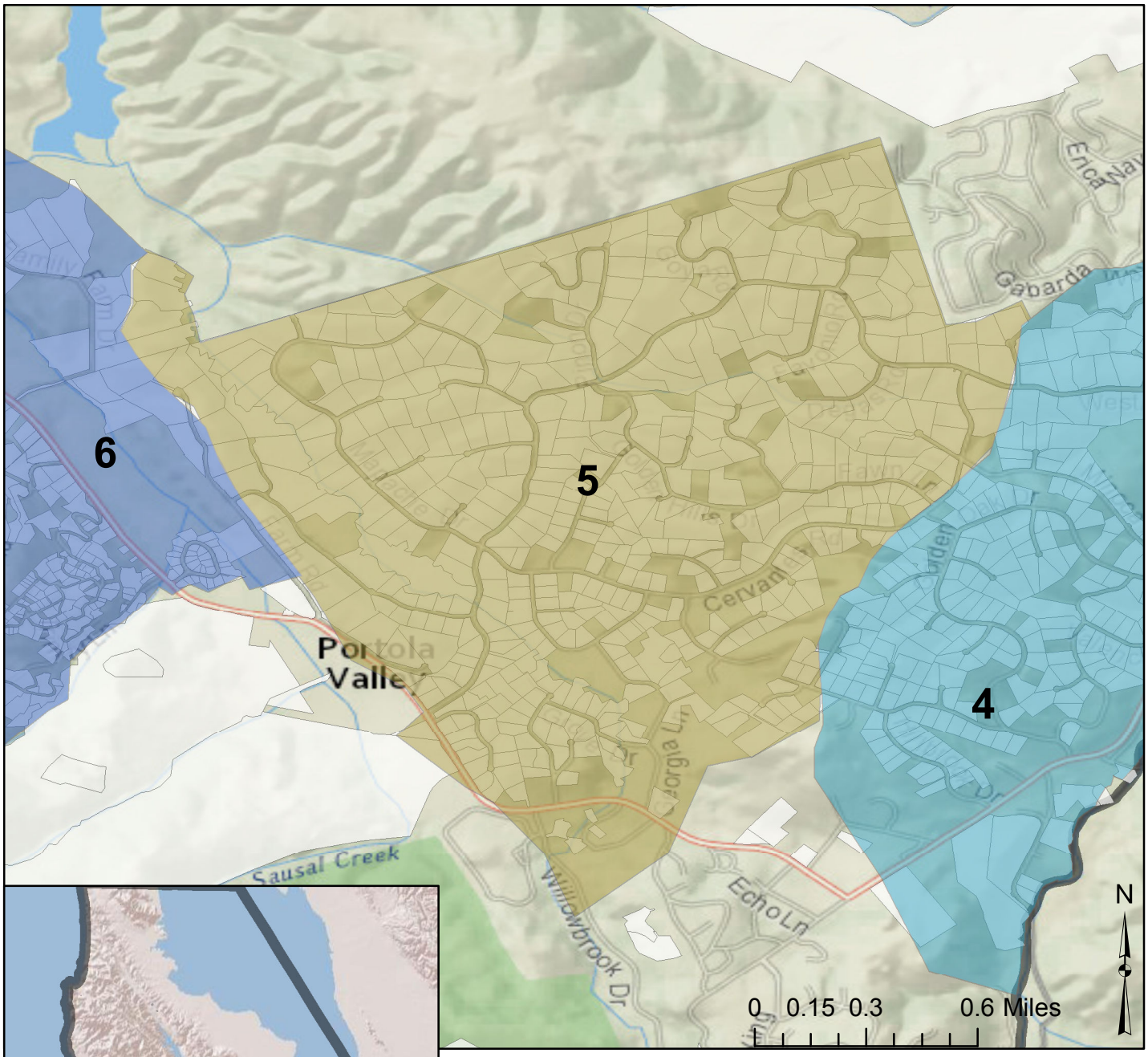
Legend

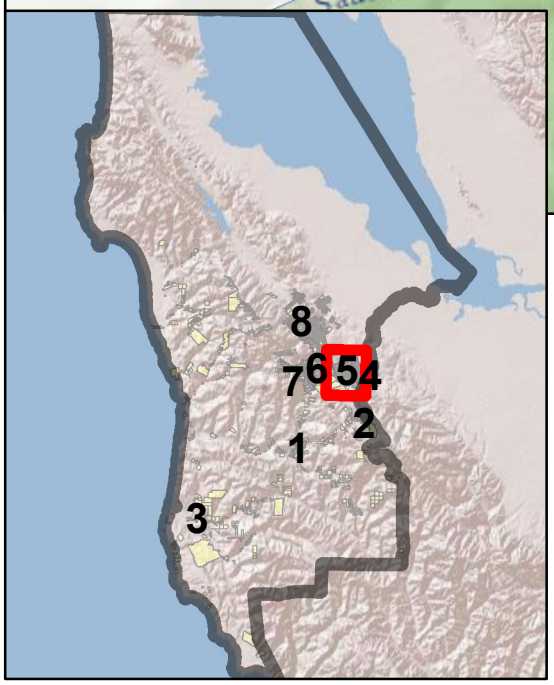
County Boundary

Residential Parcels Developed with OWTS

OWTS Focus Areas

Portola Valley Mid 5



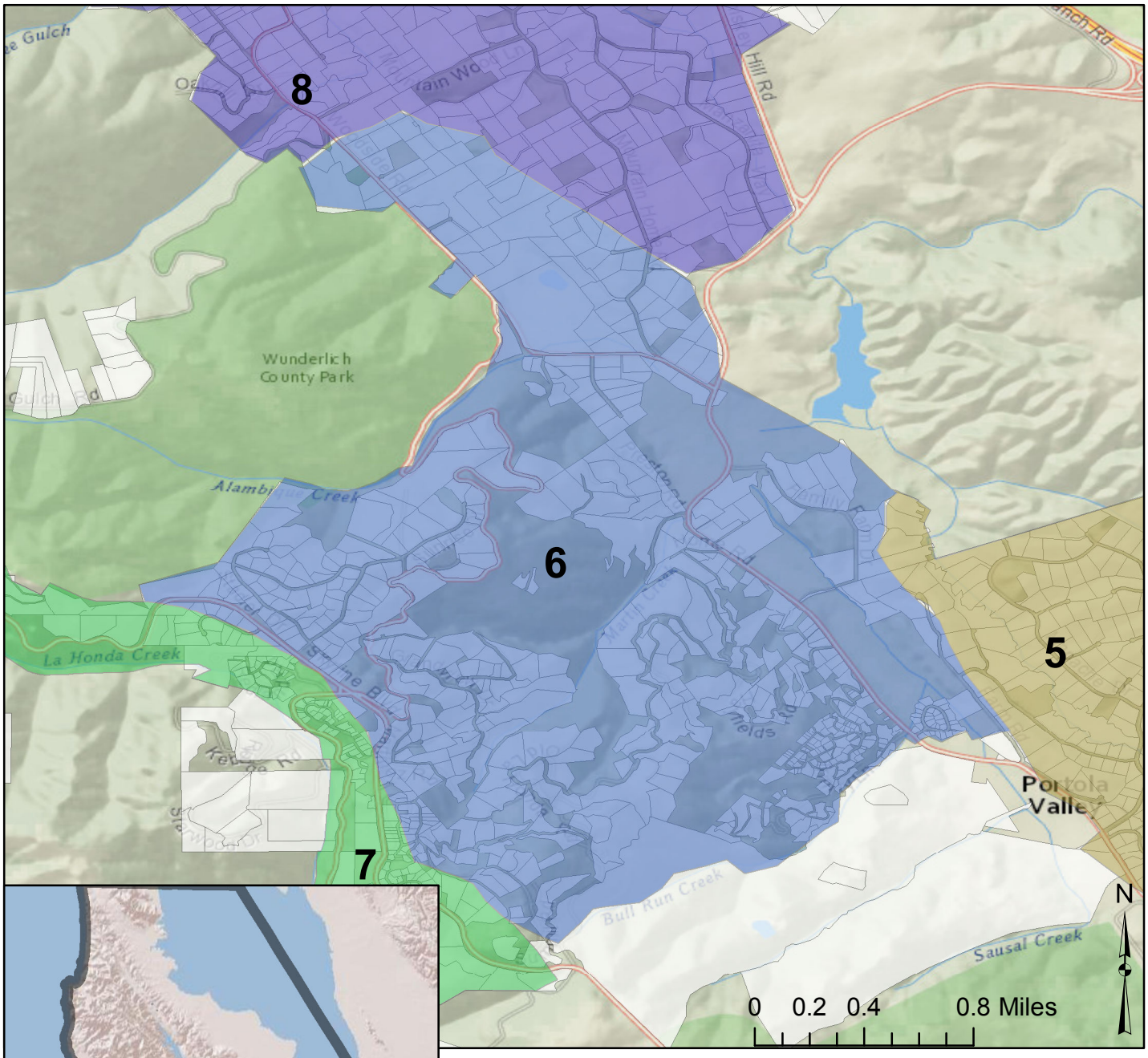


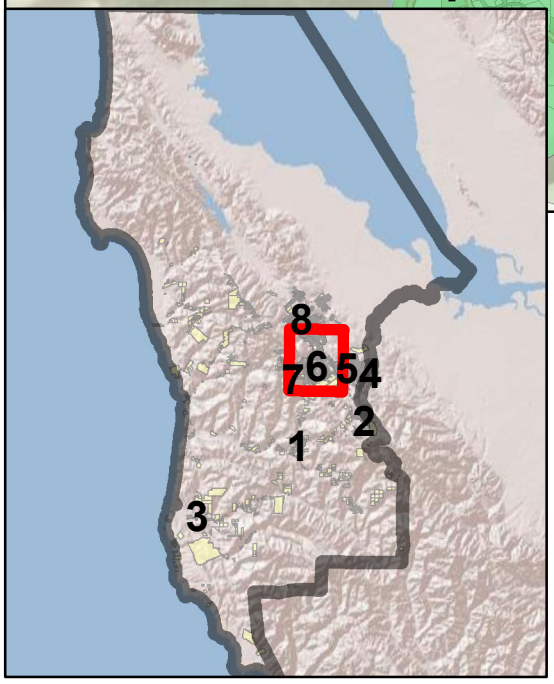
Legend

- County Boundary
- Residential Parcels Developed with OWTS

OWTS Focus Areas

Portola Valley West 6





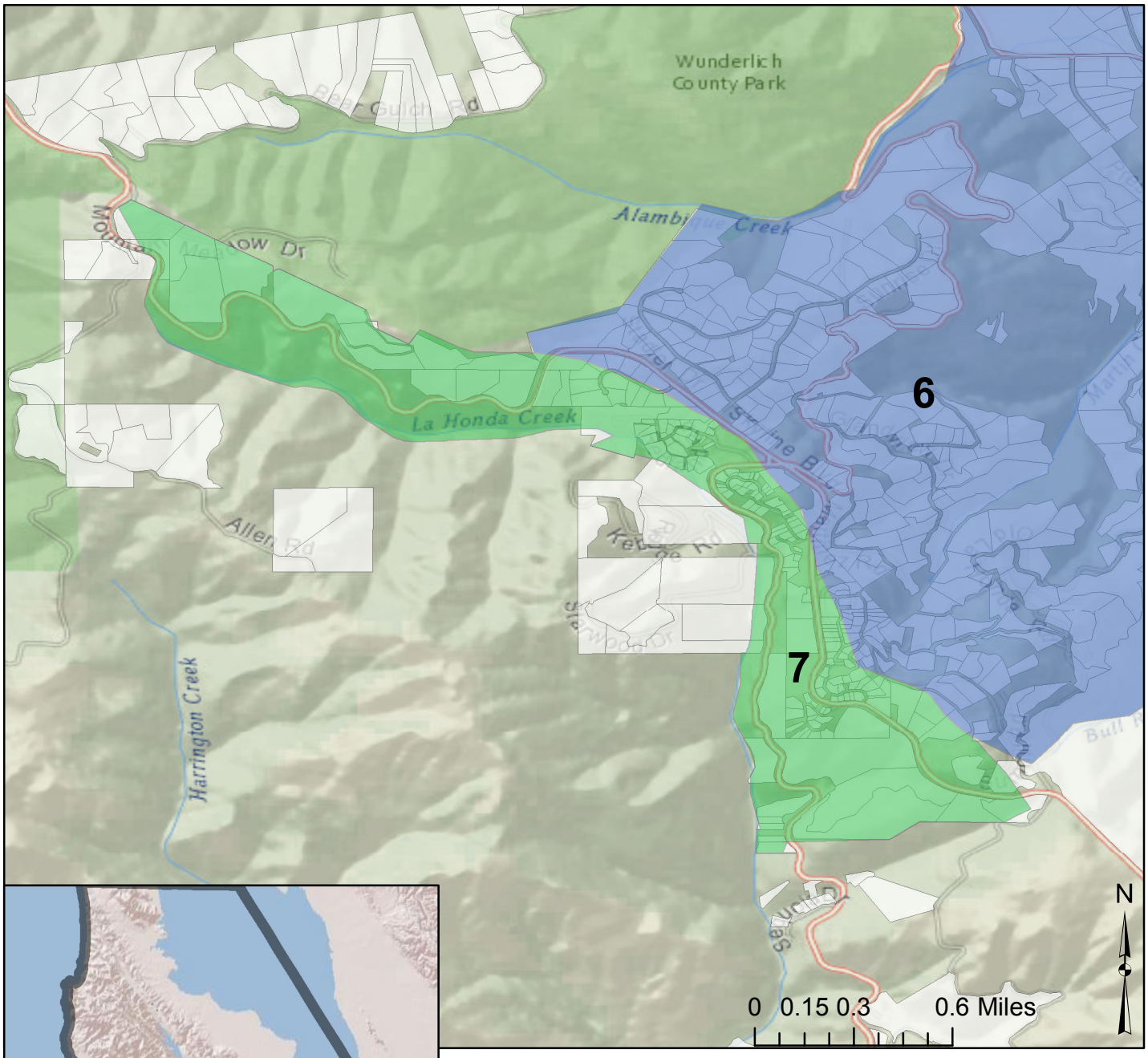
Legend

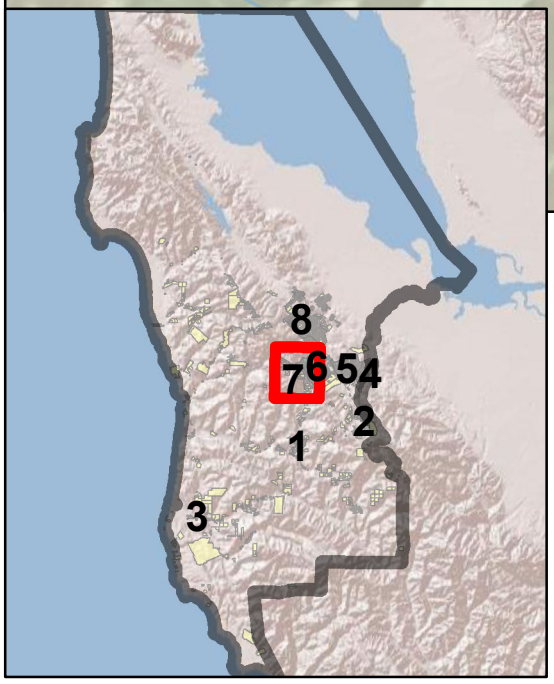
County Boundary

Residential Parcels Developed with OWTS

OWTS Focus Areas

Sky Londa West 7





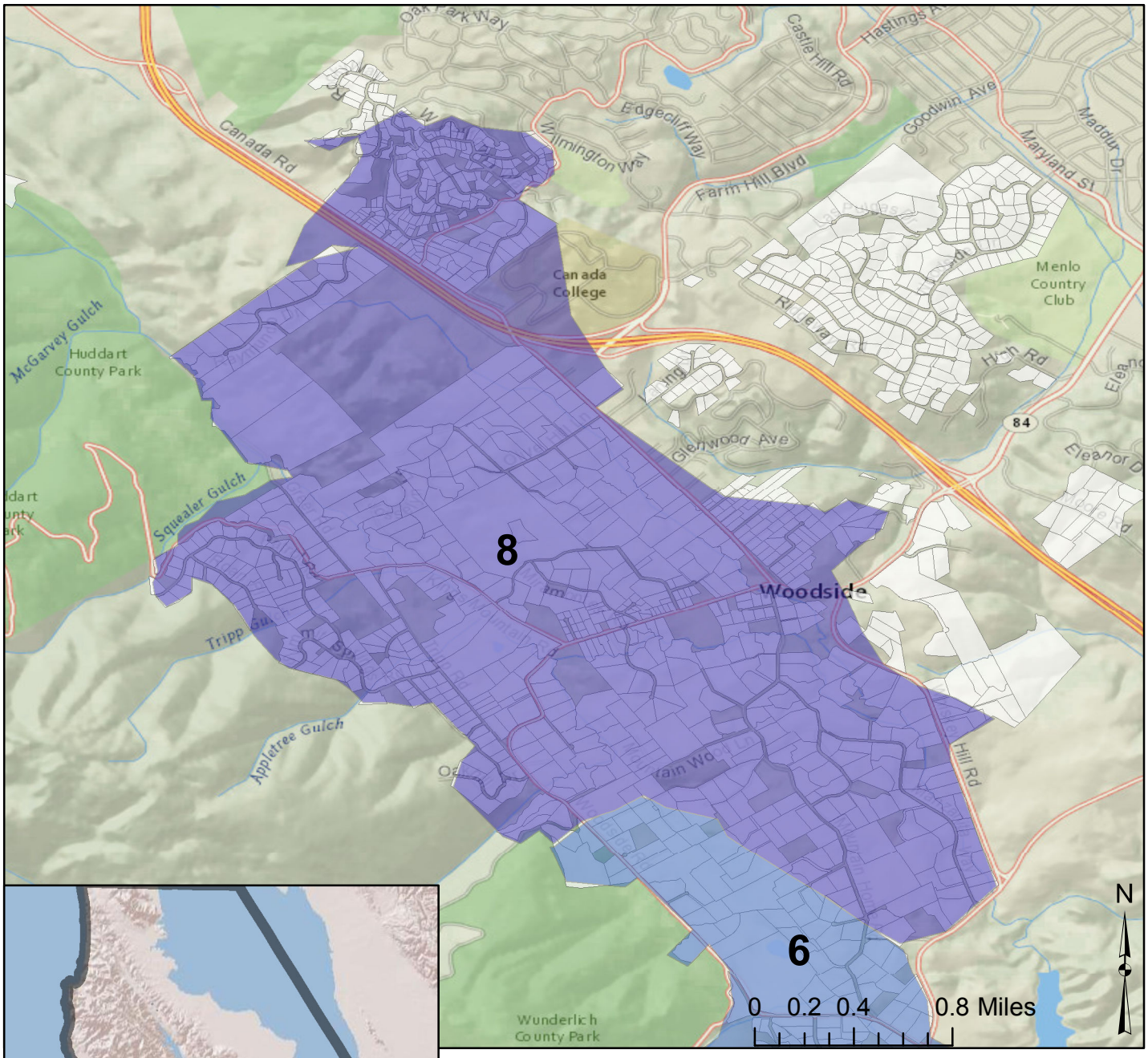
Legend

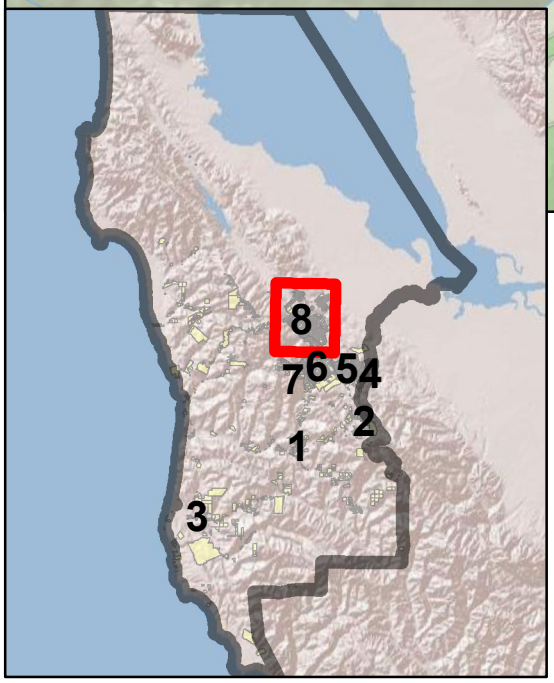
County Boundary

Residential Parcels Developed with OWTS

OWTS Focus Areas

Woodside West 8





Legend

- County Boundary
- Residential Parcels Developed with OWTS

OWTS Focus Areas

Attachment 2

Rainfall Recharge and Nitrate Loading Calculations

Table B2-1. Water Balance Recharge Analysis -Woodside/Portola Valley (ETo Climate Zone 3)

Month	Ave Precip. (in/month)	Average Runoff Rate (%)	Available Precip. (in/month)	Reference ETo (in/month)	Adjusted ET (in/month)	Net Rainfall Recharge (in/month)
Jan	5.68	0.20	4.54	1.86	0.93	3.61
Feb	4.04	0.15	3.43	2.24	1.12	2.31
Mar	3.43	0.10	3.09	3.72	1.86	1.23
Apr	2.05	0.05	1.95	4.80	2.40	0.00
May	0.59	0.00	0.59	5.27	2.64	0.00
Jun	0.12	0.00	0.12	5.70	2.85	0.00
Jul	0.01	0.00	0.01	5.58	2.79	0.00
Aug	0.04	0.00	0.04	5.27	2.64	0.00
Sep	0.23	0.00	0.23	4.20	2.10	0.00
Oct	1.33	0.05	1.26	3.41	1.71	0.00
Nov	3.15	0.10	2.84	2.40	1.20	1.64
Dec	5.56	0.20	4.45	1.86	0.93	3.52
Total	**26.23**		**22.55**	**46.31**	**23.16**	**12.31**

Notes:

1. Ave monthly precip for, determined from NOAA, Western Regional Climate Cntr for Searsville Lake
2. "Available Precip" equal to ave monthly precip minus estimated runoff volume;
3. Reference ETo obtained from CIMIS for Zone 3, Coastal Valleys/North Coastal Mtns
4. Potential ET adjusted with 0.6 Landscape Coefficient multiplier

Table B2-2. Water Balance Recharge Analysis -La Honda
(ETo Climate Zone 3)

Month	Ave Precip. (in/month)	Average Runoff Rate (%)	Available Precip. (in/month)	Potential ET (in/month)	Adjusted ET (in/month)	Net Rainfall Recharge (in/month)
Jan	6.21	0.20	4.97	1.86	0.93	4.04
Feb	4.19	0.15	3.56	2.24	1.12	2.44
Mar	4.04	0.15	3.43	3.72	1.86	1.57
Apr	2.36	0.10	2.12	4.80	2.40	0.00
May	0.79	0.00	0.79	5.27	2.64	0.00
Jun	0.35	0.00	0.35	5.70	2.85	0.00
Jul	0.09	0.00	0.09	5.58	2.79	0.00
Aug	0.18	0.00	0.18	5.27	2.64	0.00
Sep	0.44	0.00	0.44	4.20	2.10	0.00
Oct	1.87	0.10	1.68	3.41	1.71	0.00
Nov	4.17	0.15	3.54	2.40	1.20	2.34
Dec	5.64	0.20	4.51	1.86	0.93	3.58
Total	**30.33**		**25.68**	**46.31**	**23.16**	**13.98**

Notes:

1. Ave monthly precip for, determined fromNOAA, Western Regional Climate Cntr for La Honda
2. "Available Precip" equal to ave monthly precip minus estimated runoff volume;
3. Reference ETo obtained from CIMIS for Zone 3, Coastal Valleys/North Coastal Mtns
4. Potential ET adjusted with 0.5 Landscape Coefficient multiplier

Table B2-3. Water Balance Recharge Analysis - Pescadero
ETo Climate Zone 1

Month	Ave Precip. (in/month)	Average Runoff Rate (%)	Available Precip. (in/month)	Reference ETo (in/month)	Adjusted ET (in/month)	Net Rainfall Recharge (in/month)
Jan	5.66	0.15	4.81	0.93	0.56	4.25
Feb	5.08	0.15	4.32	1.40	0.84	3.48
Mar	4.25	0.15	3.61	2.48	1.49	2.12
Apr	2.27	0.05	2.16	3.30	1.98	0.18
May	0.86	0.00	0.86	4.03	2.42	0.00
Jun	0.33	0.00	0.33	4.50	2.70	0.00
Jul	0.11	0.00	0.11	4.65	2.79	0.00
Aug	0.18	0.00	0.18	4.03	2.42	0.00
Sep	0.41	0.00	0.41	3.30	1.98	0.00
Oct	1.55	0.05	1.47	2.48	1.49	0.00
Nov	3.49	0.10	3.14	1.20	0.72	2.42
Dec	5.24	0.15	4.45	0.62	0.37	4.08
Total	**29.43**		**25.86**	**32.92**	**19.75**	**16.54**

Notes:

1. Ave monthly precip for, determined from NOAA, Western Regional Climate Cntr for Pescadero
2. "Available Precip" equal to ave monthly precip minus estimated runoff volume;
3. Reference ETo obtained from DWR/CIMIS for Zone 1, Coastal Plains Heavy Fog Belt
4. Potential ET adjusted with 0.6 Landscape Coefficient multiplier

Figure B2-4 Estimated Groundwater-Nitrate Concentration Effects in OWTS Focus Areas

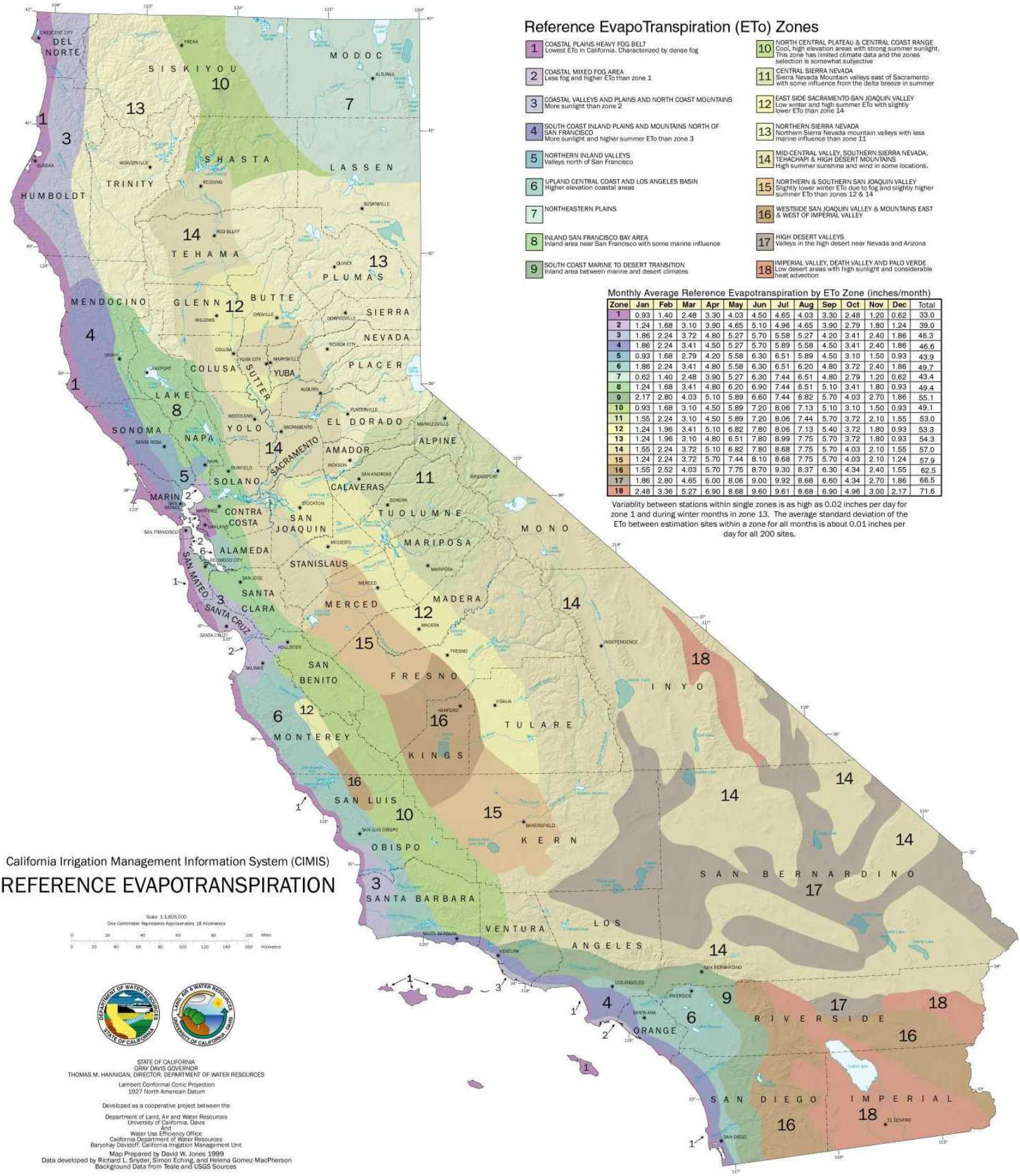
Focus Area	Recharge (acres)	Estimated OWTS	Wastewater Discharge Volumes (W)			Rainfall Recharge (R)		Total Recharge	Mass Nitrogen Loading To GW			Resultant
			Discharge Volume (gpd)	Discharge Volume (Mgal/yr)	Discharge Volume (ac-ft/yr)	Rainfall Recharge (inches/yr)	Rainfall Recharge (ac-ft/yr)	Total Recharge (ac-ft/yr)	Wastewater Mass N Loading	Background Mass N Loading	Total Mass N Loading	Resultant GW Nitrate-N Concentration (mg-N/L)
1. La Honda	301	336	50,400	18.40	56.46	13.98	351	407.12	3,162	175	3,337	8.20
2. Los Trancos Woods	357	254	38,100	13.91	42.68	12.31	366	408.90	2,390	183	2,573	6.29
3. Pescadero	73	73	10,950	4.00	12.27	16.54	101	112.88	687	50	737	6.53
4. Portola Valley East	791	235	35,250	12.87	39.49	12.31	811	850.92	2,211	406	2,617	3.08
5. Portola Valley Mid	1,341	464	69,600	25.40	77.96	12.31	1,376	1,453.61	4,366	688	5,054	3.48
6. Portola Valley West	2,256	560	84,000	30.66	94.10	12.31	2,314	2,408.38	5,269	1,157	6,426	2.67
7. Sky Londa West	513	158	23,700	8.65	26.55	13.98	598	624.19	1,487	299	1,786	2.86
8. Woodside West	2,763	787	118,050	43.09	132.24	12.31	2,834	2,966.62	7,405	1,417	8,823	2.97
TOTAL	**8,395**	**2,867**	**430,050**	**157**	**482**		**8,751**	**9,233**	**26,977**	**4,375**	**31,353**	

Calculation Notes:

Wastewater Mass N = W*70 mg/L*(1-0.20)

Background Mass N = R*0.5 mg/L

Resultant N, mg/L = Total Mass N/Total Rechage Vol



Reference EvapoTranspiration (ETo) Zones

1. COASTAL PLAINS HEAVY FOG BELT — Lowest ETo in California. Characterized by dense fog
2. COASTAL MIXED FOG AREA — Less fog and higher ETo than zone 1
3. COASTAL VALLEYS AND PLAINS AND NORTH COAST MOUNTAINS — More sunlight than zone 2
4. SOUTH COAST INLAND PLAINS AND MOUNTAINS NORTH OF SAN FRANCISCO — More sunlight and higher summer ETo than zone 3
5. NORTHERN INLAND VALLEYS — Valleys north of San Francisco
6. UPLAND CENTRAL COAST AND LOS ANGELES BASIN — Higher elevation coastal areas
7. NORTHEASTERN PLAINS
8. INLAND SAN FRANCISCO BAY AREA — Inland area near San Francisco with some marine influence
9. SOUTH COAST MARINE TO DESERT TRANSITION — Inland area between marine and desert climates
10. NORTH CENTRAL PLATEAU & CENTRAL COAST RANGE — Cool, high elevation areas with strong summer sunlight. This zone has limited climate data and the zones selection is somewhat subjective
11. CENTRAL SIERRA NEVADA — Sierra Nevada Mountain valleys east of Sacramento with some influence from the delta breeze in summer
12. EAST SIDE SACRAMENTO-SAN JOAQUIN VALLEY — Low winter and high summer ETo with slightly lower ETo than zone 14
13. NORTHERN SIERRA NEVADA — Northern Sierra Nevada mountain valleys with less marine influence than zone 11
14. MID-CENTRAL VALLEY, SOUTHERN SIERRA NEVADA, TEHACHAPI & HIGH DESERT MOUNTAINS — High summer sunshine and wind in some locations.
15. NORTHERN & SOUTHERN SAN JOAQUIN VALLEY — Slightly lower winter ETo due to fog and slightly higher summer ETo than zones 12 & 14
16. WESTSIDE SAN JOAQUIN VALLEY & MOUNTAINS EAST & WEST OF IMPERIAL VALLEY
17. HIGH DESERT VALLEYS — Valleys in the high desert near Nevada and Arizona
18. IMPERIAL VALLEY, DEATH VALLEY AND PALO VERDE — Low desert areas with high sunlight and considerable heat advection

Monthly Average Reference Evapotranspiration by ETo Zone (inches/month)

Zone	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1	0.93	1.40	2.48	3.30	4.03	4.50	4.65	4.03	3.30	2.48	1.20	0.62	33.0
2	1.24	1.68	3.10	3.90	4.65	5.10	4.96	4.65	3.90	2.79	1.80	1.24	39.0
3	1.86	2.24	3.72	4.80	5.27	5.70	5.58	5.27	4.20	3.41	2.40	1.86	46.3
4	1.86	2.24	3.41	4.50	5.27	5.70	5.89	5.58	4.50	3.41	2.40	1.86	46.6
5	0.93	1.68	2.79	4.20	5.58	6.30	6.51	5.89	4.50	3.10	1.50	0.93	43.9
6	1.86	2.24	3.41	4.80	5.58	6.30	6.51	6.20	4.80	3.72	2.40	1.86	49.7
7	0.62	1.40	2.48	3.90	5.27	6.30	7.44	6.51	4.80	2.79	1.20	0.62	43.4
8	1.24	1.68	3.41	4.80	6.20	6.90	7.44	6.51	5.10	3.41	1.80	0.93	49.4
9	2.17	2.80	4.03	5.10	5.89	6.60	7.44	6.82	5.70	4.03	2.70	1.86	55.1
10	0.93	1.68	3.10	4.50	5.89	7.20	8.06	7.13	5.10	3.10	1.50	0.93	49.1
11	1.55	2.24	3.10	4.50	5.89	7.20	8.06	7.44	5.70	3.72	2.10	1.55	53.0
12	1.24	1.96	3.41	5.10	6.82	7.80	8.06	7.13	5.40	3.72	1.80	0.93	53.3
13	1.24	1.96	3.10	4.80	6.51	7.80	8.99	7.75	5.70	3.72	1.80	0.93	54.3
14	1.55	2.24	3.72	5.10	6.82	7.80	8.68	7.75	5.70	4.03	2.10	1.55	57.0
15	1.24	2.24	3.72	5.70	7.44	8.10	8.68	7.75	5.70	4.03	2.10	1.24	57.9
16	1.55	2.52	4.03	5.70	7.75	8.70	9.30	8.37	6.30	4.34	2.40	1.55	62.5
17	1.86	2.80	4.65	6.00	8.06	9.00	9.92	8.68	6.60	4.34	2.70	1.86	66.5
18	2.48	3.36	5.27	6.90	8.68	9.60	9.61	8.68	6.90	4.96	3.00	2.17	71.6

Variablity between stations within single zones is as high as 0.02 inches per day for zone 1 and during winter months in zone 13. The average standard deviation of the ETo between estimation sites within a zone for all months is about 0.01 inches per day for all 200 sites.

California Irrigation Management Information System (CIMIS)

REFERENCE EVAPOTRANSPIRATION

Scale 1:1,805,000
One Centimeter Represents Approximately 18 Kilometers

0 20 40 60 80 100 Miles
0 20 40 60 80 100 120 140 160 Kilometers

STATE OF CALIFORNIA
GRAY DAVIS GOVERNOR
THOMAS M. HANNIGAN, DIRECTOR, DEPARTMENT OF WATER RESOURCES

Lambert Conformal Conic Projection
1927 North American Datum

Developed as a cooperative project between the

Department of Land, Air and Water Resources
University of California, Davis
And
Water Use Efficiency Office
California Department of Water Resources
Baryohay Davidoff, California Irrigation Management Unit

Map Prepared by David W. Jones 1999
Data developed by Richard L. Snyder, Simon Eching, and Helena Gomez-MacPherson
Background Data from Teale and USGS Sources

ONSITE SYSTEMS MANUAL
May 2016

San Mateo County
Environmental Health Division

2000 Alameda de las Pulgas, Suite 100
San Mateo, CA 94403
650-372-6200
www.smchealth.org/landuse

San Mateo County
Onsite Systems Manual

OVERVIEW

This *Onsite Systems Manual* (also "Onsite Manual", "Manual" or "OSM") provides the policy, procedural and technical details for implementation of the provisions of the San Mateo County Onsite Wastewater Treatment Systems (OWTS) Ordinance, codified in Chapter 4.84 of Title 4 – Sanitation and Health of the San Mateo County Ordinance Code. Section 4.84.020 provides further that:

- The *Onsite Systems Manual* shall be developed and maintained by Environmental Health, and shall provide a reasonable process for seeking input from the affected public and OWTS practitioners, such as OWTS designers and installers, regarding its development and any changes made to it.
- The *Onsite Systems Manual* and any amendments to it shall be subject to approval by Environmental Health and the San Francisco Bay and Central Coast Regional Water Quality Control Boards (RWQCB) in accordance with applicable State requirements and policies for onsite wastewater treatment.

This Manual replaces the former "Performance Standard", and incorporates new and updated information regarding design details and guidelines related to both conventional and alternative systems, operation and monitoring requirements and related procedural matters. It is intended to provide technical guidance for homeowners, designers, and installers of onsite wastewater treatment and dispersal systems.

It is expected that Environmental Health will periodically review and make amendments to the various procedures and technical information contained in this Onsite Systems Manual, typically on an annual or biannual basis. The amendments may include recommended changes originating from Environmental Health staff, RWQCB staff, other departments or agencies, contactors and consultants working in the OWTS industry, or other affected groups or individuals. Any substantive changes in requirements, such as changes in design criteria or addition of alternative design options, are expected to involve review and approval by the RWQCB as an update to the County Local Agency Management Program (LAMP).

The Onsite System Manual is divided into six main sections as follows:

Section 1: Policies and Administrative Procedures

Section 2: Site Investigation Requirements and Procedures

Section 3: Design and Construction Requirements for Conventional OWTS

Section 4: Alternative OWTS Requirements

Section 5: OWTS Performance, Monitoring and Evaluation

Section 6: Advanced Protection Management Program

GLOSSARY OF TERMS

Unless defined otherwise in this Manual, the terms used in this Manual have the same definition as in San Mateo County Ordinance 4.84 - Onsite Wastewater Treatment Systems.

"**Alternative OWTS**" is a type of OWTS that utilizes either a method of wastewater treatment other than a conventional Septic Tank for the purpose of producing a higher quality wastewater effluent and/or a method of wastewater dispersal other than a gravity-fed trench Dispersal System for effluent dispersal.

"**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 the Water Quality Control Policy for Siting, Design, Operation and Maintenance of Onsite Wastewater Treatment Systems, adopted by the State Water Resources Control Board on June 19, 2012, which became effective May 13, 2013 (SWRCB OWTS Policy). The term cesspool does not include pit-privies and out-houses which are not regulated under the SWRCB OWTS Policy. (From SWRCB OWTS Policy)

"**Conventional OWTS**" means a type of OWTS consisting of a Septic Tank for primary treatment of sewage followed by gravity flow to a Dispersal System of drainfield trenches for subsurface dispersal of effluent into the soil.

"**Cut or Embankment**" means any area of land surface having a distinctly greater slope than the adjacent natural ground surface, greater than 36 inches in vertical height, and any part of which is lower in elevation than the ground surface at the nearest point of the OWTS. Cuts supported by retaining walls or similar structures shall be included in this definition, as shall steep natural ground surfaces where a sharp break in the ground slope is discernible.

"**Dispersal System**" means a series of trenches, beds, subsurface drip lines, or other approved method for subsurface infiltration and adsorption of wastewater effluent, including all component parts, such as piping, valves, filter material, chambers, dosing pumps, siphons and/or other appurtenances.

"**Domestic Wastewater**" means wastewater with a measured strength less than 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. (From SWRCB OWTS Policy)

"**Drainage Swale**" means any course of concentrated drainage water that has formed over time by either natural or man-made forces and where the flow of water is either at or near ground surface with no significant subsurface flow component. Also included in this definition are facilities used for the treatment and/or dispersal of roof runoff or other site drainage, such as vegetated swales and infiltration/percolation trenches or basins.

"**Environmental Health**" means the Director of Environmental Health Division or his/her designee.

"**Groundwater**" means water below the land surface that is at or above atmospheric pressure. (From SWRCB OWTS Policy)

"**Holding Tank**" means a watertight receptacle used to collect and store wastewater prior to it being removed from a property by means of vacuum pumping and hauling or another approved method.

"**Impaired Water Body**" 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. (From SWRCB OWTS Policy)

"**Onsite Wastewater Treatment System (OWTS)**" means individual disposal system, 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. (From SWRCB OWTS Policy)

"**Operating Permit**" means the administrative document issued by Environmental Health authorizing the initial and/or continued use of an alternative OWTS in conformance with the provisions of the OWTS Ordinance and this manual, intended to aid in verification of the adequacy of alternative OWTS performance, and that may contain both general and specific conditions of use. An Operating Permit may also be issued for circumstances other than alternative OWTS, such as in connection with Holding Tank exemptions, Portable Toilet installations, or where, in the opinion of Environmental Health, the type, size, location or other aspects of a particular OWTS installation warrant the additional level of oversight provided by an Operating Permit.

"**OWTS Failure**" means the ineffective treatment and/or dispersal of waste resulting in the surfacing of raw, or inadequately treated sewage effluent, or the degradation of surface or groundwater quality and/or such as it creates a potential public health hazard. For a Dispersal System, signs of OWTS Failure may include surfacing wastewater effluent from the dispersal field or wastewater backed up into plumbing fixtures, including a Septic Tank, because the Dispersal System is not able to percolate the design flow of wastewater associated with the structures served. For a Septic Tank, signs of OWTS Failure may include compartment baffle buckling or failure or tank structural integrity failure such that either wastewater is exfiltrating or groundwater is infiltrating.

"**Percolation Testing**" is a method of evaluating water absorption of the soil. The test is conducted with clean water and test results are used in the design and sizing of the Dispersal System.

"**Portable Toilet**" means an enclosed unit intended for temporary use at a given location. Portable Toilets may also be referred to as chemical toilets in this manual, the OWTS Ordinance or in other County ordinances or California statute or regulation.

"**Pressure-dosing Distribution**" means a method of wastewater dispersal used to achieve equal distribution of wastewater within a dispersal field by employing a pump or automatic dosing siphon and distribution piping with small diameter holes or perforations spaced uniformly along its length.

"**Qualified OWTS Design Professional**" means an individual licensed or certified by a State of California agency to design OWTS and practice as a professional as allowed under their license or registration. Individuals certifying OWTS designs must be a State of California Registered Environmental Health Specialist, Professional Geologist, or Professional Civil Engineer.

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

"**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. (From SWRCB OWTS Policy)

"**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.
   (From SWRCB OWTS Policy)

"**Site Evaluation**" means an assessment of the characteristics of the site sufficient to determine its suitability for an OWTS to meet the requirements of the SWRCB OWTS Policy. (From SWRCB OWTS Policy)

"**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 the SWRCB OWTS Policy, soil shall contain earthen material of particles smaller than 0.08 inches (2mm) in size. (From SWRCB OWTS Policy)

"**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. (From SWRCB OWTS Policy)

"**Total Maximum Daily Load (TMDL)**" 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. (From SWRCB OWTS Policy)

"**Unstable Land Mass**" means land prone to subsidence, erosion, or mass land movement as indicated by historical landslide events, published maps or reports, or evidence of characteristics such as surface rupture, scarps, creep or other irregularities in ground slope conditions.

"**Waste Discharge Requirement (WDR)**" means an operation and discharge permit issued for the discharge of waste pursuant to Section 13260 of the California Water Code. (From SWRCB OWTS Policy)

"**Watercourse**" means a definite channel with bed and banks within which water flows either perennially, ephemerally or intermittently, including overflow channels contiguous to the main channel. A Watercourse may be either a natural or man-made channel. For the purpose of this Chapter, Watercourse also includes water bodies such as ponds, lakes, marshes, seasonal wetlands and tidal waters.

SECTION 1
POLICIES AND ADMINISTRATIVE PROCEDURES

CONTENTS

SECTION 1
POLICIES AND ADMINISTRATIVE PROCEDURES

A. INTRODUCTION

Section 1 of the Onsite Systems Manual provides an overview and clarification of various onsite wastewater treatment systems (OWTS) and other wastewater related policies and administrative procedures pertaining to:

- OWTS and other wastewater related permits and fees;
- Certifications of soil percolation testers, OWTS installers and septage pumping companies;
- Development and OWTS requirements for site approval for building projects, secondary dwellings, remodeling projects, and subdivisions;
- Requirements for properties located near sanitary sewer systems;
- Repair or destruction of existing septic systems;
- Provisions and permitting requirements for alternative treatment and dispersal systems;
- Provisions and permitting requirements for septic holding tanks and portable toilets; and
- Amendments to this Onsite Systems Manual.

B. FEES

Fees, as prescribed by resolution of the Board of Supervisors of the County of San Mateo, are payable separately to Environmental Health for services described throughout this Manual. See Environmental Health website for listing of applicable fees. Fees are non-refundable once received by Environmental Health.

Note that a fee waiver may be considered for OWTS work consistent with Board of Supervisors resolutions (i.e., farm labor housing units).

C. CERTIFICATION OF SOIL PERCOLATION TESTERS

Soil percolation testing is a method of evaluating water absorption of the soil. The test is conducted with clean water and test results are used in the design and sizing of the dispersal system. No person shall perform soil percolation testing or submit testing results unless they possess a current certification issued by Environmental Health as prescribed below.

1. Environmental Health shall certify any applicant who demonstrates competence to test and make reports on soil percolation testing in compliance with the requirements of San Mateo County Ordinance 4.84 and as prescribed in below, and who has paid an annual certification fee as set forth in San Mateo County Ordinance Section 5.64.070. Applicants shall demonstrate such competence by one of the following.

    a. Presenting a current valid registration or certification as a State of California Registered Environmental Health Specialist, Professional Geologist, or Professional Civil Engineer.

    b. Undertaking and passing an examination administered by Environmental Health.

2. Any such certificate holder may be required to undergo re-examination, additional training, other demonstration of competency or any combination thereof, as may be deemed necessary by Environmental Health.

3. Soil percolation tester certification may be renewed annually by payment of the annual certification fee. Payment must be made before expiration of certification. If there is any lapse in certification, Environmental Health may require the tester to undergo re-examination, additional training, or other demonstration of competency, or any combination thereof prior to re-certification.

D. CERTIFICATION OF OWTS INSTALLERS

A Certified Installer is any individual, organization, partnership, business, association, or corporation holding a current authorization to install or repair OWTS in San Mateo County as described below. No person shall install, construct, add to, alter, or replace an OWTS in San Mateo County unless they possess a current certification issued by Environmental Health as prescribed below. This certification shall be in addition to any license required by State law to install the OWTS.

1. Environmental Health shall certify any applicant who demonstrates competence to install, construct, add to, alter, or replace an OWTS in compliance with the requirements of San Mateo County Ordinance 4.84 and as prescribed below, and who has paid an annual certification fee as set forth in San Mateo County Ordinance Section 5.64.070. Applicants shall demonstrate such competence by one of the following.

    a. Presenting a current and valid State of California contractor license (“A” – General Engineering Contractor; C36 – Plumbing Contractor; or C42:

Sanitation System Contractor).

b. In the case of a property owner personally installing or repairing their own Conventional OWTS on property they own, property owners must undertake and pass an examination administered by Environmental Health and all work must be in compliance with this Chapter and as prescribed in the Onsite Systems Manual.

2. Any such certificate holder may be required to undergo re-examination, additional training, other demonstration of competency or any combination thereof, as may be deemed necessary by Environmental Health.

3. OWTS installer certification may be renewed annually by payment of the annual certification fee. Payment must be made before expiration of certification. If there is any lapse in certification, Environmental Health may require the installer to undergo re-examination, additional training, or other demonstration of competency, or any combination thereof prior to re-certification.

E. REQUIREMENTS FOR SEPTAGE PUMPING AND CLEANING COMPANIES AND TRUCKS

1. **Septage Pumping Company Applications.** All applications for certification of a septage pumping and cleaning company shall be completed in full and filed with Environmental Health as prescribed below. The application shall be signed by an authorized officer of the corporation or by a managing partner.

   a. The applicant shall use a disposal site(s) approved by Environmental Health for receiving OWTS, holding tank or portable toilet septage wastes.

   b. The applicant shall demonstrate to the satisfaction of Environmental Health, their knowledge of, and competence with, the equipment to be used as well as the sanitary principles, laws and ordinances which affect human health or public nuisances.

   c. The applicant shall utilize sanitary equipment meeting the requirements as prescribed below.

   d. Pumper Registration shall be valid for twelve (12) months. It shall be the responsibility of the applicant to renew this registration annually.

   e. All certified pumpers shall be required to file a monthly statement with Environmental Health, giving the name and address of the owner or tenant of each of the premises where an OWTS, holding tank or portable toilet has

been cleaned out by said pumper, his employees or others on his behalf. This statement shall also describe the place where the cleanings have been disposed.

f. Septic Tank Pumping. Whenever an OWTS is serviced for the purpose of septic tank pumping, pumping of the tank and visual inspection of the tank, pumps, visible piping and dispersal field area shall be made by the pumper, as prescribed below.

g. A written report on form(s) provided by Environmental Health shall be completed by the registered septic tank pumper and shall be submitted to Environmental Health and the property owner no later than 30 days following septic tank pumping as prescribed below.

h. Upon being notified of a failure condition or other uncorrected deficiency in an OWTS, Environmental Health will notify the owner in writing, by hand-delivery or first class U.S. mail, of the needed corrections required to comply with the applicable standards in this manual.

i. Within 60 days of notice of such written notification, the property owner shall take all corrective actions necessary to comply with the applicable standards, unless otherwise approved by Environmental Health.

2. **Pumper truck inspections.** All pumper trucks operating within San Mateo County must be inspected and certified by Environmental Health.

a. The pumper truck tank shall hold a volume at least equal to or exceeding the volume of the tank being pumped, be in good repair, and be constructed in a manner to facilitate cleaning.

b. All outer contact surfaces and fittings shall be kept in a clean and sanitary condition while stored or in transit, and all premises served and equipment used shall be left in a clean and sanitary condition.

c. All discharge valves shall be in good repair, free from leaks and fitted with water-tight caps.

d. The pumper truck must have a spill clean-up kit on board at all times.

e. The name of the operating firm shall be prominently displayed on the sides of any pump tank vehicle.

f. The pumper truck must bear a valid Environmental Health ID Permit unique to each vehicle, as affixed by Environmental Health staff following inspection. The ID Permit is not transferable to any other vehicle.

3. **Septic Tank Pumping.** Whenever an OWTS is serviced for the purpose of septic tank pumping, pumping of the tank and visual inspection of the tank, pumps, visible piping and dispersal field area shall be made by the pumper as follows.

    a. All compartments of the septic tank shall be pumped of all scum and sludge by a certified septic tank pumper.

    b. The septic tank shall be inspected for signs of damage, deterioration, corrosion, leakage, blockages, high liquid level or other deficiencies.

    c. Any pumping systems that are part of the OWTS shall be tested for proper operation and inspected for any deficiencies in the pump/sump tank, pump unit, piping, valves or control systems.

    d. The dispersal field shall be inspected for indications of system failure such as flooded trenches, soil saturation or surfacing sewage, backflow of water into the septic tank, down-slope seepage, erosion or drainage problems, or other deficiencies.

4. **Septic Inspection Report.** For every septic tank pumped and inspected as described above, a written report on form(s) provided by Environmental Health shall be completed by the registered septic tank pumper and shall be submitted to Environmental Health and the property owner no later than 30 days following septic tank pumping. At a minimum, the report must include the following.

    a. The name of the property owner, the street address of the property where the OWTS is located, and the date of servicing.

    b. The name of the septic tank pumper, size of the septic tank(s), gallons pumped, the name and location of the disposal site, and a description of servicing activities.

    c. A description of any OWTS maintenance performed.

    d. A description of any failure or uncorrected deficiencies in the OWTS. Reported deficiencies shall include, but not be limited to, deteriorated, corroded or damage septic tank components; deficiencies in the condition or operation of any pumping systems; dispersal field problems such as surface failure, flooded trenches, down-slope seepage, backflow of effluent from the dispersal system into the septic tank; existence of a cesspool; and/or other deficiencies.

5. **Monthly Septic Tank, Holding Tank and Portable Toilet Pumping Statement.** All certified pumpers shall file a monthly statement with Environmental Health,

giving the name and address of the owner or tenant of each of the premises where an OWTS, holding tank or portable toilet has been cleaned out by said pumper, his employees or others on his behalf. This statement shall also describe the place where the cleanings have been disposed.

F. ENVIRONMENTAL HEALTH REVIEW FOR PLANNING OR BUILDING PERMITS

San Mateo County Planning and Building Department, as well as Town of Woodside, Town of Portola Valley and City of Half Moon Bay planning and building departments, refer projects for review by Environmental Health that may require a new OWTS or that may affect an existing OWTS. For projects referred through County Planning and Building, Environmental Health review fees are paid through the Planning and Building Department. For projects referred through town or city planning and building departments, a separate Environmental Health Review Application with applicable fee must be submitted prior to Environmental Health staff review of the project.

Projects that do not include a new OWTS or repair to an existing OWTS, may still be referred to Environmental Health for review because the proposed project may affect an existing OWTS (i.e., a deck that may impinge upon the location of an existing OWTS or the reserved replacement area for an existing OWTS). For projects that do include a new OWTS or repair to an existing OWTS, it is at the planning/building permit review stage that Environmental Health typically reviews an OWTS project for any conflict with proposed improvements related to grading, drainage, other utilities, hardscape, landscape, etc. Note that, depending on the scope and stage in the planning/building permit process, this may require submittal of a septic system design that relies on having already completed site exam and soil percolation testing.

Environmental Health approval of a planning application or a building permit does not constitute a permit to construct/install an OWTS. See below for OWTS installation permit information.

G. INSTALLATION PERMIT REQUIREMENTS

An OWTS is required for all new residential or commercial facilities which are unable to connect to a sanitary sewer. For a new septic system, a Site Exam and Soil Percolation Test must be completed prior to the submittal of a Septic Installation Permit Application.

1. **Site Exam**
    a. An application for a site exam and soil percolation test must be completed and submitted with appropriate fee. This application must include:

(1) Owner's name, address and phone number;

(2) Assessor's Parcel Number (APN);

(3) Address and/or location of property upon which the septic system is to be installed;

(4) Owner's signature or Letter of Agent Authorization, signed by the property owner, if necessary;

(5) Contractor information and signature; and

(6) Topographic map showing proposed locations for soil percolation test holes and deeper hole(s) for evaluation of soil and depth to groundwater, as well as identifying all relevant setbacks and any slopes of ≥50% (and ≥35% for sites in Town of Woodside). Note: this may require mapping beyond property line to show relevant setbacks.

b. Environmental Health staff will evaluate the proposed soil percolation test and deeper hole(s) locations and give any needed feedback to the applicant.

c. An appointment to investigate the site must be made with Environmental Health staff at least two (2) working days in advance of any field work.

d. During the site exam, the proposed location of the soil percolation test holes, deeper hole(s) for evaluation of soil and depth to groundwater (and potential OWTS) will be confirmed, and if acceptable, presoak of the soil percolation test holes can commence. Note that a Qualified OWTS Design Professional must be onsite to, at a minimum, make observations required for the soil profile from the deeper hole(s).

e. During the site exam, Environmental Health will make a preliminary review of compliance with minimum depth to groundwater criteria and assess the need for wet weather groundwater observations per requirements detailed in Section 2 of this Manual.

f. Applications for which a permit has not been issued due to failure to submit required information shall become null and void after one year from the date the application was submitted.

2. **Soil Percolation Test**

a. An application must be completed and submitted with appropriate fee (see above for Site Exam).

(1) A soil percolation test must be conducted by a County Environmental Health Certified Soil Percolation Tester to investigate the absorption capability of the soil in which the OWTS is proposed to be installed.

(2) All soil percolation tests must be conducted in accordance with the guidelines stipulated in Section 2 of this Manual.

(3) Environmental Health staff must field-verify both the pre-soak and the soil percolation test; otherwise neither are considered valid and must be repeated. Soil percolation test-hole presoak is typically performed during the afternoon prior to the soil percolation testing during the Site Exam, as described above.

(4) With permission from Environmental Health staff, soil percolation testing may commence prior to arrival of Environmental Health field inspector observing the soil percolation testing. However, Environmental Health staff must be present for at least the final three (3) readings collected. All readings taken during the soil percolation test must be submitted to Environmental Health for incorporation in the site file.

(5) For the soil percolation rate to be considered “stabilized”, variation in last three readings must be as follows.

- For maximum readings up to 1-inch in last ½-hour, three readings must vary by less than 35% of maximum of the three readings.
- For maximum reading greater than 1-inch and less than 5-inches, three readings must vary by less than 25% of maximum of the three readings.
- For maximum reading greater than 5-inches in last ½-hour, three readings must vary by less than 15% of maximum of the three readings.

(6) The soil percolation rating (size) for the area represented by the soil percolation test holes, to be used in design of the OWTS, will be determined by Environmental Health staff, as described in Section 2 of this Manual, once the soil percolation test has been completed. This information will be provided in writing, and must be included on any plot plans with the application for the installation permit.

(7) If the slope of the area tested is greater than 20%, a geotechnical report will be required. Details of geotechnical investigation and reporting requirements are included in Section 2 of this Manual. The report must be included with the submittal of the application for the OWTS Installation Permit.

(8) Applications for site exam or soil percolation testing, for which the work has not been completed, shall become null and void after one year from the date of application submittal.

3. OWTS Installation Permit Application

a. An application for a permit to install an OWTS must be completed and submitted for review and approval by Environmental Health staff. Incomplete applications may be returned with plans as un-reviewed. Currently, installation permit fees are based on the size of the home(s) to be served. It is our intent that the fees will be updated in the near future to be based on the length of leach trench to be installed.

b. Proposed OWTS design must be certified by a Qualified OWTS Design Professional as defined in the County OWTS Ordinance (Registered Environmental Health Specialist, Professional Geologist, or Professional Civil Engineer).

c. OWTS can only be installed by a County Environmental Health Certified OWTS Installer (listed as contractor on permit application).

d. Applications must be submitted with:

(1) Scaled (1 inch to 40 feet minimum, base 10 preferred) plot plan of the property and adjacent areas, as needed, indicating:

- Topographic contours of the property (minimum 2 foot increments);
- Footprint of all existing and proposed site structures, hardscape, grading and drainage;
- Locations of the soil percolation test holes and the deeper soil and groundwater characterization holes;
- Proposed location and design of the OWTS, including both primary and reserve trenches, septic tank, piping, and diversion valve(s);
- Location of well(s), both on property and on adjacent properties; and
- Any other limiting features (i.e., trees) or item covered by the setback requirements in the County OWTS Ordinance (Topography and structures adjacent to the subject parcel may be required to establish all appropriate setbacks).

(2) Completed Coastal Development Permit, if required by the San Mateo County Planning Department or Half Moon Bay Planning Department.

(3) Letter of Agent Authorization signed by the property owner, if necessary.

e. Applications, for which a permit has not been issued due to failure to submit required information, shall become null and void after one year from the date of application submittal. No fees will be refunded once received by Environmental Health.

4. **Installation Permit Requirements**

a. OWTS must be installed in accordance with the plans approved by Environmental Health. Any changes in the installation plans must be reviewed and approved by Environmental Health prior to installation.

b. Inspection by Environmental Health staff of an OWTS being installed shall occur both prior to and during the installation. Critical inspections points include:

(1) Stake out of proposed trench locations;

(2) Inspections of empty (no rock) leach trenches for condition and total depth;

(3) Inspection of installed perforated drainpipe over drain rock in trenches;

(4) Location and proper installation of diversion valve(s); and

(5) Location and proper installation of septic tank(s).

(6) Location and proper installation of supplemental treatment units and/or pumps.

c. OWTS must be constructed in accordance with requirements stipulated in the County OWTS ordinance and this Manual, as applicable.

d. Permits shall expire and become null and void if the work authorized has not commenced within one (1) year after the permit has been issued. No fees will be refunded once received by Environmental Health. A permit extension may be granted if application for extension is made and appropriate fee paid, prior to the expiration of the original permit.

Additional details regarding the above are provided in this Manual as follows:

- **Section 2 – Site Investigation Requirements and Procedures**
- **Section 3 – Design and Construction Requirements for Conventional OWTS**
- **Section 4 – Alternative OWTS Requirements**

H. OWTS SUBJECT TO CRWQCB WASTE DISCHARGE REQUIREMENTS

OWTS that are subject to the requirements and approval of the CRWQCB are also required to obtain approval of Environmental Health in accordance with the following:

1. The proposed system must be designed to accommodate the waste discharge consistent with the requirements of the appropriate CRWQCB;

2. Environmental Health will require engineered sewerage plans to be submitted by a qualified professional with experience in OWTS design before issuing a permit;

3. A qualified professional will be required to inspect the construction of the OWTS and, upon completion, to submit a letter of certification to Environmental Health verifying the proper installation and operation of the OWTS;

4. Site evaluations, plan submittals, design and construction details, inspection, and operation and maintenance shall be consistent with guidelines and procedures prescribed by County Ordinance and prescribed in this manual.

5. The applicant must obtain a permit(s) from Environmental Health and pay a permit fee(s) in an amount established in County Ordinance Section 5.64.070.

I. OVER 50% REMODEL OR ADDITION OF A BEDROOM

For a building remodel that is 50% or greater the value of a structure[1] served by an existing OWTS, or remodel that includes addition of a bedroom served by an existing OWTS, all elements of the OWTS must meet the standards required by current County OWTS ordinance. This may require installation of additional leach trenches, installation of a larger or additional septic tank, and/or soil percolation testing (including determination of depth to groundwater).

1. **Condition of Existing OWTS.** In order to establish the condition of an existing OWTS, the following may be required:

   a. Plans must be submitted and include information showing the location of the septic tank, drainfields and expansion area in sufficient detail to confirm no encroachment upon required setbacks.

[1] Specific to the unincorporated County projects based on County Planning and Building policy. Other jurisdictions' Building Department may have different requirements.

b. Environmental Health will require that the existing septic tank be pumped, inspected and the drainfields undergo a hydraulic load test as appropriate to the requirements of the Planning and Building Department of record and based on the age and construction of the system.

c. A hydraulic load test of the OWTS must be performed by a County Environmental Health Certified septic tank pumper, recognized maintenance provider, or other qualified professional. A report of the testing shall be submitted addressing the following:

(1) Size of the tank and type of construction material;

(2) Condition of the tank, baffles and tees;

(3) Length of the test. A minimum of 20 minutes required;

(4) If the drain fields were functioning (taking water) or if the drain fields failed to take water or result in surfacing of water/effluent;

(5) Condition of the diversion valve; and

(6) The tester shall indicate on the report if the house appears to be vacant.

d. If the existing OWTS complies with current septic regulations, but is found to have deficiencies that constitute a threat to public health and safety, Environmental Health staff will require that the system be repaired under permit.

e. A soil percolation test may be required to determine the adequacy of soil conditions in the area of the existing septic system.

2. OWTS Expansion or Repairs. Where findings from evaluation of the existing OWTS indicate the need for system expansion or repair to accommodate the proposed remodel or bedroom addition(s), the following shall be required:

a. Site exam as described in Section C.1 above;

b. Soil percolation testing will be required if the area in which additional leach trenches are proposed, has not been tested, if the soil percolation information is not available or verifiable by Environmental Health staff, or existing soil percolation information is considered no longer representative of site conditions. Soil percolation tests must be conducted and verified as described in Section C.2 above;

c. Additional leach trenches must be installed and verified as described in Section C.4 above; and

d. A permit, per Section C.3 above, must be obtained from Environmental Health for retrofit of existing leach trenches, installation of additional leach trenches, and installation or replacement of septic tanks. Existing wooden septic tanks do not meet current septic code and must be replaced with appropriate septic tanks.

J. UNDER 50% REMODEL WITH NO BEDROOM ADDITION

For building remodels that are less than 50% the value of the existing home as described above, or for those buildings as determined by the Planning and Building Department of record, for which no bedroom addition is proposed, the following may be required (especially for those properties with no or limited record of the existing OWTS on file with Environmental Health):

1. Submittal of plans showing detail of the existing septic system. For systems for which installation permits were issued after December 1969, 100% reserve distribution area must be designated. For systems for which installation permits were issued prior to December 1969, 50% reserve distribution area must be designated (consistent with requirements of that earlier septic ordinance).
2. Hydraulic load test of the existing septic system by a San Mateo County Certified Septic Tank Pumper, recognized maintenance provider or other qualified professional.

K. SECOND DWELLING UNITS

Second Dwelling Units have varying definitions in different planning/building jurisdictions of the County. Each ***Second Dwelling Unit*** shall be served by an OWTS, which conforms to current OWTS code. This may be a separate OWTS serving only the second dwelling, or the second dwelling may be connected to the main house OWTS, provided there is sufficient treatment and dispersal capacity.

For second dwelling units of up to 2 bedrooms that share an OWTS with the main house, whether detached or attached (having a shared wall, but not necessarily a direct access between the main house and second dwelling), the septic tank and dispersal system will be sized based on the number of bedrooms for both the main house and second dwelling. For existing main house OWTS, this may require modifications or expansion of existing septic tank and/or leach trench capacity.

For second dwelling units of up to 2 bedrooms that have their own separate OWTS from the main house, whether detached or attached, the septic tank and dispersal system will be sized based on the number of bedrooms served and measured soil percolation rate

as described in Section 3, D. and E. This instance of second dwelling units is the only instance in which OWTS dispersal systems for residential use will be considered less than the minimum (up to 3 bedrooms) OWTS dispersal systems.

Therefore, the following requirements apply to applications for the addition of a second dwelling unit at properties served by an existing OWTS.

1. If connection to a sanitary sewer system is not available, any proposed second unit addition would have to comply with current County regulations relating to OWTS.

2. If the second unit is within the structure of the main house, the addition would be treated in the same manner as a bedroom addition, and subject to OWTS requirements per Section 1.D. (over 50% remodel or addition of a bedroom) above, which may include modifications or expansion of septic tank and/or leach trench capacity.

3. If the second unit is detached from the main house, the waste plumbing may be connected by gravity to the main house OWTS as long as it can be accomplished with gravity flow to the existing septic tank and sufficient capacity is provided for the additional sewage flow from the proposed second unit per Section 1.D. above.

4. For detached second units where gravity flow to the main house system is not possible, a new OWTS meeting County regulations may be required for the second unit. If local planning and building department allows, a septic tank-effluent pump (STEP) system designed to pump effluent from the second unit septic tank to the main house OWTS may be considered but may require a variance.

5. Where a separate OWTS is required for a detached second unit addition, minimum requirements shall include the following:
   a. Site exam, soil profile, groundwater determinations, soil percolation testing, and, where applicable, geotechnical slope stability analysis (>20% slope);
   b. New 1,500-gallon septic tank as per Section 3.D.
   c. New effluent dispersal systems as described in Section 3.E.; an
   d. Identification of 100% reserve dispersal field area.

6. All other County requirements, including, but not limited to, permit fees and plot, plans would apply to second dwelling unit additions.

L. REPAIR OF EXISTING OWTS

All repairs or alterations to existing OWTS that were not required to meet the standards of new OWTS must comply as closely as practical with current OWTS requirements, and must be protective of human health and the environment. An exemption application with corresponding fee may be required by Environmental Health. Additionally, all repairs to an existing OWTS, including septic tank replacements, must be conducted under permit with Environmental Health and verified by Environmental Health staff as described above in Sections C.3 and C.4 above.

Replacement of a septic tank in the same location as previous tank is typically considered a minor repair/alteration.

The following, occurring individually, are considered a major repair/alteration:

- Installation of a replacement septic tank in a new location,
- Installation of any new leach trenches adding to an existing system, where the total length of new leach trenches installed is less than 100 linear feet,
- Alteration of any existing leach trenches where rock is removed and trench is deepened, requiring inspection of the trench bottom, where the total length of trench being deepened is less than 100 linear feet.

Any combination of the above, as well as any leach trench installation or alteration (as described above) totally more than 100 linear feet, is considered a new installation as is subject to the corresponding installation fee..

M. DESTRUCTION OF SEPTIC TANKS AND LEACH TRENCHES

OWTS, including septic tanks, can either be completely removed or properly abandoned in-place. Destruction of any element of an OWTS must be conducted under permit with Environmental Health and verified by Environmental Health staff. Permit application for septic system destruction must include the proposed method of destruction/disposal for all elements of the system.

1. **Septic Tanks.** Septic tanks can either be completely removed and properly disposed of or abandoned in place. In either case, both chambers of the septic tank must be pumped out by a pumping company certified to work in San Mateo County and the sewage must be disposed of in an approved manner.

2. **Complete Removal**. After pumping of residual sewage as described above, the septic tank must be rinsed, pumped of its rinsed water, and completely removed from the ground. The tank can then be recycled or disposed of depending upon the construction materials.
3. **Abandonment In-Place.** After pumping of residual sewage as described above, the following steps must be completed:
    a. The bottom of the empty septic tank must be broken-up or perforated to allow for bottom drainage;
    b. The septic tank must be filled in with sand, native soil, or other approved material, and the material must be compacted as appropriate; and
    c. The top of the septic tank must be removed or collapsed.
4. **Leach Trenches.** Leach trenches can be removed, although such removal may not be necessary. If leach trench removal is necessary (i.e. for future construction or for geotechnical stability), such removal should be conducted as follows, or as may be modified in accordance with recommendations provided by a geotechnical professional:
    a. Drainpipe (and conveyance pipe) removed and properly disposed;
    b. Drain rock removed to the extent practicable and properly disposed; and
    c. Trenches backfilled with native soil or other geotechnical appropriate material, and the material compacted as appropriate.

    Appropriate erosion control measures must be employed during any excavation or earth movement activities.

N. SUBDIVISIONS AND LOT LINE ADJUSTMENTS

For subdivisions and lot line adjustments, each proposed lot shall be evaluated separately to verify OWTS suitability for each proposed developed or undeveloped lot. At a minimum:

1. Site examination and soil percolation testing for each proposed lot;
2. Demonstration that a legal minimum (3-bedroom) system, consistent with the actual soil percolation rate, meeting all requirements of the County OWTS Ordinance and this Manual, can be designed/installed for each proposed lot (with no exemptions allowed per OWTS Ordinance Section 4.84.185);
3. Each developed parcel(s) within a proposed subdivision or lot split will be evaluated to determine if the existing OWTS meets the required setbacks; and

4. Verify that the system is functioning adequately.

O. PROPERTIES NEAR A SANITARY SEWER SYSTEM

On property where there is an existing OWTS and where the structures served by the OWTS are within two hundred (200) feet of an approved available sanitary sewer, connection to the sanitary sewer will be required when addition to the OWTS is required or proposed or a major repair is required or proposed, provided any necessary approval from the planning and building department of record, the appropriate sewer authority and the San Mateo County Local Agency Formation Commission is first obtained.

P. ALTERNATIVE SYSTEMS

Alternatives to conventional OWTS may be used as detailed in Section 4.84.145 of County OWTS Ordinance, to provide a broader range of OWTS treatment and dispersal options for new construction and repair/replacement situations. These alternative systems may be allowed in accordance with certain general provisions and specific requirements as follows.

1. **General provisions.**
    a. Types of alternative systems permitted are limited to those for which siting and design standards have been adopted and incorporated in the County OWTS Ordinance and this Manual.
    b. All alternative systems must be installed by a contractor duly licensed by the Contractors State License Board of the State of California to install OWTS.
2. **Specific Requirements**
    a. **Design and Installation Permit.** Alternative OWTS require design by a licensed professional and completion of site evaluation and installation permitting as required for conventional OWTS. Additional engineering and design requirements applicable to different types of alternative OWTS are contained in Section 4 of this Manual.
    b. **Operating Permits.** A County-issued operating permit is required for all alternative systems. Operating permits are intended to serve as the basis for verifying the adequacy of alternative system performance and ensuring on-going maintenance, including requirements for system inspection, monitoring and reporting of results to Environmental Health, along with the requirement for permit renewal, typically on an annual basis. An OWTS operating permit gives Environmental Health right of inspection. In addition,

failure to comply with requirements of an OWTS operating permit may subject the system owner or user to administrative enforcement and fines.

c. **Performance Monitoring and Reporting.** Performance monitoring and reporting is required for all alternative OWTS in accordance with conditions established by Environmental Health as part of the operating permit. Performance monitoring requirements are covered in Sections 4 and 5 of this Manual.

d. **Design and Construction Guidelines.** Design and construction guidelines for approved alternative treatment and dispersal technologies are provided in Section 4 of this Manual.

Q. OPERATING PERMITS

A County-issued operating permit is required for all alternative systems, as well as for septic holding tanks (which have been granted exemptions to occur) and some portable toilet installations as described in Section 4.84.110 of County Ordinance code. Operating permits are intended to serve as the basis for verifying the adequacy of performance and ensuring on-going maintenance, including requirements for inspection, monitoring and reporting to Environmental Health, along with the requirement for permit renewal, typically on an annual basis. An operating permit gives Environmental Health the right of entry and inspection. In addition, failure to comply with requirements of an operating permit may subject the permit holder (whether owner or user) to administrative enforcement and fines.

R. EXEMPTIONS (VARIANCE)

An exemption from the terms of the OWTS Ordinance or this Manual may be granted by Environmental Health under those conditions as described in Section 4.84.185 of the OWTS Ordinance.

Application for an exemption shall be made by submitting a permit application, required fee, and all other plans and documents as may be required by Environmental Health staff in support of the request for exemption. The request for exemption will be evaluated by Environmental Health Land Use staff, and presented to the Director of Environmental Health for concurrence or denial.

S. AMENDMENTS TO THIS MANUAL

Environmental Health will periodically review and make amendments to the various procedures and technical information contained in this Onsite Systems Manual, typically on an annual or biannual basis. The amendments may include recommended changes originating from Environmental Health staff, RWQCB staff, other departments or agencies, contactors and consultants working in the OWTS industry, or other affected groups or individuals. Any substantive changes in requirements, such as changes in design criteria or addition of alternative design options, are expected to involve review and approval by the RWQCB as an update to the County LAMP.

The general format for considering changes to this Manual are as follows:

1. Environmental Health will announce its intent to entertain and review proposed changes, including a due date for submission of proposals. Environmental Health may establish, with Board of Supervisors approval, a fee to be charged for proposals that relate to proprietary equipment, systems or materials.
2. Proposals received shall include a description of the proposed change(s) along with supporting rationale, technical information, and specific language/text additions or changes.
3. Environmental Health will conduct a preliminary internal review to determine the completeness and general merit of the proposal, and request additional information, as applicable.
4. Environmental Health will circulate the proposal(s) for review by local consultants, contractors and maintenance providers, environmental groups and other stakeholders as deemed appropriate. Environmental Health will convene a workshop-meeting with interested parties to review and discuss the proposal.
5. Based on the Environmental Health review and workshop findings, proposals acceptable to the Director and warranting further consideration will be forwarded to the RWQCB for review and approval; changes will be incorporated following RWQCB approval.

FORMS AND FIGURES

SEPTIC APPLICATION CHECK LIST

*Application(s) that are not completely filled out will not be processed.

Application(s) must be:

- ► Legible
- ► Complete with current application (filled out and signed)

- ☐ check box indicating the service(s) applying for
- ☐ APN (Assessor Parcel Number)
- ☐ Mailing Address & Site Address (street, city and zip)
- ☐ Applicant / Agent's Signature (Attach a letter from the property owner providing authorization if signed by an Agent.)
- ☐ Contractor's Information and Signature
- ☐ Submit with a form of payment. cash (over the counter only), check (made to San Mateo County) or credit card (visa, mastercard)
- ☐ 3 surveyed plot plans with topography, must graphically indicate slopes greater than or equal to 50%. Make plans to scale 1" = 20' preferred (not required for permit extension or tank destruction)
- ☐ Method of Abandonment/Destruction on separate sheet (required for tank destruction)

SAN MATEO COUNTY ENVIRONMENTAL HEALTH SERVICES DIVISION
2000 ALAMEDA DE LAS PULGAS, SUITE 100, SAN MATEO, CA 94403
VOICE (650) 372-6200 FAX (650) 627-8244 WWW.SMHEALTH.ORG/ENVIRON

SEPTIC APPLICATION FOR INDIVIDUAL SEWAGE DISPOSAL SYSTEM PERMIT

ALL WORK MUST BE SCHEDULED WITH ENVIRONMENTAL HEALTH STAFF AT LEAST 2 WORKING DAYS IN ADVANCE

NEW CONSTRUCTION: (check one or more)

- ☐ PE 4218 Site Exam
- ☐ PE 4220 Perc Test
- ☐ PE 4219 Repair/Alteration
- ☐ PE 4214 Tank Replacement in same location (Minor Repair)
- ☐ PE 4211 Tank Destruction *
- ☐ PE 4225 Permit Appeal

Installation Permit: (check one)

- ☐ PE 4221 <2500 feet^2 House Size
- ☐ PE 4223 <3500 feet^2 House Size
- ☐ PE 4224 >3501 feet^2 House Size

Fees must be submitted with application

- ☐ PE 4260 Filing Fee / Water Test
- ☐ PE 4216 Wet Weather Testing
- ☐ PE 4208 Alternative / Pres Dose Annual
- ☐ PE 4213 Alternative System (in addition to Installation permit fee)
- ☐ PE 4212 Exception / Variance
- ☐ PE 4217 Permit Extension: _____
- ☐ PE 4210 Re-submittal: _____
- ☐ PE 4209 Annual Certification of Perc Tester or Installer

SITE INFORMATION

SITE ADDRESS: _____ City _____ Zip _____

APN: _____ (9 digit number required) Building Application #: _____

NUMBER OF BEDROOMS _____ ADDITION TO HOUSE ☐ YES ☐ NO SOURCE OF WATER SUPPLY: ☐ PUBLIC WATER ☐ WELL ☐ SPRING

OWNER INFORMATION

OWNER _____

Mailing Address: _____ City: _____ Zip: _____

Phone: _____ Email: _____

CONTRACTOR INFORMATION (MUST BE CERTIFIED SEPTIC CONTRACTOR)

CONTRACTOR: _____ Contractor License No. _____

Mailing Address: _____ City: _____ Zip: _____

Phone: _____ E-Mail: _____

☐ San Mateo County Certified Percolation Tester No. OR Installer No _____

☐ Workmen's Compensation Insurance Coverage: _____

I certify that I have valid Workmen's Compensation Coverage or that I shall not employ any person in a manner so as to become subject to California Workmen's Compensation Laws for the work for which this permit is being requested.

Contractor Signature: _____ Date: _____

Property Owner/ Agent Signature: _____ Date: _____

(Attach a letter from the property owner providing authorization if signed by an agent)

3 surveyed plot plans MUST be submitted with this application. (Make plans to scale 1" = 20' preferred)
*Submit Method of Tank Abandonment/ Destruction on a separate sheet.
APPLICATION WILL BE VOID AFTER 1 YEAR FROM DATE OF SUBMITTAL

ENVIRONMENTAL HEALTH
SAN MATEO COUNTY
PROTECTING OUR HEALTH AND ENVIRONMENT

LANDUSE
Program Element Fee Guide/Schedule

PE 2699- Landuse Services/Hour	$167.00
PE 2667- Building Permit Review/Hour	$834.00
PE 2656- Planning Application Review	$834.00
PE 4210- Resubmittal Fee	$834.00

WELL

PE 4666- Well Drilling Permit	$1376.00
PE 4667- Well Abandonment/Destruction	$697.00
PE 4668- Certification (Pump Test)	$1394.00
PE 4670- Well Permit Extension (1 year)	50% Current Fee
PE 4672- Permit to Operate	$1533.00
PE 4678- Well Exception/Variance	$697.00
PE 4699- Other (Change of Contractor, hourly review/consultation)	$167.00

Ground Source Heat Exchange Well Bores:

PE 4686- from 1 to 3 bores	$1376.00
PE 4687- from 4 to 8 bores	$2751.00
PE 4688- from 9 to 13 bores	$4127.00
PE 4689- from 14 to 19 bores	$5502.00
PE 4690- from 20 to 29 bores	$6878.00
PE 4691- from 30 to 39 bores	$8253.00
PE 4692- from 40 to 49 bores	$9629.00

SEPTIC

PE 4208- Alt/ Press Dosed Annual	$434.00
PE 4209- Certification Fee (Soil Perc Tester/Installer)	$52.00
PE 4211- Tank Destruction	$881.00
PE 4212- Septic Exception/Variance	$697.00
PE 4213- Alternative Systems	$5003.00
PE 4214- Septic Tank Replacement (Same Location)	$881.00
PE 4216- Wet Weather Test	$960.00
PE 4217- Septic Permit Extension (1 year)	50% Current Fee
PE 4218- Site Exam	$1009.00
PE 4219- Repair/Alteration	$1601.00
PE 4220- Perc Test	$1836.00
PE 4221- Installation Permit <2500 ft^2 House Size	$1836.00
PE 4223- Installation Permit <3500 ft^2 House Size	$2794.00
PE 4224- Installation Permit >3501 ft^2 House Size	$3839.00
PE 4225- Permit Appeal	$288.00
PE 4226- Inspection Cancellation	$348.00
PE 4244- Septic Pumper Vehicle (Annual)	$640.00
PE 4245- Business Registration Annual (Septic Pumper)	$1416.00
PE 4260- Filing Fee/Water Test	$37.00
PE 4299- Other (Change of Contractor, hourly review/consultation)	$167.00

*Fees effective August 1, 2015 thru July 31, 2016

Updated: 08/01/2015

COUNTY OF SAN MATEO ENVIRONMENTAL HEALTH SERVICES DIVISION
2000 Alameda de las Pulgas, Suite 100
San Mateo, CA 94403
Telephone (650) 372-6200 Fax (650) 627-8244
www.smchealth.org

ENVIRONMENTAL HEALTH
SAN MATEO COUNTY

SEPTIC PUMPER TRUCKS and BUSINESS APPLICATION

Check box: (see Land Use Fee Guide/Schedule for Fee) Total Amount Paid $_____

☐ (PE 4244) Annual Fee per Vehicle Operating in San Mateo County $640.00 X _____ = $_____
# of Vehicles

☐ (PE 4245) Annual Fee for Septic Pumper Business Registration $1416.00

☐ Will NOT be Engaging in any Business within San Mateo County

Application for registration to engage in the business of cleaning septic tanks, chemical toilets, etc. As issued in accordance with Sections 25000 to 25010 of the State Health & Safety Code and San Mateo County Ordinance Code, Chapter 4 Section 9340

BUSINESS NAME	PHONE #
OWNERS NAME	FAX #
MAILING ADDRESS	
CONTACT PERSON	EMAIL ADDRESS

Names & Addresses of Partner(s):

_____ _____

_____ _____

List Vehicles Operating in San Mateo County (use additional paper if needed)

Year	Make	License Number	Capacity in Gallons

Is the Business Name, Address, Telephone Number & Capacity in Gallons printed on both sides of truck, with letters at least four inches high? □ Yes □ No

Location of discharge: _____

The undersigned agrees to conform to all conditions, orders and directions issued pursuant to above laws and to furnish monthly reports to all work done in County of San Mateo to the Environmental Health Services Division.

Signature: _____ Date: _____

SAN MATEO COUNTY ENVIRONMENTAL HEATLH
SEPTIC TANK AND CHEMICAL TOILET CLEANERS REPORT

COMPANY NAME: _____

COMPANY ADDRESS: _____

REPORT FOR THE MONTH OF: _____ **20____**

DATE:	NAME OF PROPERTY OWNER	ADDRESS WHERE WORK WAS COMPLETED	GALLONS PUMPED	WHERE CLEANING WERE UNLOADED

Return by the 12th of each month to
County of San Mateo
Environmental Health Services Division
2000 Alameda de las Pulgas, Suite 100, San Mateo, CA 94403

San Mateo County Environmental Health Services Division
Phone (650) 372-6200
Fax (650) 627-8244

2000 Alameda de las Pulgas, Suite 100
San Mateo, CA 94403
www.smchealth.org/landuse

SEPTIC TANK PUMPING AND INSPECTION REPORT

PUMPER COMPANY NAME: _____

JOB LOCATION: _____ **APN:** _____

OWNER: _____ **REQUESTED BY:** _____

REASON FOR PUMPING/INSPECTION:

☐ MAINTENANCE ☐ HAULAWAY ☐ SALE INSPECTION ☐ SYSTEM FAILURE ☐ REPAIR ☐ OTHER _____

☐ SLUDGE DISPOSAL LOCATION: _____

PROPERTY USE: ☐ HOME ☐ OTHER _____ OCCUPIED? YES ☐ NO ☐

SEPTIC TANK: SIZE _____ GALLONS PUMPED _____ BOTH COMPARTMENTS PUMPED? YES ☐ NO ☐

TYPE: REDWOOD_____ CONCRETE _____ POLY_____ FIBERGLASS _____ OTHER_____

CONDITION OF TANK	GOOD	FAIR	POOR	REPAIRS RECOMMENED
SEPTIC ELLS/TEES				
TANK TOP AND/OR LIDS				
SIDES/BOTTOM OF TANK				
BAFFLES				

OPERATIONAL LEVEL: HIGH_____ LOW_____ NORMAL_____DATE LAST PUMPED: _____

LEACHING SYSTEM

PRESENT OR PAST HIGH LEVEL IN TANK YES ☐ NO ☐

LIQUID FLOWBACK WHILE PUMPING? YES ☐ NO ☐

SIGNS OF SURFACING EFFLUENT ? YES ☐ NO ☐

SEPARATE GREYWATER DISCHARGE? YES ☐ NO ☐ TO SUMP ☐ ONTO GROUND ☐

OTHER SYSTEM COMPONENTS/NOTES:

_____

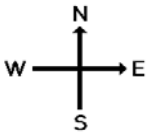
_____

_____

_____

_____

SYSTEM LOCATION (SKETCH OR DESCRIBE, WITH MEASURED DIMENSIONS AND DIRECTION OF NORTH; INCLUDED ANY PERTINENT FEATURES SUCH AS PAVED AREAS, SURFACING EFFLUENT, CREEKS, LARGE TREES, ETC.)



INSPECTION DATE: _____ **INSPECTED BY:** _____

COUNTY OF SAN MATEO
Environmental Health Services Division
2000 Alameda de las Pulgas, Suite 100, San Mateo, CA 94403
Phone (650) 372-6200 Fax (650) 627-8244

Environmental Health Review Application

**Fees subject to change*

Applicant:
Name:_____
Site Address:_____
City:_____Zip:_____
Phone #: _____

_____ Unincorporated
_____ Incorporated

Assessor's Parcel Number(s)
_____

Property Owner:
Name:_____
Address:_____
City:_____Zip:_____
Home #:_____
Business#: _____

Contractor/Architect:
Name:_____
Address:_____
City:_____Zip:_____
Phone #:_____

TYPES OF REVIEW	**FEES**
□ Planning Application Review Planning App #:_____	$ 834.00 (PE 2656)
□ Building Application Review Building App #: _____	$ 834.00 (PE 2667)
□ Other _____ _____ _____	$ _____
TOTAL:	$_____

Detailed Description of Work_____
_____
_____
_____

Owner or Authorized Representative:_____**Date:**_____
Please submit check payable to San Mateo County with this review application. This application is for Environmental Health Review only. Additional permits, site inspections from this office will require additional applications and/or fees.

SECTION 2
SITE INVESTIGATION REQUIREMENTS AND PROCEDURES

CONTENTS

SECTION 2
SITE INVESTIGATION REQUIREMENTS AND PROCEDURES

A. SITE EVALUATIONS FOR OWTS

Prior to approving the use of an OWTS, a site evaluation is required in all instances to allow proper system design and to determine compliance with the site suitability criteria specified in the San Mateo County OWTS Ordinance and this manual. Site evaluations shall be conducted by Environmental Health staff performed in accordance with the following general requirements and referenced attachments.

1. **General Site Features**

Site features to be determined by inspection shall include:

a. Land area available for treatment components and for primary and reserve dispersal fields;

b. Ground slope in the primary and reserve dispersal area(s) and in those areas within relevant setbacks of the proposed OWTS;

c. Location of cut banks, fills, or evidence of past grading activities, natural bluffs, sharp changes in slope, soil landscape formations, and unstable land forms within 100 feet of the primary and reserve dispersal area(s);

d. Location of wells, streams, and other bodies of water within 200 feet of the primary and reserve dispersal area(s); and

e. To the extent possible, the location of existing OWTS within 100 feet of the primary and reserve dispersal area(s).

2. **Soil Profiles**

a. Soil characteristics shall be evaluated by soil profile test pit observations. A minimum of one test pit in the most limiting area of the dispersal field area shall be required for this purpose. Additional soil profiles may be required if:

(1) the initial profile indicates conditions which do not provide sufficient information for design and/or determination of code compliance, or
(2) the area proposed for the dispersal fields cannot be adequately represented by a single soil profile test pit, or

(3) it is determined by Environmental Health that additional soil profile test pits are needed.

b. An augured test hole may be an acceptable alternative to a test pit where adequate soil profile can be determined given the limited visibility within the boring and where Environmental Health staff determines that:

(1) The use of a backhoe/excavator is impractical because of access or because of the fragile nature of the soils;
(2) It is necessary only to verify conditions expected on the basis of prior soils investigations; or
(3) It is done in connection with geotechnical investigations.

c. The following factors shall be observed and reported from the ground surface to a limiting condition, up to a minimum of three to five feet below the bottom of the proposed dispersal system. **Note that these observations must be made and reported by a <u>Qualified OWTS Design Professional</u>** (in compliance with California Business and Professions Code and California Health and Safety Code).

(1) Thickness and coloring of soil layers, soil structure, and texture according to United States Department of Agriculture (USDA) classification (see U.S. EPA Design Manual for Onsite Wastewater Treatment and Disposal Systems, 1980);
(2) Depth to a limiting condition such as hardpan, rock strata, impermeable soil layer, or saturated soil conditions;
(3) Depth to observed groundwater or soil mottling; and
(4) Other prominent soil features which may affect site suitability, such as coarse fragments, soil consistency, roots and pores, and moisture content.

3. **Soil Percolation Testing**

Determination of a site's suitability for dispersal of effluent and OWTS design shall be made by the completion of soil percolation testing in accordance with procedures detailed in Section 2.2.

4. **Depth to Groundwater Determination**

The anticipated highest level of groundwater in the primary and reserve area shall be estimated:

a. Base on the highest extent of soil mottling observed in the examination of soil profiles; or

b. By direct observation of groundwater levels during the time of year when the highest groundwater conditions are expected or known to occur, i.e., wet weather testing timeframe as defined by the Environmental Health (see Section 2.3 - Wet Weather Groundwater Observations).

Where there is a discrepancy between soil profile indicators (mottling) and direct observations, the direct observations shall govern.

5. **Geotechnical – Slope Stability Analysis**

For sites where the ground slope exceeds 20% or other geotechnical constraints exist, additional technical evaluation of slope stability, drainage, and other similar factors shall be required to verify that the proposed dispersal system will not degrade water quality, create a nuisance, affect soil stability or present a threat to the public health or safety (See Section 2.4 – Geotechnical Requirements).

6. **Cumulative Impacts**

For certain projects, typically non-residential and large flow OWTS, the completion of additional technical studies, termed “cumulative impact assessment”, may be required. This is to address the cumulative impact issues, mainly groundwater mounding and nitrogen loading, from OWTS that can result from such factors as the constituent levels in the wastewater (e.g., nitrogen content), the volume of wastewater flow, the density of OWTS discharges in a given area, and/or the sensitivity and beneficial uses of water resources in a particular location (See Section 2.5 – Cumulative Impact Assessment, and guidelines in Attachment A).

7. **Reporting**

All site evaluation information, including test results for primary and reserve dispersal areas, shall be submitted to the Environmental Health upon completion of the work (and a copy included with the OWTS installation permit application).

B. SOIL PERCOLATION TEST PROCEDURES

1. General

In accordance with the provisions of Section 4.84.115 of the San Mateo County Ordinance, the following standards have been developed for conducting percolation tests. Soil percolation testing must comply with these standards and the test results must satisfy the requirements for OWTS in Section 3 of this Manual before a permit to install/construct an OWTS will be issued or a building permit application approved.

Soil percolation tests other than those described below may be used with prior approval of Environmental Health, provided that such tests are verifiable and the results can be expressed in inches/hour for a twelve (12) inch deep test hole, twelve (12) inches in diameter.

2. Procedure for Standard 8-foot Deep Dispersal Trench

The following procedure shall be used where soil is acceptable for a drain field trench with a standard depth of eight (8) feet.

a. The standard soil percolation test of Environmental Health involves a backhoe excavation to a depth of four (4) to five (5) feet, with a slanted end-wall for ingress/egress. A minimum of six (6) test holes per building site in the area to be used for dispersal fields shall be provided. Three (3) holes must be in the primary area and three (3) must be in the proposed reserve area.

b. At the bottom of each excavation, a twelve (12) inch diameter hole must be dug to a depth of (12) inches.

c. The sides of the hole must be scratched or roughened to remove smeared surfaces and all loose materials removed from the hole. Two (2) inches of coarse clean sand or fine gravel must be added to the bottom of the hole to protect the bottom from scouring and sediment.

d. The 12-inch diameter hole must be filled with clear water and the water maintained in the hole for at least four (4) hours prior to the start of the test, normally on the afternoon of the day before the test. This presoak of the holes must be observed by Environmental Health staff.

e. The test is begun by adding clear water to bring the depth of water to approximately eight (8) to ten (10) inches over the sand/gravel. From a fixed reference point, the drop in water level is measured at thirty (30) minute

intervals for four (4) hours, refilling six inches over the gravel as necessary. The drop that occurs during the final thirty (30) minute period is used to calculate the percolation rate. This rate must be a stabilized rate over the last three (3) readings. The testing shall continue until a stabilized rate has occurred. The final three (3) 30-minute intervals must be observed by Environmental Health staff.

f. For the soil percolation rate to be considered "stabilized", variation in last three readings must be as follows:

(1) For maximum readings up to 1 inch in last ½-hour, three readings must vary by less than 35% of maximum of the three readings;

(2) For maximum reading greater than 1-inch and less than 5-inches, three readings must vary by less than 25% of maximum of the three readings; and

(3) For maximum reading greater than 5-inches in last ½-hour, three readings must vary by less than 15% of maximum of the three readings.

g. All soil percolation test holes, trenches and excavations must be filled upon completion of testing.

h. All soil percolation test data shall be verified and submitted to Environmental Health staff upon completion of the test.

i. The soil percolation rating (size) for the area represented by the soil percolation test holes, to be used in design of the OWTS, is determined by Environmental Health staff once the soil percolation test has been completed. This information will be provided in writing, and must be included on any plot plans with the application for the installation permit.

3. **Auger/Drilled Method**

A twelve (12) inch diameter hole drilled to a depth of six (6) feet may be used as an alternative soil percolation testing method. All other aspects of the soil percolation test are the same for this alternate method as described above for the standard test method. While this method will be accepted, the applicant or his agent should realize the difficulties inherent in this method, which are unfavorable to the successful conduct of the soil percolation test.

Care must be exercised in:

- addition of the two (2) inches of sand or fine gravel to the bottom of the hole six (6) feet deep so as to evenly cover and protect the bottom soil from erosion during the test;

- scratching or equivalent roughening of the bottom and side wall so as to return it to approximately the original percolation capacity since drilling usually causes a smearing or sealing of the borehole walls;

- introduction of water into the hole so as to avoid turbulence, erosion, and increased turbidity of the test water;

- construction of the borehole and the conduct of the test to avoid sloughing of soil from the sidewalls into the bottom of the borehole; and

- maintenance of a maximum depth of twelve (12) inches of water.

4. **Soil Percolation Test Methods to Evaluate for Shallower Trenches**

Both test methods as described above can be used for measuring percolation rates in soil for distribution trenches shallower than the standard 8-foot deep trench, including for mid-depth and/or chambered (rockless) trenches. However, the target depth at which to measure percolation rates may need to be shallower than the 4- to 6-foot depth range measure as described above. The targeted depth interval should be described and justified with the application for percolation testing for such projects.

5. **Soil Percolation Test Methods to Evaluate for Shallow Subsurface Drip**

There are a variety of methods for determining soil percolation rates and associated application rates when evaluating and designing for shallow subsurface drip distribution systems. While rough soil percolation rates and application rates can be estimated based on soil lithology and structure, it is always preferred that these rates are confirmed with direct-reading field measurements. Therefore, methods proposed to be used for direct-reading field testing of soil percolation rates and associated application rates must be submitted to Environmental Health for evaluation/approval prior to use.

6. **Use and Interpretation of Results**

For comparison with applicable OWTS standards, soil percolation test data from the various test holes should be evaluated and interpreted as follows:

a. Calculate average of all test holes in inches per hour (also MPI) to verify that the rate falls within the acceptable range and to determine system design/sizing requirements.

b. If there are one or two failing test results (i.e. too fast or too slow), three options are available:

(1) Include the failing result(s) in the calculated average and evaluate/design the system accordingly;

(2) Exclude the area represented by the failing test hole(s), and design the system according to the average of the other test holes. Split the difference between the locations of failing and nearby passing test holes to determine the area to be excluded; or

(3) Conduct additional testing in an alternate area or to refine the exclusion area represented by the failed test result(s).

c. If there are more than two failing test results, additional testing will be required to define the limits of acceptable soil areas for the dispersal system.

7. **Observation of Soil Percolation Test**

Soil percolation test data must be verified and the soil percolation test card must be signed by a representative of Environmental Health to be valid. The person conducting the soil percolation test shall notify the Environmental Health office two (2) working days prior to the time of such test to permit Environmental Health staff to observe portions of the test as needed.

With permission from Environmental Health staff, soil percolation testing may commence prior to arrival of Environmental Health field inspector observing the soil percolation testing. However, Environmental Health staff must be present for at least the final three readings collected. All readings taken during the soil percolation test must be submitted to Environmental Health for incorporation in the site file.

8. **Observation of Soil Conditions Three (3) to Five (5) Feet Below Proposed Standard Drainfield Trench Bottom**

An eleven (11) to thirteen (13) foot deep test hole shall be excavated in the presence of Environmental Health staff to determine soil conditions three (3) to five (5) feet or greater below the bottom of the proposed dispersal trench. If it is determined that seasonal ground water conditions exist at a depth within three (3) to five (5) feet of the bottom of the proposed dispersal trench or field, wet weather or seasonal groundwater testing shall be required using methods described later in this section.

9. **Reporting of Results**

When a Qualified OWTS Design Professional submits data for review regarding onsite wastewater treatment and disposal systems, they shall interpret such soil percolation tests, borings and similar information in terms of conformance with current standards. The Qualified OWTS Design Professional shall also state that geological conditions, historical and seasonal ground water fluctuations, topography and other factors covered in the regulations have been investigated and based on this information, in their professional judgment, the OWTS will be in compliance with the County OWTS Ordinance and this Manual.

10. **Soil Percolation Testing for Proposed Subdivision**

A Qualified OWTS Design Professional shall submit all percolation test data for each of the proposed parcels of the subdivision. They shall interpret such soil percolation tests, borings and similar information in terms of conformance with current regulations. They shall also state fluctuations, topography and other factors covered in the regulations have been investigated and, based on this information, in their professional judgment, the OWTS will be in compliance with the County OWTS Ordinance and this Manual.

C. WET WEATHER GROUNDWATER OBSERVATIONS

County Ordinance Sections 4.84.120 and 4.84.165 specify minimum vertical separation requirements between the bottom of the dispersal trench and seasonal high groundwater levels. If general observations during soil percolation testing and evaluation of soil profile are not definitive of seasonal high groundwater conditions, wet weather testing may be required. Wet weather testing is designed to verify compliance with applicable groundwater separation requirements from base of effluent distribution to seasonal high groundwater.

Procedures for wet weather groundwater observations are as follows:

1. **Timeframe.** Wet weather groundwater observations during any given year:

   a. can commence once 50% of the annual rainfall has been obtained for a particular area, as measured for the water year from October 1st – September 30th, per rainfall data as reported by the National Weather Service; and

   b. can continue through March 20th of the water year, unless the observation period is extended by Environmental Health based on the rainfall conditions for the given year.

2. **Testing Methods.** Wet weather groundwater observations may consist of one of the following. Alternate methods other than those described below may be used, with approval of Environmental Health prior to the testing, provided that such methods are verifiable.

   a. For immediate monitoring: An 11- to 13-foot deep hole shall be drilled or excavated under the supervision of a qualified professional, who will observe the static level of infiltration of groundwater (if any) in the hole; or

   b. For extended monitoring, a piezometer (observation monitoring well) of appropriate depth and screened interval may be permitted through Environmental Health and installed at the site. Proper installation and abandonment of the piezometer must be completed under permit from Environmental Health.

3. **Where Required.** Determination of whether an area requires wet weather groundwater observations will be as follows:

   a. When an area has been known to have shallow levels of groundwater, as previously observed; and
   b. When conditions in the soil (i.e., mottling, moisture) indicate that shallow groundwater levels have occurred in the past.

D. GEOTECHNICAL REQUIREMENTS

OWTS dispersal systems, including repairs to existing dispersal systems, shall not be permitted where steep or unstable slopes, rock outcropping, cuts in banks, underground clay lenses or similar topographic and geologic conditions could be expected to result in the surfacing of the liquid effluent or cause instability in the slope. Requirements and investigation procedures established to ensure

appropriate consideration of geotechnical issues in the siting, design and operation of OWTS are described below.

1. **Ground Slope**

   a. Any OWTS dispersal system located on ground slope greater than 20% shall require the completion of a geotechnical slope stability study as described below under Geotechnical Report Requirements.

   b. For conventional (gravity) dispersal systems, maximum ground slope in the dispersal system area shall not exceed thirty-five (35) percent.

   c. Any dispersal system located on ground slope greater than 35% shall require the use of pressure distribution or subsurface drip dispersal to distribute the wastewater effluent uniformly throughout the dispersal area. Both of these dispersal methods fall in the category of "Alternative OWTS".

   d. No dispersal system will be permitted to be located where ground slope is 50% or greater.

2. **Proximity to Cuts, Embankments, and Steep Slopes**

   a. Dispersal systems shall not be installed where deep cuts exist, which can be expected to later cause sewage seepage from dispersal systems installed at a higher elevation.

   b. Dispersal systems shall be located in conformance with the following horizontal setbacks from geological/landscape features.

      (1) Setback equal to 4 x height of a cut or embankment; the required setback distance shall be at least 25 feet and no more than 50 feet.

      (2) Setback from Steep Slopes (lower in elevation than OWTS) shall be at least 25 feet where the height of the steep slope is less than 12 feet, and at least 50 feet where the height of the steep slope is greater than 12 feet. Steep slope is considered to be land with a slope of greater than or equal to fifty percent (50%). Where there is clearly discernable embankment and/or break in slope, the setback should be treated as Cut or Embankment. Any setback of less than 50 feet must be confirmed by appropriate geotechnical evaluation, including but not limited to

investigation of slope stability, evidence of rock or impermeable soil layers intersecting slope, seeps, or spring.

(3) 100 feet from an unstable land mass. Horizontal setback distance from unstable land mass may only be reduced in accordance with recommendations provided in a Geotechnical Report prepared by a California civil engineer or professional geologist consistent with this Manual.

3. **Fill**

No dispersal of effluent shall be allowed within fill.

4. **Trench Spacing**

In sloping terrain, spacing between dispersal trench sidewalls shall be increased beyond minimum design requirements as follows:

a. For dispersal trenches less than the standard 8-feet deep, minimum trench spacing (based on twice the trench sidewall) shall be increased by one (1) foot for each 5% incremental increase in ground slope above 20%; and

b. Where geological conditions present special constraints, an increase in standard trench spacing requirements may be necessary in accordance with recommendations contained in the Geotechnical Report.

5. **Geotechnical Report**

“Geotechnical Report” means a written document used to communicate soil and geologic site conditions, interpretations, analysis and recommendations pertinent to the design, installation and operation of an OWTS in areas of steeply sloping terrain or near landscape features of geologic concern. A primary emphasis of the Geotechnical Report is the evaluation of potential slope stability issues that may be affected by or result in impacts to the operation of the proposed OWTS. An additional purpose of a Geotechnical Report may be to provide site-specific recommendations regarding appropriate horizontal setbacks from cuts, steep slopes and unstable land masses.

Where slopes in excess of twenty percent (20%) are proposed for use, substantiating detailed geotechnical data shall be provided to demonstrate that

wastewater surfacing and/or slope instability will not occur throughout the primary and designated reserve dispersal system areas or down-slope areas. Data shall include, but not be limited to:

- topography (by means of contours);
- subsurface lithological and structural data;
- all existing or proposed grading, including OWTS dispersal fields;
- accurate cross-sections showing all soil bedrock zones, etc.;
- seasonal groundwater elevation determination;
- surface drainage and soil erosion hazards; and
- any other appropriate factors.

For slopes of greater than thirty-five percent (35%), the Geotechnical Report shall include static and seismic analyses with safety factors of 1.5 and 1.2+, respectively, using residual strengths under saturated conditions.

As applicable, the Geotechnical Report shall present recommendations addressing horizontal setbacks to geologic/landscape features of concern, trench spacing, drainage and erosion control, and other pertinent design or construction issues.

Environmental Health staff may rely upon a third-party consultant to assist in the review of a Geotechnical Report. Costs for retaining a third-party consultant would be the responsibility of the project applicant.

E. CUMULATIVE IMPACT ASSESSMENT

For certain projects, typically non-residential and large flow OWTS, the completion of additional technical studies, termed “cumulative impact assessment”, may be required. This is to address the cumulative impact issues (mainly groundwater mounding and nitrogen loading) from OWTS that can result from such factors as the constituent levels in the wastewater (e.g., nitrogen content), the volume of wastewater flow, the density of OWTS discharges in a given area, and/or the sensitivity and beneficial uses of water resources in a particular location (e.g., proximity to impaired water bodies or vernal pools). These issues are not necessarily addressed by conformance with standard OWTS siting and design criteria.

Cumulative impact assessment is mandatory for any OWTS with projected wastewater flows of 2,500 gpd or more.

Cumulative impact assessment is not required for normal residential OWTS, regardless

of the type of system (conventional or alternative), except where the design flow exceeds 1,000 gpd (more than 6 bedrooms) or as may otherwise be determined by Environmental Health staff for certain situations or geographical areas of the county (e.g., Impaired Areas).

Cases where cumulative impact assessments shall be required are listed in Table 1 below**.**

Additionally, Environmental Health staff reserves the right to require the completion of a cumulative impact assessment in any case where, special circumstances related to the size, type, or location of the OWTS warrant such analysis.

Requirements and guidelines pertaining to cumulative impact assessments are detailed in Attachment A of this Section.

Table 1
Projects Requiring Cumulative Impact Assessment*

Type of Project	Geographic Location	Lot Size (acres)	Design Wastewater Flow (gpd)	Groundwater Mounding Analysis	Nitrate Loading Analysis
Residence, including 2nd dwelling unit	Countywide	-	< 1,000 (<7 bedrooms)	No	No
	Impaired Areas	**TBD - Per TMDL/Advanced Protection Mgt Criteria**			
Residence, including 2nd dwelling unit	Countywide	< 1	1,000 + (7+ bedrooms)	No	Yes
	Impaired Areas	**TBD - Per TMDL/Advanced Protection Mgt Criteria**			
Multiunit and Non-residential	Countywide	< 1	1,000 +	No	Yes
		-	1,500+	Yes	No
		-	2,500+	Yes	Yes
	Impaired Areas	**TBD - Per TMDL/Advanced Protection Mgt Criteria**			
Subdivisions	Countywide	2.5+	-	No	No
		<2.5	-	No	Yes
	Impaired Areas	**TBD - Per TMDL/Advanced Protection Mgt Criteria**			
Any OWTS <200 feet from a vernal pool	Countywide	-	-	Yes**	Yes**

*Note: Environmental Health may also require cumulative impact assessment based on project or site specific conditions.

** The hydrological and water quality analysis requirements may be modified depending on site specific conditions and the extent to which the OWTS discharge contributes flow to catchment area supporting the vernal pool.

ATTACHMENT A
GUIDELINES FOR CUMULATIVE IMPACT ASSESSMENT

A. **GENERAL PROVISIONS.** San Mateo County Ordinance Code, Section 4.84.180 authorizes Environmental Health to require the completion of additional technical studies ("cumulative impact assessment") for OWTS proposals in situations where cumulative impacts on groundwater and/or watershed conditions are of potential concern. Cumulative impacts from OWTS may occur due to such factors as the constituent levels in the wastewater (e.g., nitrogen content), the volume of wastewater flow, the density of OWTS discharges in a given area, and/or the sensitivity and beneficial uses of water resources.

Cumulative impact assessments to address potential concerns shall be conducted in accordance with the procedures and criteria outlined in this Manual. The results of the assessment shall be submitted for review by Environmental Health staff and may be the basis for denial, modification or imposition of specific conditions for the OWTS proposal, in addition to other siting and design criteria.

The findings from cumulative impact evaluations may also be used for the County designation of certain geographical areas as "Impaired Areas", under the provisions of San Mateo County Ordinance, Section 4.84.170. This may result in the establishment of additional protections related to OWTS siting, design, installation, monitoring and reporting in such areas.

B. **CUMULATIVE IMPACT ISSUES.** The primary issues to be addressed in cumulative impact assessments will normally include the following:

1. Groundwater Mounding. A rise in the water table, referred to as "groundwater mounding", may occur beneath or down-gradient of OWTS as a result of the concentrated or high volume of hydraulic loading from one or more systems in a limited area; and

2. Groundwater Nitrate Loading. Discharges from OWTS contain high concentrations of nitrogen that may contribute to rises in the nitrate level of local and regional aquifers.

   For individual cases, Environmental Health staff may identify and require analysis of cumulative impact issues other than those listed above which, could pose potential water quality, public health, or safety risks.

C. **QUALIFICATIONS.** Required cumulative impact assessments shall be performed by or under the supervision of one of the following licensed professionals:

1. California Civil Engineer; or

2. California Professional Geologist

Additionally, the licensed professional assuming responsibility for the cumulative impact assessment should have training and experience in the fields of water quality and hydrology.

D. **CASES REQUIRING CUMULATIVE IMPACT ASSESSMENT.** Cases where cumulative impact assessments shall be required are listed in Table 1 below. Additionally, Environmental Health staff reserves the right to require the completion of a cumulative impact assessment in any case where special circumstances related to the size, type, or location of the OWTS warrants such analysis.

Table 1
Projects Requiring Cumulative Impact Assessment*

Type of Project	Geographic Location	Lot Size (acres)	Design Wastewater Flow (gpd)	Groundwater Mounding Analysis	Nitrate Loading Analysis
Residence, including 2nd dwelling unit	Countywide	-	< 1,000 (<7 bedrooms)	No	No
	Impaired Areas	**TBD - Per TMDL/Advanced Protection Mgt Criteria**			
Residence, including 2nd dwelling unit	Countywide	< 1	1,000 + (7+ bedrooms)	No	Yes
	Impaired Areas	**TBD - Per TMDL/Advanced Protection Mgt Criteria**			
Multiunit and Non-residential	Countywide	< 1	1,000 +	No	Yes
		-	1,500+	Yes	No
		-	2,500+	Yes	Yes
	Impaired Areas	**TBD - Per TMDL/Advanced Protection Mgt Criteria**			
Subdivisions	Countywide	2.5+	-	No	No
		<2.5	-	No	Yes
	Impaired Areas	**TBD - Per TMDL/Advanced Protection Mgt Criteria**			
Any OWTS <200 feet from a vernal pool	Countywide	-	-	Yes**	Yes**

*Note: Environmental Health may also require cumulative impact assessment based on project or site specific conditions.

** The hydrological and water quality analysis requirements may be modified depending on site specific conditions and the extent to which the OWTS discharge contributes flow to catchment area supporting the vernal pool.

E. **METHODS.**

1. Groundwater Mounding Analysis
   a. Analysis of groundwater mounding effects shall be conducted using accepted principles of groundwater hydraulics. The specific methodology shall be described and supported with accompanying literature references, as appropriate.
   b. Assumptions and data used for the groundwater mounding analysis shall be stated along with supporting information. A map of the project site showing the location and dimensions of the proposed system(s) and the location of other nearby OWTS, wells and relevant hydrogeological features (e.g., site topography, streams, drainage channels, subsurface drains, etc.) shall be provided.
   c. The wastewater flow used for groundwater mounding analyses shall be the design sewage flow, unless supported adequately by other documentation or rationale.
   d. Groundwater mounding analyses shall be used to predict the highest rise of the water table and shall account for background groundwater conditions during the wet weather season.
   e. All relevant calculations necessary for reviewing the groundwater mounding analysis shall accompany the submittal.
   f. Any measures proposed to mitigate or reduce the groundwater mounding effects shall be presented and described as to their documented effectiveness elsewhere, special maintenance or monitoring requirements or other relevant factors.
   g. For OWTS located <200 feet from and within the catchment area of a vernal pool, an annual water balance analysis will also ordinarily be required to assess the extent of potential OWTS impacts on vernal pool hydrology.

2. Nitrate Loading
   a. Analysis of nitrate loading effects shall, at a minimum, be based upon construction of an annual chemical-water mass balance. The specific methodology shall be described and supported with accompanied literature references as appropriate.
   b. Assumptions and data for the mass balance analysis shall be stated,

along with supporting information. Such supporting information should include, at a minimum:

(1) climatic data (e.g., precipitation, evapotranspiration rates);
(2) groundwater occurrence, depth and flow direction(s);
(3) background groundwater quality data, if available;
(4) soil conditions and runoff factors;
(5) wastewater characteristics (i.e., flow and nitrogen content); and,
(6) other significant nitrogen sources in the impact area (e.g., livestock, other waste discharges, etc.)

c. A map of the project siting showing the location and dimensions of the proposed system(s) and the location of other nearby OWTS, wells and relevant hydrogeological features (e.g., site topography, streams, drainage channels, subsurface drains, etc.) shall be provided.
d. The wastewater flow (average) used for nitrate loading analyses shall be as follows, unless adequately supported by other documentation or rationale:
   (1) For individual residential systems: 75 gpd/bedroom;
   (2) For multi-family residential systems and other non-residential systems: average monthly wastewater flow for the proposed OWTS;
e. Minimum values used for the total nitrogen concentration of septic tank effluent shall be as follows, unless supported adequately by other documentation or rationale:
   (1) Residential wastewater: 50 mg/l
   (2) Non-residential wastewater: as determined from sampling of comparable system(s) or from literature values.

   Environmental Health staff may require the use of more conservative values than cited above if the values are judged (by EH) not likely to be representative of the proposed system(s).
f. All relevant calculations necessary for reviewing the nitrate loading analysis shall accompany the submittal.
g. Any measures proposed to mitigate or reduce the nitrate loading effects shall be presented and described as to their documented effectiveness elsewhere, special maintenance or monitoring requirements or other relevant factors.

F. EVALUATION CRITERIA

1. Groundwater Mounding. The maximum acceptable rise of the water table for short periods of time (e.g., one to two weeks) during the wet weather season, as estimated from groundwater mounding analyses, shall be as follows:

a. General Requirement for all OWTS. Groundwater mounding shall not result in more than a 50-percent reduction in the required minimum depth to seasonally high groundwater per the County Ordinance Sections 4.84.120 and 4.84.165, as applicable, for the type of OWTS and site conditions. For example, where a 5-foot vertical separation to the native groundwater level is required, a short-term “mounding” rise of the water table to within 2.5 feet of trench bottom would be acceptable during peak wet weather conditions. Where a 3-foot vertical separation is required, a short-term rise to within 1.5 feet of trench bottom would be acceptable.
b. Requirement for Large Systems. Notwithstanding (a) above, for all OWTS with design flows of 2,500 gpd or more (i.e., "large systems"), the groundwater mounding analysis shall demonstrate that the minimum required groundwater separation, per the County Ordinance Sections 4.84.120 and 4.84.165, will be maintained beneath the system during peak wet weather conditions.

Environmental Health staff may require, in any individual case or in specific geographical areas (e.g., designated impaired areas), a minimum of 2 feet of groundwater clearance (“mounded” conditions) where deemed necessary for protection of public health, or based upon specific requirements or recommendations of the applicable California Regional Water Quality Control Board.

Criteria for assessing hydrological impacts to vernal pools will be considered on a case-by-case basis. Environmental Health staff may rely upon Regional Water Quality Control Board staff or a third-party consultant to assist in the review. Costs for retaining a third-party consultant would be the responsibility of the project applicant.

2. Nitrate Loading. Minimum criteria for evaluating the cumulative nitrate loading from proposed OWTS shall be as follows:

a. For Areas Served By Individual Water Wells.
(1) Existing Lots of Record: New OWTS on existing lots of record shall not cause the groundwater nitrate-nitrogen concentration to exceed 7.5 mg-N/L at the nearest existing or potential point of groundwater withdrawal (e.g., water well location);
and

(2) New Subdivisions: The total loading of nitrate from new subdivisions shall not result in an average groundwater nitrate-nitrogen concentration over the geographical extent of the subdivision that exceeds 7.5 mg-N/L.

b. For Areas Not Served by Individual Water Wells.

(1) Existing Lots of Record: OWTS installed on existing lots of record shall not cause the groundwater nitrate-nitrogen concentration to exceed 10 mg-N/L at the nearest existing or potential point of groundwater withdrawal (e.g., water well location).

and

(2) New Subdivisions. The total loading of nitrate from new subdivisions shall not result in an average groundwater nitrate-nitrogen concentration over the geographical extent of the subdivision that exceeds 10 mg-N/L.

Environmental Health staff may require, in any individual case or specific geographical areas (e.g., designated impaired areas), more stringent nitrate-nitrogen compliance criteria where deemed necessary for protection of public health, or based upon specific requirements or recommendations of the applicable California Regional Water Quality Control Board.

Criteria for assessing nitrate or other water quality impacts to vernal pools will be considered on a case-by-case basis. Environmental Health staff may rely upon Regional Water Quality Control Board staff or a third-party consultant to assist in the review. Costs for retaining a third-party consultant would be the responsibility of the project applicant.

FORMS AND FIGURES

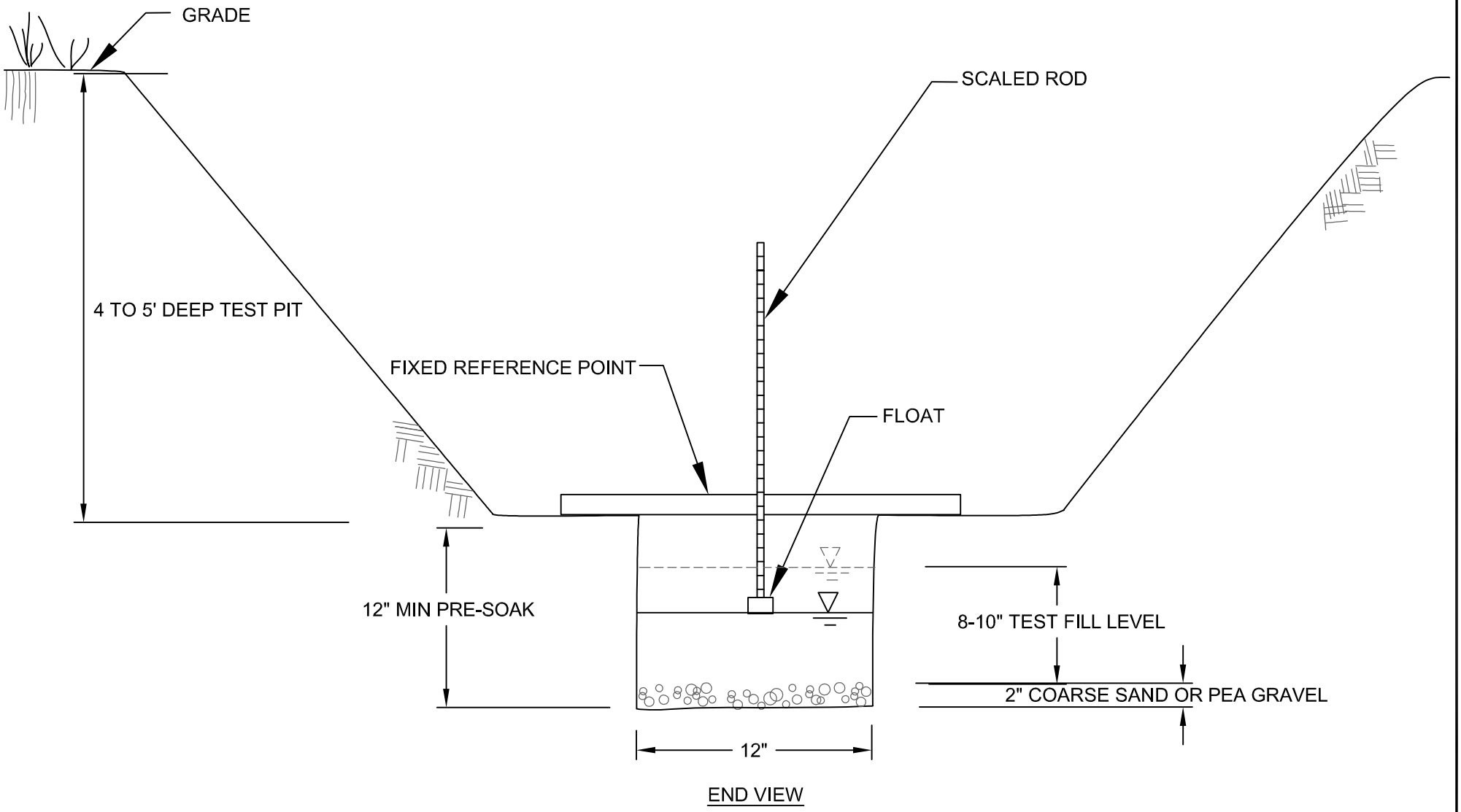


DIAGRAM OF A PERCOLATION TEST

FIGURE

2-1

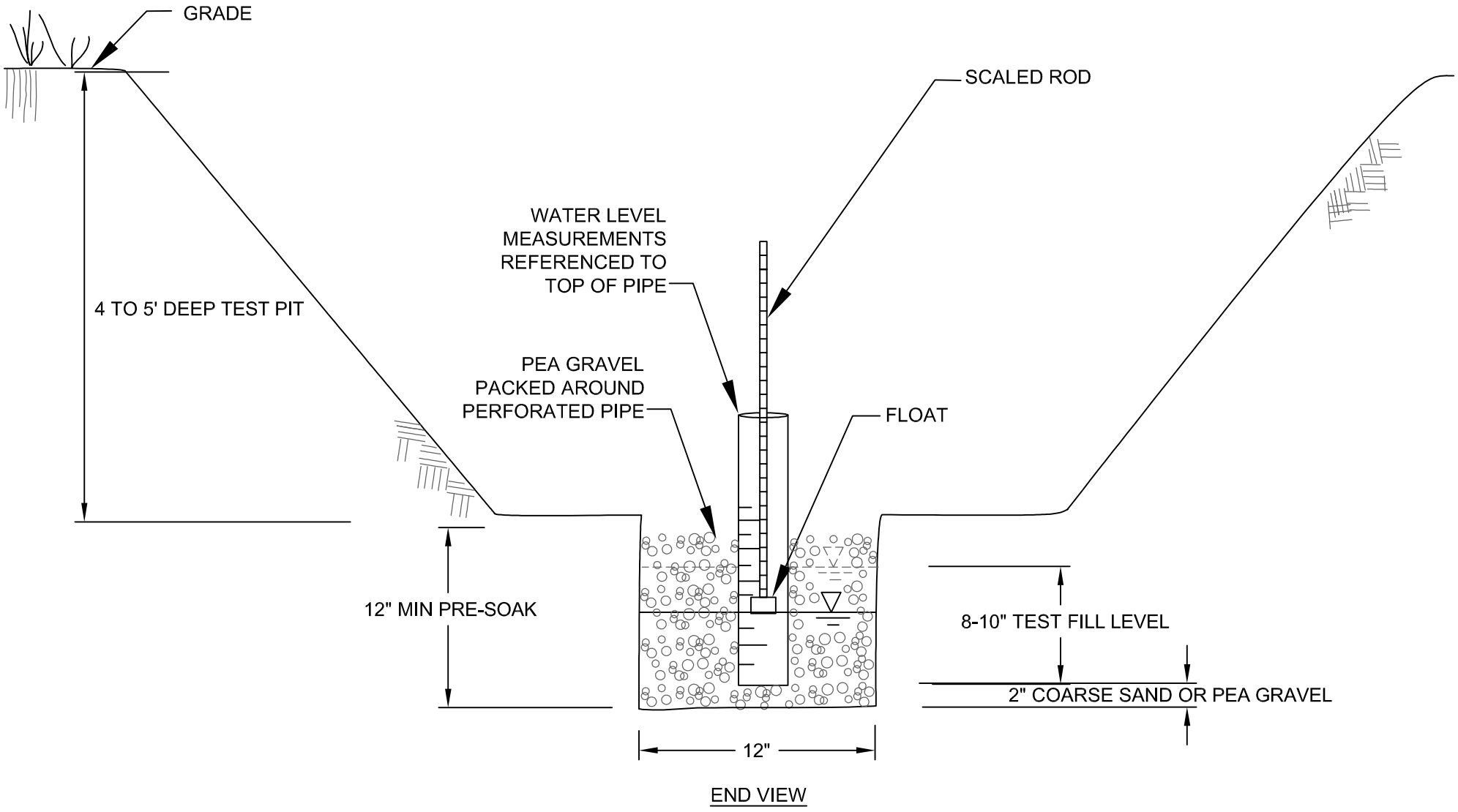


DIAGRAM OF A GRAVEL-PACKED PERCOLATION TEST

FIGURE

2-2

SAN MATEO COUNTY
ENVIRONMENTAL HEALTH SERVICES DIVISION

MEASUREMENTS

½ HOUR INTERVALS	READINGS	HOLE #1	HOLE #2	HOLE #3	HOLE #4	HOLE #5	HOLE #6
1	FINISH						
	START						
	DIFF.						
2	FINISH						
	START						
	DIFF.						
3	FINISH						
	START						
	DIFF.						
4	FINISH						
	START						
	DIFF.						
5	FINISH						
	START						
	DIFF.						
6	FINISH						
	START						
	DIFF.						
7	FINISH						
	START						
	DIFF.						
8	FINISH						
	START						
	DIFF.						

SITE INFORMATION

Site Address:_____ APN:_____

Size Of Parcel:_____ Subdivision Number:_____

Soil Log:_____ Water Source:_____

Depth To Ground Water:_____

Wet Weather Testing Required? ☐ YES ☐ NO

Tested By:_____ Tester #:_____

Observed in Field By:_____ Date:_____

SECTION 3
DESIGN AND CONSTRUCTION REQUIREMENTS FOR CONVENTIONAL OWTS

CONTENTS

SECTION 3
DESIGN AND CONSTRUCTION REQUIREMENTS FOR CONVENTIONAL OWTS

A. DESCRIPTION

Per San Mateo County OWTS Ordinance, a "Conventional OWTS" means a type of OWTS consisting of a septic tank for primary treatment of sewage followed by gravity flow to a system of drainfield trenches for subsurface dispersal of effluent into the soil.

B. SITING CRITERIA

The following minimum siting criteria must be met for approval of any conventional OWTS.

1. Accessible. OWTS must be located to be easily accessible for maintenance and repairs.
2. Within Property Boundaries. The septic tank, dispersal system, and other components of the OWTS shall be located within the boundaries of the parcel upon which the structure requiring the system is built.
3. Soil Depth. Soil of an accepted quality to receive effluent from the dispersal system shall extend a minimum depth of three (3) feet below the bottom of the dispersal trenches.
4. Soil Fill. No dispersal of effluent shall be allowed within soil fill.
5. Soil Cover. All dispersal systems shall have at least twelve (12) inches of soil cover.
6. Underground Utilities. Underground utility lines, conduits or trenches, including irrigation lines, shall not be installed across dispersal systems, nor shall they be located near dispersal systems so as to pose a potential preferential pathway for effluent.
7. Vertical Groundwater Separation. Minimum required vertical separation distance between trench bottom and groundwater shall be 5 feet.
8. Areas of Flooding. OWTS shall not be located in low-lying areas subject to annual flooding on the basis of flood mapping or historical evidence acceptable to Environmental Health staff.
9. Compacted Areas. OWTS shall not be located in areas subject to vehicular traffic or other areas subject to significant compaction, including areas of concentrated livestock use.
10. Ground Slope. Maximum ground slope in the conventional dispersal system area shall not exceed thirty-five (35) percent. Additionally, for any site where the

ground slope exceeds twenty percent, approval shall be dependent upon completion of a geotechnical report as provided in the County Ordinance and Section 2 of this Manual.

11. Soil Percolation Rate. The average soil percolation rate in the proposed conventional dispersal field area shall not be faster than 12 inches per hour (5 minutes per inch) nor slower than 1.00 inches per hour (60 minutes per inch), determined in accordance with procedures prescribed in Section 2 of this Manual (soil percolation rates of less than 1-inch per hour require pressure dosing as described in Section 4 of this Manual).
12. Horizontal Setbacks. Minimum horizontal setback distances from various site features to OWTS components shall be as listed in Table 3-1 below:

Table 3-1. Minimum Horizontal Setback Distances

Site Feature	Minimum Setback Distance (feet)	
	To Septic Tank	To Dispersal Field
Building or foundation	5	10
Septic tank	N/A	10
Property line -From properties served by wells or springs -From properties served by approved public water supply	50 10	50 10
Swimming pool or spa	25	25
Road easement, pavement or driveway	5	5
Watercourses -General (from top bank) -Between 1200 to 2500 feet from a public or State small water system intake -Within 1200 feet downstream from a public or State Small water system intake	100 100 100	100 200 [1] 400 [1]
All wells and domestic/irrigation springs	100	100
Public and State small water system supply wells or springs	150	150
Reservoirs (from high water mark) -General -Within 1200 feet from a public or State small water system intake	200 200	200 400
Groundwater interceptor trench or drain	5	25
Stormwater infiltration trench, gallery or well	25	25
Drainage ditch or swale (from edge of flow path) -General, lined or unlined -Evidence of sustained wet conditions or ponding	25 25	25 50
Cuts or embankments (from top of cut)	10	4 x h [2,3]
Steep Slopes (lower in elevation than OWTS)[4] -Height of steep slope less than 12 feet -Height of steep slope greater than 12 feet	10 10	25 [3] 50
Unstable land mass [5]	100 [4]	100 [4]

[1] For areas tributary to and upstream of water supply intake; setback distance measure from high water mark. Exceptions may be allowed per SWRCB OWTS Policy, as follows:

(a) for replacement OWTS, comply with the maximum extent practicable and incorporate supplemental treatment unless Environmental Health finds no impact or significant threat to water source;
(b) for new OWTS on pre-existing lot of record (pre-May 13, 2013), comply to maximum extent practicable and incorporate supplemental treatment for pathogens per County Ordinance, Section 4.84.145 and prescribed by Environmental Health in this Manual.

[2] 'h' equals the height of cut or embankment, in feet. The required setback distance shall not be less than twenty five (25) feet nor more than fifty (50) feet.

[3] Steep slope is considered to be land with a slope of greater than or equal to fifty percent (50%). Where there is clearly discernible embankment and/or break in slope, treat as Cut or Embankment. Setback of less than 50 feet must be confirmed by appropriate geotechnical evaluation, including but not limited to investigation of slope stability, evidence of rock or impermeable soil layers intersecting slope, seeps, or springs.

[4] Setback distance may be reduced in accordance with recommendations provided in a geotechnical report prepared by a California civil engineer or professional geologist consistent with guidelines prescribed by Environmental Health in Section 2 of this Manual.

C. WASTEWATER FLOWS FOR OWTS DESIGN

1. Single Family Residences and Second Units. Wastewater flows used for design of OWTS for single family residences and second units are based on a factor of 150 gal/day per bedroom. The septic tank and dispersal systems for a primary residence and secondary dwelling unit shall be determined (as described in Section 3.D. and 3.E. below) based on total bedroom count where the primary residence and secondary dwelling unit share the same OWTS, and determined independently where the primary residence and secondary dwelling unit use separate OWTS.

2. Multiunit Residences and Non-residential Facilities. Wastewater flows used for the design of OWTS for multi-unit residences and non-residential projects shall be developed based on full consideration of projected activities, occupancy, and facilities. Guidelines provided in the 2002 US EPA Onsite Wastewater Treatment Systems Manual (Chapter 3) shall be used as the primary reference in estimating

design wastewater flows. For facilities not covered in the 2002 US EPA Onsite Wastewater Treatment Systems Manual, wastewater design flow shall be estimated based on either: (a) other appropriate literature references for the type of facility proposed; or (b) documented wastewater flow monitoring data for a comparable facility. Additionally, Environmental Health staff may consider case-by-case adjustment(s) of literature values based on more specific documented wastewater flow monitoring data. In all cases, the design proposal shall include sufficient technical information to support the proposed design flow estimate. Notwithstanding the above, minimum design flow for any OWTS shall not be less than 150 gpd.

3. Flow Equalization. Flow equalization is the process of controlling the rate of wastewater flow through an OWTS by providing surge capacity storage and timed-dosing of the incoming flow. Installed downstream from the septic tank, it allows peak surges in wastewater flow (e.g., from a weekend event) to be temporarily stored and metered into the treatment system and/or dispersal field at a relatively even ("average") rate over an extended number of days (e.g., during the subsequent week). This generally aids OWTS performance.

   Flow equalization may be used for non-residential and mixed use facilities that experience significant, regular and predictable fluctuations in wastewater flows. Examples of applicable facilities include, but are not limited to:

   - Churches;
   - Schools; and
   - Special event venues.

   Where flow equalization is proposed to be incorporated in an OWTS the following apply:

   - the septic tank capacity shall be sized based on the peak daily flow for the facility;
   - the design flow used for sizing supplemental treatment unit(s) and/or the dispersal system may be based on the equalized ("average") flow rate rather than the peak daily flow rate for the facility;
   - engineering calculations and specifications must be submitted substantiating the proposed design and operation of the flow equalization system; and
   - an operating permit (per the County Ordinance Section 4.84.155 and this Manual) will be required.

D. SEPTIC TANK REQUIREMENTS

1. **Materials for Construction**. Reinforced concrete or other durable materials that are not subject to excessive corrosion or decay and which will produce a watertight tank shall be used. Interior surfaces of porous tanks require a coating, such as a water-based acrylic similar to Conseal CS-55 or a flexible polyurethane/polyuria elastomer similar to BASF's ElastoCast S55090R resin, or similar compound to minimize corrosion, typically meeting requirements of 40CFR261.4 for solid waste management. The coating shall extend from the top of the tank to six (6) inches below the water line.

   Existing wooden septic tanks do not meet current septic code and must be replaced with appropriate septic tanks.

2. **Size of tank.** All septic tanks must have a minimum capacity of fifteen hundred (1,500) gallons or as specified below, whichever is greater.

   a. For single-family residences and second dwelling units, minimum septic tank capacity shall be based on bedroom count as follows:
      - 1 - 4 bedrooms - 1,500 gallons
      - 5 – 6 bedrooms - 2,000 gallons
      - 7 – 8 bedrooms - 2,500 gallons
      - 9 – 10 bedrooms - 3,000 gallons

   b. For multifamily and non-residential systems, minimum septic tank capacity shall be equal to at least two (2) times the peak daily wastewater flow for the facility served. Where a septic tank is employed in connection with a supplemental treatment system, the septic tank shall also meet minimum sizing requirements of the treatment system manufacturer, as applicable.

3. **Design.**

   a. Septic tanks for private residences shall be one (1) piece comprised of two (2) compartments with the first compartment containing two-thirds of the total tank volume.

   b. Septic tanks installed to serve other than individual residential structures shall meet the same requirements specified for private residences in (a) above. However, for larger flow OWTS exceptions will be permitted allowing the use of multiple tanks instead of a single (one-piece) tank.

   c. Each tank shall be structurally designed to withstand all anticipated loads, stress and weight. Tanks subjected to vehicular traffic shall be traffic-rated to State Department of Transportation Standard H20-44 truck loading standards.

Complete plans and design calculations shall be submitted for approval prior to installation.

d. All septic tanks shall be 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.

e. The outlet of the septic tank shall be fitted with an effluent filter capable of screening solids in excess three-sixteenths (3/16) of an inch in diameter and conforming to NSF/ANSI Standard 46 or as otherwise approved by Environmental Health staff.

f. Septic tank designs that differ from the above requirements may be considered by Environmental Health staff if supported by appropriate technical analysis demonstrating equal or better septic tank functionality and performance.

4. **Location and Installation**.

a. The septic tank shall be located in a place accessible for vacuum pumping. Each compartment shall be provided with an access port extending at least to grade and covered with watertight, weight-bearing covers. Access openings shall be locked or otherwise secured to prevent unauthorized access.

b. Where a setback variance is granted, a septic tank may be permitted closer than 5 feet, or under driveways provided it is traffic-rated and the septic tank is provided with a metal sewer access ring and cover over both compartments.

c. No pumping of sewage from the house/building to the septic tank shall be permitted; gravity flow only shall be utilized.

d. Tanks shall have a minimum of eight (8) inches of soil cover; however, as a minimum, tank access risers shall extend to grade.

e. All connections from building to septic tank must conform to construction standards as required by the County or City building official, as applicable.

f. Water-tightness Testing. All new septic tank installations and modifications to existing septic tanks shall undergo water-tightness testing as follows:

(1) New Tanks. For new tank installations, the testing shall be done with the risers in place and the inlet and outlet pipes plugged. The tank shall be filled with water to a level extending a minimum of two (2) inches into the risers, and monitored for a 1-hour period, with no measurable drop in the water level.

(2) Existing Tanks. For existing tanks, the tank shall be filled with water to a level even with the invert of the outlet pipe, and monitored for a 1-hour period, with no measurable drop in water level. However, in cases where the groundwater level is known or estimated to rise above the level of the outlet pipe during any time of the year, the water-tightness test shall be conducted following the procedure for new tank installations (i.e., by filling the tank with water into the risers).

E. DISPERSAL SYSTEM REQUIREMENTS

1. Trench Specifications.

a. Width. The width of the conventional dispersal system trench shall be a minimum of eighteen (18) inches and a maximum of twenty four (24) inches.

b. Depth and cover. The depth of the standard conventional dispersal system trench shall be eight (8) feet deep with six (6) feet of properly graded clean ¾- to 1½-inch rock fill beneath the distribution pipe (see Dispersal System Sizing – Residential) and extending at least two (2) inches above the top of the distribution pipe. The drain rock shall be covered with a layer of filter fabric and then with twelve (12) to eighteen (18) inches of uncompacted native soil. Trenches of greater than 8 feet depth may require a variance. No conventional dispersal system trench shall have less than 1 foot of rock beneath the distribution pipe.

c. Trench Spacing.

(1) The minimum distance between standard (8-feet deep) dispersal system trenches shall be fifteen (15) feet, measured horizontally from the edges of adjacent trenches.

(2) For trench designs less than 8-feet deep, the minimum horizontal spacing between adjacent trenches shall be equal to two (2) times the sidewall depth of the trench; but in no case less than 6 feet.

(3) For sloping terrain, minimum trench spacing in conditions (1) and (2) above shall be increased by one (1) foot for each 5% incremental increase in slope above 20%.

(4) Where geological conditions indicate, an increase in the above spacing requirements may be necessary.

(5) Designated replacement trenches must maintain the same spacing from other trenches, whether installed or simply designated for potential replacement value.

d. Diversion Valve. The total dispersal system shall be divided into two (2) equal lengths preceded by a diversion valve or equivalent device of approved design to allow for alternate use of each half of the dispersal system.

e. On Contour. Each half of the dispersal system shall, whenever possible, be located on one contour (one elevation).

f. Piping. Three (3) inch minimum diameter solid pipe schedule 40 PVC or stronger shall be used between the septic tank and dispersal system and between units of dispersal system trenches.

g. Minimum/Maximum Length. Minimum length for a trench shall be twenty five (25) feet. Maximum length shall be one hundred twenty five (125) feet for gravity flow systems.

h. Materials. The standard trench shall have six (6) feet of properly graded clean rock fill of ¾ to 1½ inch size below the standard perforated drain pipe and extending at least two (2) inches above the top of the perforated drain pipe. The rock fill shall be covered with a protective layer of filter fabric and then with twelve (12) to eighteen (18) inches of lightly compacted (e.g., approximately 85%) native topsoil. Potential alternate materials, along with complete specifications, may be proposed to Environmental Health for consideration. Use of such alternate materials may require a variance with applicable fee.

2. **Dispersal System Sizing – Residential.**
Dispersal system sizing for single-family residential systems considers a standard 8-ft deep trench with 6 feet of drain rock beneath the distribution piping. For shallower trenches the equivalent infiltrative area is calculated based on the side-wall area beneath the distribution pipe, not counting the base of trench. Main house residential installations and main house with secondary dwelling unit using the same OWTS shall be in accordance with the following:

a. For stabilized percolation rates of at least two (2) inches per hour but less than twelve (12) inches per hour:
(1) Up to three bedrooms – two lines each of seventy (70) linear feet;
(2) Each additional bedroom – add twenty (20) linear feet to each line.

b. For stabilized percolation rates between one (1) inch per hour and one and ninety-nine hundredths (1.99)inches per hour:
(1) Up to three bedrooms – two (2) lines each of one hundred twenty five (125) feet;
(2) Each additional bedroom – add forty (40) feet to each line.

c. For stabilized percolation rates between three-fourths (0.75) and ninety-nine hundredths (0.99) inches per hour:
   (1) Up to three bedrooms – two (2) lines each of one hundred eighty (180) feet;
   (2) Each additional bedroom – add sixty (60) feet to each line.

d. Dispersal systems located in soils demonstrating percolation rates of between three-fourths (0.75) and ninety-nine hundredths (0.99) inches per hour shall utilize pressure dosing to distribute wastewater uniformly. See Section 4 of this Manual (Alternative OWTS) for additional requirements applicable to pressure distribution trench systems.

e. No individual onsite wastewater treatment and disposal system which requires percolation of wastewater into the ground shall be approved where the stabilized percolation rate is less than three-fourths (0.75) inch per hour or more than twelve (12) inches per hour.

f. Dispersal systems of lesser effective depths (<6 feet beneath distribution pipe) but equivalent effective sidewall infiltrative area may be permitted subject to the approval of Environmental Health.

g. 100% reserve area equivalent to and separate from the proposed primary dispersal system area is required.

3. **Dispersal System Sizing – Second Dwelling Units (separate OWTS).** Dispersal system sizing for second dwelling units considers a standard 8-ft deep trench with 6 feet of drain rock beneath the distribution piping. For shallower trenches the equivalent infiltrative area is calculated based on the side-wall area beneath the distribution pipe, not counting the base of trench. Secondary dwelling units of one (1) or two (2) bedrooms using a stand-alone OWTS (not connected to the main house OWTS) shall be in accordance with the following:
   a. For stabilized percolation rates of two (2) inches per hour but less than twelve (12) inches per hour:
      (1) One bedroom (or studio) – two lines each of thirty (30) linear feet;
      (2) Two bedrooms – two lines each of fifty (50) linear feet.

   b. For stabilized percolation rates between one (1) inch per hour and one and ninety-nine hundredths (1.99)inches per hour:
      (1) One bedroom (or studio) – two lines each of forty five (45) linear feet;

(2) Two bedrooms – two lines each of eighty five (85) linear feet.

c. For stabilized percolation rates between three-fourths (0.75) and ninety-nine hundredths (0.99) inches per hour:
   (1) One bedroom (or studio) – two lines each of sixty (60) linear feet;
   (2) Two bedrooms – two lines each of one hundred twenty (120) linear feet.

d. The requirements in Section 3.E.2.d. through g. above apply to second dwelling unit installations.

4. **Dispersal System Sizing – Multifamily and Non-Residential.** Dispersal system sizing for multi-family and non-residential installations shall be in accordance with the following:

a. Design Flow. Design wastewater flow used for determining the required square footage and length of dispersal system trench shall be determined in accordance with the criteria in Paragraph C – Wastewater Flows for OWTS Design above; and

b. Wastewater Application Rates. The wastewater application rate(s) used for determining the required infiltrative surface area and overall trench length shall be based upon representative soil percolation test results for the soil zone corresponding with trench bottom depth, and the criteria in Table 3-2.

c. General Dispersal System Requirements. The requirements in Section 3.E.2.d. through g. above apply to multifamily and non-residential installations.

Table 3-2
Wastewater Application Rates for Drain Field Trench Sizing[1]
For Multifamily and Non-residential Installations

Percolation Rate		Wastewater Application Rate (gpd/ft^2)
Inches /Hr	Min per Inch	
> 12	< 5	Not Permitted
12.0	5	1.20
6.0	10	0.80
2.5	24	0.60

2.0	30	0.56
1.5	40	0.49
1	60	0.35
0.75	80	0.20
< 0.75	> 80	Not Permitted

[1] Interpolate between reference values for other percolation rates; see attached table for expanded listing of interpolated values.

d. Effective Infiltrative Area.

(1) Standard Requirement. For trench sizing, the "effective infiltrative area" shall be limited to four (4) square feet per lineal foot of trench length, counting only trench sidewall area below the invert of the perforated distribution pipe.

(2) Deep Trench Exception. Under certain (favorable) soil and site conditions where deeper dispersal trench (e.g., up to 8-feet deep) construction is acceptable; the effective infiltrative surface may be increased up to a maximum of eight (8) square feet per lineal foot. This exception is limited to OWTS dispersal sites where: (a) ground slope is <20%; and (b) soil percolation rate is in the range of 2 inches per hour (30 mpi) to 12 inches per hour (5 mpi).

e. Trench Length Calculation. Required trench length for 100% capacity dispersal field shall be calculated as follows:

Trench Length, L = Q / (R*A)

Where:

Q = Design (peak) wastewater flow, gpd
R = Wastewater application rate, in gpd/ft^2
A = Total infiltrative area per lineal foot of trench, in ft^2 ($4ft^2$ standard)

f. Dual System Requirement. Total dispersal trench capacity shall be provided for (2) 100% fields (primary and secondary) each sized per (d) above. Both primary and secondary fields shall be installed, and shall be equipped with an approved (manual) diversion device to allow alternating use of the two fields, typically switching between fields every 6 to 12 months.

5. **Trench Construction.**

a. Both the perforated drain tile pipe and the trench bottom shall be level.

b. Perforated pipe shall be a minimum of 2,000 lb. Standard crush weight ASTM F810-8149232 or greater and shall be capped at the ends.

c. Soil of an accepted quality to receive effluent from the drain field shall extend a minimum of three (3) feet below the dispersal system.

d. Capped observation standpipes shall be installed at the end of each dispersal system trench, and extend from the bottom of the trench to ground level. The standpipe shall not be connected to the drain line.

e. No dispersal of effluent shall be allowed within soil fill material.

f. The dispersal system shall not be located under any paving or in an area subject to vehicular traffic.

g. Underground utility lines, conduits or trenches, including irrigation lines, shall not be installed in or across dispersal systems, nor shall they be located near dispersal systems so as to pose a potential pathway for effluent.

h. Trenches shall be constructed when the soil is dry. If moisture still remains in portions of the soil resulting in a smearing (sealing) effect on the sidewalls by the excavating equipment, the sidewalls shall be adequately scarified to restore the soil to its original drainage capacity.

i. Trenches shall not be left without adequate cover overnight if rock fill is not added the same day as excavation.

j. Appropriate erosion control measures must be employed during any excavation or earth movement activities.

k. Environmental Health staff shall be notified for inspection at least twenty four (24) hours prior to the excavation of trenches.

6. **Construction Inspection.** At a minimum, inspection of conventional OWTS installation should include the items listed below. Joint inspection by the designer, contractor, and Environmental Health may be required.
    a. Pre-construction inspection where the construction staking or marking of the various system components is provided and construction procedures discussed.

b. Open trench inspection of dispersal trench dimensions and conditions.

c. Drain rock and perforated pipe materials and placement.

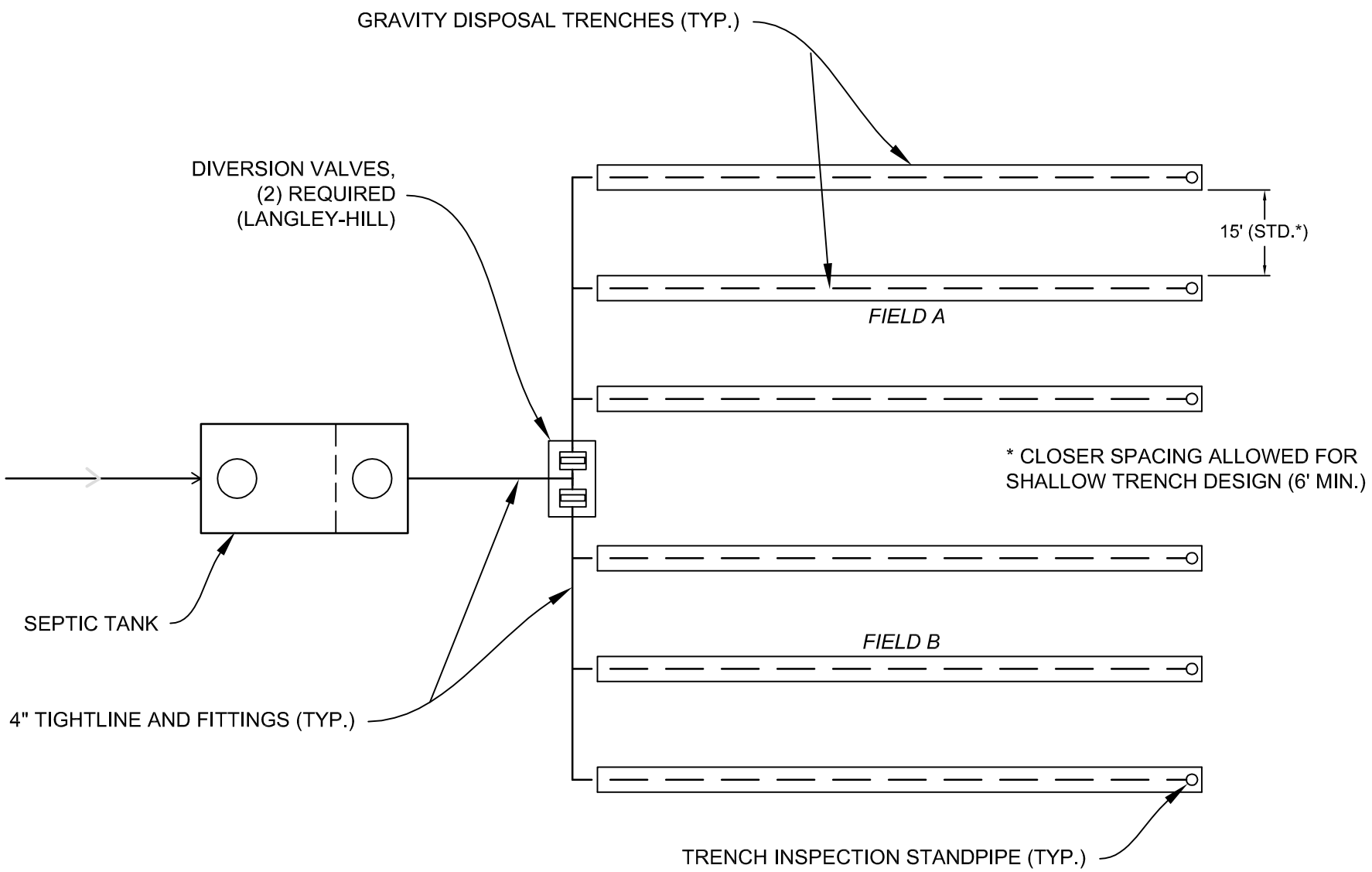
d. Location and proper installation of diversion valve(s).

e. Location, size, materials, and water tightness testing of septic tank.

f. Final inspection to verify that all construction elements are in conformance with the approved plans and specifications, and final trench backfill/cover and erosion control has been completed.

Any field changes to the approved OWTS design shall be documented in a set of "as-built" drawings supplied to Environmental Health by the system designer, which shall be required before final written notice of installation approval is issued by Environmental Health.

FORMS AND FIGURES



NOTE: ADDITIONAL 100% RESERVE AREA TO BE PROVIDED
(NOT SHOWN)

CONVENTIONAL GRAVITY TANK AND DRAINFIELD SCHEMATIC

FIGURE 3-1

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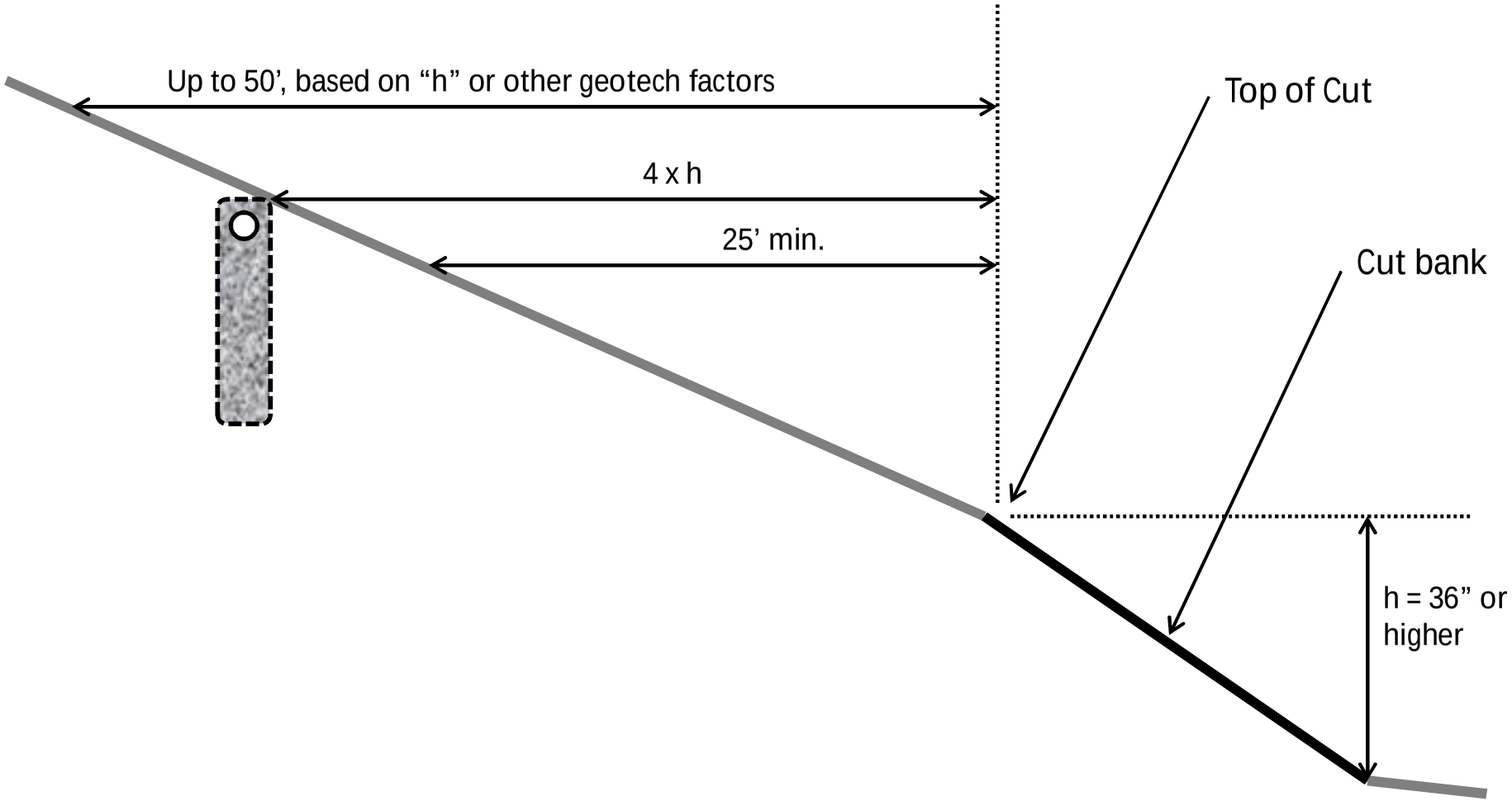
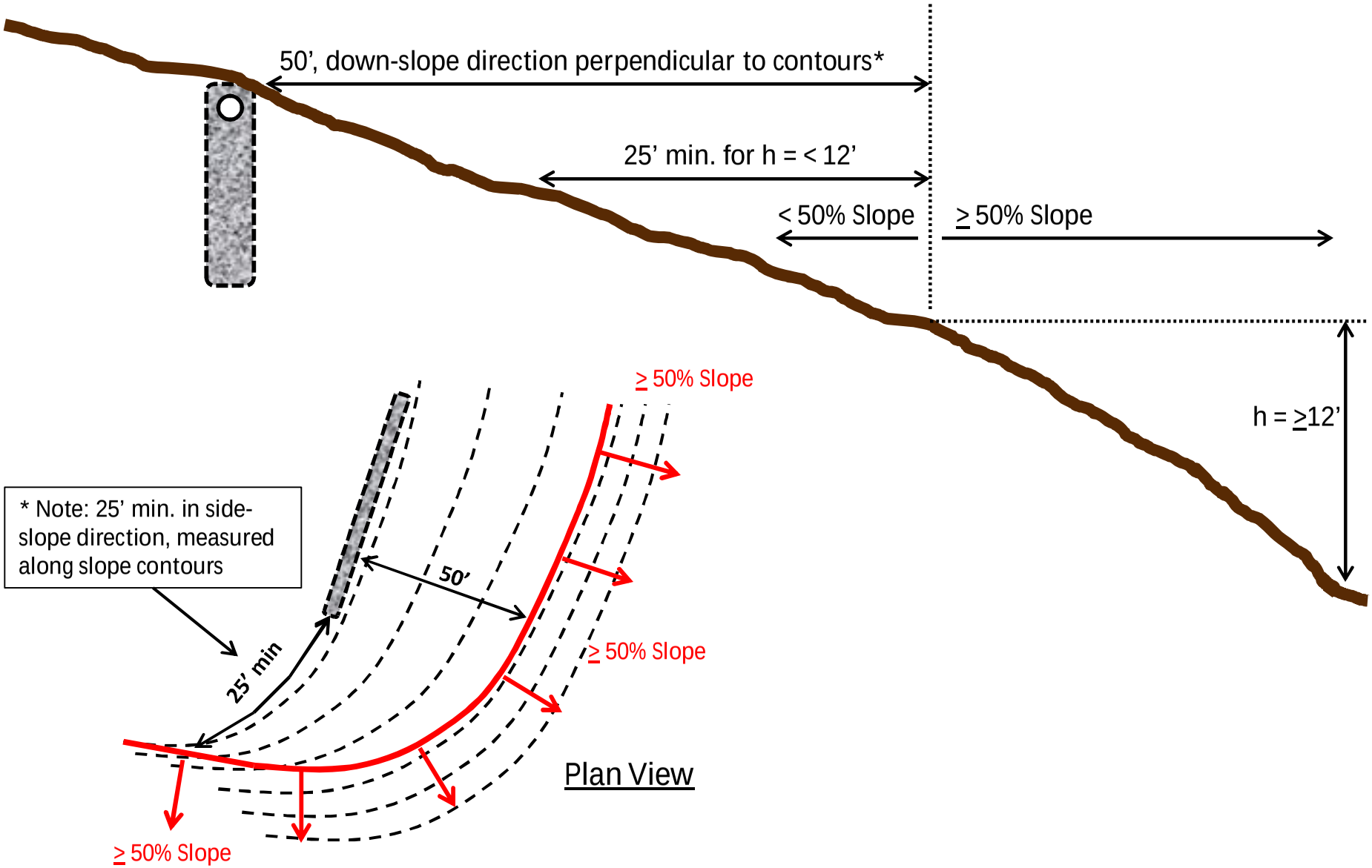


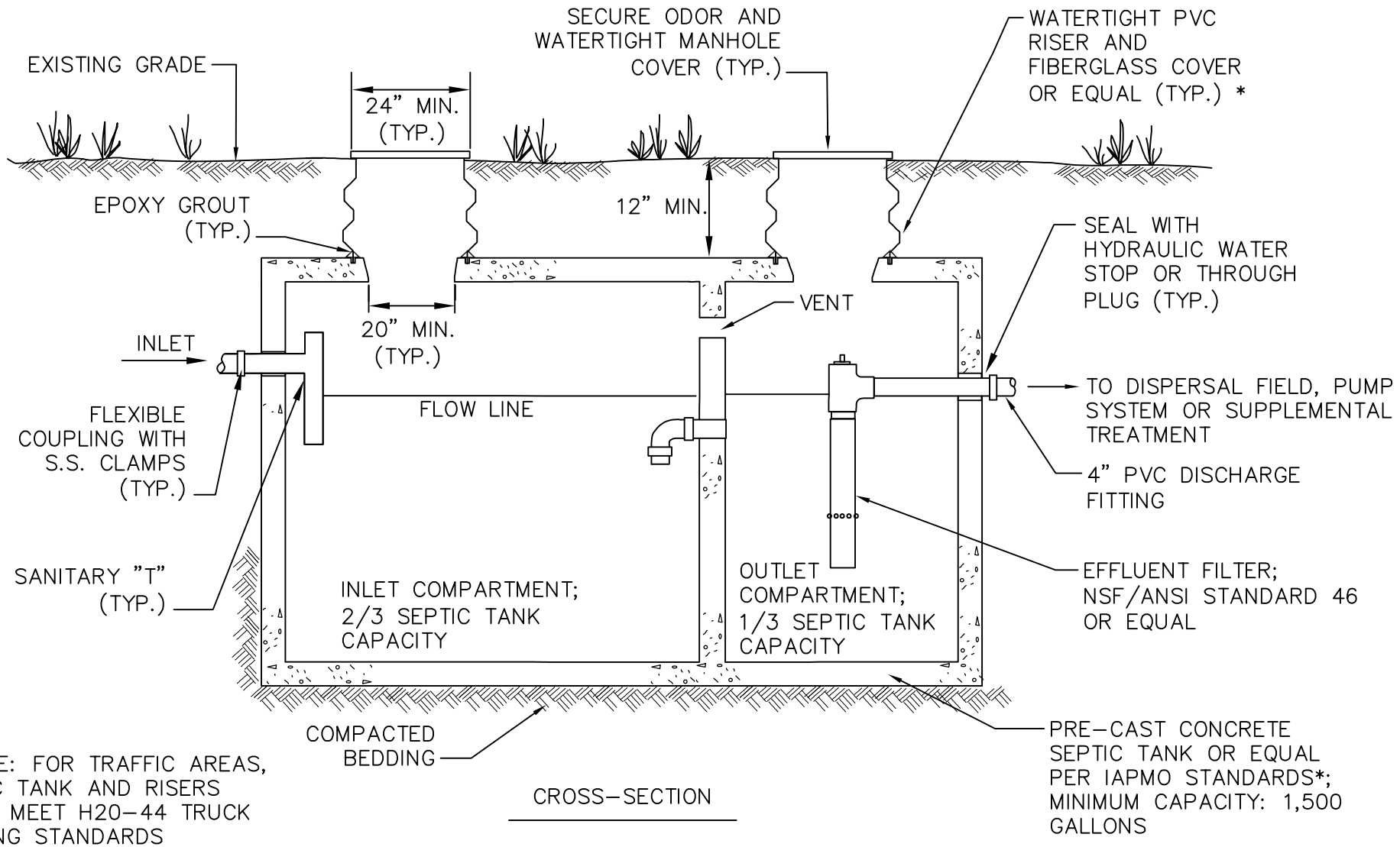
Setback to Cut or Embankment

FIGURE
3-2



Setback to Slope of 50% or Greater

FIGURE
3-3



* NOTE: FOR TRAFFIC AREAS, SEPTIC TANK AND RISERS SHALL MEET H20-44 TRUCK LOADING STANDARDS

CROSS-SECTION

TYPICAL SEPTIC TANK

FIGURE

3-4

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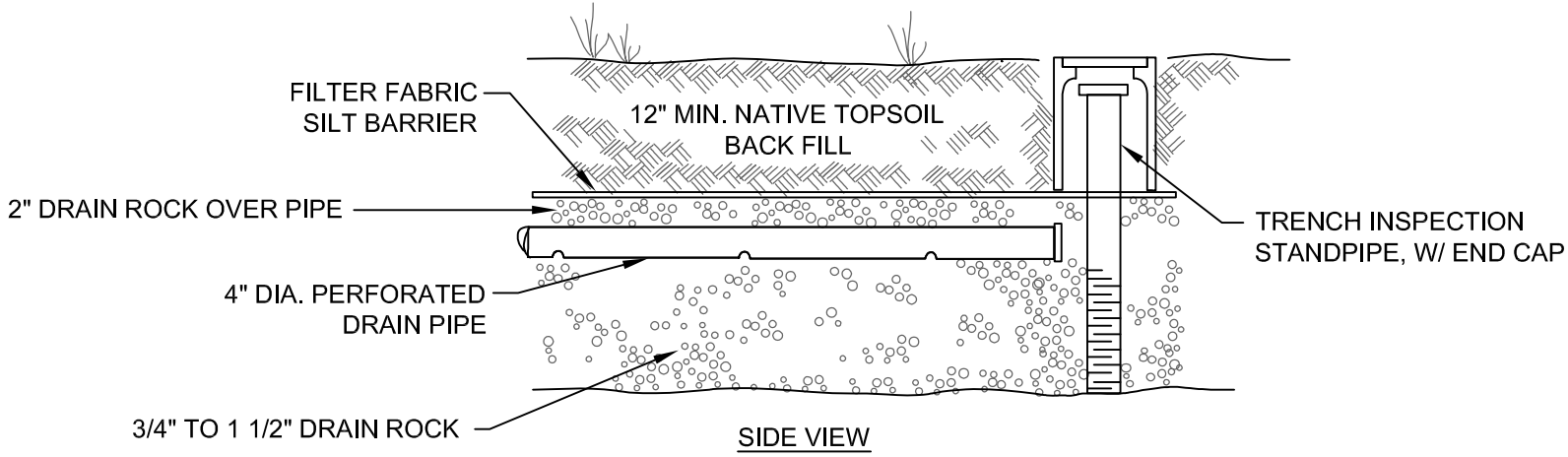
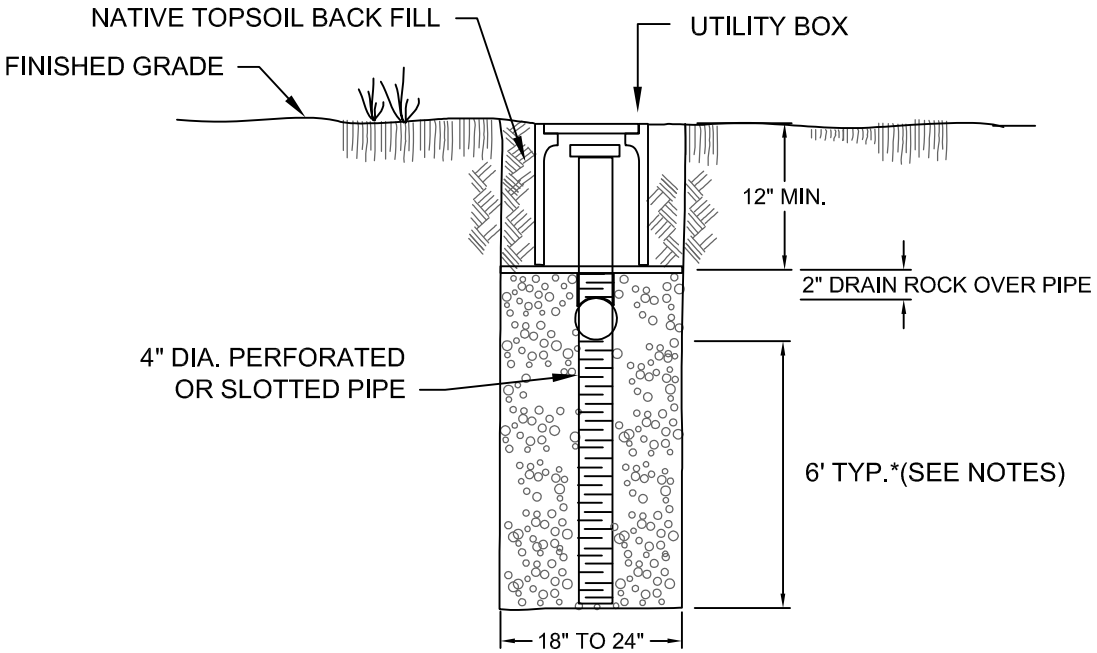


SIDE VIEW



END VIEW

NOTES:

1. FOR RESIDENTIAL OWTS, DRAIN FIELDS OF LESSER DEPTHS (<6 FT. SIDEWALL DEPTH) BUT EQUIVALENT OVERALL SIDEWALL AREA MAY BE PERMITTED SUBJECT TO THE APPROVAL OF ENVIRONMENTAL HEALTH.

2. FOR MULTI-FAMILY AND NON-RESIDENTIAL OWTS:

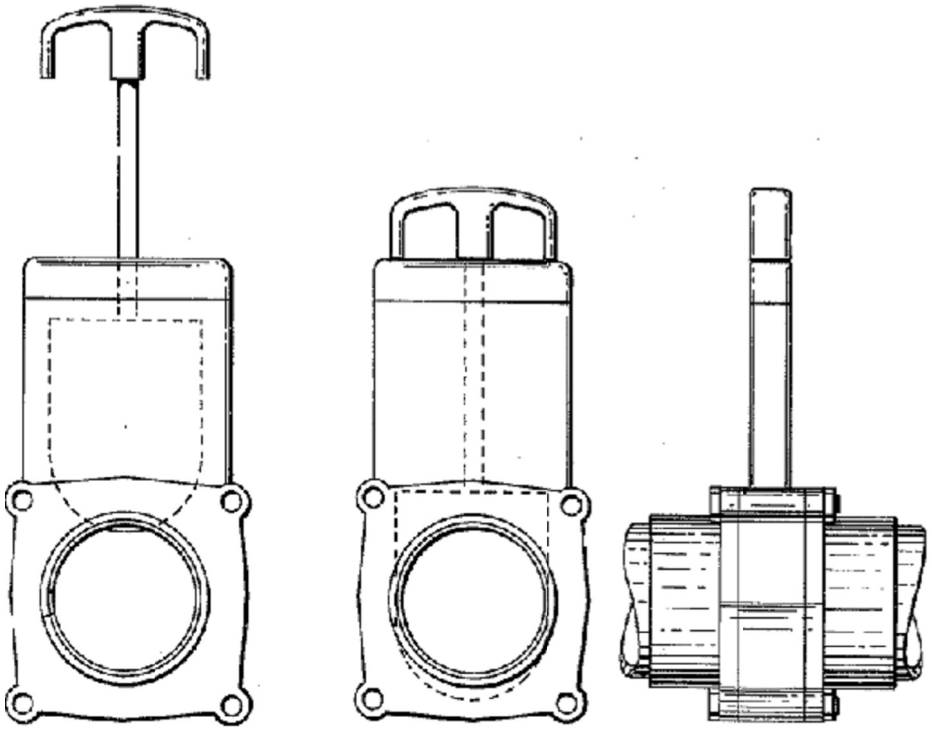
- THE "EFFECTIVE INFILTRATIVE AREA" SHALL BE LIMITED TO FOUR (4) SQUARE FEET PER LINEAL FOOT OF TRENCH LENGTH, COUNTING ONLY TRENCH SIDEWALL AREA BELOW THE INVERT OF THE PIPE;

- UNDER CERTAIN (FAVORABLE) SOIL AND SITE CONDITIONS, THE EFFECTIVE INFILTRATIVE SURFACE MAY BE INCREASED TO UP TO A MAXIMUM OF EIGHT (8) SQUARE FEET PER LINEAL FOOT.

STANDARD GRAVITY TRENCH

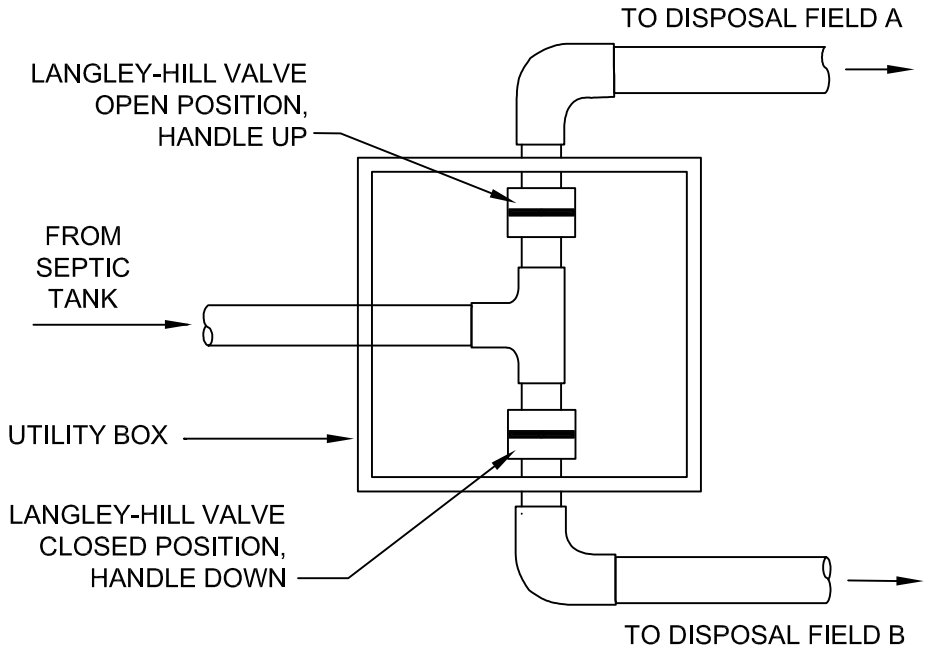
FIGURE

3-5



OPEN POSITION CLOSED POSITION SIDE VIEW

SOURCE: U.S. PATENT #3,956,137
MAY 11, 1976



PLAN VIEW

LANGLEY-HILL DIVERSION VALVE

FIGURE 3-6

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SECTION 4

ALTERNATIVE OWTS REQUIREMENTS

CONTENTS

A. INTRODUCTION

1. General

"Alternative OWTS" is a type of OWTS that utilizes either a method of wastewater treatment other than a conventional septic tank for the purpose of producing a higher quality wastewater effluent or a method of wastewater dispersal other than a gravity fed drain field trench for effluent dispersal. By this definition, any OWTS that includes the use of a pump system for effluent treatment and/or dispersal is considered to be an Alternative OWTS.

This Section provides technical guidance and requirements for the application, design, construction and management of various alternative onsite wastewater treatment and dispersal technologies deemed to be suited to the conditions and constraints in San Mateo County.

For all Alternative OWTS, a copy of the operation and maintenance guidelines must be kept onsite at all times and must be provided to any new owner upon property transfer.

2. General Pump System Requirements

Effluent pump systems may be considered when they offer a better alternative for the protection of public health and safety or the only safe opportunity for effluent distribution within a parcel. Due to problems inherent in mechanical devices, pump systems are to be considered only after gravity feed options have been explored and shown to be infeasible.

For any treatment or dispersal system using effluent pumps in any way (all considered alternative systems), plans must include specifications and sizing justification for any pump tank and pump (including pump performance curves); must show the elevations of the pump and the distribution or transfer piping at the highest elevation; show the calculations for total dynamic head through any piping and valves.

All systems using effluent pumps shall have an alarm system to alert the occupants of the residence of pump failure. Telemetry alarms to service companies are preferred, but not always required.

For all systems using effluent pumps, the septic tank must be sized as for a conventional system. For treatments system using pumps for recirculation, but gravity flow to distribution (e.g., no distribution pump tank required), there is no requirement for additional storage capacity beyond the septic/treatment unit storage. OWTS using pressure distribution must have a pump chamber consisting of a tank, pump, pump controls and alarm system. The pump chamber can be a separate unit or it can have

common wall construction with the septic tank (or pretreatment unit), as long as the required dosing volume and reserve volume can be achieved as described below.

The pump chamber must have sufficient volume to provide the desired dosing volume, plus a reserve volume. The reserve volume is the volume of the pump chamber between the high water alarm switch and the invert of the inlet pipe. It provides storage during power outages or pump failure.

A reserve volume equal to the estimated daily wastewater flow (150 gallons per room) is required for residential OWTS. This reserve volume may be reduced when an emergency gravity-flow trench of appropriate volume is installed as the reserve volume. As a general rule, the pump chamber volume will be the same as the septic tank volume.

3. Alternative Treatment Systems

Requirements are provided for the following alternative treatment systems:

- Intermittent Sand Filters
- Proprietary Treatment Units

County Ordinance allows for the future addition of other alternative treatment systems, as may be approved by Environmental Health and the appropriate California Regional Water Quality Control Board. Upon approval, such other alternative treatment systems will be incorporated into this Manual, including a listing of applicable requirements, similar to the information provided for intermittent sand filters and proprietary treatment units.

Dispersal systems receiving effluent from an alternative treatment system shall be sited, designed and constructed in accordance with the respective design and construction requirements for the particular type of dispersal system (e.g., conventional trenches, pressure distribution, drip dispersal), as specified in this Manual.

4. Alternative Disperal Systems

Requirements are provided for the following types of alternative dispersal systems.

- Pressure Distribution Trench Systems
- Subsurface Drip Dispersal

County Ordinance allows for the future addition of other alternative dispersal systems, as may be approved by Environmental Health and the appropriate California Regional Water Quality Control Board. Upon approval, such other alternative dispersal systems will be incorporated into this Manual, including a listing of applicable requirements, similar to the information provided for pressure distribution trench systems and subsurface drip dispersal.

5. OPERATION AND MAINTENANCE GUIDELINES

Operation and maintenance guidelines for each alternative OWTS installation shall be supplied to the system owner by the designer, with a copy also provided to Environmental Health. Final approval of system installation shall be contingent upon confirmation by Environmental Health that required operation and maintenance guidelines have been provided.

Minimum items expected to be contained in the operation and maintenance guidelines include the following:

- General description of the OWTS, design capacity, and any special permit or operating conditions;
- Brief description of the key components and their function;
- For each component, describe recommended inspection and maintenance activities, including frequency; provide copies of manufacturer operation and maintenance instructions and “trouble-shooting” guides, as applicable;
- General preventative measures for proper use and maintenance of the OWTS (e.g., “Dos and Don’ts”);
- Copy of system plans or “as-built” drawings, as applicable.
- Contact information for the following:
  - Designer
  - Installer
  - Maintenance contractor
  - Environmental Health
- Other information, references or documents, as appropriate.

B. INTERMITTENT SAND FILTER SYSTEMS REQUIREMENTS

Description.

Intermittent sand filters (ISF) are used to provide supplemental treatment of septic tank effluent prior to discharge to the dispersal system. They are used to improve or restore the capacity of the dispersal field, reduce pathogenic bacteria and can provide additional nitrogen removal.

Sand filtration is well established in sanitary engineering practice for more than 100 years as a passive, reliable "biofilm" treatment process. An ISF consists of a packed-bed filter of medium-grained sand, designed for single pass-through treatment of septic tank effluent; it is sometimes referred to as a "single pass filter".

Effluent from sand filters may be discharged to conventional leachfields and to any type of alternative dispersal system identified in the County Onsite Systems Manual. Effluent from an ISF designed and operated in accordance with these requirements will be considered to meet the criteria for "supplemental treatment", not including pathogen removal where applicable.

Siting Criteria

a. Sand Filter Treatment Unit. All siting criteria for septic tanks, as specified in the County Ordinance Section 4.84.120, shall also apply to intermittent sand filters and associated tanks and pumping units.

b. Dispersal Systems Receiving Sand Filter Effluent. Dispersal systems receiving sand filter effluent are subject to all siting criteria for conventional septic tank-dispersal trench systems, with certain exceptions as noted. Exceptions allowed for supplemental treatment may include reduction in vertical separation distance to groundwater from standard 5 feet to minimum of 3 feet (measured from bottom of dispersal trench). Refer to the adopted requirements for the specific type of dispersal system for applicable requirements and supplemental treatment allowances.

Design Criteria

a. Septic Tank Pretreatment. Sand filter treatment units shall be preceded by a septic tank, sized for the projected sewage flow for the structure or facility being served, determined in accordance with sewage flow estimation requirements in Part 3 of this Manual.

b. Pressure Dosing. Septic tank effluent shall be applied to the sand filter treatment unit by pressure dosing (i.e., pump system). The pressure distribution system shall be designed in accordance with accepted engineering practices to achieve, at a minimum:

(1) Uniform dosing of effluent over the surface application area of the sand filter distribution bed;
(2) Adequate flow rate, screening of effluent and suitable piping network to preclude solids accumulation in the pipes or clogging of discharge orifices;
(3) Suitable access provisions for inspection, testing and adjustment of the pressure distribution system;
(4) Dosing volume set to achieve a minimum of 3 to 5 doses per day at design flow conditions; and
(5) At least one distribution lateral for every 36 inches of bed width.

Additional requirements for the design and construction of pressure distribution systems contained in "Requirements for Pressure Distribution Systems" shall also apply.

Also, where a sand filter is used in conjunction with a non-gravity-fed dispersal system, the dosing pump system for the sand filter shall provide emergency storage capacity equal to at least 1.5 times the daily wastewater flow, consistent with requirements for pump systems provided in Section 4 of this Manual.

c. Wastewater Application Rate. The wastewater application rate used for sizing the surface area of the sand filter shall be as follows:
   (1) 1.2 gpd/ft^2 for individual residential OWTS; and
   (2) 1 gpd/ft^2 for all commercial, industrial, institutional, and multi-residential OWTS

   Reduction in the above wastewater loading rates or other provisions to insure the long-term integrity and performance of the sand filter may be required for high strength waste flows, such as those from restaurants.

d. Containment Liner. The sand filter shall be provided with an impermeable containment liner to prevent leakage out of or into the filter. The liner shall consist of: (a) 30 mil plastic; (b) reinforced poured-in-placed concrete; or (c) an equivalent impermeable structure or barrier.

e. Finished Grade. The finished grade of the sand filter shall be at or above the surrounding ground elevation. Above-ground installation shall be structurally supported with retaining wall(s), as required.

f. Shape. The sand filter shall not be restricted as to its shape in plan view; i.e., it may be square, rectangular or an irregular shape.

g. Multiple Units. The sand filter may be divided into compartments or multiple units.

h. Sand Filter Media
   (1) **Sand Specification**. The sand media shall be a medium to coarse sand that meets the gradation specifications in **Table SF-1**.
   (2) **Sand Depth**. The minimum sand depth below the gravel distribution bed shall be 24 inches.

Table SF-1. Sand Media Specifications

Sieve Size	Percent Passing
3/8	100
#4	90-100
#10	62-100
#16	45-62
#30	25-55
#50	5-20
#60	0-10
#100	0-4
#200	0-2

Documentation of laboratory sieve analysis results for the proposed sand fill material shall be supplied to Environmental Health staff to verify conformance with the above specifications.

i. Gravel Distribution Bed
   (1) Material. The distribution bed shall consist of 3/8-inch double-washed pea gravel, substantially free of fines.

(2) Depth. Pea gravel shall extend a minimum of 6 inches below the invert and 2 inches above the top of the distribution piping. If the distribution piping is installed with chambers, the pea gravel depth below the distribution pipe may be reduced from 6 inches to 4 inches, and the 2-inch pea gravel cover may be eliminated.

j. Silt Barrier. The gravel distribution bed shall be covered in its entirety with a geotextile ("filter fabric") silt barrier. Filter fabric shall be either polyester, nylon or polypropylene, or any combination thereof, and shall be similar to that used for underdrain applications. Filter fabric shall be non-woven, be permeable, and shall not act as a wicking agent.

k. Cover
(1) Material. A soil cover shall be placed over the distribution bed, consisting of a medium, loamy-textured soil.
(2) Depth. Soil cover depth shall be a minimum of 12 inches and a maximum of 18 inches over the top of the distribution bed. Soil cover shall be crowned or sloped to promote rainfall runoff.

l. Underdrain
(1) Material. The underdrain beneath the sand media shall consist of 3/8" washed pea gravel with 4-inch diameter perforated drain pipe, installed with perforations oriented down.
(2) Depth. The pea gravel underdrain shall have a minimum depth of 9 inches.

(3) Grade. The underdrain shall be constructed and the drain pipe set with a minimum grade of 1% toward the outlet point.
(4) Watertight Outlet "Boot". The sand filter underdrain shall be equipped with a watertight outlet "boot" for connection of piping to the dosing tank. An exception to this is for intermittent sand filters that are equipped with an internal pump system for direct dosing to the disposal field (see paragraph #15 below).
(5) Clean-out Riser. For clean-out and inspection purposes the upslope end of the perforated drain pipe in the underdrain shall be equipped with a vertical riser constructed of non-perforated pipe of equal diameter. The riser shall extend to finished grade of the sand filter.

m. Air Manifold. An air manifold shall be installed within the pea gravel underdrain for the purpose of introducing forced air to into the sand filter media, as needed, for maintenance or drainage rehabilitation. The air

manifold shall consist of small diameter PVC piping, with drilled perforations (pointed down), and positioned above the perforated underdrain pipe. The manifold shall be connected to a vertical leader pipe that extends to the surface of the sand filter, fitted with a threaded pipe cap or plug at the top where a portable air-line can be connected.

n. Inspection Wells. An inspection well shall be installed in the gravel distribution bed of each sand filter compartment. The inspection well shall extend from finished grade to the pea gravel-sand interface of the distribution bed and shall be perforated in the pea gravel zone only. Inspection wells shall be 2-inch to 4-inch diameter plastic pipe and fitted with a wrench-tight cap or pipe plug. Perforations shall consist of hacksaw slots at nominal 1" spacing; alternatively, commercially slotted pipe may be used. Inspection wells shall be sealed against surface infiltration with a bentonite or concrete annular seal through the soil backfill zone.

o. Internal Pump System (ISF only). In lieu of gravity flow from the sand filter to the dispersal field (or dispersal field dosing system); an internal pump system may be installed within the intermittent sand filter for dosing directly to the dispersal field. In such applications:

(1) pump chamber shall be seated at or below the bottom of the underdrain;
(2) pump operating depth shall be entirely within the depth of the underdrain; and,
(3) storage volume equal to at least 50 percent of the disposal field dose volume shall be provided in the network of perforated drain pipe within the underdrain.

Engineering Plans & Construction

a. Reference Guidelines. In addition to the requirements set forth herein, design and construction of sand filter systems shall utilize applicable guidelines contained in the following references:

(1) "Onsite Wastewater Treatment Systems Manual", U.S. Environmental Protection Agency, February 2002 and as amended.
(2) “Design Manual – Onsite Wastewater Treatment and Disposal Systems”, U.S. Environmental Protection Agency, October 1980.

b. Engineering Plans. Engineering plans for sand filter systems shall include:

(1) All relevant elevation data and hydraulic calculations;

(2) Specific step-by-step construction guidelines and notes for use by the installer;
(3) Recommended make and model of all components;
(4) Recommended pump system components, with cut-sheet depicting float settings;
(5) Control panel programming; and
(6) An inspection schedule listing critical control points.

c. Construction Inspection. At a minimum, inspection of the sand filter system installation should include the items listed below. Joint inspection by the designer, contractor, service provider, and Environmental Health staff may be required.

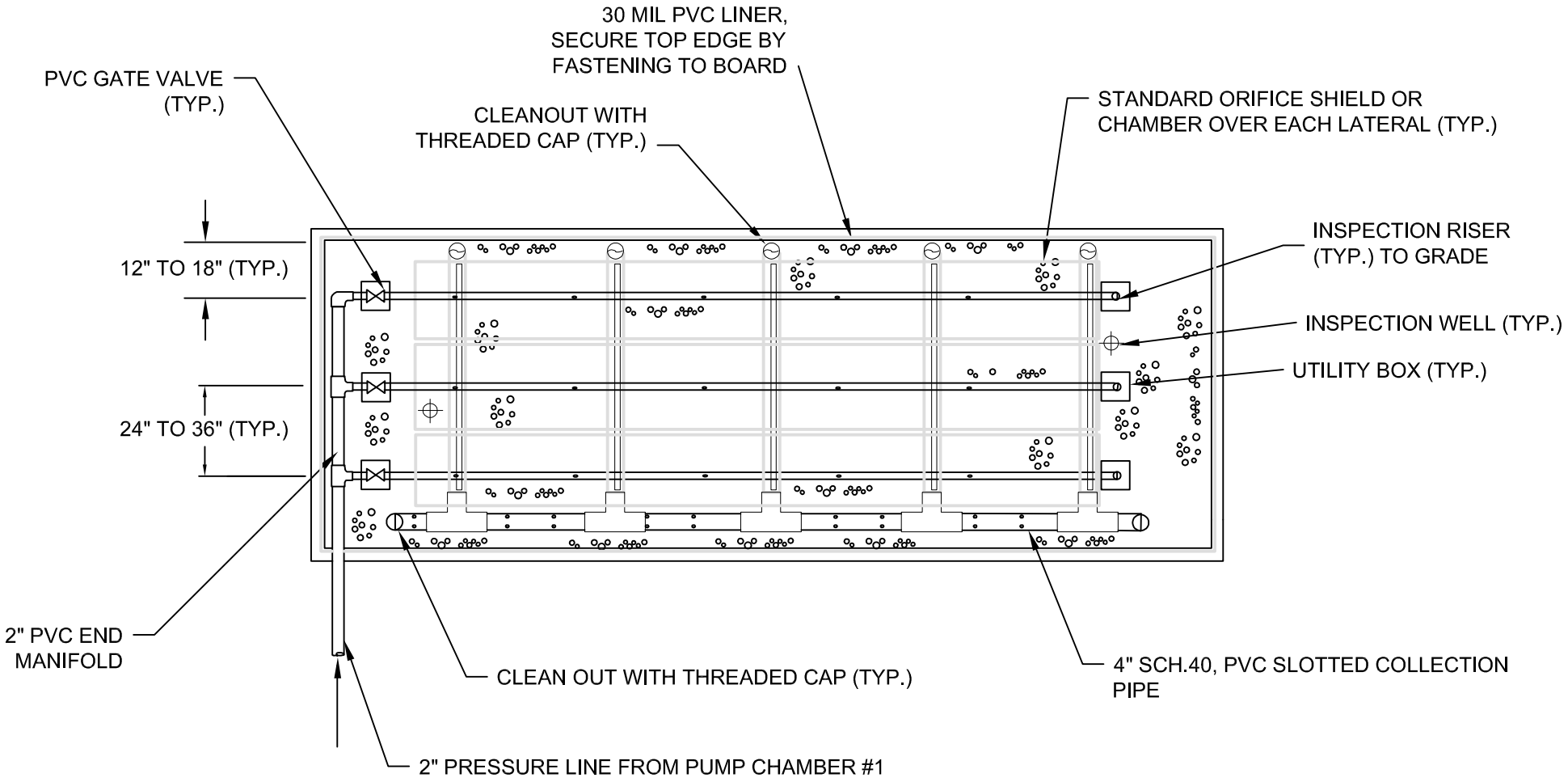
(1) Pre-construction inspection where the construction staking or marking of the sand filter is provided and construction procedures discussed;
(2) Water tightness of septic tank and dosing (pump) tank;
(3) Sand filter dimensions, structure and liner;
(4) Underdrain piping and filter rock;
(5) Sand quality and placement;
(6) Layout and excavation of dispersal trenches and piping;
(7) Drain rock material and placement;
(8) Piping installation and hydraulic ("squirt") test of the distribution system;
(9) Functioning and setting of all control devices; and
(10) Final Inspection to verify that all construction elements are in conformance with the approved plans and specifications, all inspection wells are installed; and erosion control has been completed;
(11) A letter from the designer that the alternative OWTS has been installed, operating, and tested in conformance with design specifications shall be provided to Environmental Health staff; and
(12) A valid, signed maintenance agreement between applicant/property owner and service provider shall be provided to Environmental Health staff.

MANAGEMENT REQUIREMENTS

Recommended minimum procedures and frequency for inspection, maintenance, monitoring and reporting activities for intermittent sand filter systems are included below in Table SF-2.

Table SF-2. Intermittent Sand Filter System Management Requirements

	Work	Minimum Frequency
Inspection	• Observe surface conditions on and around filter for effluent leakage, drainage/infiltration, erosion or other problems. • Check/measure water level in inspection wells in filter bed. • Perform all inspection work as recommended by designer or equipment manufacturer. • Perform inspection protocol for pump systems (per O&M manual and Performance Evaluation Guidelines, Part 5 of this Manual). • Record observations.	• According to permit conditions, typically every 6 to 12 months, depending on system size, usage, and history.
Maintenance	• Purge laterals. • Perform squirt and balance laterals. • Exercise valves to ensure functionality. • Perform all maintenance work as recommended by designer or equipment manufacturer. • Record work done.	• According to permit conditions, typically every 6 to 12 months, depending on system size, usage, and history. • Responsive maintenance as necessary.
Water Monitoring & Sampling	• Report observation findings and maintenance actions, including notation of problems and corrective actions. • Record dose counter and elapsed time meter readings from control panel.	• According to permit conditions, if applicable.
Reporting	• Report findings to Environmental Health per permit requirements. • Standard report to describe findings, analyze performance, and detail actions taken. • Report emergency or failure conditions to Environmental Health immediately.	• According to permit conditions, typically every year, depending on system size, usage, history, location.



PLAN VIEW

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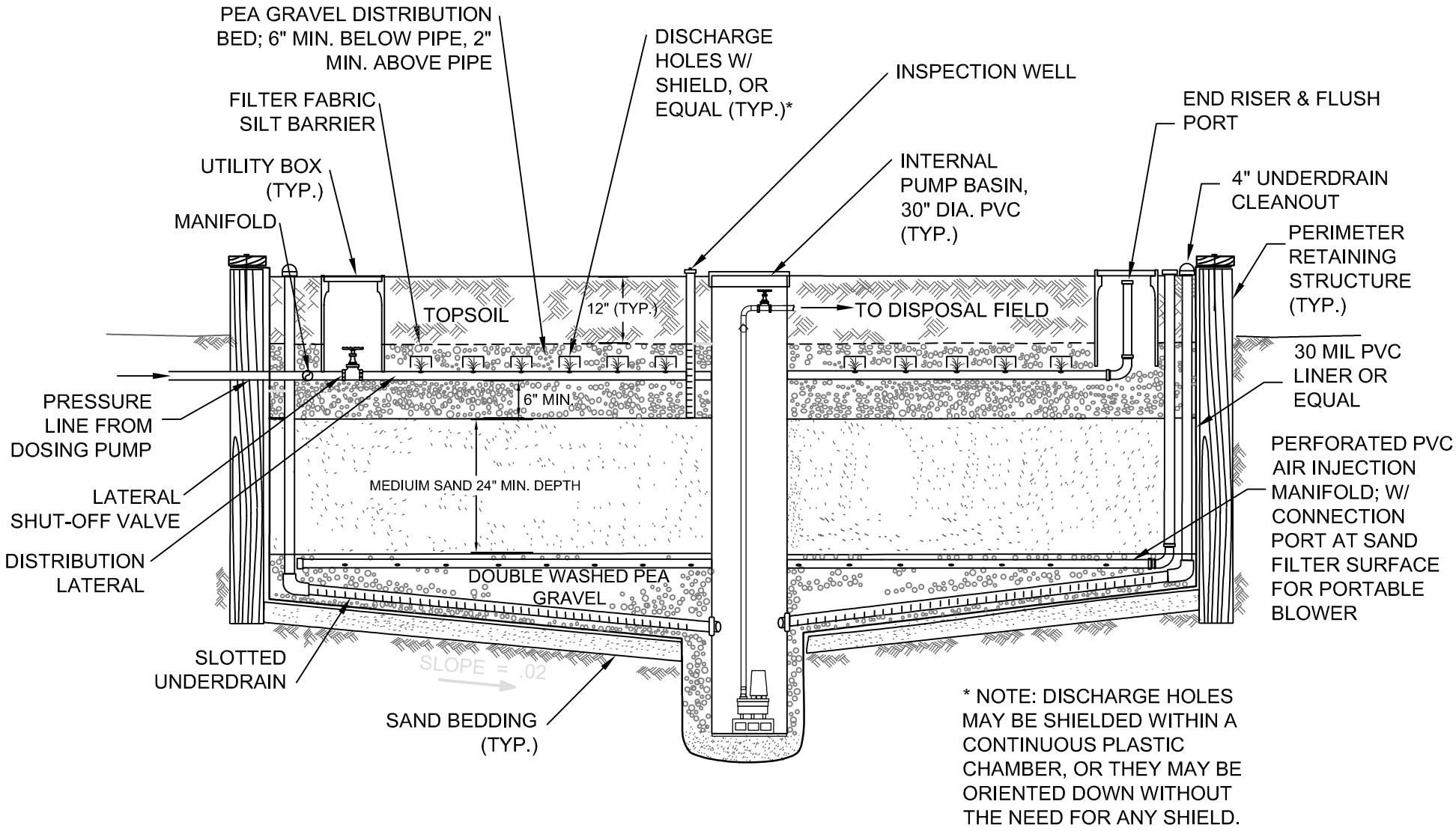
INTERMITTENT SAND FILTER
PLAN VIEW

FIGURE
4-1



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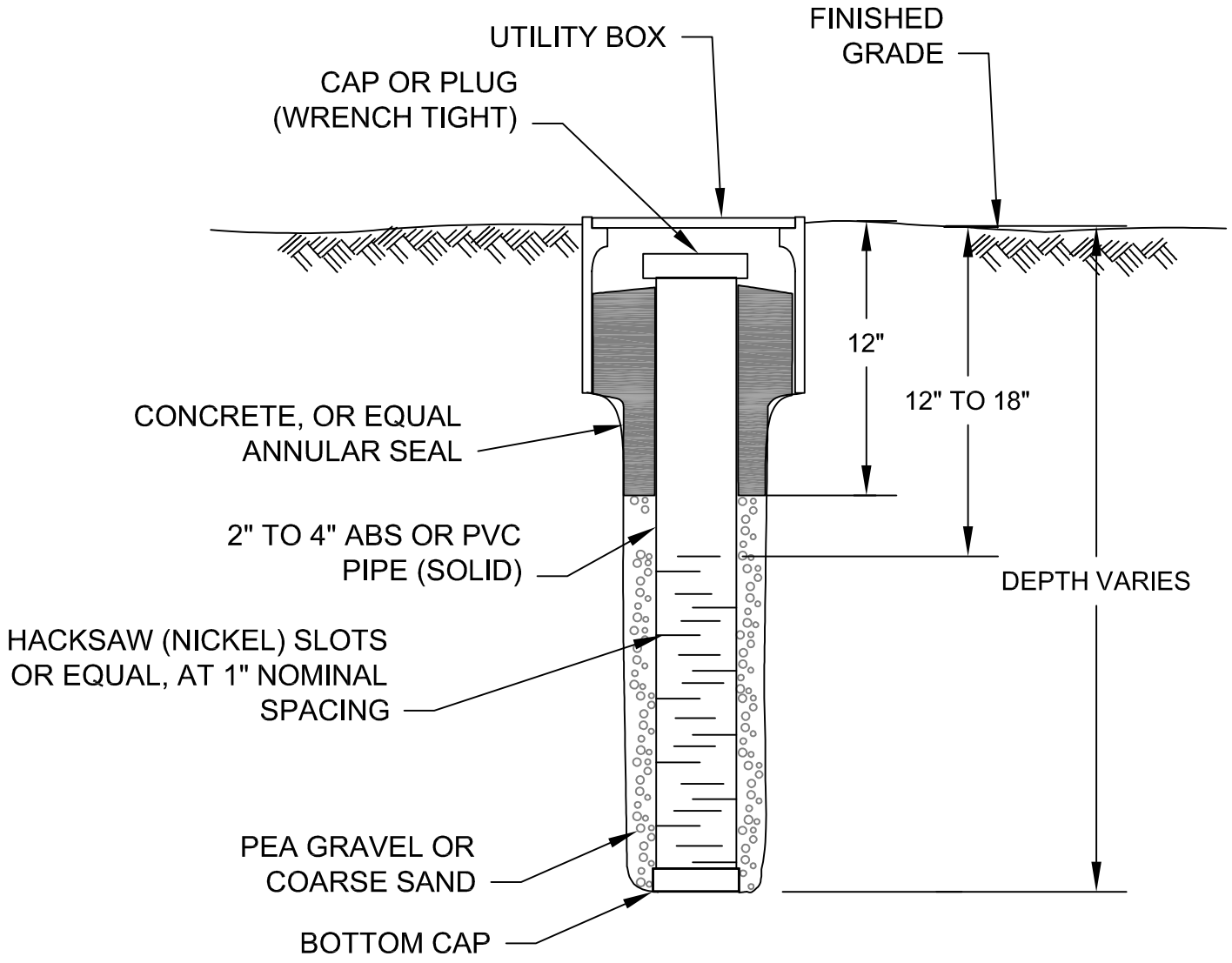
INTERMITTENT SAND FILTER
WITH INTERNAL PUMP BASIN

FIGURE
4-2



INSPECTION STANDPIPE (TYPICAL)

FIGURE

4-3

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C. PROPRIETARY TREATMENT UNITS REQUIREMENTS

1. Description

Propriety treatment units cover a category of manufactured or "package" systems specifically developed for residential and other small-scale sewage treatment applications. Most proprietary designs currently available fall into two general categories: (1) aerobic treatment units (ATUs); and (2) media filters.

a. Aerobic Treatment Units (ATUs**).** ATUs utilize forced air to oxidize the wastewater, promoting aerobic decomposition of the wastewater solids. These systems provide supplemental treatment of wastewater for improvement in dispersal field performance; they also provide varying degrees of nitrogen removal. In general, ATUs can be relied on to produce secondary quality effluent, better than 30 mg/L BOD and TSS. ATUs are generally not as effective in reducing pathogen levels as are systems that incorporate media filtration. However, some ATUs provide reduction in nitrogen levels equal to or greater than that provided by sand filters and other media filters.

b. Media Filters. This includes proprietary designs that function similar to sand filters. In these systems, the sand is replaced with an alternate media (examples, but not limited to: peat, gravel or textile). Textile and other media filters have been found to produce effluent quality reasonably similar to recirculating sand filters, and provide similar capabilities in overcoming various soil and site constraints.

Effluent from proprietary treatment units may be discharged to conventional dispersal trenches and to any type of alternative dispersal system identified in this Onsite Systems Manual. Effluent from proprietary treatment units designed and operated in accordance with these guidelines will be considered to meet the criteria for "supplemental treatment".

2. Siting Criteria

a. Treatment Unit. All siting criteria for septic tanks, as specified in Part 3 of this Manual and in the County Ordinance Section 4.84.120, shall also apply to proprietary treatment units and associated tanks and pumping units.

b. Dispersal Systems Receiving Proprietary Treatment Effluent. Dispersal systems receiving effluent from a proprietary treatment unit are subject to all siting criteria for conventional septic tank-dispersal trench systems, except as modified in accordance with adopted requirements for the specific type of

alternative dispersal system proposed, including any allowances for the incorporation of supplemental treatment. Allowances for supplemental treatment may include reduced vertical separation distances, increased wastewater application rates or modified slope restrictions. Refer to the part of this Section for the specific type of dispersal system for applicable requirements and supplemental treatment allowances.

3. **Design and Construction Requirements**

a. NSF Standard 40. The proprietary treatment unit shall be listed by the National Sanitation Foundation (NSF) as meeting the NSF Standard 40, Class 1 performance evaluation, or have certification by a third-party listing agency as complying with NSF Standard 40 performance requirements. The treatment unit shall be manufactured and installed in accordance with the design specifications used to determine compliance to NSF Standard 40. This specification is applicable to treatment units for wastewater flows of up to 1,500 gpd and is based on compliance with US EPA standards for secondary treatment of municipal wastewater, including 30-day average effluent limits of 25 mg/L for $CBOD_5$ and 30 mg/L for TSS. Treatment units for flows in excess of 1,500 gpd will require certification by a third-party listing agency of equivalent performance.

b. Design Sewage Flow. Sizing and design of proprietary treatment units shall be based on the projected sewage flow for the structure or facility being served, determined in accordance with sewage flow estimation guidelines in Part 3 of this Manual.

c. Tanks. All tanks housing a proprietary treatment unit shall be structurally sound, water-tight and capable of withstanding 1,000 pounds of weight.

d. Controls. Control panels shall be designed and configured in such a manner that, in the event of a treatment unit malfunction, an alarm system will be triggered and discharge from the treatment system to the dispersal field will be interrupted until the treatment unit malfunction is rectified. At a minimum, the alarm system shall include an audible and visual alarm located within the building served by the system.

e. Emergency Storage Provisions. Where a proprietary treatment unit is used in conjunction with a non-gravity-fed dispersal system, the system shall provide emergency storage capacity equal to at least 1.5 times the daily wastewater flow, consistent with requirements for pump systems provided in this Manual. Depending on OWTS configuration, tank free board, pump tank capacity and

available gravity flow trench may be considered, at the discretion of Environmental Health staff.

f. Compliance with Manufacturer Requirements. The designer and installer shall follow the proprietary manufacturer's design, installation, construction, and operations procedures.

g. Engineering Plans. Engineering plan submittals for proprietary treatment units shall provide documentation of compliance with manufacturer requirements and sufficient design analysis to verify the appropriateness of the treatment unit for the proposed application. Engineering plans shall contain specific step-by-step construction guidelines and notes for use by the installer, including any manufacturer instructions.

h. Installer Requirements. Anyone installing a proprietary treatment unit shall be trained and certified by the system manufacturer. Documentation verifying conformance to this requirement shall be provided to Environmental Health staff prior to system installation.

i. Maintenance Contract. The applicant must demonstrate that a written maintenance agreement with a qualified service provider has been obtained for the proposed proprietary treatment unit to ensure satisfactory post-construction operation and maintenance. A maintenance agreement must be maintained valid for the life of the treatment unit.

j. Construction Inspection. The following minimum inspections prior to commencing construction or covering any elements of the system shall be required. Joint inspection by the designer, installer, service provider, and Environmental Health staff may be required.

(1) Pre-construction inspection where the construction staking or marking of the treatment unit is to be placed and installation procedures are discussed;
(2) Testing of the treatment unit:
    (a) Function and setting of all control devices and alarms.
    (b) Water-tightness of septic tank, treatment tank(s), and dosing tank, as applicable.
(3) Drain Field:
    (a) Layout and excavation of dispersal trenches and piping.
    (b) Drain rock and perforated pipe materials and placement.
    (c) Piping installation and hydraulic ("squirt") test of the distribution system.
(4) Final Inspection:

(a) A letter from the designer that the alternative OWTS has been installed and is operating in conformance with design specifications shall be provided.
(b) A valid, signed maintenance agreement between the applicant/property owner and service provider shall be provided.

4. **Management Requirements**

Recommended minimum procedures and frequency for inspection, maintenance, monitoring and reporting activities for proprietary treatment systems are outlined in Table P-1 below.

Table P-1. Proprietary Treatment System Management Requirements

	Work	Minimum Frequency
Inspection	• Inspection to be in accordance with manufacturer specifications.	• According to permit conditions, typically every 6 to 12 months, depending on system size, usage, and history.
Maintenance	• Perform all maintenance as required and in accordance with equipment manufacturer specifications.	• According to permit conditions, typically every 6 to 12 months, depending on system size, usage, and history.
Water Monitoring & Sampling	• Monitoring to be in accordance with manufacturer specifications.	• If required, according to permit conditions, typically every 6 to 12 months, depending on system size, usage, and history.
Reporting	• Report findings to Environmental Health per permit requirements. • Standard report to describe findings, analyze performance, and detail actions taken. • Report crisis or failure conditions to Environmental Health immediately.	• According to permit conditions, typically every year, depending on system size, usage, history, location.

D. PRESSURE DISTRIBUTION TRENCH SYSTEMS REQUIREMENTS

1. Description

Pressure distribution (PD) systems are a variation of a conventional gravity dispersal system that use a pump and small-diameter pressure piping to achieve broad, uniform distribution of wastewater throughout the dispersal system for improved soil absorption and better treatment of percolating effluent. Pressure distribution can be used in conjunction with regular rock-filled trenches receiving septic tank effluent (PD trench systems), or for shallow/chambered dispersal fields or subsurface drip dispersal with supplemental treatment systems. This Section covers requirements for PD trench systems; shallow/chambered and drip dispersal alternatives are covered in subsequent sections of this Manual.

2. Applications

Pressure distribution trench systems are permitted and/or required for the following situations:

a. Areas with ground slopes exceeding 35%;

b. Areas with percolation rates between 1.0 and 0.75 inches per hour (61 to 80 MPI);

c. To allow reduction of vertical separation to groundwater (below trench bottom) from 5 feet to 3 feet;

d. For any OWTS where pumping from the septic tank to the drain field is required;

e. For large flow systems, e.g., with dispersal field lengths (primary) exceeding 500 lineal feet; and

f. Others as may be determined necessary due to site-specific soil, geology or other conditions.

3. Siting Criteria

a. Setbacks. Horizontal setback requirements for PD trench systems shall be those applicable to conventional dispersal fields, as specified in the County Ordinance Section 4.84.120.

b. Vertical Separation Requirements.

(1) Depth to Groundwater. Minimum depth to seasonal high groundwater for PD trench systems, as measured from trench bottom, shall be five (5) feet, but may be reduced to three (3) feet for dispersal trench designs utilizing no more than four (4) square feet of effective application area per lineal foot of trench.

(2) Soil Depth. Minimum depth of soil, as measured from trench bottom to impermeable soil or rock, for PD trench systems shall be three (3) feet.

c. Percolation Rate.

(1) Average percolation rate for PD trench systems shall be within the range of 12 inches per hour to 0.75 inches per hour (5 to 80 minutes per inch, MPI), as determined in accordance with standard percolation requirements for conventional dispersal trenches.

(2) Any drain field located in an area demonstrating percolation rates of between three-fourths (0.75) and ninety-nine hundredths (0.99) inches per hour is required to utilize pressure distribution.

d. Ground Slope.

(1) Ground slope in areas used for PD trench systems shall be less than 50 percent.

(2) Any drain field located on slopes exceeding 35% is required to utilize pressure distribution.

(3) Any PD trench system located on slopes greater than 20 percent shall require the completion of a geotechnical report and slope stability analysis as specified in the County Ordinance Section 84.120 and Section 2 of this Manual.

e. Dual System. Two PD trench dispersal fields, each one hundred percent of the total size required for the design sewage flow, shall be installed and interconnected with an approved flow diversion device (pressure-rated), intended to allow alternate use of the two fields.

4. **Design Criteria**

a. Treatment. The following treatment requirements shall apply in connection with the use of PD trench systems:

(1) Primary (septic tank) treatment shall be the minimum level of treatment.

(2) Supplemental treatment, using an approved alternative treatment system identified in this Manual, may be used and/or required to comply with provisions applicable to OWTS within identified Advanced Protection Management areas in the County or in other circumstances as deemed necessary due to site-specific soil, geologic or other conditions.

(3) Screening of effluent ahead of effluent pump system, as applicable.

b. Design Sewage Flow. PD trench systems shall be designed on the basis of the projected sewage flow for the structure or facility being served, determined in accordance with sewage flow estimation requirements in Section 3 of this Manual.

c. Pressure Dosing. Septic tank effluent shall be applied to the PD trench system by pressure dosing, utilizing a pump system. The pressure distribution system shall be designed in accordance with accepted engineering practices to achieve, at a minimum:

(1) Uniform dosing of septic tank effluent throughout the system of PD trenches;

(2) Adequate flow rate, screening of effluent and suitable piping network to preclude solids accumulation in the pipes or clogging of discharge orifices;

(3) Suitable access provisions for inspection, testing and adjustment of the pressure distribution system; and

(4) Dosing volume to achieve minimum of 3 to 5 doses per day at design flow conditions.

d. Dispersal Trenches. PD trenches shall conform to the same design and construction requirements as conventional trenches, per Section 4 of this Manual, with the exception that the piping system shall consist of pressure piping rather than gravity piping. Both primary and secondary fields must be fed by the pump system.

e. Pressure Distribution Piping.

(1) Pressure-Rated Pipe Material. All pipe, fittings and valves shall be pressure-rated PVC pipe, minimum 150 psi.

(2) Solvent Welded. All joints in the pressure piping system shall be solvent welded.

(3) Pipe Sizing. All pressure distribution pipes and fittings, including transport lines, manifolds, laterals and valves, must be adequately sized for the design flow, and shall be designed to minimize frictional losses to the maximum extent practicable.

(4) Thrust Blocks. Concrete thrust blocks, or equivalent restraint, shall be provided at sharp changes in piping directions.

(5) Shut-off Valves. The distribution lateral for each trench shall be fitted with a shut-off valve to adjust or terminate the flow to individual trenches. This valve may be either a ball or gate valve, and shall be located in a utility/valve box.

(6) Lateral End Riser**.** The end of each lateral shall be fitted with a 90^{o} long sweep to facilitate line cleaning and hydraulic testing. The end riser pipe shall also be fitted with a ball valve and/or threaded end cap or plug, housed in a valve box.

f. Pump System. The pump system shall be: (a) appropriate for sewage applications; (b) of the size and type to meet the hydraulic design requirements; and (c) designed and constructed in accordance with pump system requirements provided in Section 4 of this Manual.

g. Trench Sizing.

(1) Residential OWTS. Trench sizing for drain field areas with percolation rates of one inch per hour (60 MPI) or faster shall be in accordance with requirements for "Drain Field Sizing – Residential", as specified for Conventional OWTS in Section 4 of this Manual.

Areas with stabilized percolation rates between three-fourths (0.75) and ninety-nine hundredths (0.99) inches per hour shall require:

(a) Up to three bedrooms – two (2) lines, each of one hundred eighty (180) feet total trench length;

(b) Each additional bedroom – add sixty (60) feet total trench length to each line.

(c) 100% reserve area equivalent to the proposed drain field.

(2) Multifamily and Non-Residential. Trench sizing shall be in accordance with requirements for "Drain Field Sizing – Multifamily and Non-

Residential", as specified for Conventional OWTS in Section 3 of this Manual.

h. Inspection Standpipes. A minimum of three (3) inspection standpipes shall be installed within and around PD trench systems for the purpose of checking groundwater levels, and may also be used for water quality sampling, as needed. Inspection standpipes shall extend to a depth of at least 5 feet below the bottom of the PD trenches. The inspection standpipes shall be located and constructed as follows:

(1) One shall be located upslope of the dispersal field, typically 10- to 15-feet away, to serve as a background or control point;
(2) One shall be located within the dispersal field, typically between trenches near the center of the field;
(3) One shall be located down-slope of the dispersal field, typically 10 to 25 feet horizontally from the lowest trench(es), and positioned to provide a representative point for monitoring the area estimated to be in the probable flow path of percolating wastewater; and
(4) Inspection standpipes shall be constructed of 2" to 4" diameter pipe, equipped with a wrench-tight cap or pipe plug, and a bottom cap. All standpipes shall be perforated beginning at a depth of 18 inches below grade and extending to the bottom of the pipe. Perforations shall consist of hacksaw (nickel) slots at nominal 1" spacing, or equivalent commercially-perforated pipe. To prevent surface water infiltration, inspection standpipes shall be sealed/stabilized with a concrete annular seal (or equivalent) to a depth of 12 inches, minimum.

5. Engineering Plans & Construction

a. Reference Guidelines. In addition to the requirements set forth herein, design and construction of PD trench systems shall utilize applicable guidelines contained in the following references:

(1) "Onsite Wastewater Treatment Systems Manual", U.S. Environmental Protection Agency, February 2002 and as amended; and

(2) "Design Manual – Onsite Wastewater Treatment and Disposal Systems", U.S. Environmental Protection Agency, October 1980.

b. Engineering Plans. Engineering plans for PD trench systems shall include:

(1) All relevant elevation data and hydraulic calculations;

(2) Specific step-by-step construction guidelines and notes for use by the installer;

(3) Erosion control plans for any site over 20% slope;

(4) Recommended make and model of all components;

(5) Recommended pump system components, with cut-sheet depicting float settings;

(6) Control panel programming; and

(7) An inspection schedule listing critical control points.

c. Construction Inspection. At a minimum, inspection of the PD trench system installation should include the items listed below. This is in addition to inspection work required for a supplemental treatment system, if used. Joint inspection by the designer, contractor, service provider, and Environmental Health may be required.

(1) Pre-construction inspection where the construction staking or marking of the various system components is provided and construction procedures discussed;

(2) Water tightness of septic tank and dosing (pump) tank;

(3) Layout and excavation of dispersal trenches and piping;

(4) Drain rock material and placement;

(5) Piping installation and hydraulic (“squirt”) test of the distribution system;

(6) Functioning and setting of all control devices; and

(7) Final inspection to verify that all construction elements are in conformance with the approved plans and specifications, all inspection standpipes are installed; and erosion control has been completed.

(8) A letter from the designer that the Alternative OWTS has been installed, operating, and tested in conformance with design specifications shall be provided to Environmental Health staff; and

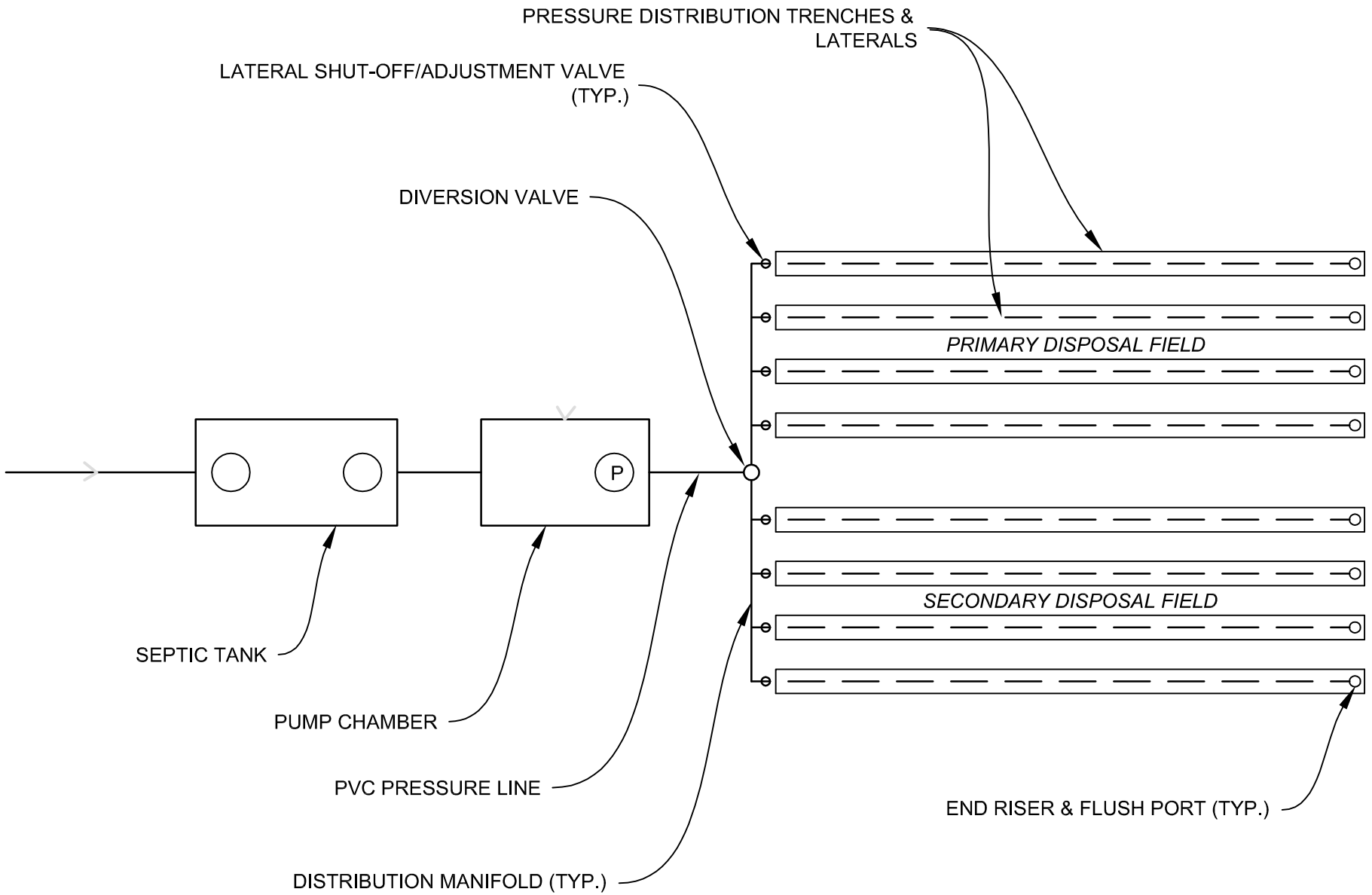
(9) A valid, signed maintenance agreement between applicant/property owner and service provider shall be provided to Environmental Health staff.

6. **Management Requirements**

Recommended minimum procedures and frequency for inspection, maintenance, monitoring and reporting activities for pressure distribution trench systems are outlined in Table PD-1 above.

Table PD-3. Pressure Distribution Trench System Management Requirements

	Work	Minimum Frequency
Inspection	• Conduct routine visual observations of disposal field and downslope area and surroundings for wet areas, pipe leaks or damage, soil erosion, drainage issues, abnormal vegetation, or other problems. • Perform all inspections of pump and appurtenances (per system O&M manual, and Performance Evaluation Guidelines in Section 5.3 of this Manual).	• Every 6 to 12 months.
Maintenance	• Purge laterals, squirt and balance. • Exercise valves to ensure functionality. • Perform all maintenance work as recommended by equipment manufacturer for any special valves or other components. • Investigate and repair erosion, drainage or other disposal field problems, as needed. • Investigate and perform distribution system corrective work, as required. • Record work done.	• Distribution system maintenance annually. • Other maintenance as required.
Water Monitoring & Sampling	• Measure and record water levels in trench observation wells. • Measure and record water levels in dispersal field monitoring wells, as applicable, per permit requirements. • Obtain and analyze water samples from monitoring wells, as applicable, per permit requirements.	• Measure trench water levels annually. • Other monitoring according to permit conditions, as applicable.
Reporting	• Report findings to Environmental Health per permit requirements. • Standard report to include dates, observation well and monitoring well readings and other data collected, work performed, corrective actions taken, and performance summary. • Report public health/water quality emergency to Environmental Health staff immediately.	• According to permit conditions, typically every year, depending on system size, usage, history, location.



PRESSURE DISTRIBUTION SYSTEM SCHEMATIC

FIGURE

4-4

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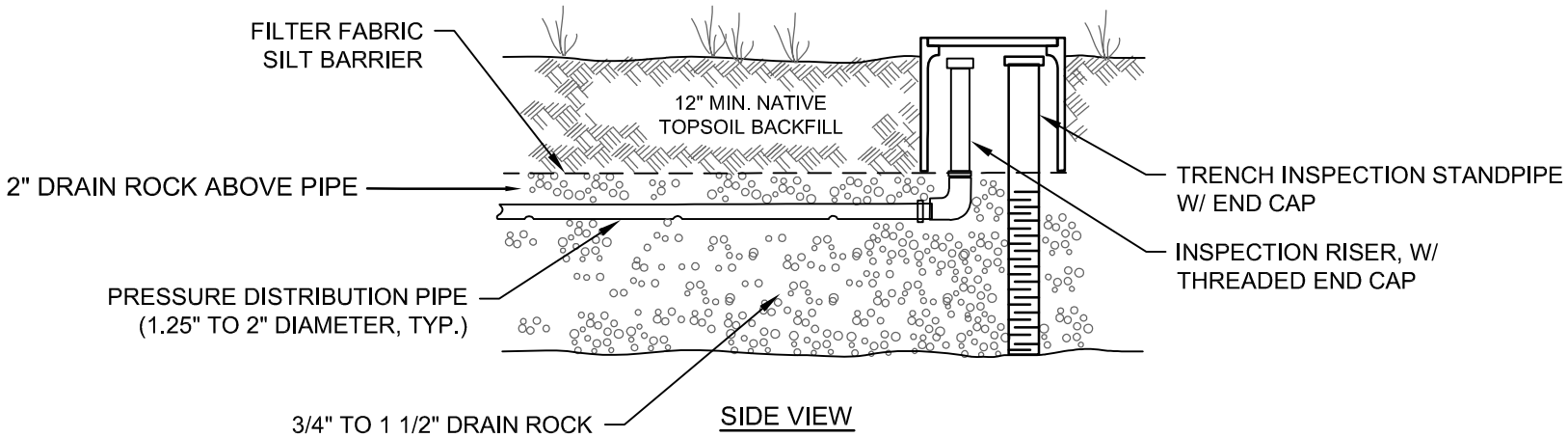
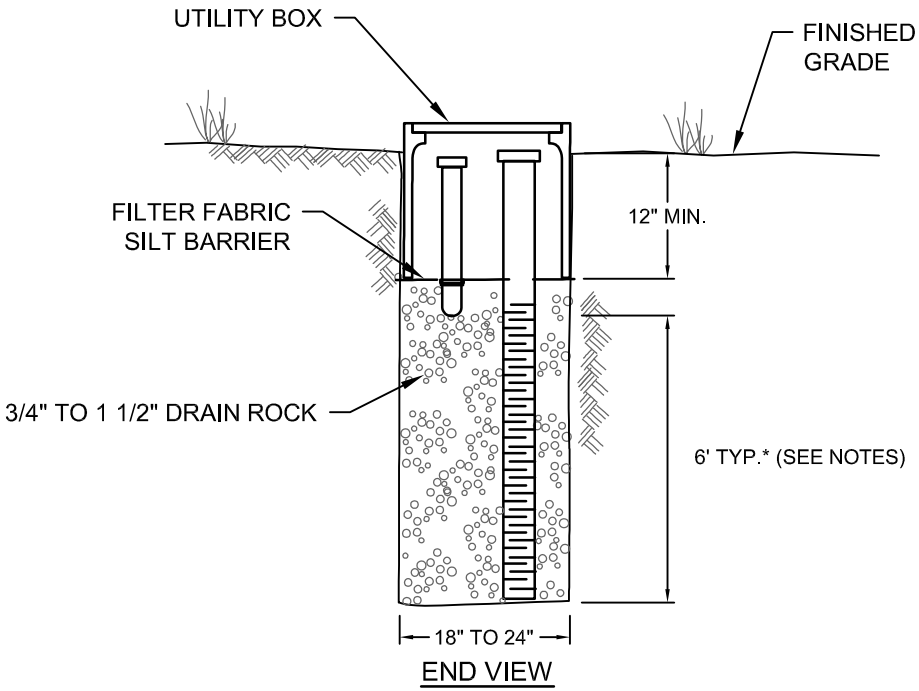




NOTES:

1. FOR RESIDENTIAL OWTS, DRAIN FIELDS OF LESSER DEPTHS (<6 FT. SIDEWALL DEPTH) BUT EQUIVALENT OVERALL SIDEWALL AREA MAY BE PERMITTED SUBJECT TO THE APPROVAL OF ENVIRONMENTAL HEALTH.

2. FOR MULTI-FAMILY AND NON-RESIDENTIAL OWTS:

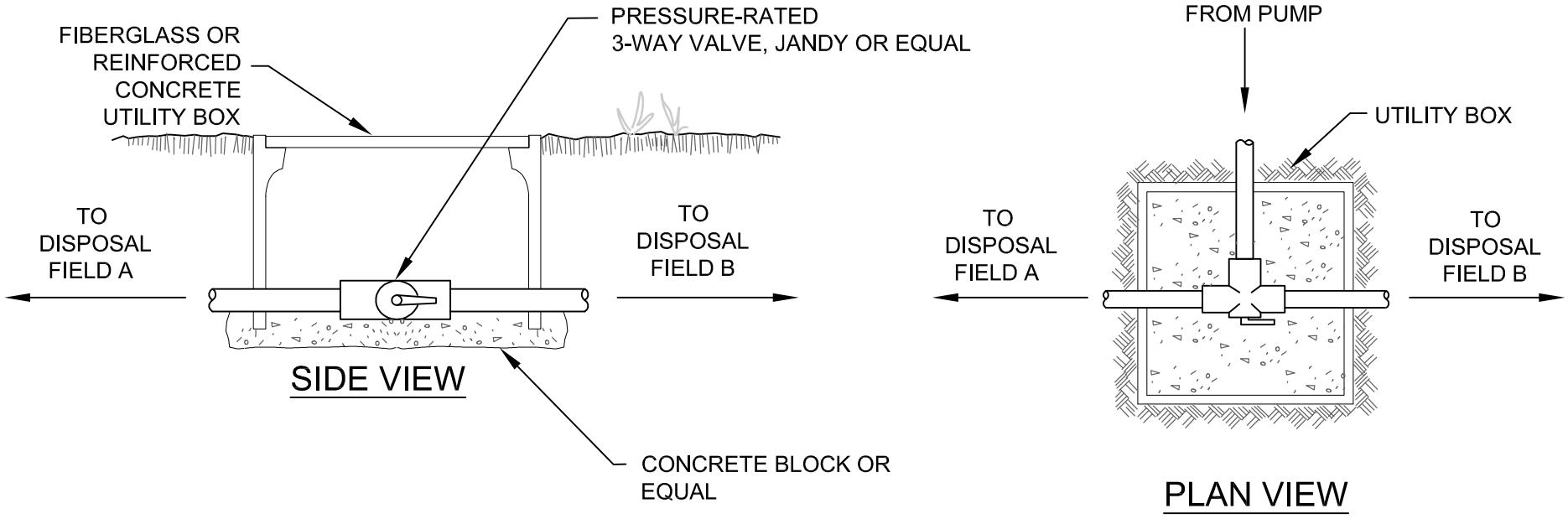
- THE "EFFECTIVE INFILTRATIVE AREA" SHALL BE LIMITED TO FOUR (4) SQUARE FEET PER LINEAL FOOT OF TRENCH LENGTH, COUNTING ONLY TRENCH SIDEWALL AREA BELOW THE INVERT OF THE PIPE;

- UNDER CERTAIN (FAVORABLE) SOIL AND SITE CONDITIONS, THE EFFECTIVE INFILTRATIVE SURFACE MAY BE INCREASED TO UP TO A MAXIMUM OF EIGHT (8) SQUARE FEET PER LINEAL FOOT.

PRESSURE DISTRIBUTION TRENCH

FIGURE

4-5



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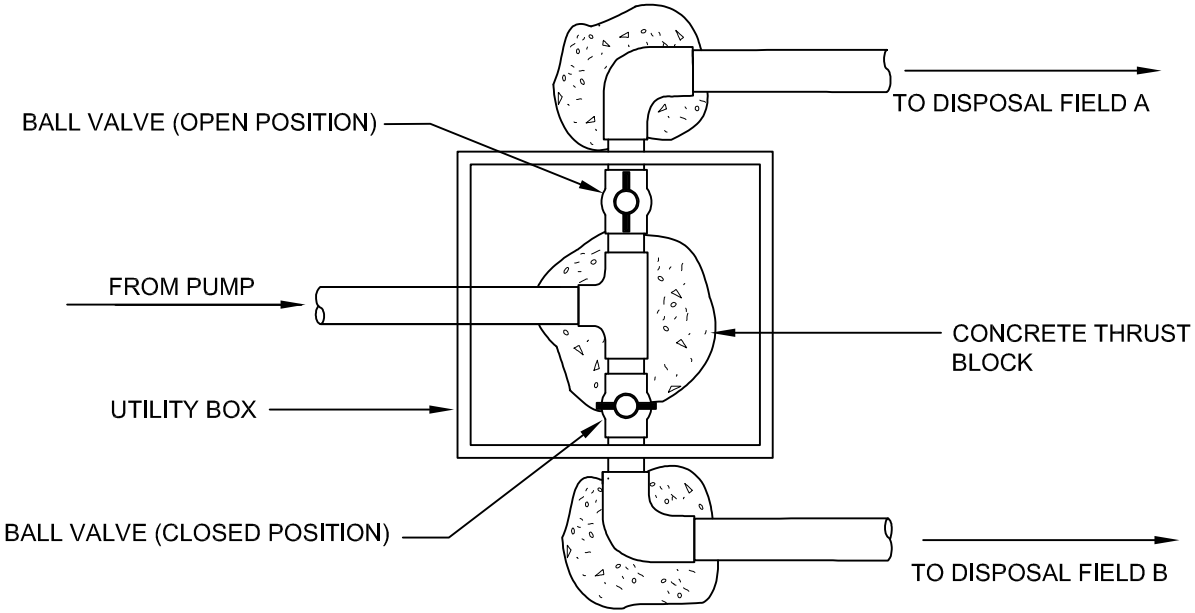
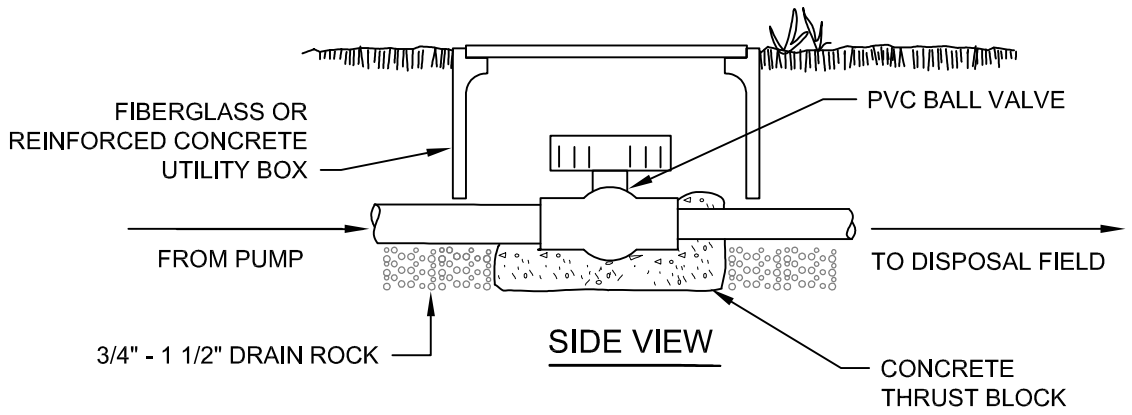
PRESSURE DISTRIBUTION
3-WAY DIVERSION VALVE

FIGURE

4-6



PLAN VIEW



SIDE VIEW

PRESSURE DISTRIBUTION DIVERSION VALVE W/ DUAL BALL VALVES

FIGURE 4-7

E. SUBSURFACE DRIP DISPERSAL REQUIREMENTS

1. Description

Subsurface drip dispersal is a method for disposal of treated wastewater that uses special drip tubing designed for use with wastewater. The dripline is placed normally 9 to 12 inches below ground surface and makes use of the most biologically active soil zone for distribution, nutrient uptake and evapotranspiration of the wastewater. A drip dispersal system is comprised of small-diameter (½" to 1") laterals ("driplines"), usually spaced about 24 inches apart, with small-diameter emitters (1/8") located at 12 to 24 inches on-center along the dripline. Effluent is conveyed under pressure to the laterals, normally with timed doses. Prior to dispersal the effluent requires supplemental treatment. See Figure 4-8 for a schematic of typical shallow drip dispersal system elements.

Drip dispersal has several advantages, including: (a) it can be effective in very shallow soil conditions since it distributes the wastewater very uniformly to substantially all of the available soil in the field; (b) it can be installed in multiple small discontinuous "zones", allowing the hydraulic load to be spread widely rather than concentrated in one main area; (c) installation on steeper slopes causes less soil disturbance and erosion or slope stability hazards; and (d) water movement away from the drip emitters is substantially by unsaturated/capillary flow, which maximizes contact with and treatment by the soil.

2. Applications

Subsurface drip dispersal systems may be permitted for the following situations:

a. Areas with ground slopes less than 50%;

b. Areas with percolation rates between 12.0 and 0.75 inches per hour (5 to 80 MPI);

c. To allow reduction of vertical separation to groundwater (below trench bottom) from 5 feet to 3 feet;

d. Where pumping from the septic tank to the drain field is required; and

e. Others as may be determined appropriate due to site-specific soil, geology or other conditions.

Per County Ordinance Section 4.84.145, subsurface drip dispersal may be permitted by Environmental Health for new construction on any legally-created parcel where: (a) Environmental Health determines such system would provide equal or greater protection to public health and the environment than a conventional or pressure-

dosed trench dispersal field system; (b) a primary and reserve leaching system for a conventional or pressure-dosed trench dispersal system can also be accommodated on the property, if required. The subsurface drip dispersal system may overlap the area reserved for the conventional or pressure-dosed trench dispersal system, as long as the operation of the shallow subsurface drip dispersal system will not affect the potential future function of the trench dispersal system.

3. **Siting Criteria**

a. Setbacks. Horizontal setback requirements for subsurface drip dispersal systems shall be those applicable to conventional disposal fields, as specified in the County Ordinance Section 4.84.120.

b. Vertical Separation Requirements.

(1) Depth to Groundwater. Minimum depth to seasonal high groundwater, as measured from the bottom of the dripline shall be 3 feet.

(2) Soil Depth. Minimum depth of soil, as measured from the bottom of the dripline to impermeable soil or rock, shall be 3 feet.

c. Percolation Rate. The average soil percolation rate in the proposed subsurface drip dispersal field area shall not be faster than 12 inches per hour (5 minutes per inch) nor slower than 0.75 inches per hour (80 minutes per inch), determined in accordance with procedures prescribed by in Section 2 of this Manual. Percolation testing for drip dispersal systems shall be conducted at 12 to 24-inch depth.

d. Ground Slope.

(1) Ground slope in areas used for drip dispersal shall be less than 50 percent.

(2) Any drip dispersal system located on slopes greater than 20 percent shall require the completion of a geotechnical report and slope stability analysis as specified in the County Ordinance Section 4.84.120 and Section 2 of this Manual.

e. Dual System. Two drip dispersal fields, each one hundred percent of the total size required for the design sewage flow, shall be installed and interconnected with an approved flow diversion device (pressure-rated), to allow alternate or combined use of the two fields.

4. Design Criteria

a. Treatment: The following treatment requirements shall apply in connection with the use of subsurface drip dispersal systems:

(1) Wastewater effluent discharged to any drip dispersal system shall be treated to at least a secondary level through an approved supplemental treatment system, in accordance with applicable guidelines provided in this Manual.

(2) All drip dispersal systems shall include a filtering device capable of filtering particles larger than 100 microns; this device shall be located downstream of the supplemental treatment system.

(3) Any additional requirements that may be assigned in connection with criteria for use in Advanced Protection Management Areas.

b. Design Sewage Flow: Subsurface drip dispersal systems shall be designed on the basis of the projected sewage flow for the structure or facility being served, determined in accordance with sewage flow estimation guidelines in Section 3 of this Manual.

c. Wastewater Application Rates: Wastewater application rates used for sizing drip dispersal fields shall be based on soil percolation rates as measured in the field by appropriate percolation testing. Wastewater application rates should be in accordance with the criteria in Table DD-1 below. In applying these criteria, the wastewater application area refers to the ground surface area encompassed by the drip dispersal field.

Table DD-1. Wastewater Application Rates for Subsurface Drip Dispersal Fields

Soil Percolation Rate (minutes per inch)	Soil Percolation Rate (inches per hour)	Wastewater Application Rate (gpd/ft^2)
5-10	12-6	1.2
11-20	5.99-3	1.0
21-30	2.99-2	0.7
31-45	1.99-1.31	0.6
46-60	1.3-1.0	0.4
61-80	0.99-0.75	0.2

d. Dripfield Sizing.

(1) Minimum sizing of the dripfield area shall be equal to the design wastewater flow divided by the applicable wastewater application rate from Table DD-1 above**.** As an example, for a design flow of 450 gpd in soils having an average percolation rate between 46 and 60 MPI, the minimum required dripfield area for a single (100%) would be:

- 450 gpd/0.4 gpd/ft^2 = 1,125 ft^2

(2) For sizing purposes, effective ground surface area used for drip field sizing calculations shall be limited to no more than 4.0 square feet per drip emitter. For example, 200 lineal feet of dripline with emitters at 2-foot spacing would provide a total of 100 emitters (200/2) and could be used for dispersal to an effective area of up to 400 ft^2 (100 emitters x 4 ft^2/emitter). Conversely, if wastewater flow and percolation design information indicate the need for an effective area of 1,000 ft^2, the dripline design and layout would have to be configured to provide a minimum of 250 emitters spaced over the required 1,000 ft^2 of dispersal area.

(3) Dripfields may be divided into multiple zones which may be located in different areas of a site, as desired or needed to provide the required dripfield size. A single continuous dripfield area is not required. However, any areas proposed for drip dispersal shall be supported by field

observations and measurements to verify conformance with soil suitability and other site requirements. Differences in soil conditions and percolation characteristics from one zone to another may require the use of correspondingly different wastewater application rates and dripfield sizing for each zone.

e. **Pressure Dosing.** Secondary-treated effluent shall be delivered to the dripfield by pressure, employing a pump system and timed dosing. The pressure distribution system shall be designed in accordance with accepted engineering practices and manufacturer recommendations for drip dispersal systems to achieve, at a minimum:

(1) Uniform dosing of treated effluent;

(2) An adequate dosing volume and pressure per manufacturer's guidelines;

(3) Adequate flow rate, final filtering of effluent and suitable piping network to preclude solids accumulation in the pipes and driplines or clogging of discharge emitters;

(4) A means of automatically flushing the filter and driplines at regular intervals; and

(5) Suitable access provisions for inspection, testing and adjustment of the dripfield and components.

Additional requirements for design and construction of pressure distribution piping systems contained in requirements for Pressure Distribution Systems in Section 4.3 above shall also apply.

f. Pump System: The pump system shall be: (a) appropriate for sewage applications; (b) of the size and type to meet the hydraulic design requirements; and (c) designed and constructed in accordance with pump system requirements provided in Section 4 of this Manual.

g. Dripline Material: Dripline shall be manufactured and intended for use with secondary quality wastewater, with minimum 45 mil tubing wall thickness, bacterial growth inhibitor(s), and means of protection against root intrusion.

h. Dripfield Layout: The bottom of each dripline row shall be level and parallel to the slope contour.

i. Dripline Depth: The dripline depth shall be installed at a depth between nine (9) and twelve (12) inches below native grade. Deeper placement of driplines may be considered by Environmental Health on a case-by-case basis.

j. Length of individual driplines: The maximum dripline length shall be designed in accordance with accepted engineering practices and in accordance with the manufacturer's criteria and recommendations.

k. Line and Emitter Spacing: Line and emitter spacing shall be designed as appropriate for soil conditions, slope, and contour. There shall be a minimum spacing of 12 inches between emitters and no emitter shall be located less than 12 inches from the supply and return manifolds.

l. Dual System Operation. Unless exempted by Environmental Health, all drip dispersal systems shall be installed as dual (200% capacity) drip fields, and shall normally be operated with both fields in use. Doses may be alternated among different zones in both the primary and secondary fields, or all zones may be dosed simultaneously. Secondary drip fields should not be left dormant for long periods of time (e.g., more than a few weeks at a time).

m. Inspection Standpipes. A minimum of three (3) inspection standpipes, minimum 3 feet in depth, shall be installed for the purpose of monitoring groundwater levels or for water quality sampling within and around subsurface drip dispersal fields as follows:

(1) One standpipe shall be located within the dripfield area.

(2) One standpipe shall be located 10 to 15 feet up-gradient of the dripfield.

(3) One standpipe shall be located 10 to 15 feet down-gradient of the dripfield.

(4) Inspection standpipes shall be constructed of 2" to 4" diameter pipe (or equivalent), equipped with a wrench-tight cap or pipe plug and a bottom cap. All standpipes shall be perforated beginning at a depth of 12 inches below grade and extending to the bottom of the pipe. Perforations shall consist of hacksaw (nickel) slots at nominal 1" spacing, or equivalent commercially-slotted pipe. Inspection standpipes shall be sealed with a concrete annular seal (or equivalent) for stability and to prevent surface infiltration.

5. ENGINEERING PLANS AND CONSTRUCTION

a. Reference Guidelines. Installation of subsurface drip dispersal systems shall be in accordance with applicable manufacturer guidelines and recommendations.

b. Engineering Plans. Engineering plans for subsurface drip dispersal systems shall include:

(1) All relevant elevation data and hydraulic calculations;

(2) Specific step-by-step construction guidelines and notes for use by the installer;

(3) Erosion control plan for any site over 20%;

(4) Recommended make and model of all components;

(5) Recommended pump system components, with cut-sheet depicting float settings;

(6) Control panel programming; and

(7) An inspection schedule listing critical control points.

c. Construction Inspection. At a minimum, inspection of the drip dispersal system installation should include the following. This is in addition to inspection work required for the treatment system. Joint inspection by the designer, contractor, and Environmental Health staff may be required.

(1) Pre-construction inspection where the construction staking or marking of the drip lines, supply and return piping, pump system and appurtenances is provided and construction procedures discussed;

(2) Water tightness of effluent dosing (pump) tank;

(3) Drip field layout, piping materials and installation, and all associated valves and connections;

(4) Hydraulic testing of the drip system;

(5) Functioning and setting of all control devices; and

(6) Final Inspection to verify that all construction elements are in conformance with the approved plans, specifications, and manufacture recommendations; all inspection standpipes are installed; and erosion control has been completed.

(7) A letter from the designer that the Alternative OWTS has been installed and is operating in conformance with design specifications shall be provided.

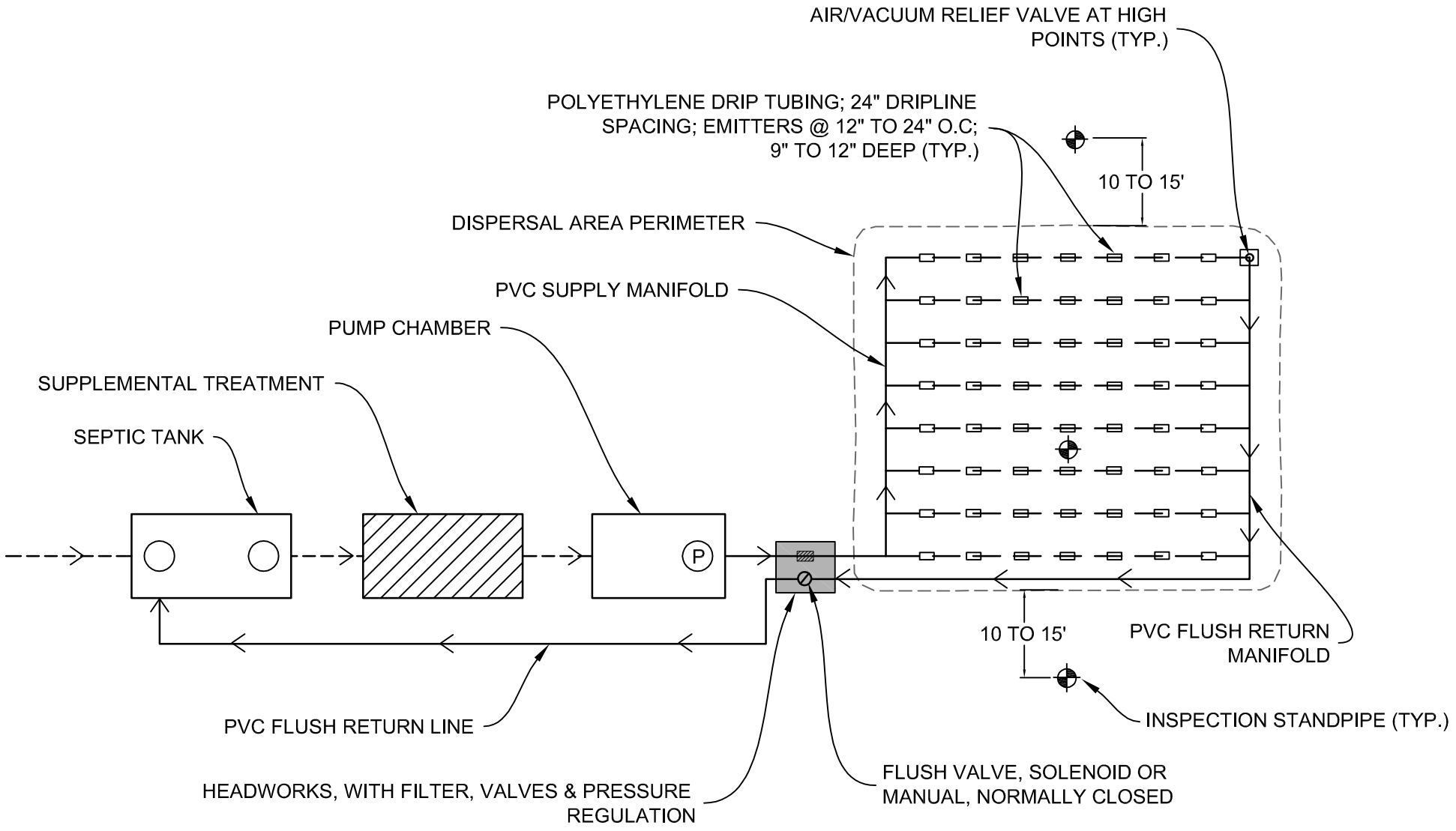
(8) A valid, signed maintenance agreement between the applicant/property owner and service provider shall be provided.

F. MANAGEMENT REQUIREMENTS

Recommended minimum procedures and frequency for inspection, maintenance, monitoring and reporting activities for subsurface drip dispersal systems are outlined in Table DD-2 below**.**

Table DD-2. Drip Dispersal System Management Requirements

	Work	Minimum Frequency
Inspection	• Conduct routine visual observations of drip field, downslope area and surroundings for wet areas, pipe leaks or damage, soil erosion, drainage issues, abnormal vegetation, gophers or other problems. • Conduct routine physical inspections of system components, including valves, filters, and headworks box(es). • Perform special inspections of drip field at time of any landscaping work or other digging in drip field area. • Perform inspections of dosing pump(s) and appurtenances (per system O&M manual, and Performance Evaluation Guidelines, Section 5 of this Manual). • Record observations.	• Every 6 to 12 months.
Maintenance	• Manually remove and clean filter. • Clean and check operation of pressure reducing valves. • Clean flush valves and vacuum release valves.	• Clean filter every 6 months. • Other maintenance annually.
Water Monitoring & Sampling	• Measure and record water levels in dispersal field monitoring wells, as applicable, per permit requirements. • Obtain and analyze water samples from dispersal field monitoring wells, as applicable, per permit requirements.	• According to permit conditions, if applicable.
Reporting	• Report findings to Environmental Health per permit requirements. • Standard report to include dates, monitoring well and other data collected, work performed, corrective actions taken, and performance summary. • Report public health/water quality emergency to Environmental Health immediately.	• According to permit conditions, typically every year, depending on system size, usage, history, location.



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DRIP DISPERSAL SYSTEM SCHEMATIC

FIGURE 4-8

SECTION 5

OWTS PERFORMANCE, MONITORING, AND EVALUATION

CONTENTS

A. OWTS OPERATIONAL PERFORMANCE REQUIREMENTS

1. General

a. All onsite wastewater treatment systems (OWTS) shall function in such a manner as to**:**

(1) Be sanitary and not create a health hazard or nuisance;

(2) Prevent backup or release of wastewater or wastewater effluent into the structure(s) being served by the OWTS; and

(3) Not discharge wastewater or wastewater effluent onto the ground surface or into surface water, or in such a manner that groundwater may be adversely impacted.

b. All OWTS and the individual components shall meet the performance requirements for the specific site conditions and application for which they are approved.

c. All OWTS shall be operated in compliance with applicable performance requirements particular to the type of system, the facility served, and the site conditions.

2. Conventional Systems

a. All septic tanks shall be structurally sound, watertight, provide clarified effluent, have adequate space available for sludge and scum storage, and operate in such a manner as to not create odors or vector attraction, be properly vented, and have a functional baffle and sanitary tees for inlet/outlet from tank chambers.

b. Dispersal systems shall: (a) have adequate dispersal capacity for the structures and/or uses served; (b) not result in seepage or saturated soil conditions within 12 inches of ground surface in or adjacent to the dispersal field; and (c) be free from soil erosion or instability.

c. Effluent shall not continuously pond at a level above the invert (bottom) of the perforated distribution pipe in the dispersal trench or serial distribution overflow line, as applicable.

d. All components of the OWTS shall be functional and in proper working order.

3. Supplemental Treatment

In addition to meeting criteria in 1 and 2 above, supplemental treatment systems shall comply with the following performance requirements.

a. Effluent Quality. Effluent produced by all supplemental treatment systems shall comply with the following minimum 30-day average constituent limitations:

Constituent	(1) For Use with Trench Systems	(2) For Use with Drip Dispersal Systems	(3) Where Pathogen or Nitrogen treatment Required*
Biochemical Oxygen Demand (BOD), mg/L	30	20	Per (1) or (2), as applicable
Total Suspended Solids (TSS), mg/L	30	20	Per (1) or (2), as applicable
Fecal Coliform, MPN/100 ml	N/A	N/A	200
Total Nitrogen, % reduction (effluent/influent)	N/A	N/A	50%

*Due to: (1) proximity to public water supply well or surface water intake per SWRCB OWTS Policy and the County Ordinance Section 4.84.120 or (2) location within an Advanced Protection Management Area subject to SWRCB OWTS Policy supplemental treatment limits (10.9 and/or 10.10). Where applicable, additional requirements for pathogens include: (a) minimum 3-ft separation to groundwater below dispersal field; and (b) minimum 12 inches of soil cover over dispersal piping. Note: TMDL requirements may be stricter than requirements of this Section.

b. Sand Filters. Sand filters shall:

(1) be operated to maintain uniform effluent distribution throughout the sand filter bed;

(2) not result in continuously ponded effluent on the distribution bed infiltrative surface;

(3) be operated and maintained to prevent channeling of flow, erosion of the sand media or other conditions that allow short-circuiting of effluent through the system;

(4) not result in leakage of effluent through the sand filter liner or supporting structure; and

(5) conform to applicable requirements for pressure distribution in Section A.4 below.

c. Proprietary Treatment Units. Proprietary treatment units shall comply with the following:

(1) The unit and its components shall be structurally sound, free from defects, be watertight, and not create odor or vector attraction nuisance.

(2) The unit shall be operated in accordance with the approved manufacturer and certification/listing organization standards.

4. **Alternative Dispersal System**

In addition to the requirements in 1. and 2. above, alternative dispersal systems shall also comply with the following.

a. Pressure Distribution Systems.

a. Pump tanks, risers and lids shall be structurally sound, watertight and store wastewater effluent in such a manner as to not create odors or vector attraction.

b. Pumps, floats, alarms and associated controls shall be in good condition and operate in accordance with design specifications.

c. Dispersal field and components shall:

(a) be operable and in good condition;

(b) maintain uniform distribution of effluent throughout the dispersal field;

(c) not result in continuously ponded effluent in the dispersal trench (or bed) to a level above the invert (bottom) of the distribution pipe; and

(d) in the case of pressure-dosed sand trenches, not result in continuously ponded effluent above the sand interface.

b. Subsurface Drip Dispersal Systems. Subsurface drip dispersal systems and components shall:

(1) not result in seepage or saturated soil conditions above the depth of the dripline within or anywhere along the perimeter of the dripfield;

(2) be free from erosion, slumping or other soil disturbance that threatens to expose or cause damage to drip dispersal tubing or appurtenances;

(3) conform to applicable requirements for pressure distribution in A.4 above; and

(4) be operated and maintained in accordance with manufacturer recommendations.

B. OWTS MONITORING REQUIREMENTS

1. General

A monitoring program will be established for each alternative OWTS as a condition of the operating permit at the time of permit issuance, and may be amended at the time of permit renewal. The purpose of this monitoring is to ensure that the alternative OWTS is functioning satisfactorily to protect water quality and public health and safety.

2. MONITORING ELEMENTS

The monitoring requirements will vary depending on the specific type of alternative OTWS, typically including the following:

a. Recording of wastewater flow based on water meter readings, pump event counter, elapsed time meter, in-line flow meter, or other approved methods;

b. Measurement and recording of water levels in inspection risers/pipes in the dispersal field;

c. Inspection and observation of pump operation and other mechanical equipment;

d. Water quality analysis of selected water samples taken from points in the treatment process, from groundwater monitoring wells, or from surface streams or drainages; typical water quality parameters include total and fecal coliform, nitrate, BOD, and suspended solids;

e. General review and inspection of treatment and dispersal area for evidence of seepage, effluent surfacing, erosion or other indicators of system malfunction; and

f. Other monitoring as recommended by the system designer or equipment manufacturer.

3. **Monitoring Frequency**

The required frequency of monitoring for each alternative OWTS installation will be established in the operating permit, generally in accordance with the following minimum schedule:

- Years 1 through 4 of operation: semi-annual monitoring
- Years 5 and beyond: annual monitoring

Monitoring frequency may be increased for larger flow OWTS (e.g., >2,500 gpd), where warranted because of the complexity of the design or sensitive nature of the site (i.e., impaired areas). Monitoring frequency may be increased for any system if problems are experienced.

4. **Monitoring Responsibility**

Monitoring of alternative OWTS shall be conducted by or under the supervision of one of the following:

a. Registered Civil Engineer;

b. Professional Geologist;

c. Registered Environmental Health Specialist; or

d. Other onsite wastewater maintenance providers recognized by Environmental Health as having experience in the construction and/or operation of OWTS as evidenced by either of the following:

(1) possession of a valid contractor's license (A, C-36 or C-42); or

(2) completion of an onsite wastewater certification training course by a third party entity, such as the California Onsite Wastewater Association (COWA), National Association of Waste Transporters (NAWT), National Sanitation Foundation (NSF), or other acceptable training program as determined by the director.

Additionally, Environmental Health staff may require third-party or County inspection and monitoring of any alternative OWTS where deemed necessary because of special circumstances, such as the complexity of the system or the sensitive nature of the site. The costs for such additional monitoring would be the responsibility of the owner.

5. **Reporting**

Monitoring results shall be submitted to Environmental Health staff in accordance with reporting guidelines provided in this Manual and as specified in the operating permit. The monitoring report shall be signed by the party responsible for the monitoring. Notwithstanding formal monitoring reports, Environmental Health staff shall be notified immediately of any system problems observed during system inspection and monitoring that threaten public health or water quality.

6. **Post-Seismic Inspections**

In addition to regular inspection and monitoring activities, post-seismic inspection and evaluation of alternative OWTS located in high-risk seismic areas may be required in the event of an earthquake causing significant ground shaking in the region, as determined by Environmental Health staff in consultation with other County departments. Environmental Health staff will be responsible for issuing appropriate notices when such inspections are required; those conducting the inspections will be required to report the inspection results to Environmental Health staff. The purpose of such inspections will be to assess and document any damage to the OWTS and to implement corrective measures, as needed, in a timely manner. Post-seismic inspection shall be in accordance with the standard inspection requirements specified in the applicable operating permit for each OWTS, along with any additional requirements that may be prescribed by Environmental Health staff, in consultation with other County departments, based on the intensity, location and other aspects of the particular seismic event.

7. **Data Review**

Environmental Health staff will, from time-to-time, compile and review monitoring and inspection results for alternative OWTS and will provide a summary of results to the San Francisco Bay and Central Coast Regional Water Quality Control Boards as part of required OWTS-water quality assessment per the State Water Board's OWTS Policy. Based on this review, Environmental Health staff may require corrective action for specific properties or certain types of alternative OWTS, or general changes in monitoring and inspection requirements.

C. OWTS PERFORMANCE EVALUATION GUIDELINES

1. Purpose and Performance Criteria

San Mateo County Ordinance requires the completion of an OWTS inspection and performance evaluation in connection with certain types or level of changes or additions to an existing building served by an OWTS. Guidelines for these

inspections are prescribed below. These guidelines may also be useful and employed for other circumstances, such as OWTS inspections in connection with property transfers, for lending institutions, etc.

The purpose of these inspections is to determine, on an individual basis, whether an existing OWTS is functional and meets minimum standards of performance established by the San Mateo County Environmental Health Division. The following performance criteria are established as minimum requirements:

a. There is no surfacing effluent at any time;

b. The effluent is not discharged directly to groundwater; i.e., the dispersal trenches do not extend to or below the seasonal high groundwater level;

c. There is always positive flow to the dispersal field from the septic tank, with no backup to the tank or house plumbing during high groundwater conditions;

d. There is an adequately sized septic tank for the structure being served and it must be serviceable - e.g. access risers for maintenance. The septic tank must be water tight and constructed of approved materials; and

e. There is no indication that the existing OWTS is adversely affecting any beneficial uses of surface water or groundwater.

2. **Inspection Responsibility**

The inspections may be carried out by any of the following:

a. Registered Civil Engineer;

b. Registered Environmental Health Specialist;

c. Professional Geologist (also meeting the requirements of 4a or 4b below); or

d. Other onsite wastewater maintenance providers recognized by Environmental Health as having experience in the construction and/or operation of OWTS as evidenced by either of the following:

(1) possession of a valid contractor's license (A, C-36 or C-42); or

(2) completion of an onsite wastewater certification training course by a third party entity, such as the California Onsite Wastewater Association (COWA), National Association of Waste Transporters (NAWT), National Sanitation Foundation (NSF), or other acceptable training program as determined by the director.

Maintenance provider shall provide documentation to Environmental Health staff demonstrating minimum qualifications.

The individual conducting the field inspection work shall be familiar with the testing and inspection procedures outlined in this document.

3. **Background Data**

Prior to conducting the field inspection, compile and review background information pertaining to the property, structures and OWTS. This should include permit information, site plan, "As Built" drawings of the OWTS, prior inspection results, etc. Important information to look for are the location of the septic tank and dispersal field, the locations of all buildings, decks, cut banks, creeks, wells, reserve area, direction and percentage of slope, any other items which may affect the OWTS, and identification of the reserve dispersal field area(s) and evaluate any conflicting encroachment by buildings or other site development.

4. **Initial Site Observations**

a. First, walk the property to confirm the location of the septic tank, dispersal field, and other pertinent features of the system.

b. Next check setbacks between the existing dispersal field and reserve areas and any man-made structures, e.g., to confirm no building foundations recently added within or too close to the existing dispersal field or expansion areas.

c. Check septic tank and dispersal field areas for any obvious signs of existing system problems such as surfacing effluent, odors, gray water bypasses, saturated soil in the dispersal field area, or any other condition that may suggest an existing or impending problem.

d. Determine if the system has dual dispersal fields and, if so, locate and check the diversion valve: (a) to see that it is functional; and (b) to determine which field is in service. Note all observations. To the extent possible, determine the length of each line and depth of pipe (below ground surface). This may require probing with a fiberglass rod or hand excavation.

5. **Septic Tank Inspection**

a. Access Risers. First, locate the septic tank and determine if permanent access risers have been installed on the tank. If equipped with risers, check their general condition. Ideally, the risers should be properly grouted or sealed to the top of the septic tank to prevent groundwater and/or surface water intrusion. The lids of the risers should also be properly sealed to prevent odors or the entry of insects, (e.g., flies, mosquitoes, etc.). Any observed defects in the access risers should be noted. If the tank lacks access risers, this information should be noted; and the property owner should be provided information about access risers and advised to have them installed.

b. Opening the Tank. After inspecting the access risers carefully remove the riser lids. Take care to prevent or minimize damage and disturbance to adjacent vegetation and yard area. Concrete lids are heavy and may be "cemented" in place by silt. A steel bar or other suitable tool may be needed to assist in opening the lids. During the tank inspection process, personnel should wear protective boots and gloves (neoprene) to guard against infection from pathogenic organisms.

c. Structural Condition. Once the tank is open observe and probe the structural condition of the septic tank to check for any obvious signs of cracking or other structural defects in the tank. A steel rod is used to probe the walls and bottom of the tank. Normally, the tank will need to be pumped-out to perform this procedure.

   Inspect the inlet and outlet sanitary “tees” to make sure they are in satisfactory condition, properly positioned, and free of scum accumulation, rocks, root matter or other obstructions. Note any problems and assess whether or not additional tests or observations are necessary to verify the structural integrity of the tank.

d. Liquid Level. Measure and note the liquid level in the tank with respect to the outlet pipe. In a properly functioning system, the level in the tank should be even with the invert (i.e., bottom) of the outlet pipe. If the liquid level is below the outlet pipe, the tank is probably leaking. If the liquid is above the pipe, the dispersal field is either flooded or the line to the field is obstructed or possibly set with an improper grade.

e. Tank Capacity. Determine the capacity of the septic tank (in gallons) from as-built plans or from measurements of the width, length and depth (below outlet pipe) of the tank. Compare the capacity with the established water use/wastewater flow rates for the property or building size (e.g., bedroom count).

6. Hydraulic Load Test

a. General. After tank inspection, proceed with a hydraulic load test (HLT) of the septic tank and dispersal field. The described here is only for conventional gravity-fed dispersal trench systems, and does not apply if the system utilizes a pump. A separate test for pump systems is described in the next section.

The HLT is conducted by surcharging the septic tank with about 150 gallons of water over a 20 to 30-minute period, and then observing the rise of water in the tank and the subsequent draining process. Tracer dye, added to the tank during the test, may be used to assist in investigating the possible contribution of effluent where surface wetness/seepage is suspected or observed.

Alternatively, a portable water meter can be installed between the house faucet and the hose to directly measure the water volume added.

b. Test Procedures**.** Step-by step procedures for the HLT are as follows:

(1) Measure the location of the static water level in the septic tank (at the outlet side) as an initial reference point.

(2) Begin surcharging the tank with water to start the HLT.

(3) Observe any rise in the liquid level at the outlet pipe and measure the final level at the end of filling. Typically, the liquid level will rise from an inch or two, at which point the liquid level should stabilize for the remainder of filling, and then return to the initial level in a matter of minutes after filling is stopped.

(4) After the filling cycle is finished, observe the water level decline in the tank until it returns to the initial level; note how much time this takes. If the initial level is not attained within 30 minutes, terminate the test and note water level.

c. System Rating. Based on the water level readings during the test, assign a hydraulic performance rating to the system in accordance with the guidelines provided in Table 1 below. It should be emphasized that these are guidelines only; and special circumstances may be cause for modifying the evaluation and rating of a particular system. A system receiving a "Failed" rating will likely require upgrading and/or additional investigation to determine the underlying cause(s).

6. **Final Dispersal System Inspection**

At the completion of the HLT, check the dispersal system area and down-slope areas again for indications of surfacing effluent, wetness, or odors. If any of these conditions exist as a result of the HLT, this would likely be considered evidence of system failure. If the field observations of wetness are not obviously the result of the HLT, further investigation may be necessary to determine if the dispersal system is failing and the cause of the failure. Additional investigative work may include water quality sampling (for total and fecal coliform, ammonia and nitrate) or dye testing. The cause of seepage could be related to gopher holes, site drainage or erosion problems, excessive water use or simply the age of the system.

TABLE 1
HYDRAULIC LOAD TEST RATING GUIDELINES

RATING	SEPTIC TANK RESPONSE TO HYDRAULIC LOADING
EXCELLENT	No noticeable rise in water level during filling.
SATISFACTORY	Maximum water level rise of about 2 inches, with decline to initial level within about 15 minutes after end of filling.
MARGINAL	Maximum water level rise of about 3 inches, with decline to initial level within about 30 minutes after end of filling.
POOR	Water level rise of more than 3 inches, with decline not reaching initial level within 30 minutes after end of filling.
FAILED	Water level rise of more than 3 inches, with no noticeable decline within 30 minutes after end of filling.

8. **Pump Systems**

For systems equipped with an effluent pump, the following inspection procedures should be followed. This is in addition to inspection of the septic tank as described under Section E. “Septic Tank Inspection”.

a. Pump Test. The pump test is conducted by adding sufficient water to the basin to activate the pump "ON" control, and observing the operation of the system over at least one pumping cycle. The total amount of water added should be about 150 gallons, to approximate the same hydraulic loading of the dispersal field as for gravity systems.

   Using a garden hose, the water may be added to the outlet side of the septic tank, or directly to the pump basin. If filling the basin directly, be careful to minimize turbulence and disturbance of sediment or sludge that may have collected in the basin. This can be best accomplished by directing the stream of water against the interior side of the chamber, rather than directly toward the bottom of the pump chamber.

   Observe the filling of the basin, and note and measure the point at which the pump is activated. Immediately stop the filling operation and observe the pumping cycle until the pump shuts off. While the pump is discharging, examine the piping system (where exposed) for any leaks. Even small leaks could be a forewarning of possible breaks in the pressure line at some point in the future; and these should be corrected as soon as possible.

   Note and measure the depth at which the pump shuts off, and calculate the volume of water between the "ON" and “OFF” measurements. Compare this dose with the design dose volume specified for the system. If the dose is too high or too low, float controls should be readjusted to correct the dose. Any adjustments to the pump system should be done by a licensed and properly qualified contractor (not by the inspector, unless so qualified).

   The pumping cycle (from "ON" to "OFF') level should be timed and the results recorded on the inspection form. Typically, if the pump is sized and operating properly, pump operation lasts about 1 to 5 minutes per dose. Pump cycles lasting longer than this may indicate a flooded dispersal field and/or pump or piping deficiencies. If this is observed, it should be noted and further investigation of the pump and dispersal field should be conducted to determine the specific cause.

Dividing the pump volume (in gallons) by the pump cycle time (in minutes) will give an approximate pump discharge rate (in gpm). Check the observed pump rate against the design requirement for the system, and note any discrepancy.

If during filling of the pump basin, the pump does not activate when the water reaches the high liquid level control (i.e., "ON" float), discontinue the pump test. This indicates a pump failure, defective float switch or wiring problems and will require the repair service of a competent contractor familiar with these types of systems. The pump system failure should be noted, communicated immediately to the resident/owner, and followed up with prompt corrective action.

b. Dispersal System Inspection. At the completion of the pump test, check the dispersal system area for signs of seepage in the same manner as previously described for gravity-fed systems following hydraulic loading.

c. Audio and Visual Alarm. Test the pump system audio and visual alarm to confirm that it can be heard at the house/building if mounted at the pump tank.

9. CLEAN-UP

At the completion of the OWTS inspection and testing, replace all access lids and clean all tools before leaving the site. All tools and equipment that come into contact with wastewater should be cleaned and disinfected with a 1:5 bleach solution, then rinsed with fresh water; and all contaminated rinse water should be disposed of in the septic tank.

10. OPTIONAL SOIL BORING.

Ideally, as part of the performance evaluation a hand-augured boring should also be made within or adjacent to the dispersal field for observation of soils and groundwater conditions. If a hand-auger boring is not feasible and the area is known or estimated to have high groundwater conditions, a motorized drill rig or excavator may be necessary. This is especially important if the performance evaluation is in connection with a proposed building remodel or other system expansion. If groundwater is observed in the test hole, measure the depth to water prior to and following the HLT. Backfill the test hole before leaving the site.

SECTION 6

ADVANCED PROTECTION MANAGEMENT PROGRAM

CONTENTS

SECTION 6
ADVANCED PROTECTION MANAGEMENT PROGRAM

A. INTRODUCTION

According to Section 10.0 of the SWRCB OWTS Policy, 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.

Per County Ordinance Article 6, the Advanced Protection Management Program for San Mateo County is intended to apply to new, replacement and expansion OWTS within the following areas:

1. Those lands addressed by a specific TMDL issued by a CRWQCB;

2. Those specific areas as may be determined by the Board of Supervisors as impaired areas based on results of cumulative impact evaluations consistent with the OWTS Code. Such impaired areas may require additional protections related to OWTS design, installation, and reporting (none established as of October 2015); and

3. Those lands within six hundred (600) lineal feet from the natural or levied bank of creeks and rivers, high water for lakes and reservoirs, and the mean high tide line for tidally influenced water bodies, of any impaired water body or segments thereof that are identified by the State Water Board and by US EPA pursuant to Section 303(d) of the Federal Clean Water Act.

Description of all areas considered to be within the Advanced Protection Management Program will be maintained by San Mateo County Environmental Health as part of this Onsite Systems Manual. Maps are provided in at the end of this section for those areas of the County currently designated as “impaired”.

B. REQUIREMENTS

1. For those lands addressed by a specific TMDL, advanced protection management requirements for OWTS will be as defined by the TMDL implementations plan. However, no TMDLs have been completed as of January 2016, that include load allocations for OWTS. 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.

2. For those specific impaired areas determined by Environmental Health based on cumulative impact evaluations, any advanced protection management requirements for OWTS will be defined as to mitigate the specific impact(s) (none identified as of January 2016).

3. For those areas within six hundred (600) lineal feet of 303(d) listed water bodies impaired for either pathogens or nitrogen, in the absence of an adopted TMDL, new, replacement and expansion OWTS shall comply with applicable requirements contained in SWRCB OWTS Policy, Section 10, and in this Onsite Systems Manual, including:

   a. Operating Permit Required as Alternative OWTS.

      Apply for and maintain an operating permit as an Alternative OWTS, subject to all the requirements of this Manual and County Ordinance 4.84.

   b. Supplemental Treatment for Pathogen Impairment.

      (1) Effluent Quality. For OWTS adjacent to water bodies impaired for pathogens, provide ongoing supplemental treatment for pathogens using supplemental treatment components designed to perform disinfection providing sufficient pretreatment of the wastewater so that effluent from the supplemental treatment components does not exceed a thirty (30)-day average TSS of thirty (30) mg/L and shall further achieve an effluent fecal coliform (or E. coli) bacteria concentration less than or equal to two hundred (200) MPN per one hundred (100) milliliters.

      (2) Groundwater Separation. The minimum soil depth shall not be less than three (3) feet, and the minimum depth to the anticipated highest level of groundwater below the bottom of the dispersal system shall be as defined in County Ordinance 4.84, and Section 3 of this Manual. All dispersal systems shall have at least twelve (12) inches of soil cover.

      (3) Monitoring and Reporting. In addition to all other design, operation, monitoring and reporting requirements of County Ordinance 4.84 and this Onsite Systems Manual, OWTS with required disinfection for pathogens shall be inspected for proper operation quarterly by a service provider while the system is in use unless a telemetric monitoring system is installed capable of continuously assessing the operation of the disinfection system. The wastewater flowing from the supplemental treatment components that perform disinfection shall be sampled quarterly

at a point in the system after the treatment components and prior to the dispersal system and shall be tested for fecal coliform (or E. coli). Reporting of all effluent sample results shall include the geographic coordinates of the sample location. Effluent samples shall be taken be a service provider, using appropriate chain of custody and sample holding and handling techniques, and analyzed by a California Department of Public Health certified laboratory.

c. Supplemental Treatment for Nitrogen Impairment

For OWTS adjacent to a water body impaired for nitrogen, the OWTS must provide ongoing supplemental treatment for nitrogen using supplemental treatment components certified by NSF, or other approved third party tester, to meet a fifty percent (50%) reduction in total nitrogen when comparing the thirty (30)-day average influent to the thirty (30)-day average effluent.

2012 INTEGRATED REPORT — ALL ASSESSED WATERS

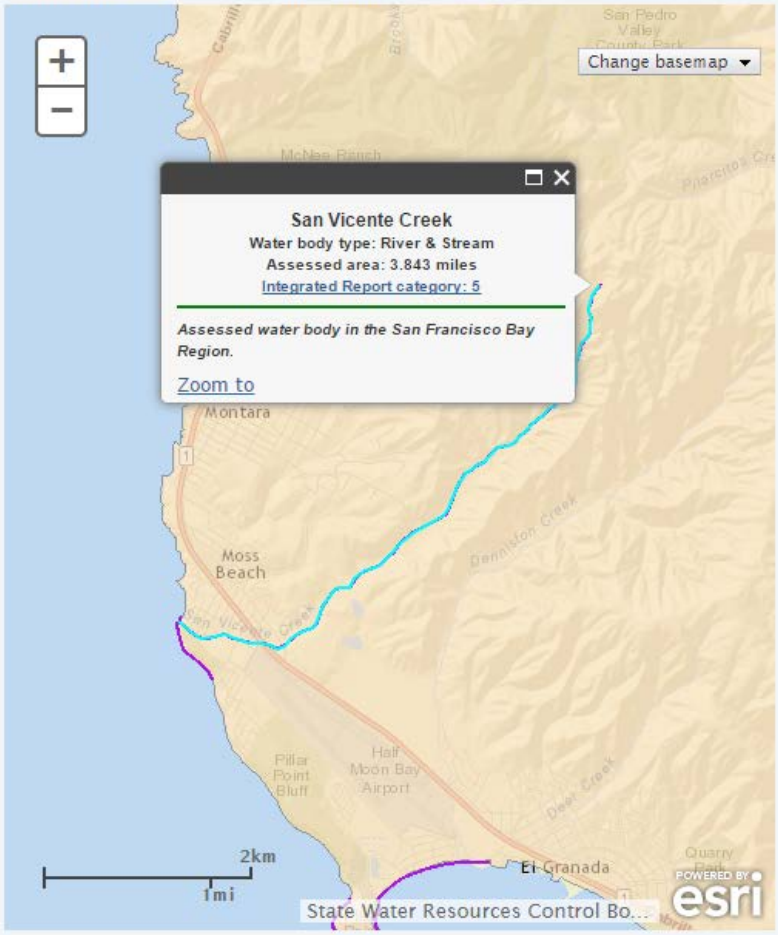
Zoom to county: San Mateo ▾ Show county

Zoom to Regional Board: All ▾ Show Regional Board

Map Help

Zoom to water body: *(Filter: All)*

San Vicente Creek ▾ Filter list by: ▾ Reset list



San Vicente Creek Close

Pollutant assessments

Pollutants	**Listing Decision**	Do Not Delist from 303(d) list (TMDL required list)
	Report Link	18262
	Potential Sources	n/a
	Schedule	Est. TMDL completion: 2019
	Comments	
Coliform Bacteria		

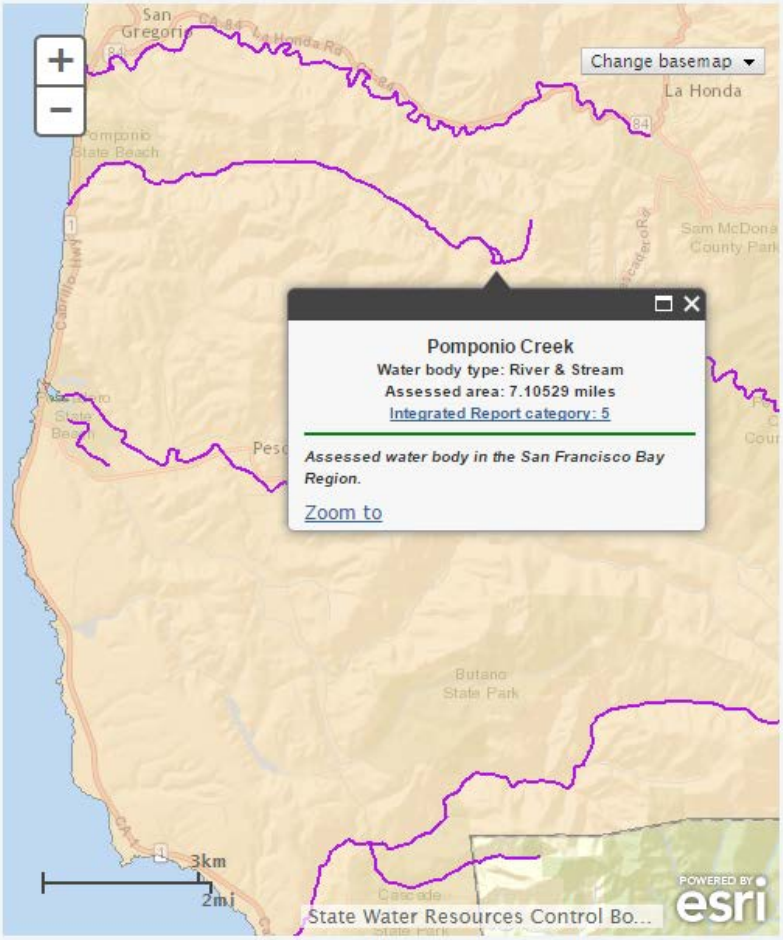
2012 INTEGRATED REPORT — ALL ASSESSED WATERS

Zoom to county: San Mateo
Show county

Zoom to Regional Board: All
Show Regional Board

Map Help

Zoom to water body: *(Filter: All)*
Pomponio Creek | Filter list by: | Reset list



Pomponio Creek Close
Pollutant assessments

Pollutants	Listing Decision	Report Link	Potential Sources	Schedule	*Comments*
Coliform Bacteria	List on 303(d) list (TMDL required list)	30355	n/a	Est. TMDL completion: 2019	

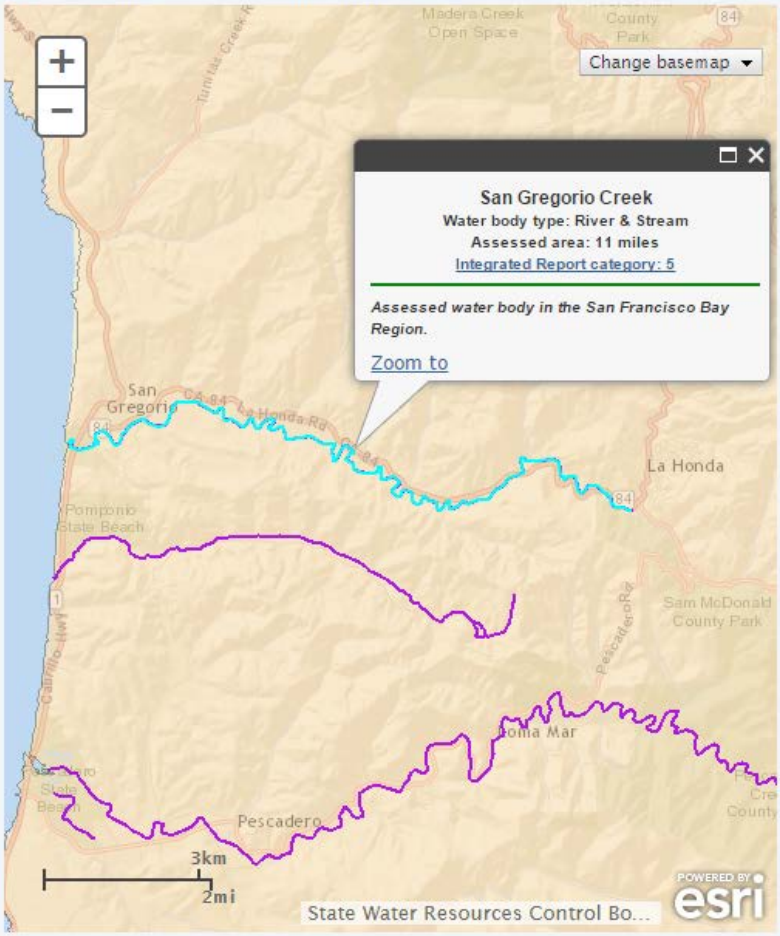
2012 INTEGRATED REPORT — ALL ASSESSED WATERS

Zoom to county: San Mateo ☑ Show county

Zoom to Regional Board: All ☐ Show Regional Board

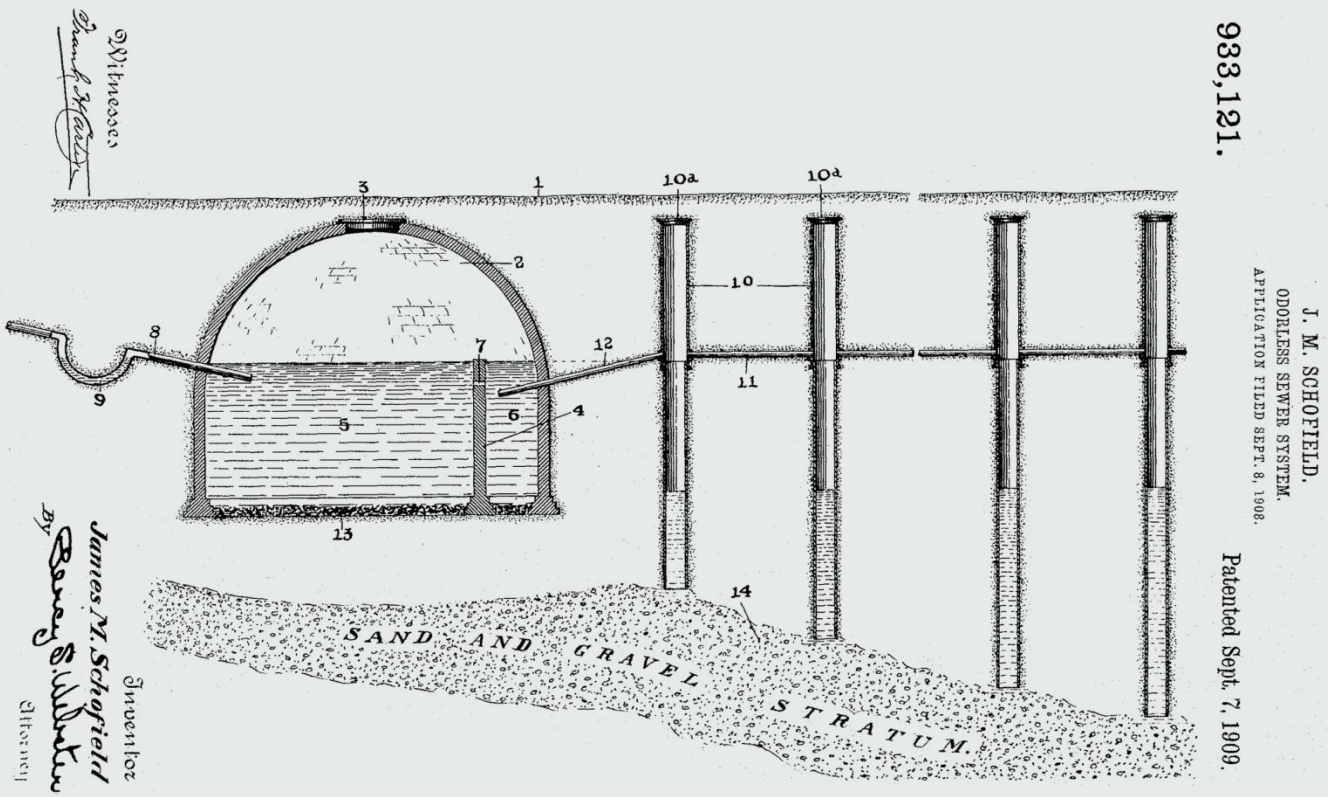
Map Help

Zoom to water body: *(Filter: All)* San Gregorio Creek | Filter list by: | Reset list



San Gregorio Creek — *Pollutant assessments* — Close

Pollutants	Listing Decision / Report Link / Potential Sources / Schedule / *Comments*
Cadmium	303(d) list (TMDL required list) / 29942 / n/a /
Coliform Bacteria	Do Not Delist from 303(d) list (TMDL required list) / 18052 / n/a / Est. TMDL completion: 2019 /
Copper | Lead | Nickel | Silver | Zinc	Do Not List on 303(d) list (TMDL required list) / 29791 / n/a /
Sedimentation/Siltation	List on 303(d) list (TMDL required list) / 20017 / n/a / Est. TMDL completion: 2013 / *Impairment to steelhead habitat.*



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.

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.

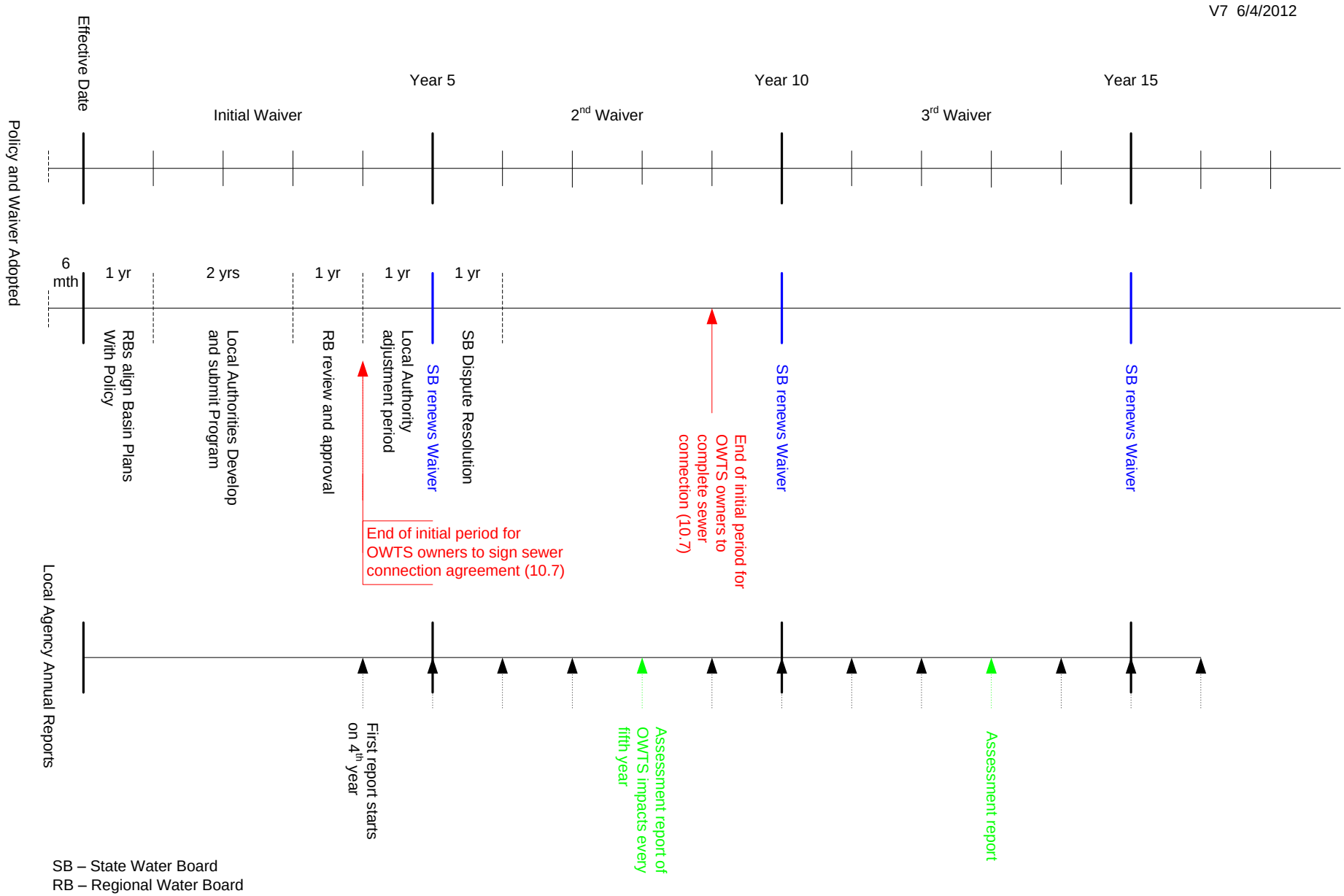
14.1 Loan interest rates for loans to local agencies will be set by the State Water Board using its policies, procedures, and strategies for implementing the Clean Water State Revolving Fund program, but will typically be one-half of the States most recent General Obligation bond sale. Historically interest 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

Attachment 2

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

153.206 - FLOOR AREA

(A) - Floor area requirements.

(1) Table E sets forth the basic *floor area* requirements which apply to all zoning districts. Such basic regulations are further defined and supplemented by the additional requirements and exceptions set forth in this section.

TABLE E: Floor Area Requirements

Zone District	Total Floor Area (TFA) Allowed	Maximum Size of Main Residence [3]	Barns and Stables [6]	Accessory Structures [5]
R-1	(1.4) (10% of *lot area* +1000 sq. ft, up to a maximum of 3,000 sq. ft.), up to a maximum of 4,200 sq. ft.	Outside the Glens: 10% of *lot area* + 1000 sq. ft, up to a maximum of 3,000 sq. ft. (subject to TFA limit) Maximum with exception: Sliding scale [3] up to a maximum of 4,200 sq. ft. Inside the Glens: Lots <3,500 sq. ft.: 10% of *lot area* + 1,000 sq. ft. Lots ≥3,500 sq. ft. to <14,000 sq. ft.: Sliding scale [3] up to 3,000 sq.	2,500 sq. ft.	1,500 sq. ft.

		ft. Lots ≥14,000 sq. ft.: 3,000 sq. ft. Lots ≥20,000 sq. ft.: Maximum with exception: Sliding scale [3] up to 4,200 sq. ft.		
SR	18.0% of *lot area*	4,000 square feet Maximum with exception: Sliding scale [3] up to 5,500 square feet	2,500 square feet	1,500 square feet
RR	9.00% of *lot area* [2]	6,000 square feet [4] Maximum with exception: Sliding scale [3] up to 8,800 square feet	2,500 square feet	1,500 square feet
SCP-5	5.50% of *lot area* [2]	6,000 square feet [4] Maximum with exception: Sliding scale [3] up to 8,800 square feet	3,000 square feet	1,500 square feet
SCP-7.5	3.50% of *lot area* [2]	6,000 square feet [4] Maximum with	3,000 square feet	1,500 square feet

		exception: Sliding scale [3] up to 8,800 square feet		
SCP-10	2.75% of *lot area* [2]	6,000 square feet [4] Maximum with exception: Sliding scale [3] up to 8,800 square feet	3,000 square feet	1,500 square feet
OSH [1]	2.75% of *lot area*	1,500 square feet	3,000 square feet	N/A
OSRL [1]	2.75% of *lot area*	1,500 square feet	3,000 square feet	N/A
OSRM [1]	2.75% of *lot area*	1,500 square feet	3,000 square feet	N/A
OSN [1]	2.75% of *lot area*	1,500 square feet	3,000 square feet	N/A
OSM [1]	2.75% of *lot area*	1,500 square feet	N/A	N/A

1 See § 153.202(I) of the Woodside Mun. Code.

2 Adjusted TFAs for legal *nonconforming lots* in the SCP and RR zone districts are listed in § 153.206(A)(1)(a)(Tables E-1 through E-4) of the Woodside Mun. Code.

3 For exceptions to maximum residence size limitations, see § 153.206(C) of the Woodside Mun. Code.

4 *Maximum size of a main residence* may be limited by the adjusted TFA allowed for legal *nonconforming lots*, see footnote 2.

5 See §§ 153.107—153.108 of the Woodside Mun. Code, for size requirements related to greenhouses and covered *equestrian riding arenas*.
6 See §153.206(A)(2) of the Woodside Mun. Code, for size limitations on barns with an ADU that exceeds 50% of the total barn square footage.

(a) The following tables modify the maximum permissible *total floor area* limits for legal *nonconforming lots* in the SCP and RR zones:

Table E-1: Adjusted TFAs for Legal Nonconforming Lots in the SCP-5 Zone District	
Lot Area	Total Floor Area Allowed in the SCP — 5 Zone District
5 acres	11,979 square feet (5.5%)
4.9 acres	11,923 square feet
4.8 acres	11,845 square feet
4.7 acres	11,768 square feet
4.6 acres	11,691 square feet
4.5 acres	11,613 square feet
4.4 acres	11,536 square feet

4.3 acres	11,459 square feet
4.2 acres	11,381 square feet
4.1 acres	11,304 square feet
4 acres	11,227 square feet
3.9 acres	11,149 square feet
3.8 acres	11,072 square feet
3.7 acres	10,995 square feet
3.6 acres	10,917 square feet
3.5 acres	10,840 square feet
3.4 acres	10,763 square feet
3.3 acres	10,686 square feet
3.2 acres	10,608 square feet
3.1 acres	10,531 square feet
3 acres	10,454 square feet (8.00%)
2.9 acres	10,232 square feet (8.10%)
2.8 acres	10,001 square feet (8.20%)
2.7 acres	9,762 square feet (8.30%)

2.6 acres	9,514 square feet (8.40%)
2.5 acres	9,257 square feet (8.50%)
2.4 acres	8,991 square feet (8.60%)
2.3 acres	8,716 square feet (8.70%)
2.2 acres	8,443 square feet (8.80%)
2.1 acres	8,141 square feet (8.90%)
2 acres	7,841 square feet (9.00%)
1.9 acres	7,532 square feet (9.10%)
1.8 acres	7,214 square feet (9.20%)
1.7 acres	6,887 square feet (9.30%)
1.6 acres	6,551 square feet (9.40%)
1.5 acres	6,207 square feet (9.50%)
1.4 acres	5,854 square feet (9.60%)
1.3 acres	5,493 square feet (9.70%)
1.2 acres	5,123 square feet (9.80%)
1.1 acres	4,744 square feet (9.90%)
1 acre	4,356 square feet (10.00%)

<1 acre	10.00% of *lot area*

Table E-2: Adjusted TFAs for Legal Nonconforming Lots in the SCP-7.5 Zone District	
Lot Area	Total Floor Area Allowed in the SCP — 7.5 Zone District
7.5 acres	11,435 square feet (3.5%)
7 acres	11,396 square feet
6.5 acres	10,780 square feet
6 acres	10,163 square feet
5.5 acres	9,547 square feet
5 acres	8,931 square feet
4.9 acres	8,807 square feet
4.8 acres	8,684 square feet
4.7 acres	8,561 square feet
4.6 acres	8,438 square feet
4.5 acres	8,314 square feet

4.4 acres	8,191 square feet
4.3 acres	8,068 square feet
4.2 acres	7,945 square feet
4.1 acres	7,821 square feet
4 acres	7,698 square feet
3.9 acres	7,575 square feet
3.8 acres	7,451 square feet
3.7 acres	7,328 square feet
3.6 acres	7,205 square feet
3.5 acres	7,082 square feet
3.4 acres	6,958 square feet
3.3 acres	6,835 square feet
3.2 acres	6,712 square feet
3.1 acres	6,589 square feet
3 acres	6,465 square feet
2.9 acres	6,342 square feet
2.8 acres	6,219 square feet

2.7 acres	6,095 square feet
2.6 acres	5,972 square feet
2.5 acres	5,849 square feet
2.4 acres	5,726 square feet
2.3 acres	5,602 square feet
2.2 acres	5,479 square feet
2.1 acres	5,356 square feet
2 acres	5,232 square feet
1.9 acres	5,109 square feet
1.8 acres	4,986 square feet
1.7 acres	4,863 square feet
1.6 acres	4,739 square feet
1.5 acres	4,616 square feet
1.4 acres	4,493 square feet
1.3 acres	4,370 square feet
1.2 acres	4,246 square feet
1.1 acres	4,123 square feet

1 acre	4,000 square feet
<1 acre	9.00% of *lot area*

Table E-3: Adjusted TFAs for Legal Nonconforming Lots in the SCP-10 Zone District	
Lot Area (Acres)	Total Floor Area Allowed in the SCP — 10 Zone District
10 acres	11,979 square feet (2.75%)
9.5 acres	11,535 square feet
9 acres	11,062 square feet
8.5 acres	10,590 square feet
8 acres	10,117 square feet
7.5 acres	9,644 square feet
7 acres	9,172 square feet
6.5 acres	8,699 square feet
6 acres	8,227 square feet
5.5 acres	7,754 square feet

5 acres	7,281 square feet
4.9 acres	7,187 square feet
4.8 acres	7,092 square feet
4.7 acres	6,998 square feet
4.6 acres	6,903 square feet
4.5 acres	6,809 square feet
4.4 acres	6,714 square feet
4.3 acres	6,620 square feet
4.2 acres	6,525 square feet
4.1 acres	6,431 square feet
4 acres	6,336 square feet
3.9 acres	6,241 square feet
3.8 acres	6,147 square feet
3.7 acres	6,052 square feet
3.6 acres	5,958 square feet
3.5 acres	5,863 square feet
3.4 acres	5,769 square feet

3.3 acres	5,674 square feet
3.2 acres	5,580 square feet
3.1 acres	5,485 square feet
3 acres	5,391 square feet
2.9 acres	5,296 square feet
2.8 acres	5,202 square feet
2.7 acres	5,107 square feet
2.6 acres	5,013 square feet
2.5 acres	4,918 square feet
2.4 acres	4,824 square feet
2.3 acres	4,729 square feet
2.2 acres	4,635 square feet
2.1 acres	4,540 square feet
2 acres	4,446 square feet
1.9 acres	4,351 square feet
1.8 acres	4,256 square feet
1.7 acres	4,162 square feet

1.6 acres	4,067 square feet
1.5 acres	3,973 square feet
1.4 acres	3,878 square feet
1.3 acres	3,784 square feet
1.2 acres	3,689 square feet
1.1 acres	3,595 square feet
1 acre	3,500 square feet
<1 acre	8.00% of *lot area*

Table E-4: Adjusted TFAs for Legal Nonconforming Lots in the RR Zone District	
Lot Area	Total Floor Area Allowed in the RR Zone District
3.0 acres	11,791 square feet (9%)
2.5 acres	9,801 square feet (9.0%)
2 acres	7,928 square feet (9.1%)
1.9 acres	7,614 square feet (9.2%)
1.8 acres	7,292 square feet (9.3%)

1.7 acres	6,961 square feet (9.4%)
1.6 acres	6,621 square feet (9.5%)
1.5 acres	6,273 square feet (9.6%)
1.4 acres	5,914 square feet (9.7%)
1.3 acres	5,550 square feet (9.8%)
1.2 acres	5,175 square feet (9.9%)
1.1 acres	4,791 square feet (10.0%)
1.0 acre	10.1% of *lot area*

(2) The gross *floor area* of any accessory building shall not exceed 1,500 square feet, except barns and stables, which shall not exceed 2,500 square feet unless the barn or stable is located in the OS or SCP Districts, where barns and stables may not exceed 3,000 square feet. Buildings that include barns or stables, and an *accessory dwelling unit* having floor area that exceeds 50 percent of the building footprint, may not have building footprint that exceeds 1,500 square feet.

(3) The gross *floor area* of a covered *constructed equestrian riding arena* shall not exceed the size permitted for an *accessory use* or permitted *conditional use* as outlined in Sections 153.107 Table A-2 and 153.107 Table A-3, subject to the *total floor area* limit for a property.

(B) - Measurement of floor area.

(1) The *floor area* of *structures* as set forth in division (A) of this section on a site shall be measured as related to *exterior wall height* as explained in Table F.

(2) Measurements of *floor area* shall be from the outside surfaces of the exterior *wall*.

(3) *Plate* height is measured from *existing grade* at time of application, or from *finished grade*,

whichever is lower.

(4) Table F applies to all *structures* except *stables*, *barns*, and covered equestrian arenas, whose *floor areas* equal their *footprint* areas.

(5) The Community Commercial District utilizes *building coverage*, in place of *floor area*. See Section 153.210, for *building coverage* requirements, measurement, and exceptions.

TABLE F — Floor Area Calculation Method

STEP 1:

Divide the floor plan of the *building* into non-overlapping rectangular, triangular and circular sections, each with the following characteristics:

a. The *slope* of the *grade* under each section remains the same over the entire section (±5%). If the *slope* changes by more than 5%, break the section into multiple sections at the point that the *slope* changes.

b. If the roof line changes (e.g., a second story), start a new section at that point.

NOTE: *Floor area* is counted to the outside of the exterior stud *wall*. Thick finishes and veneers, or unused spaces such as decorative pilasters, are also included in *floor area*.

STEP 2:

Add up the *plate* heights at each corner of the section and divide the total by four if the section is a rectangle, and divide by three if the section is a triangle. If the section is a circle, measure the *plate* height at the center. This gives the average *plate* height (APH) for each section.

The *plate* height is the distance from the *existing grade* at the time of application or *finished grade* (whichever is lower) to the intersection of the exterior *wall* plane with the underside of the roof plane. Flat soffits do not lower the *plate* height.

Clarification 1: *Plates* DO NOT run up the ends of gable roofs, but are assumed to run in a straight line from the *plate* height at one corner of the *building* to the *plate* height at the other corner.

Clarification 2: *Plates* DO run along the roof line of shed roofs, which are defined as a roof which terminates at its high point with a *wall* which has more than four feet exposed.

Clarification 3: *Plates* DO run along roofs that have a pitch greater than 12:12, which are considered a *wall*.

Clarification 4: Gambrel roofs and parapets are a judgment call by the *Planning Director* based on the pitch of the gambrel and the appearance of the roof.

STEP 3:

If the average *plate* height for a section is 11 feet or less, the *floor area* for that section is equal to its *footprint* area. If the average *plate* height of a section is over 11 feet, multiply the *footprint* area of that section by an additional 0.1 for each foot the average *plate* height (APH) is over 11 feet. (Example: If a section's APH is 13 feet, multiply the corresponding *footprint* area by 1.2 to get that section's *floor area*.)

STEP 4:

Add up the *floor areas* for each section to determine the *total floor area* for the *building*.

Apply *floor area* credits or exclusions, as specified in the following Table F-1.

TABLE F-1: Floor Area Exclusions and Credits	
Feature	Multiplier
One-story portions of main residences: - Up to 600 square feet of *footprint* area that would otherwise have a *floor area* multiplier of either (i) more than 1.0 but less than 1.5 shall have its multiplier reduced to 1.0, or (ii) greater than 1.5 shall have its multiplier reduced by 0.5. Clarification 1: *Basements* shall not be counted as *stories* in determining	

what constitutes one-story portions. Clarification 2: Stairwells are considered two-story elements, except when they only provide access to the main floor, from a *basement*.	
Attic spaces: - Are spaces within the roof *structure* of a *building* and usually do not count toward *floor area*, except when associated roof pitches exceed 12:12, per Table F.	
Garages and *carports*: attached and detached.	≥1.00
- In the *Woodside Glens*, *garages*, *carports, and parking platforms,* attached and detached, up to 440 square feet, with a plate height ≤11 feet, where TFA of all other development does not exceed 3,000 square feet.	0.00
- In the *Woodside Glens*, *garages*, *carports, and parking platforms,* attached and detached, up to 440 square feet, on *lots* that slope downward from the roadway where additional height is needed to meet the roadway elevation and therefore the plate heights are >11 feet, and where there are no exterior *walls* enclosing the foundation of the *garage*, *carport*, or *parking platform.*	= 1.00
- In the *Woodside Glens*, portions of the floor space of *garages*, *carports, and parking platforms,* attached and detached, exceeding 440 square feet; or *garages*, *carports, and parking platforms* in their entirety that have exterior *walls* enclosing the foundation of the *garage*, *carport*, or *parking platform,* on *lot* that slope downward from the roadway where additional height is needed to meet the roadway elevation and therefore the plate heights are >11 feet.	= ≥1.00

Covered Decks/Porches/Patios/Balconies:	
- Covered with a roof, eave, overhang of an upper *story*, or another *deck*, that does not extend beyond 8 feet from the *structure* and is not enclosed except for exterior *walls* of the *structure*.	0.00
- Covered with a roof, *eave*, overhang of an upper *story*, or another *deck* that does extend beyond 8 feet from the *structure* (only that portion that extends beyond 8 feet counts).	≥1.00
- Covered with a *trellis* or other covering that is at least 50% open.	0.00
Clarification 3: Solid or *latticework walls*, screens, glass or glazing shall constitute exterior *walls*. Clarification 4: The *footprint* of a *barn*, *stable*, or covered *equestrian riding arena* shall be measured to the support posts of any covered areas.	
Eaves:	
- Up to 8 feet from the *structure*.	0.00
- Any portion extending beyond 8 feet from the *structure*.	≥1.00
Basements:	
- Areas of *basements* that are below exterior *grade* shall not count toward *floor area*.	0.00
- Areas of *basements* that are above exterior *grade* that contribute to *plate* heights will add *floor area* to a *structure*, as defined by Table F.	≥1.00

Bay windows:	
- Up to 25 square feet for each *bay window*.	0.00
- Greater than 25 square feet or exceeding one *story* in *height* (only that portion in excess of 25 square feet and/or one *story* would count).	≥1.00
Dormers:	
- Up to 25 square feet of an individual *dormer*.	0.00
- Greater than 25 square feet of an individual *dormer*.	≥1.00
Clarification 5: If the total length of *dormers* on a roof section is more than 30% of the length of that roof section, *floor area* of the *building* shall be calculated based on *plate heights* measured to the *dormers*, per Table F.	
Dormers for ADUs above detached *garages* that do not comply with the *basic setbacks in Table H*, pursuant to § 153.211 and § 153.110):	
- Up to 50% of the length of the roof.	0.00
Dormers for ADUs above detached *garages* that comply with the *basic setbacks* in Table H, pursuant to § 153.211 and § 153.110):	
- Up to 65% of the length of the roof.	0.00
Chimneys and fireplaces, shall be counted as normal *floor area*, per Table F.	≥1.00

Clarification 6: Freestanding fireplaces shall not be counted as *floor area.* Clarification 7: The *plate height* of the adjacent *building wall* shall be used to calculate the *floor area* of a chimney.	
Stairwells are counted for each floor and counted as normal *floor area*, per Table F.	≥1.00
Feature *walls*, *walls* which exceed the 6-foot *height* limit for *fences* and *walls* and/or are attached to a *building*, shall be counted as normal *floor area*, per Table F.	≥1.00
Detached *garages* with an ADU above the *garage*.	1.00
Clarification 8: The allowable *plate height* of 12 feet for an ADU above a detached *garage* complying with the *basic setbacks* in Table H, shall not increase the multiplier above 1.00.	

(6) ***Measurement of size of main residence.*** The size of a main residence shall include the total gross *floor area* of a main residence using the rules for calculating *floor area* stated in division (B) above with the following exceptions:

(a) Detached *structures* shall be excluded unless they are attached to the main residence by an aboveground structural element, or they are separated from the main residence by less than eight feet in the R-1 Districts or less than 15 feet in all other zoning districts. *Structures* are not considered attached if they are only connected via a covered walkway that is 100 percent open on one of the long sides, 50 percent open on the other long side, less than eight feet wide, have a *plate* height under 11 feet and do not have a *wall* higher than four feet on one long side.

(b) *Floor area* utilized exclusively for attached *garages* and *carports*, including those existing at the time of the adoption of the amendment codified in this division shall be excluded as

follows:

1. In the R-1 and SR Zoning Districts, the maximum amount of area excluded shall be 440 square feet or the actual size of the *garage* or *carport*, whichever is less. If a *maximum residence size exception* has been approved for a property in the SR Zoning District, the maximum *garage* or *carport* exclusion shall be 550 square feet.
2. In the RR and SCP Zoning Districts, the maximum amount of area excluded shall be 660 square feet or the actual size of the *garage* or *carport*, whichever is less.

(C) - Exceptions to floor area requirements: Maximum residence size exceptions.

(1) ***In the SR, RR and SCP Residential Zoning Districts.*** An exception shall be granted to the *maximum size* of the *main residence*, pursuant to the formulas in Table G of this section, by the body and evaluation criteria designated in Sections 153.912 through 153.918 for *lots* in the SR, RR and SCP Residential Zoning Districts. For purposes of such exceptions, conforming *parcels* shall consist of no more than one *lot*. In order for the approving body to grant an exception in the SR, RR and SCP Residential Zoning Districts, all of the following conditions must be satisfied:

(a) The *maximum size of a main residence*, with an exception granted, may not exceed the following limits:

SR: 5,500 square feet

RR and SCP districts: 8,800 square feet

(b) The property shall not be subdivided to create a *lot* smaller than the minimum acreage required for the exception; and

(c) The *front*, *rear* and *side setbacks* shall be increased from 50 feet to 100 feet for ten to 15 acre *parcels*, to 150 feet for 20 acre *parcels* to 200 feet for 25 acre *parcels* and to 250 feet for 30+ acre *parcels* (allowing for interpolation between steps at the rate of ten feet for every acre of *lot* size increase).

(2) ***In the R-1 Residential Zoning District.*** An exception shall be granted to the *maximum size of main residence*, pursuant to the formulas in Table G of this section, by the body and evaluation criteria designated in Sections 153.912 through 153.918, in the R-1 Residential Zoning District, provided the following condition is satisfied:

(a) The *maximum size of a main residence*, with an exception granted, may not exceed the following limits:

R-1 District:

For *lots* < 20,000 sq. ft.: TFA limit, up to 3,000 sq. ft.

For *lots* > 20,000 sq. ft.: 4,200 sq. ft.

TABLE G: Maximum Residence Size Allowed Without and With An Exception		
Zone District	Lot Area	Calculation
R-1	< 0.458 acres	10% of *lot area* (sq. ft.) + 1,000 square feet
	≥ 0.458 acres	5,217 × (*lot area* in acres - 0.458) + 3,000; not to exceed 4,200 sq. ft.
(Woodside Glens)	≥ 0.08 to < 0.321	4,660 × (*lot area* in acres - 0.08) + 1,890 sq. ft.
(Woodside Glens)	≥ 0.321 to < 0.458 acres	Flat maximum: 3,000 sq. ft.
(Woodside Glens)	≥0.458	5,217 × (*lot area* in acres - 0.458) + 3,000; not to exceed 4,200 sq. ft.
SR	< 0.519 acres	Subject to TFA limitations for *nonconforming lots*, see § 153.206(A)(1)(a)
	≥ 0.519 acres	1,530 × (*lot area* in acres - 0.519) + 4,000; not to exceed 5,500 sq. ft.
RR	< 1.439 acres	Subject to TFA limitations for *nonconforming lots*, see § 153.206(A)(1)(a)

	≥ 1.439 acres	915.03 × (*lot area* in acres - 1.439) + 6,000; not to exceed 8,800 sq. ft.
SCP-5	< 1.450 acres	Subject to TFA limitations for *nonconforming lots*, see § 153.206(A)(1)(a)
	≥ 1.450 acres	462.83 × (*lot area* in acres - 1.450) + 6,000 not to exceed 8,800 sq. ft.
SCP-7.5	< 2.669 acres	Subject to TFA limitations for *nonconforming lots*, see § 153.206(A)(1)(a)
	≥ 2.669 acres	326.34 × (*lot area* in acres - 2.669) + 6,000; not to exceed 8,800 sq. ft.
SCP-10	< 3.680 acres	Subject to TFA limitations for *nonconforming lots*, see § 153.206(A)(1)(a)
	≥ 3.680 acres	247.35 × (*lot area* in acres - 3.680) + 6,000; not to exceed 8,800 sq. ft.

(D) - Exceptions to floor area requirements: Accessory Dwelling Units.

(1) Up to the first 800 square feet of one *accessory dwelling unit* or, up to 800 square feet of the combined square footage of two *accessory dwelling units,* shall not count toward the maximum size of the main residence and/or *total floor area* permitted on a property.

(E) - Exceptions to floor area requirements: Junior Accessory Dwelling Units.

(1) An expansion of no more than 150 square feet to the size and physical dimensions of an existing main residence, which retains sufficient *setback* for fire and safety access, shall be

allowed to provide separate exterior access for the *junior accessory dwelling unit*.

(Ord. 2017-589, effective 8-24-17; Am. Ord. 2018-593 , effective 4-26-18; Am. Ord. 2018-596 , § 2(Exh. A, § II), effective 10-26-18; Am. Ord. 2020-604 , § 2(Exh. A), effective 2-27-20; Am. Ord. 2020-610 , § 4, effective 8-13-20; Am. Ord. 2021-616 , § 2(Exh. A, § III), effective 3-11-21)