San Joaquin County
Environmental Health Department

ONSITE WASTEWATER TREATMENT SYSTEMS LOCAL AGENCY MANAGEMENT PROGRAM

April 2016

A Local Program to Manage Onsite Wastewater Treatment Systems to Protect Public Health and Water Quality

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3.3	Annual Reporting	For Section 3.3 et seq, describe your program for annual reporting to Central Valley Regional Water Quality Control Board (Central Valley Water Board) staff in a tabular spreadsheet format.	Section 3, Page 15 Section 10, Page 38	OWTS Policy LAMP-B-16-240 SJCOC §9-1110.5(a) SJCSS §1.2
3.3.1	Complaints	Include numbers and locations of complaints, related investigations, and means of resolution.	Section 3, Page 14 Section 10, Page 37	OWTS Policy LAMP-B-16-240 SJCOC §9-1110.5(a) SJCSS §1.2
3.3.2	OWTS Cleaning	Include applications and registrations issued as part of the local cleaning registration pursuant to California Health and Safety Code §117400 et seq.	Section 2, Page 13 Section 10, Page 38	OWTS Policy LAMP-B-16-240 SJCOC §9-1110.5(a) SJCSS §1.2
3.3.3	Permits for New and Replacement OWTS	Include numbers and locations of permits for new and replacement OWTS, and their Tiers.	Section 3, Page 15 Section 4, Page 17	OWTS Policy LAMP-B-16-240 SJCOC §9-1110.5(a) SJCSS §1.2
3.4	Permanent Records	Describe your program for permanently retaining records, and means of making them available to Central Valley Water Board staff within 10 working days of a written request.	Section 3, Page 14	OWTS Policy LAMP-B-16-240 SJCOC §9-1110.5(a) SJCSS §1.2
3.5	Notifications to Municipal Water Suppliers	Describe your program for notifying public well and water intake owners, and the California Department of Public Health. Notification shall be as soon as practicable, but no later than 72 hours upon discovery of a failing OWTS, as described in Sections 11.1 and 11.2, within setbacks described in Sections 7.5.6 through 7.5.10.	Section 4, Page 18	OWTS Policy LAMP-B-16-240 SJCOC §9-1110.5(a) SJCSS §1.2
9.0	Minimum OWTS Standards	This Section is an introduction; we require no specific LAMP Section citation here.		Not applicable
9.1	Considerations for LAMPs	For Section 9.1 et seq., provide your commitment to evaluate complaints, variances, failures, and inspections in Section 9.3.2 (Water Quality Assessment); and your proposed means of assessment to achieve this Policy's purpose of protecting water quality and human health.	Section 10, Page 36	OWTS Policy LAMP-B-16-240 SJCOC §9-1125.4 SJCSS §1.2, 11.0, 12.0
9.1.1	Degree of vulnerability due to local hydrogeology	*Describe your commitment, and proposed means to identify* hydrogeologically vulnerable areas for Section 9.3.2, *after compiling monitoring data*. Discuss appropriate related siting restrictions and design criteria to protect water quality and public health. Qualified professionals ("Definitions," page 9 in the Policy) should identify hydrogeologically vulnerable areas. *Such professionals, where appropriate during a Water Quality Assessment, should generally consider locally reasonable percolation rates of least permeable relevant soil horizons, best available evidence of seasonally shallowest groundwater (including, but not limited to, soil mottling and gleying, static water levels of nearby wells and springs, and local drainage patterns), threats to receptors (supply wells and surface water), and potential geotechnical issues (including, but not limited to, potentially adverse dips of bedding, foliations, and fractures in bedrock).*	Section 2, Page 11 Section 8, Page 30	OWTS Policy LAMP-B-16-240 SJCOC §9-1105.2(d) SJCSS §1.5, 3.7
9.1.2	High quality waters and other environmental conditions requiring enhanced protection	Describe special restrictions to meet water quality and public health goals pursuant to all Federal, State, and local plans and orders. *Especially consider appropriate alternatives to those provided in Section 7.8, Allowable Average Density Requirements under Tier 1. See also: State Water Resources Control Board Resolution No. 68-16.*	Section 2, Page 11 Section 8, Page 30	OWTS Policy LAMP-B-16-240 SJCOC §9-1110.5(a) SJCSS §3.7, 7.0, 8.0

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9.1.3	Shallow soils requiring non-standard dispersal systems	*We interpret "shallow" soils generally to mean thin soils overlying bedrock or highest seasonal groundwater. Dependent on threats to receptors, highest seasonal groundwater can locally include perched and intermittent saturated zones, as well as the shallowest local hydraulically unconfined aquifer unit. See Section 8.1.5 for Minimum Depths to Groundwater under Tier 1.* Qualified professionals should make appropriate determinations on the design and construction of non-standard dispersal systems due to shallow soils.	Section 2, Page 11 Section 8, Page 30	OWTS Policy LAMP-B-16-240 SJCOC §9-1105.2(d) SJCSS §3.0, 9.10
9.1.4	High domestic well usage areas	*Our key potential concerns are nitrate and pathogen transport toward receptor wells, especially in areas with existing OWTS already prone to soft failures (OWTS failures not evident at grade). Appropriate qualified professionals should consider reasonable pollutant flow paths toward domestic wells, at minimum based on; publically available nitrate concentrations in local wells, published technical literature on local wastewater and non-wastewater nitrate sources, well constructions, pumping demands, and vulnerability of wells due to local hydrogeology. For pathogens, qualified professionals should ensure that field methods are sufficient to mitigate the potential for false positives.*	Section 2, Page 11 Section 8, Page 30	OWTS Policy LAMP-B-16-240 SJCOC §9-1105.2(d) SJCSS §1.0, 3.0
9.1.5	Fractured bedrock	*Where warranted, appropriate qualified professionals should assess permeability trends of water-bearing fractures, and related potential pathways of effluent toward receptors, including but not limited to, domestic wells and surface water. The professionals should also consider potential geotechnical issues. We suggest consideration of fractured bedrock in concert with percolation rates of overlying soils; either very high or low percolation rates might warrant siting restrictions or non-standard dispersal systems. See also State Water Resources Control Board Order WQ 2014-0153-DWQ, Attachment 1, page 1-3, Item A-3.*	Section 2, Page 11 Section 8, Page 30	OWTS Policy LAMP-B-16-240 SJCOC §9-1105.2(d) SJCSS §3.0
9.1.6	Poorly drained soils	*Appropriate qualified professionals should give criteria for determination of representative percolation rates, including but not limited to, general site evaluation, trench logging, pre-soak and measurement methods of percolation tests, and acceptable alternatives for percolation tests.*	Section 2, Page 11 Section 8, Page 30	OWTS Policy LAMP-B-16-240 SJCOC §9-1105.2(d) SJCSS §3.0
9.1.7	Vulnerable surface water	*Our key potential concern is eutrophication of fresh surface water. While typically with relatively low mobility in groundwater and recently informally banned in dishwater detergents, phosphate is a common cause. At minimum, describe appropriate qualified professionals who will consider potential pathways of wastewater-sourced phosphate and other nutrients toward potentially threatened nearby surface bodies.*	Section 2, Page 11 Section 8, Page 30	OWTS Policy LAMP-B-16-240 SJCOC §9-1105.2(d) SJCSS §3.0
9.1.8	Impaired water bodies	*Wolf Creek, Nevada County, and Woods Creek, Tuolumne County will require Tier 3 Advanced Protection Management Programs. This applies to Nevada, Placer, and Tuolumne Counties. See Attachment 2 of the OWTS Policy.*	Section 2, Page 11 Section 8, Page 30	Not Applicable
9.1.9	High OWTS density areas	*Where nitrate is an identified chronic issue, at minimum, consider nitrogen loading per area; for example, see Hantzsche and Finnemore (1992), Crites and Tchobanoglous (1998), and more recent publications as appropriate.*	Section 2, Page 11 Section 8, Page 30	OWTS Policy LAMP-B-16-240 SJCOC §9-1105.2(d) SJCSS §3.0
9.1.10	Limits to parcel size	At minimum, consider hydraulic mounding, nitrate and pathogen loading, and sufficiency of potential replacement areas.	Section 2, Page 11 Section 8, Page 30	OWTS Policy LAMP-B-16-240 SJCOC §9-1105.2(d) SJCSS §3.0
9.1.11	areas with OWTS that predate adopted standards	This refers to areas with known, multiple existing OWTS.	Section 2, Page 11 Section 8, Page 30	OWTS Policy LAMP-B-16-240 SJCOC §9-1110.4(f) SJCSS §5.1, 5.2, 11.0

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9.1.12	areas with OWTS within prescriptive, Tier 1 setbacks, or within setbacks that a Local Agency finds appropriate	This refers to areas with known, multiple existing OWTS.	Section 2, Page 11 Section 8, Page 30	OWTS Policy LAMP-B-16-240 SJCOC §9-1110.4(f) SJCSS §5.1, 5.2, 11.0
9.2	Scope of Coverage:	For Section 9.2 et seq, provide details on scope of coverage, for example maximum authorized projected flows, allowable system types, and their related requirements for site evaluation, siting, and design and construction requirements.	Section 3, Page 14	OWTS Policy LAMP-B-16-240 SJCOC §9-1105 SJCSS §3.12, 3.13
9.2.1	Installation and Inspection Permits	Permits generally cover procedures for inspections, maintenance and repair of OWTS, including assurances that such work on failing systems is under permit; see Tier 4.	Section 4, Page 17	CWC §13282 SJCOC §9-1110.3 SJCSS §2.0
9.2.2	Special Provision Areas and Requirements near Impaired Water Bodies	*Wolf Creek, Nevada County, and Woods Creek, Tuolumne County will require Tier 3 Advanced Protection Management Programs. This applies to Nevada, Placer, and Tuolumne Counties. See Attachment 2 of the OWTS Policy.*	Section 10, Page 38	Not Applicable
9.2.3	LAMP Variance Procedures	Variances for new installations and repairs should be in substantial conformance to the Policy, to the greatest extent practicable. Variances cannot authorize prohibited items in Section 9.4.	Section 8, Page 32	OWTS Policy LAMP-B-16-240 SJCOC §9-1110.4(f) SJCSS §5.1, 5.2, 11.0
9.2.4	Qualifications for Persons who Work on OWTS	Qualifications generally cover requirements for education, training, and licensing. *We suggest that Local Agencies review information available from the California Onsite Water Association (COWA), see*: http://www.cowa.org/	Section 4, Page 16 Section 4, Page 17 Section 6, Page 22 Section 9, Page 34 Section 9, Page 35	OWTS Policy LAMP-B-16-240 SJCOC §9-1110.5(a) SJCSS §2.1,7.1
9.2.5	Education and Outreach for OWTS Owners	Education and Outreach generally supports owners on locating, operating, and maintaining OWTS. At minimum, ensure that you will require OWTS designers and installers to provide owners with sufficient information to address critical maintenance, repairs, and parts replacements within 48 hours of failure; *see also Tier 4*. Also, provide information to appropriate volunteer groups. *At minimum, we suggesting providing this information on your webpage.*	Section 5, Page 20	OWTS Policy LAMP-B-16-240 SJCOC §9-1110.5(a) SJCSS §1.12, 12.0
9.2.6	Septage Disposal	Assess existing and proposed disposal locations, and their adequacy.	Section 2, Page 12	OWTS Policy LAMP-B-16-240 SJCOC §9-1110.8 SJCSS §10.14
9.2.7	Maintenance Districts and Zones	*These generally refer to Homeowners Associations, special maintenance districts, and similar responsible entities. Requirements for responsible entities should generally reflect the Local Agency's judgment on minimum sizes of subdivisions that could potentially cause environmental impacts. LAMPs should ensure that responsible entities have the financial resources, stability, legal authority, and professional qualifications to operate community OWTS.*	Section 8, Page 30	OWTS Policy LAMP-B-16-240 SJCOC §9-1105 SJCSS §3.4
9.2.8	Regional Salt and Nutrient Management Plans	Consider development and implementation of, or coordination with, Regional Salt and Nutrient Management Plans; *see also State Board Resolution 2009-0011:* http://www.waterboards.ca.gov/centralvalley/water_issues/salinity/laws_regs_policies/rw_policy_implementation_mem.pdf	Section 8, Page 30	OWTS Policy LAMP-B-16-240 SJCOC §9-1105.2(d) SJCOC §9-1110.4(e) SJCSS §7.0, 8.0

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9.2.9	Watershed Management Groups	Coordinate *with volunteer well monitoring programs* and similar watershed management groups.	Section 8, Page 30	OWTS Policy LAMP-B-16-240
9.2.10	Proximity of Collection Systems to New or Replacement OWTS	Evaluate proximity of sewer systems to new and replacement OWTS. *See also Section 9.4.9*.	Section 4, Page 19	OWTS Policy LAMP-B-16-240 SJCOC §9-1105.2(e)(f)
9.2.11	Public Water System Notification prior to permitting OWTS Installation or Repairs	Give your notification procedures to inform public water services of pending OWTS installations and repairs within prescribed setback distances.	Section 4, Page 18	OWTS Policy LAMP-B-16-240 SJCOC §9-1110.5(a) SJCSS §1.0, 2.2.10
9.2.12	Policies for Dispersal Areas within Setbacks of Public Wells and Surface Water Intakes	Discuss supplemental treatments; see Sections 10.9 and 10.10. A Local Agency can propose alternate criteria; *however we will need rationale in detail.*	Section 8, Page 31 Section 9, Page 34	OWTS Policy LAMP-B-16-240 SJCOC §9-1105.2(d) SJCOC §9-1110.4(e) SJCSS §7.0, 8.0
9.2.13	Cesspool Discontinuance and Phase-Out	Provide plans and schedule.	Section 8, Page 33	OWTS Policy LAMP-B-16-240 SJCOC §9-1110.6(c) SJCSS §1.13
9.3	Minimum Local Agency Management Responsibilities:	For Section 9.3 et seq, discuss minimum responsibilities for LAMP management. Responsibilities should generally cover data compilation, water quality assessment, follow-up on issues, and reporting to the Central Valley Water Board:	Section 3, Page 14	OWTS Policy LAMP-B-16-240 SJCOC §9-1110.5(a) SJCSS §1.0
9.3.1	Permit Records, OWTS with Variances	Describe your records maintenance; numbers, locations, and descriptions of permits where you have granted variances.	Section 3, Page 14 Section 8, Page 32	OWTS Policy LAMP-B-16-240 SJCOC §9-1110.5(a) SJCSS §1.0 EHD Policy 11-01
9.3.2	Water Quality Assessment Program:	In the Water Quality Assessment Program, generally focus on areas with characteristics covered in Section 9.1. Include monitoring and analysis of water quality data, complaints, variances, failures, and inspections. Also include appropriate monitoring for nitrate and pathogens; you can use information from other programs. *We are available to provide further guidance on reporting requirements. In the interim, to assist with analyses and evaluation reports (Section 9.3.3), we suggest posting data on appropriate maps; for example consider the following links*: http://www.nrcs.usda.gov/wps/portal/nrcs/site/ca/home/ http://www.cdpr.ca.gov/docs/emon/grndwtr/gwpa_maps.htm http://ngmdb.usgs.gov/maps/mapview/ http://www.conservation.ca.gov/cgs/information/publications/ms/Documents/MS58.pdf http://www.water.ca.gov/groundwater/data_and_monitoring/northern_region/GroundwaterLevel/SacValGWContours/100t400_Wells_Spring-2013.pdf http://www.water.ca.gov/waterdatalibrary/ http://www.waterboards.ca.gov/gama/docs/hva_map_table.pdf http://geotracker.waterboards.ca.gov/gama/ http://msc.fema.gov/portal	Section 10	OWTS Policy LAMP-B-16-240 SJCOC §9-1110.5(a) SJCSS §1.0, 2.10, 11.3, 11.4 SJCOC §9-1115.6 SJCWS §13.7.2

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9.3.2.1	Domestic Well Sampling	*Apply your best professional judgment to ensure that well sampling focuses on hydrogeologically reasonable pollutant (primarily nitrate) flow paths. A qualified professional should generally design an appropriate directed, judgmental, sample (i.e., statistically non-random). Of the links provided, the Geotracker GAMA website might be particularly useful to the professional; at minimum we suggest reviews of available nitrate data in relevant domestic wells, up-gradient, within, and down-gradient of an area of interest. For some instances, for example where a developer proposes a relatively large project, a Local Agency might require a special study to distinguish between wastewater and non-wastewater sourced nitrate. In such cases, we suggest your consideration of requiring focused sampling and analyses, for example of $\delta^{18}O$ and $\delta^{15}N$ of nitrate (Megan Young, USGS, 2014 pers comm), and the artificial sweeteners sucralose and acesulfame-K (Buerge et al 2009, Van Stempvoort et al 2011, and more recent publications as they become available)*.	Section 10	OWTS Policy LAMP-B-16-240 SJCOC §9-1110.5(a) SJCSS §1.0, 2.10, 11.3, 11.4 SJCOC §9-1115.6 SJCWS §13.7.2
9.3.2.2	Domestic Well Sampling, Routine Real Estate Transfer Related	This applies only if those samples are routinely performed and reported.	Section 10	Not Applicable
9.3.2.3	Water Quality of Public Water Systems	Reviews can be by you or another municipality.	Section 10	SJC as Local Primacy Agency B-13-767
9.3.2.4	Domestic Well Sampling, New Well Development	This applies if those data are reported.	Section 10	OWTS Policy LAMP-B-16-240 SJCOC §9-1105.2(d) SJCSS §9.0 SJCOC §9-1115.6 SJCWS §13.7.2
9.3.2.5	Beach Water Quality Sampling, H&S Code §115885	*Public beaches include those on freshwater.*	Section 10, Page 37	CA H&S Code §115885
9.3.2.6	Receiving Water Sampling Related to NPDES Permits	This refers to existing data from other monitoring programs.	Section 10, Page 37	OWTS Policy LAMP-B-16-240 SJCOC §9-1115.6 SJCWS §13.7.2
9.3.2.7	Data contained in California Water Quality Assessment Database	This refers to existing data from other monitoring programs.	Section 10, Page 37	OWTS Policy LAMP-B-16-240 SJCOC §9-1115.6 SJCWS §13.7.2
9.3.2.8	Groundwater Sampling Related to Waste Discharge Requirements	This refers to existing data from other monitoring programs.	Section 10, Page 37	OWTS Policy LAMP-B-16-240 SJCOC §9-1115.6 SJCWS §13.7.2
9.3.2.9 9.3.3	Groundwater Sampling Related to GAMA Program Annual Status Reports Covering 9.3.1-9.3.2	This refers to existing data from other monitoring programs. Reports are due 1 February, annually beginning one year after Regional Board approves LAMP. Every fifth year also include an evaluation report. Submit all groundwater monitoring data in Electronic Delivery Format (EDF) for Geotracker; submit all surface water data to CEDEN.	Section 10, Page 37 Section 10, Page 38 Section 3, Page 15	OWTS Policy LAMP-B-16-240 SJCOC §9-1115.6 SJCWS §13.7.2

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9.4	Not Allowed or Authorized in LAMP:	For Section 9.4 et seq, ensure that your LAMP covers prohibitions.	Section 8, Page 33	OWTS Policy LAMP-B-16-240 SJCOC §9-1110.6 SJCOC §9-1110.7 SJCSS §1.13, 1.14
9.4.1	Cesspools	Local Agencies cannot authorize cesspools of any kind or size.	Section 8, Page 33	OWTS Policy LAMP-B-16-240 SJCOC §9-1110.6 (c) SJCSS §1.13(c)
9.4.2	Projected Flow>10,000 gpd	*Apply professional judgment to further limit projected flows.*	Section 8, Page 33	OWTS Policy LAMP-B-16-240 SJCOC §9-1105.2 (a) SJCSS §3.12
9.4.3	Effluent Discharger Above Post-Installation Ground Surface	For example, Local Agencies cannot authorize effluent disposal using sprinklers, exposed drip lines, free-surface wetlands, and ponds.	Section 8, Page 33	OWTS Policy LAMP-B-16-240 SJCOC §9-1105.2 (a) SJCSS §9.0
9.4.4	Installation on Slopes >30% without Registered Professional's Report	*See also earlier comments, Section 9.1.1, regarding potential geotechnical concerns.*	Section 8, Page 33	OWTS Policy LAMP-B-16-240 SJCOC §9-1105.2 (a) SJCSS §1.6
9.4.5	Decreased Leaching Area for IAPMO-Certified Dispersal System with Multiplier <0.70	IAPMO, International Association of Plumbing and Mechanical Officials. *Decreased leaching area refers to alternatives to conventional (stone-and-pipe) dispersal systems; these alternatives require relatively less area. The multiplier, <1, allows for a reduction in dispersal field area relative to a conventional system.*	Section 8, Page 33	OWTS Policy LAMP-B-16-240 SJCOC §9-1105.2 (a) SJCSS §9.5.5
9.4.6	Supplemental Treatments without Monitoring and Inspection	*Therefore, ensure that the LAMP describes periodic inspection and monitoring for OWTS with supplemental treatments*.	Section 8, Page 33	OWTS Policy LAMP-B-16-240 SJCOC §9-1105.2 (a) SJCSS §7.0
9.4.7	Significant Wastes from RV Holding Tanks	*We interpret significant amounts to mean amounts greater than incidental dumping, such that volume, frequency, overall strength, or chemical additives preclude definition as domestic wastewater; see Definitions in OWTS Policy. See also, State Water Resources Control Board Order WQ 2014-0153-DWQ, Attachment B-2.*	Section 8, Page 33	OWTS Policy LAMP-B-16-240 SJCOC §9-1105.2 (a) SJCSS §1.14(k)
9.4.8	Encroachment Above Groundwater	Bottom of OWTS dispersal systems cannot be less than 2 feet above groundwater, or bottom of seepage pits, less than 10 feet above groundwater. *We interpret groundwater to include inter-flow and perched zones, along with the shallowest main unconfined aquifer. Degree of vulnerability to pollution due to hydrogeological conditions, Section 9.1.1, and the Water Quality Assessment, Section 9.3.2., should cover in detail means of assessing seasonally shallowest depth to groundwater.*	Section 8, Page 33	OWTS Policy LAMP-B-16-240 SJCOC §9-1105.2 (a) SJCSS §1.10.2, 2.9, 3.11, 9.9.3, 9.9.12, 9.11.4
9.4.9	Installations Near Existing Sewers	New and replacement OWTS cannot occur on any lot with available public sewers less than 200 feet from a building or exterior drainage facility (exception; connection fees plus construction costs are greater than 2 times the replacement OWTS costs, and Local Agency determines no impairment to any drinking water.)	Section 8, Page 33	OWTS Policy LAMP-B-16-240 SJCOC §9-1105.2(e)(f)
9.4.10	Minimum Setbacks:	These setbacks are from public water systems.	Section 6, Page 23 (Table 6-2)	OWTS Policy LAMP-B-16-240 SJCOC §9-1105.2 (a) SJCSS §1.5

SAN JOAQUIN COUNTY
ENVIRONMENTAL HEALTH DEPARTMENT
ONSITE WASTEWATER TREATMENT SYSTEMS
LOCAL AGENCY MANAGEMENT PROGRAM

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9.4.10.1	From Public Supply Wells	If the dispersal system is less than 10' in depth, then the setback must be greater than150' from public water supply well.	Section 6, Page 23 (Table 6-2)	OWTS Policy LAMP-B-16-240 SJCOC §9-1105.2(a) SJCSS §1.5
9.4.10.2		If the dispersal system is greater than10' in depth, then the setback must be greater than 200' from public water supply well.	Section 6, Page 23 (Table 6-2)	OWTS Policy LAMP-B-16-240 SJCOC §9-1105.2(a) SJCSS §1.5
9.4.10.3	From Public Supply Wells, Regarding Pathogens	If the dispersal system is greater than 20' in depth, and less than 600' from public water supply well, then the setback must be greater than the distance for two-year travel time of microbiological contaminants, as determined by qualified professional. In no case shall the setback be less than 200'.	Section 4, Page 19	OWTS Policy LAMP-B-16-240 SJCOC §9-1105.2(a) SJCSS §1.5
9.4.10.4	From Public Surface Water Supplies	If the dispersal system is less than 1,200' from public water system's surface water intake, within its drainage catchment, and potentially threatens an intake, then the setback must be greater than 400' from the high water mark of the surface water body.	Section 6, Page 23 (Table 6-2)	OWTS Policy LAMP-B-16-240 SJCOC §9-1105.2(a) SJCSS §1.5
9.4.10.5	From Public Surface Water Supplies	If the dispersal system is greater than1,200', but less than 2,500', from public water system's surface water intake, within its drainage catchment, and potentially threatens an intake, then the setback must be greater than 200' from high water mark of surface water body.	Section 6, Page 23 (Table 6-2)	OWTS Policy LAMP-B-16-240 SJCOC §9-1105.2(a) SJCSS §1.5
9.4.11	Supplemental Treatments, Replacement OWTS That Do Not Meet Minimum Setback Requirements	Replacement OWTS shall meet minimum horizontal setbacks to the maximum extent practicable.	Section 8, Page 32	OWTS Policy LAMP-B-16-240 SJCOC §9-1110.4(e)(f) SJCSS §11.0
9.4.12	Supplemental Treatments, New OWTS That Do Not Meet Minimum Setback Requirements	New OWTS shall meet minimum horizontal setbacks to the maximum extent practicable, and meet requirements for pathogens as specified in Section 10.8. and any other Local Agency's mitigation measures.	Section 4, Page 19	OWTS Policy LAMP-B-16-240 SJCOC §9-1110.4(e)(f) SJCSS §7.0, 11.0
9.5	Technical Support of LAMP	Include adequate detail to ensure that the combination of all proposed criteria will protect water quality and public health sufficiently to warrant the Central Valley Water Board's waiver of Waste Discharge Requirements, pursuant to §13269, California Water Code.	Whole Document	OWTS Policy LAMP-B-16-240
9.6	Regional Water Quality Control Board Consideration of LAMP	Regional Boards shall consider past performance of local programs to protect water quality. *We will generally consider past performance based on our reviews of annual status and evaluation reports; see Section 9.3.3.*		
E. Rapport, Revised 10 Feb 2015/Table Legal Authority Column Updated 1-17-2017				

***EHD OWTS Authority:**

CWC - California Water Code, Section 13282
CHSC - California Health and Safety Code, Section 5410 et Seq.
CHSC - California Health and Safety Code, Section 106615(e)
CHSC - California Health and Safety Code, Section 106620
SJCOC - San Joaquin County Ordinance Code, Title 9, Chapters 9-1105, 9-1110, 9-1115, and 9-1125
SJCSS - San Joaquin County Sewage Standards
SJCWS - San Joaquin County Well Standards

LAMP - San Joaquin County Onsite Wastewater Treatment Systems Local Agency Management Program, April 2016

References:

Hantzsche, N.N. and E.J. Finnemore (1992). *Predicting groundwater nitrate-nitrogen impacts*. "Groundwater," 30, No. 4, pages 490-499.

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Young, Megan, USGS Menlo Park, mbyoung@usgs.gov , (650-329-4544)

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SECTION 1: INTRODUCTION, PURPOSE, AND OVERVIEW

Introduction

The California Water Code authorizes the State Water Resources Control Board (SWRCB) to regulate all discharges that could affect the quality of the waters of the state. The policies of the SWRCB are implemented locally through nine regional water quality control boards. Historically, each regional board developed "basin plans" that outlined water quality objectives in their respective jurisdictions as well as policies and programs to achieve those objectives.

Discharges are regulated through the use of Waste Discharge Requirements that act as discharge permits. With regards to the regulation of wastewater in San Joaquin County, the California Central Valley Regional Water Quality Control Board (CVRWQCB) issues discharge permits to the Municipalities and special districts that operate wastewater treatment plants in the county. In addition, they issue storm water permits to the incorporated cities and to the County as well as permits for the use of recycled water.

The CVRWQCB had adopted a general waiver of waste discharge requirements for septic tank and leach field systems, where such systems were regulated by the counties that used the criteria for onsite systems set forth in the Basin Plans. Pursuant to the Water Code section13269 (b)(2), the CVRWQCB's general waiver expired on June 30, 2004. Since expiration of the general waiver, discharges from onsite wastewater treatment systems (OWTS) have not been formally authorized by the Central Valley Water Board.

On June 19, 2012, The SWRCB approved Resolution 2012-0032, adopting the Water Quality Control Policy for Siting, Design, Operation, and Maintenance of Onsite Wastewater Treatment Systems (OWTS Policy). The OWTS Policy (hence forth the Policy) was approved by the Office of Administrative Law on November 13, 2012 and became effective six months later on May 13, 2013. The Policy established a risk-based tiered approach for the regulation and management of OWTS statewide and called for incorporation of the Policy requirements into regional water boards' basin plans within a year of the policy's effective date.

Under the tiered approach of the Policy, Tier 1 establishes minimum standards for low risk new or replacement OWTS. Tier 2 allows local agencies to develop customized management programs that address the conditions specific to that jurisdiction. These Local Agency Management Programs (LAMPS) must be approved by the appropriate regional water quality control board. Tier 3 applies special, enhanced standards to both new and existing OWTS located near a water body that has been listed as impaired due to nitrogen or pathogens pursuant to Section 303(d) of the Clean Water Act. Once approved, the standards contained in an approved LAMP supersede the Tier 1 standards.

The San Joaquin County Environmental Health Department (EHD) acknowledges that the Tier 1 standards afford an essential level of public health and water quality protection, but recognizes there are elements in Tier 1 that would preclude property owners from developing on their property relative to current standards. Information presented in this LAMP will provide alternatives to these Tier 1 requirements that are just as protective to public health and water quality.

Purpose

The purpose of the LAMP is to set forth an alternative method for the siting, design, operation, and maintenance of OWTS than those specified in the OWTS Tier 1 Policy. The LAMP will prescribe

proper mitigation measures that will provide effective sewage treatment and achieve the purpose of the Policy in protecting water quality, while allowing current use and development of properties within the all areas in San Joaquin County. This will additionally enable the EHD to continue to provide a consistent and feasible regulatory system for OWTS in San Joaquin County while maintaining the highest level of ground and surface water protection. As example, the LAMP will address ways to implement the following development practices that deviate from Policy:

- The use of seepage pits and sumps in specific areas of the county, constructed to a maximum depth of 25' below surface grade where EHD determines it to be necessary and appropriate.
- The use of OWTS in cases where the percolation rate is less than or equal to one minute per inch or greater than or equal 60 minutes per inch by requiring a system design that mitigates any impacts and provides for effective disposal.
- Risers will be only required when the septic tank is installed deeper than two feet below grade.
- For existing parcels where the current setback requirements cannot be met, the setback requirements from the CVRWQCB's 1994 Basin Plan document Guidelines for Waste Disposal from Land Developments (Guidelines) will be used, and pre-Guidelines setbacks from the San Joaquin County Sewage Standards will be used for older lots when either of these other setbacks can be met.
- For existing parcels where the current 100% replacement area requirement cannot be met, a minimum fifty percent (50%) replacement area for future expansion of the OWTS for residential developments will be used.
- The continued allowance of one acre parcels with public water and OWTS, as appropriate based on Soil Suitability and Nitrate Loading studies.
- The continued allowance of second unit or farm labor dwellings on less than four acre parcels with OWTS, as appropriated based on Soil Suitability and Nitrate Loading studies.

Plan Structure

This plan is structured to include all required information as specified in the OWTS Policy relating to Tier 2 – Local Agency OWTS Management Program. Related topics are grouped into separate sections for easier reference, as indicated in the Table of Contents.

Authority

California Water Code, Section 13260, requires any person discharging or proposing to discharge waste to file a report of waste discharge to the appropriate CVRWQCB.

California Water Code, Section 13291, requires the State Water Board to adopt regulations or standards for the permitting and operation of all OWTS in the state. On June 19, 2012, the State Water Board adopted the OWTS Policy to satisfy this requirement. The standards provided in the OWTS Policy carry the same substance as regulations and are enforceable.

The OWTS Policy provides for local agencies to submit management programs to the CVRWQCB, and once approved, manage the installation of new and replacement OWTS under that program.

Water Code section 13282, allows Regional Water Quality Control Boards to authorize a local public agency to issue permits for and to regulate OWTS "to ensure that systems are adequately designed,

located, sized, spaced, constructed and maintained." The CVRWQCB, with jurisdiction over San Joaquin County, authorizes the EHD to issue certain OWTS permits throughout the county including within incorporated cities. No city within San Joaquin County is authorized to issue these permits.

SWRCB Order WQ 2014-0153-DWQ, the General Waste Discharge Requirements for Small Domestic Wastewater Treatment Systems, dated September 23, 2014, is the general order providing directive for discharges from all types of small domestic wastewater treatment systems and is complementary to the Policy.

California Health and Safety Code, Section 5410 et Seq. provides authority for local Health Officers and Directors of Environmental Health to abate discharges of "sewage or other waste, or the effluent of treated sewage or other waste in any manner which will result in contamination, pollution, or a nuisance."

California Health and Safety Code, Section 5461 states that "Any person who discharges sewage or other waste in any manner which results in contamination is guilty of a misdemeanor."

California Health and Safety Code, Section 106615(e) defines the scope of practice in environmental health" as "the practice of environmental health by registered environmental health specialists in the public and private sector within the meaning of this article and includes, but is not limited to, organization, management, education, enforcement, consultation, and emergency response for the purpose of prevention of environmental health hazards and the promotion and protection of the public health and the environment in the following areas: food protection; housing; institutional environmental health; land use; community noise control; recreational swimming areas and waters; electromagnetic radiation control; solid, liquid, and hazardous materials management; underground storage tank control; onsite septic systems; vector control; drinking water quality; water sanitation; emergency preparedness; and milk and dairy sanitation pursuant to Section 33113 of the Food and Agricultural Code.

California Health and Safety Code, Section106620, states "Except for the design of onsite septic systems, nothing in this article shall authorize registered environmental health specialists to design any of the fixed works defined in Section 6731 of the Business and Professions Code."

San Joaquin County Ordinance Code, Title 9, regulates the use, subdivision, and development of land in the County. Chapters 9-1105 and 9-1110 authorize the Director of Environmental Health to regulate OWTS. The associated Sewage Standards, adopted by the Board of Supervisors, provides additional specific regulation of OWTS. Chapter 9-1125 authorizes the Director of Environmental Health to enforce unlawful discharges of any treated or untreated wastes that may be detrimental to the surface or ground waters of the County. This Chapter provides that all wastewater discharges shall meet the discharge standards set by the Regional Water Quality Control Board in addition to local standards.

The OWTS Policy provides a risk-based, tiered approach for the regulation of OWTS and retains implementation at the local level. The OWTS Policy also recognizes the diversity of California's geology, hydrology, geography, and meteorology and allows local agencies to vary from the prescribed standards in the OWTS Policy under an approved LAMP that provides for alternative standards while maintaining the same level of surface and ground water protection.

SECTION 2: HISTORY AND COUNTY CHARACTERISTICS

History of Sewage Standards

San Joaquin County records show OWTS have historically been regulated at the local level, with those systems generating significant volumes of waste or non-domestic wastes being referred to the CVRWQCB for oversight.

In the late 1940's the Dickey Water Pollution Act was established to create the California Water Pollution Control Board in response to degradation to water quality. In the early 1950s, the California Regional Water Pollution Control Board waived the filing of reports for discharges from individual sewage disposal systems in those counties having satisfactory ordinances or regulations. This prompted the San Joaquin Local Health District to develop the San Joaquin County Ordinance #549 (1950) to establish local requirements for the sanitary disposal of sewage in the unincorporated areas of San Joaquin County. From this point forward, the Local Health District, and subsequently the EHD, began issuing permits for new installation and repairs for OWTS. The implementation of this permitting process enabled the EHD to maintain a consistent, comprehensive management program for the new installation, repair, and replacement of OWTSs.

Since that time, the EHD sewage ordinance evolved through the years including the development of the San Joaquin County Sewage Disposal Bulletins of 1967, 1971, 1974, and 1983; the San Joaquin County Sewage Standards 1989; the San Joaquin County Residential Sewage System Bulletin 1990; and the San Joaquin County Onsite Wastewater Disposal Bulletin 2003, which is the current EHD standard today. The development of the EHD standards were historically based on the criteria noted in the Regional Board Basin Plans and Guidelines for Waste Disposal from Land Developments.

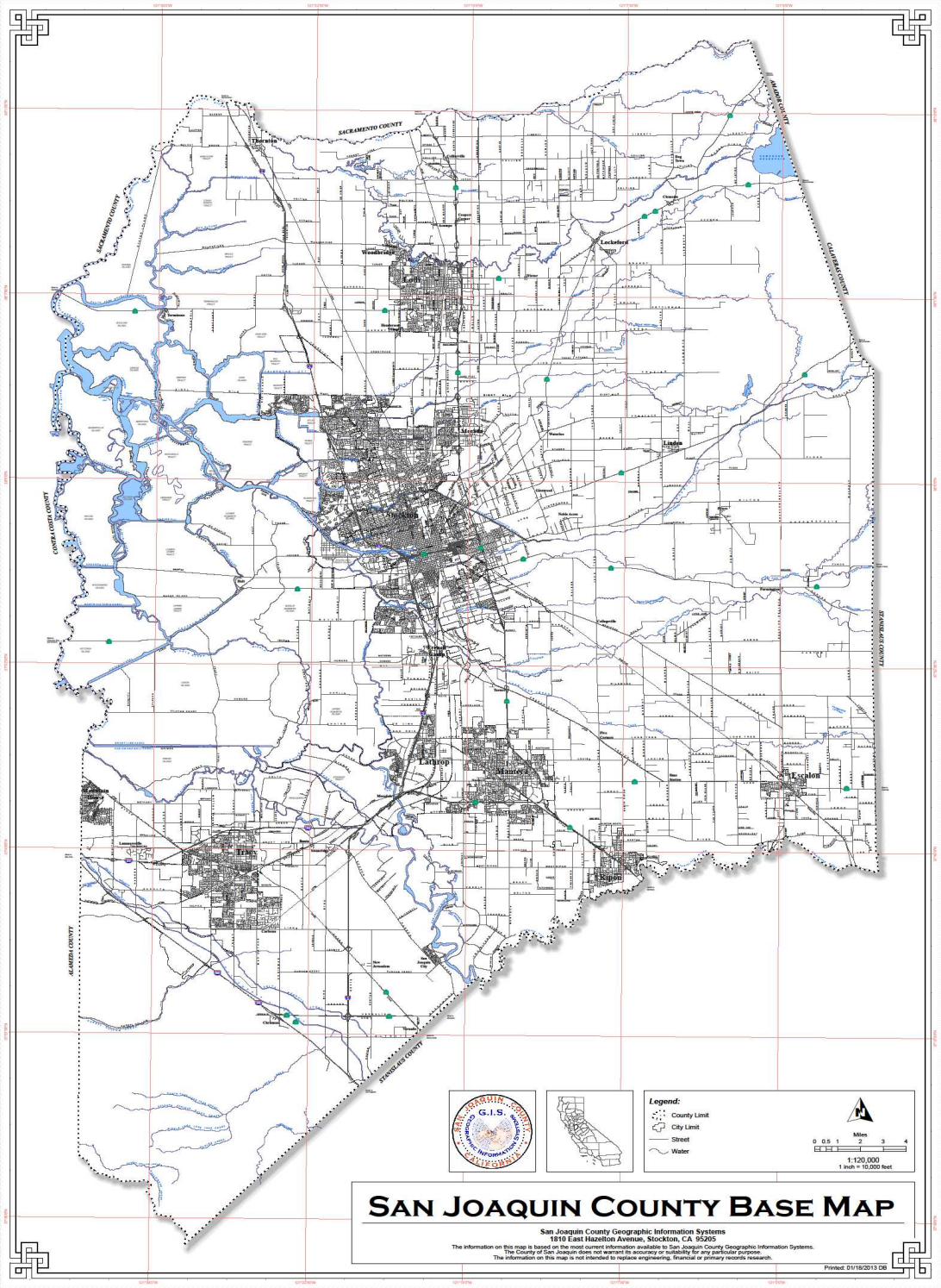
On December 15, 1972, the CVRWQCB incorporated the Guidelines for Waste Disposal from Land Developments into the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins. These guidelines provided standards designed to be protective of surface and ground water and public health. Shortly after, San Joaquin County updated the Sewage Standards to be consistent with those Guidelines and have implemented the requirements since that time.

Currently, San Joaquin County has worked to maintain a consistent, comprehensive local regulatory program for OWTS while conforming to the changes outlined in the OWTS Policy and the SWRCB Order WQ 2014-0153-DWQ dated September 23, 2014 by reviewing and updating local ordinance and standards relating to OWTS and by preparing and implementing an approved LAMP.

County Characteristics and Composition

San Joaquin County was one of the 27 original counties formed in 1850 when California became a State of the Union. The county encompasses approximately 921,600 total acres (1400 square miles) with a total population of about 682,000 (source: 2008 Data, California Department of Finance). San Joaquin County has seven incorporated cities with a combined population of approximately 537,000. Approximately 145,000 people reside in the unincorporated areas of the county, some in small towns and communities and others in rural agricultural areas. San Joaquin County's economy is predominantly driven by agriculture, with grapes, walnuts and milk being the top three crops in 2012 (source: 2012 San Joaquin County Agricultural Report). In 2007, San Joaquin County had about 3624 farms covering 737,503 acres.

Figure 2-1: Map of San Joaquin County



Source: San Joaquin County GIS

The County is approximately 75 miles in length North to South and 65 miles in length East to West. The elevation ranges from 12-20 feet below sea level in the Delta area to 3065 feet above sea level in the hills in the southwest portion of the County (source: 2012 San Joaquin County Agricultural Report

and Soil Survey of San Joaquin County). Annual precipitation within the county ranges from about 11 inches in the southwest to about 25 inches in the northeast, providing an overall average annual rainfall of 15.6 inches. (California Bulletin 118).

Groundwater and Hydrology

Basin Boundaries

San Joaquin County overlies the Eastern San Joaquin, Cosumnes, and Tracy Subbasins of the greater San Joaquin Valley Groundwater Basin. The physical boundaries of the Eastern San Joaquin and Cosumnes Sub-Basins extend beyond the boundaries of San Joaquin County and into portions of Calaveras and Stanislaus Counties.

The California Bulletin 118 describes the Basin Boundaries of the Eastern San Joaquin Subbasin to be of unconsolidated to semi-consolidated sedimentary deposits that are bounded by the Mokelumne River on the north and northwest; San Joaquin River on the west; Stanislaus River on the south; and consolidated bedrock on the east. The Eastern San Joaquin Subbasin is bounded on the south, southwest, and west by the Modesto, Delta-Mendota, and Tracy Subbasins, respectively and on the northwest and north by the Solano, South American, and Cosumnes Subbasins. The Solano and South American are subbasins of the Sacramento Valley Groundwater Basin. The Eastern San Joaquin Subbasin is drained by the San Joaquin River and several of its major tributaries namely, the Stanislaus, and Calaveras, and Mokelumne Rivers. The San Joaquin River flows northward into the Sacramento and San Joaquin Delta and discharges into the San Francisco Bay. The Surface Area of the Basin is: 707,000 acres (1,105 square miles).

Water Bearing Formations

Water bearing formations of significance in the Eastern San Joaquin Subbasin consist of the Alluvium and Modesto/Riverbank Formations, Flood Basin Deposits, Laguna Formation, and Mehrten Formation. The Mehrten Formation is considered to be the oldest fresh water-bearing formation on the east side of the basin, even though the underlying Valley Springs Formation produces minor quantities. Information on water bearing units and groundwater conditions was taken primarily from the California Bulletin 118 and DWR 1967.

Alluvium and Modesto/Riverbank Formations (Undifferentiated)

These units are exposed within the subbasin along a band approximately 15 miles wide that extends from about Stockton eastward. These units are Recent to Late Pleistocene in age and consist primarily of sand and gravel in the fan areas while clay, silt, and sand are dominant in the interfan areas. These units range in thickness from a thin veneer on the east side of the basin to over 150 feet near the center of the basin. Groundwater occurs unconfined within these units. Well yields to 650 ± gallons per minute (gpm) are reported. Because these units are limited in thickness, most wells penetrate them in order to tap deeper aquifers in the area. Average specific yields in the 10 to 200-foot depth range vary from about 7 to 15 percent within the boundaries of the Tuolumne River Storage Unit (Davis et al. 1959). The average specific yield for fresh water bearing units in the San Joaquin County Groundwater Investigation area as defined in (DWR 1967) is 7.3 percent. The Victor Formation as defined in (DWR 1967) is correlative with these units.

Flood Basin Deposits

This unit is exposed in the Delta area of the San Joaquin Valley. These deposits are basinward, fine-grained forms of the Laguna, Riverbank, Modesto, and Recent formations and, therefore, range in age from Pliocene to Recent. They are generally much finer grained with a higher percentage of fine sand and clays than their depositional equivalents to the east and west. Occasional gravel beds occur

along the present waterways and are probably representative of the type of underlying lithology distribution. This unit ranges in thickness from 0 to 1,400 ± feet. Groundwater in this unit occurs under unconfined to confined conditions. The unit, in general, has low permeabilities and may create semi-confined to confined conditions when interfingered with the Alluvium and Modesto/Riverbank Formations. Occasional pockets of fresh water are found in the Delta deposits, but generally speaking the formation contains poor quality water. This unit is designated as Dos Palos Alluvium by (Wagner et al. 1990).

Laguna Formation
The Laguna Formation is Plio-Pleistocene in age and consists of discontinuous lenses of stream laid sand and silt with lesser amounts of clay and gravel. There are no regionally significant fine-grained intervals that could cause water pressure conditions, although the heterogeneous nature of the sediments causes local confinement. From the Mokelumne River area, the formation thickens from approximately 400 feet to approximately 1,000 feet in the Stockton area. Regionally, yields of 1,500 gpm have been reported from highly permeable beds, but average yields are about 900 ± gpm. Groundwater occurs under unconfined to locally semiconfined conditions within this unit. Occasional minor perched water zones are encountered in this formation, particularly in the Mokelumne River area.

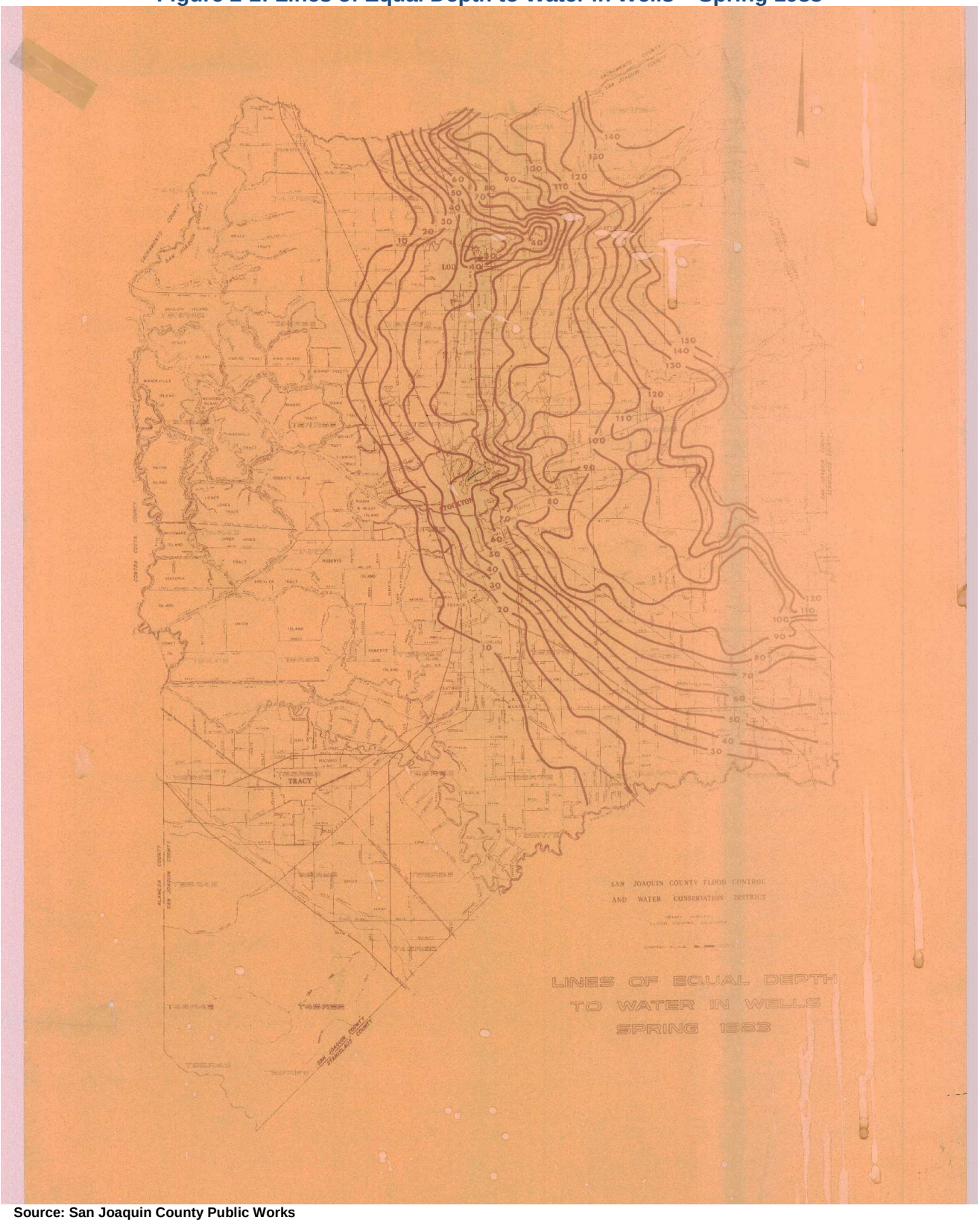
Mehrten Formation
This formation is exposed in the easternmost part of the subbasin where it forms readily identifiable, nearly flat-topped hills. The formation is late Miocene to Pliocene in age and is composed of moderately to well indurated andesitic sand to sandstone interbedded with conglomerate, tuffaceous siltstone, and claystone. The Mehrten Formation is approximately 400 feet thick in eastern surface outcrops to over 600 feet thick in the subsurface near Stockton. It is reported to be 1,300 ± feet thick at McDonald Island. The top of the Mehrten Formation occurs at depths of approximately 800 to 1,000 feet in the Stockton area. Regional studies indicate that Mehrten Formation sands commonly yield on the order of 1,000 gpm from wells. The formation appears to be semiconfined at least locally in the Stockton area, due to the inferred extensive fine-grained beds in its upper part. The average specific yield for fresh water bearing units in the San Joaquin County Groundwater Investigation area as defined in (DWR 1967) is 7.3 percent.

Groundwater Level Trends
Current and historical groundwater pumping rates exceed the sustainable yield of the underlying groundwater Basin on an average annual basis. In the central portion of the Basin, the groundwater table dropped continuously from the 1950s to the early 1980s. Some recovery of the groundwater table during the early 1980s is attributed to extreme wet years of heavy rainfall. Due to the continued overdraft of groundwater in the early 1990s, significant groundwater depressions below the City of Stockton, east of Stockton, and east of Lodi formed. Several of these groundwater depressions extend to depths of about 100 feet below ground surface or more than 40 feet below mean sea level.

The Sustainable Groundwater Management Act requires actions to be taken to achieve basin sustainability over time and was enacted to address this overdraft issue.

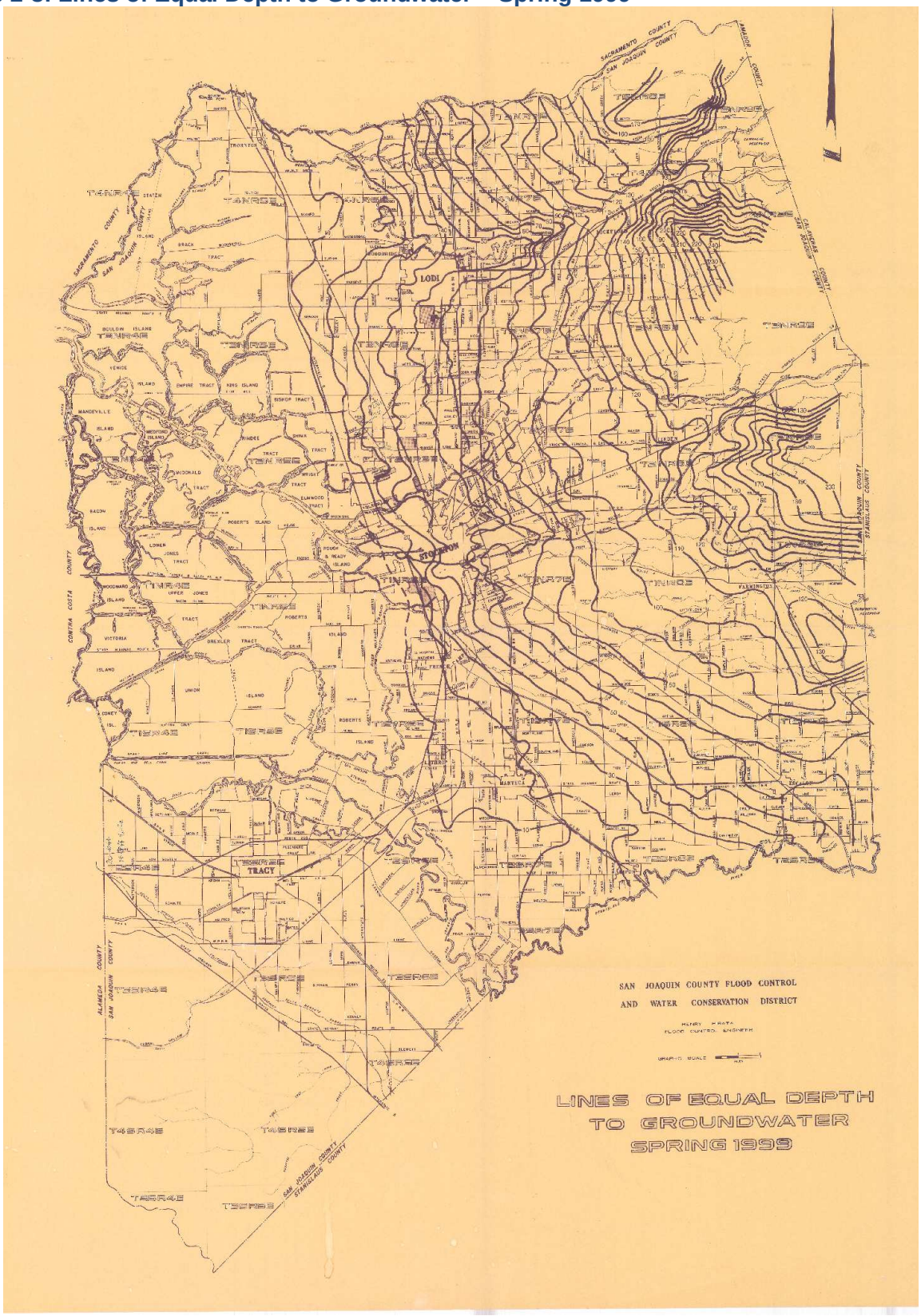
For the purposes of OWTS permitting, seasonal high groundwater levels are used to determine distance from groundwater to bottom of leach line or seepage pit. The EHD utilizes the depth to water information from 1983 and 1999 (Figures 2.1 and 2.3) when groundwater levels were recorded to be the anticipated highest levels. In areas where the anticipated highest levels are difficult or unable to be determined based on this information, site specific evaluations are required.

Figure 2-2: Lines of Equal Depth to Water in Wells – Spring 1983



Source: San Joaquin County Public Works

Figure 2-3: Lines of Equal Depth to Groundwater – Spring 1999



Source: San Joaquin County Public Works

Groundwater Protection Efforts

Local land use ordinances, policies and activities support efforts to protect groundwater quality throughout the Basin. The San Joaquin County Well Standards (Well Standards) was adopted in 1971 to ensure the adequate construction of wells to prevent contamination, pollution, and degradation of groundwater and to eliminate potential cross-connections with surface and subsurface contaminants. San Joaquin County Well Standards meet or exceed the requirements found in the California Well Standards Bulletin 74-81 and 74-90.

The Well Standards for public and individual wells require the annular space to be sealed to a minimum depth of at least 100 feet. This requirement effectively prevents the well from becoming a preferential pathway for surface contaminants (particularly from OWTS). For areas in the county where groundwater is known to be impacted by contaminants, deeper well grout seals are required. In addition, wells that are in a state of disrepair or are no longer used are required to be destroyed in a manner that prevents future migration of contaminants and protects groundwater.

The nature and extent of groundwater contamination issues in San Joaquin County is monitored and tracked through the land use, site mitigation, small public water, and emergency response programs. Groundwater quality records and data obtained through these programs are tracked using the EHD database and is available for evaluation and reporting purposes.

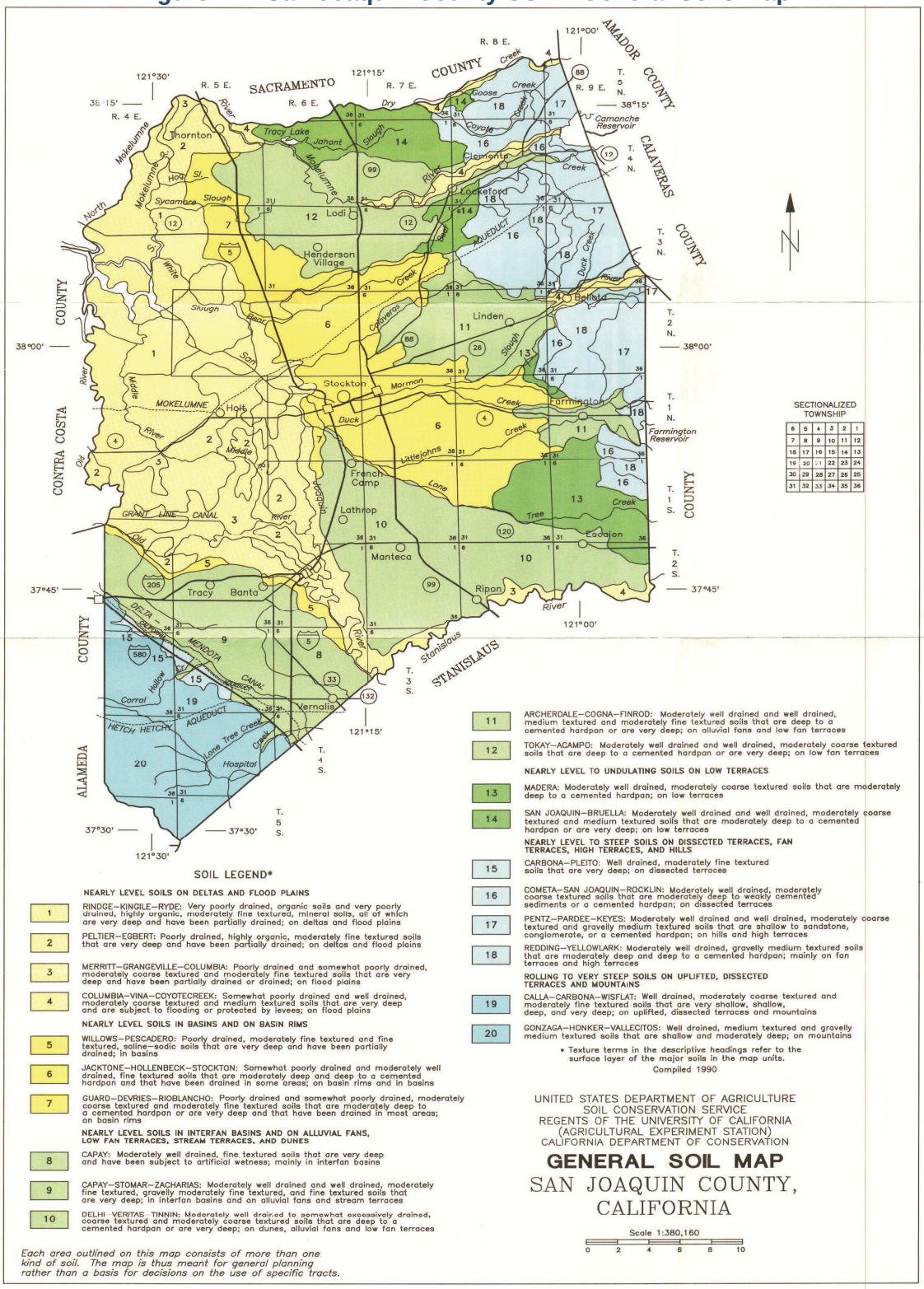
Geology

San Joaquin County issues OWTS permits and provides design recommendations or restrictions for waste water treatment based on the local soil characteristics which are derived from the surficial geological units and geomorphic setting. The county is generally subdivided into six areas that roughly coincide with the geological framework and mapped soil types of the county. The six areas are used for standard permitting and design purposes and are referred to as the Southwest Area, the Delta Area, the Manteca Area, the Stockton Area, the Lodi Area, and the East County Area. Each of these areas is described below.

The geologic information cited below was obtained primarily from the Geological Map series issued by the California Division of Mines and Geology for the San Francisco – San Jose Quadrangle and the Sacramento Quadrangle, both issued in 1991 and soil information was obtained from *Soil Survey of San Joaquin County, California*, issued by the United Stated Department of Agriculture (USDA) Soil Conservation Service (See Figure 2-3 below). The Soil Survey generally is concerned with the upper 5 feet of the soil column.

The USDA categorized the hydrological properties of soil in four groups designated, A, B, C or D, based on the infiltration rate of the soil when thoroughly wet; “A” having a high infiltration rate declining to “D” with the lowest, the latter having the higher potential for runoff.

Figure 2-4: San Joaquin County USDA General Soils Map



Source: USDA

The Southwest Area

The Southwest Area of the county includes a portion of the northwest-southeast trending Diablo Range, which is part of the Pacific Coastal Range. The area is sparsely developed and populated. Topographically, the Diablo Range in San Joaquin County consists of uplifted rolling hills and incised plateaus with locally steep surfaces and terraces. The bedrock and surficial deposits in the area consist of Cretaceous/Jurassic Franciscan formation with blue-schist blocks locally exposed and metamorphosed greywacke; these give way toward the northeast to the Cretaceous Panoche formation (marine sandstone and shale) and Cretaceous Moreno formation (marine shale), which terminate against the northwest-southeast trending Black Butte Fault. Wedged between the Black Butte Fault and the similarly trending Stockton Fault is a Miocene fanglomerate; Ouaternary fanglomerate deposits lie northeast of the Stockton Fault, dropping in elevation toward the northeast to the valley floor, which is part of the Delta Area.

The Franciscan formation found in the higher elevations of the Southwest Area weathers to soil types that are in the Gonzaga-Honker-Vellecitos soil series with soils described as clay loam to gravelly loam, commonly underlain by claypan, shale or sandstone at shallow depth in areas of locally exposed bedrock. These three soil types generally belong to hydrologic group D.

As elevation declines toward the northeast, the marine sandstone and shale of the Panoche formation and the marine shale of the Moreno formation weather to soil types in the Calla-Carbona-Wisflat series, generally described as clay loam to sandy loam. The Calla soils are in hydrologic Group B and the Carbona and Wisflat series soil belong to hydrologic group D.

Soils developed on the Miocene fanglomerate wedged between the Black Butte Fault and the Stockton fault belong to the Carbona and Pleito soil series, the former belonging the hydrologic group B and the latter hydrological group D.

The northeast portion of Southwest Area 1 that projects northeastward from the Delta-Mendota Canal into lower elevation areas is comprised of soils developed on the Quaternary fanglomerate that are classified in the Capay-Stomor-Zacharias series; these soils are comprised of clay loam and belong to hydrologic group D, except Stomer, which is in group C.

The Delta Area

The southwestern margin of this zone is comprised of a continuation of the Quaternary age alluvial fan deposits (fanglomerate) that extend northeastward roughly from the San Joaquin Fault, declining to lower elevations northeastward in a northwest-southeast trending belt parallel to the San Joaquin Fault; the alluvial fans terminate against Quaternary-age Dos Palos formation associated with the proximal flood plains and bed of the San Joaquin River. The Recent Dos Palos sediments form a northwest-southeast trending band that includes the San Joaquin River, its distributaries and intervening areas, with the band widening toward the northwest where it transitions into the intertidal deposits on the islands between the anastomosing river channels toward the north.

Eastward of the band of intertidal deposits lay the undifferentiated Quaternary-age Modesto formation, which is differentiated into upper and lower units further east. The northern-most ‘point’ of the Delta Area around Thornton near the confluence of the Cosumnes, Mokelumne, and Dry Creek Rivers consists of levee and channel deposits. The eastern margin of the Delta Area north of the French Camp area consists of a discontinuous band of the upper member of the Modesto formation.

The Quaternary fanglomerate or alluvial fan deposits in the southwestern portion of the Delta Area are the continuation of the same unit from the Southwestern Area to lower elevations northeastward and

the same soil series are developed: the Capay-Stomor-Zacharias series, which have the same hydrologic properties and suitability for septic absorption fields as described above for these soil types.
The flood plain and delta deposits of the Dos Palos Alluvium portion of the Delta Area consist of several soil series, Willows and Pascadero series where the Dos Palos borders the fanglomerate and alluvial fan deposits, the Peltier and Egbert series, and the Merritt, Grangeville and Columbia series are developed on the flood plains and deltas of the Dos Palos formation. Soils of the Willows and Pascadero series generally belong to hydrologic group “D”. The soils of these two series are montmorillonitic.

Soils of the Peltier and Egbert series belong to hydrologic group “C”, the Merritt and Grangeville soils are characterized as belonging to hydrologic group “B” while the Columbia soils are in group “C”. Soils of the Rindge, Kingile and Ryde series are developed on the intertidal deposits of the delta islands; soils in the three series all belong to hydrologic group “C”.

The upper member of the Modesto formation, east of the intertidal deposits and Dos Palos formation, has developed soil types in the Guard, Devries and Rioblancho series; these soils belong to hydrologic unit “C”. These soils develop on basin rims on alluvium from mixed rock types.

The lower member of the Modesto formation, in the northeast corner of the Delta Area, has developed soil types in the Tokay and Acampo series. The Tokay soils belong to hydrologic class “B” and the Acampo series soils belong to hydrologic class “C”. These soils form on low fan terraces on alluvium from granitic rock sources.

The Manteca Area
The geology of the Manteca Area consists primarily of sediments of the Modesto formation with a band of Dos Palos Alluvium along the west margin of the area bordering the San Joaquin River, and a large area of Quaternary dune sand east of the City of Manteca, about in the center of the Manteca Area. The strip of Dos Palos is associated with soil types in the Peltier and Egbert series, and the Merritt, Grangeville and Columbia series with the hydrologic properties as described above for those soil types in the Delta Area section.

Soil types developed on the sediments of the Modesto formation covering most of the Manteca area fall into the Delhi, Veritas and Tinnin series. The Delhi soils (formed on dune sand) and Tinnin soils (formed on low fan terraces) belong to hydrologic class “A” while the soils of the Veritas series (formed on low fan terraces) fall into hydrologic classes “B” and “C”.

The Stockton Area
Geologically, most of the Stockton Area is comprised of the upper member of the Modesto formation or is mapped as undifferentiated Modesto formation with a small area of Quaternary Riverbank formation near the northeast corner of the area. The Modesto formation is composed of medium to fine-grained sand that is generally coarser toward the base of the unit (thought to be of fluvial or eolian origin) and light grey to yellowish brown silt with local cross-bedding and sandy gravelly lenses. Locally the underlying Riverbank formation, separated from the Lower Modesto formation by an unconformity, is comprised of pebbly arkosic sand. The upper member of the Modesto formation, separated from the lower member by an unconformity, is comprised of sandy alluvium and eolian sand.

The predominant soil types developed in the area are in the Jacktone, Hollenbeck and Stockton series. The area generally south of the Calaveras River and north of Highway 26 developed soil types

in the Archerdale, Cogna and Finrod series. The Jacktone, Hollenbeck and Stockton series soils all belong to hydrologic group “D”. These soil types developed in basins, on basin rims and in interfan basins. The soils of Archerdale, Cogna and Finrod series are well drained and occur on low terraces and alluvial fans on sediment derived from mixed rock sources. The Archerdale and Finrod soils belong to hydrologic class “C” while the Cogna soils belong to hydrologic class “B”.

Soils in the limited area of Tokay and Acampo series have the hydrologic characteristics as described above for the Delta Area. See the description of soils of the limited area of San Joaquin and Bruella soil series as described below for the Eastern County.

The Lodi Area
The predominant geological formation comprising the Lodi Area is the Quaternary-aged upper Modesto formation, with Quaternary-aged Riverbank formation exposed north of the Mokelumne River and south of Dry Creek, narrow bands of Quaternary alluvium along the trace of the Mokelumne River and a relatively small area of lower Modesto formation near the Lodi Airport. The upper and lower Modesto formation units and the Riverbank formation were described above for the Stockton Area.

An east-west oriented band of Jacktone, Hollenbeck and Stockton series soil types occur along the southern boundary of the Lodi Area. Their hydrologic group was discussed above in the Stockton Area section. Most of the Lodi Area soil types fall into the Tokay and Acampo series which were discussed in the Delta Area above. For information on the San Joaquin and Bruella soil series types that occur south of Dry Creek, see the description of the San Joaquin and Bruella soil series as described below for the Eastern County.

The main soil types in the area are the Acampo sandy loam, Tokay fine sandy loam and Urban land complex, the San Joaquin clay and complex, the Jahant loam, Kingdon fine sandy loam and Rioblancho clay loam.

The East County Area
The topography of the East County Area is variable, ranging from approximately 100 feet to 500 feet above mean sea level as the valley floor of the Lodi, Stockton and Manteca Areas gives way to the Sierra Nevada foothills eastward. Geologically, the East County Area is the most varied of the areas described, ranging from Late Miocene to Pliocene-aged Mehrten formation to the Quaternary-aged Riverbank formation.

In order of decreasing age the geological units identified in the East County Area include: the Mehrten formation, Valley Springs formation, Laguna formation, and Quaternary units North Merced Gravel, Turlock Lake formation, Lower Modesto formation, Upper Modesto formation, and Riverbank formation.

The Mehrten formation crops out primarily in the northeast portion of the East County Area from the northeast corner of the county southward to south of Farmington Dam; the arkosic sandstone, basic andesite and tuffaceous sandstone weathered to shallow soil types Pentz series on hills, Pardee series on hills and terrace remnants and Keys series on terraces.

Westward, the Mehrten formation locally is succeeded by patches of the Laguna formation and Turlock formation. The Laguna formation weathers into Redding soil series and Yellowlark soil series.

Areas covered by the non-marine sand, silt and gravel olde alluvium of the Turlock formation developed soil types in the Cometa, San Joaquin and Rocklin soil series. These soil types typically form on well drained dissected terraces in alluvium from granitic rock sources.

The Riverbank formation and undifferentiated Riverbank/Modesto formation occupy the stream valleys of Dry Creek and the Mokelumne River where they cut westward through the hills, terraces and dissected terraces comprised of the Mehrten, Valley Springs, Laguna and Turlock formations. The stream valley of the Calaveras River and Mormon Slough is occupied by the lower member of the Modesto formation. Generally westward and southward of the northern streams, the Riverbank formation is overlain by the lower member of the Modesto formation or undifferentiated Modesto formation.

Soil types developed in the narrow portions of the stream valleys in the Eastern County area are parts of the Columbia, Vina and Coyote Creek soil series. These soils are very deep and developed in alluvium of mixed rock sources, but the Vina series developed on alluvium derived primarily from granitic rocks.

Where the Riverbank formation occurs on older alluvial fans and terraces in the wider flood plains downstream of the narrow stream channels described above, the soil types developed are members of the San Joaquin and Bruella soil series. These soil types developed on alluvium from granitic rock sources and occur on low terraces and dissected terraces; they are moderately to well drained and moderately deep to hardpan. The USDA characterizes the hydrologic properties of the Bruella soils as classes B and C and the San Joaquin soils as class D.

Flanking the Mokelumne River and dissecting the Riverbank formation described above, the lower member of the Modesto formation occurs. It also occurs on the low fans and terraces between and flanking the Calaveras River and the Mormon Slough and between and flanking Duck Creek and Little Johns Creek.

Tokay and Acampo series soil types developed on the lower member of the Modesto formation flanking the Mokelumne River. These soil types are moderately to well drained and formed on low fan terraces from alluvium derived from granitic rocks. The USDA assigned these soil types intermediate hydrologic categories B and C.

The two southernmost occurrences of the Modesto formation described above weathered into soils belonging to the Archerdale, Cogna and Finrod series. The soils are well drained and occur on low terraces and alluvial fans on sediment derived from mixed rock sources.

Downgradient of the Archerdale-Conga-Finrod series soils, south of Mormon Slough to Lone Tree Creek in the southwestern portion of the East County Area is undifferentiated Modesto formation that has weathered in to soils of the Jacktone, Hollenbeck and Stockton series. These soil types occur in basins and on basin rims, and in the case of the Hollenback, also on basin rims. The soil types are all derived from rocks of mixed sources and are montmorillonitic. The soils all belong to hydrologic class “D”.

Other Considerations Relating to OWTS Groundwater Quality Protection

In San Joaquin County, most OWTS are installed in the alluvium of the basin with adequate soil thickness and separation from leach field to groundwater. Fractured rock may be found in areas of higher elevations but these areas are sparsely populated and OWTS installed at these locations are

based on a site specific soil suitability study that mitigates potential impacts. OWTS located in poorly drained soils utilize leach line with seepage pit or sump designs. The maximum depth of pits or sumps is 25 feet below surface with separation to groundwater of at least 10 feet. However, most of these areas have a separation to groundwater of at least 50 feet. OWTS installed in areas in the county with shallow depth to water are also mitigated by appropriate OWTS design. All systems installed meet a minimum separation of five feet from bottom of leach trench to seasonal high groundwater. The minimum soil cover for standard systems is at least 6'' below surface for pressure systems and 12'' below surface for standard gravity systems. In addition, San Joaquin County remains predominately agricultural based and rural housing is mostly low density. Higher density subdivisions are limited in number, are located in areas with adequate soil thickness and separation to ground water, and usually utilize a centralized public water system. Therefore, the vulnerability of pollution from OWTS in San Joaquin County is very low.

San Joaquin County has followed the guidance provided by the Basin Plan and State Water Resources Control Board (SWRCB) policies in regulating OWTS with the protection and preservation of the high quality of groundwater as a goal. These policies include SWRCB Resolution 68-16 – *Statement of Policy with Respect to Maintaining High Quality of Waters in California* and Resolution 88-63 – *Sources of Drinking Water*. The groundwater in San Joaquin County has been designated as suitable or potentially suitable, at a minimum, for municipal and domestic water supply, agricultural supply, industrial service supply and industrial process supply. San Joaquin County has historically adopted OWTS standards as found in the Basin Plan intended to provide protection to groundwater quality, including minimum setbacks. Development projects that show potential impact to groundwater and cannot use typical OWTS are required to install alternative engineered designed systems or advance treatment units to mitigate potential impacts. Minimum setbacks from OWTS to surface waters are enforced and currently there are no 303(d) listed waterways in San Joaquin County shown to be impacted from OWTS activities.

The suitability of a parcel for OWTS usage is determined through site specific studies that address hydraulic loading, nitrogen loading, and minimum usable disposal areas for the current and future OWTS. San Joaquin County Sewage Standards require septic tanks to be water tight and cesspools and redwood tanks are prohibited.

San Joaquin County's OWTS program meets or exceeds most elements found in Tier 1 of the Policy. The few instances of deviation from Tier 1 are itemized in detail in Sections 7 and 8 of this LAMP document, along with technical support for each item.

Septage Disposal

In 2003, data from the San Joaquin County Assessor's Office showed over 30,000 parcels existing in San Joaquin County that were not provided service by a wastewater utility. In the unincorporated areas of the County, it is projected that approximately 20,000 parcels have a land use that requires the use of a OWTS. This includes parcels that are zoned for residential, commercial, industrial, recreational, and government uses. It is projected that approximately 10,000 parcels will require a future OWTS upon development.

The *San Joaquin County Hauled Waste Treatment and Disposal Study* was released in 2006 and provided information on the status of septage treatment and disposal in the county. This study identified four treatment facilities in San Joaquin County that accept hauled waste: the City of Lodi White Slough Water Pollution Control Facility, the City of Stockton Regional Wastewater Treatment Plan, the City of Tracy Wastewater Treatment Facility, and the City of Manteca Wastewater Quality

Control District Treatment Plant. The study also identified areas of the county that were not served by a local disposal facility. This waste is disposed of at treatment facilities outside of the county, typically East Bay Municipal Utilities District Wastewater Treatment Facility in Alameda County.

The volume of hauled waste was estimated in the study by evaluating septage pumping records from January through December of 2003. The total volume of hauled waste reported during this time frame was 11,093,008 gallons. Since 2004, 3,290 new OWTS were installed in San Joaquin County and it is estimated that the current volume of hauled waste is approximately 12,809,500 gallons per year. Currently, adequate capacity within San Joaquin County is available but some local treatment plants will not accept waste from outside their service districts. However, these areas are being served by treatment plants outside their service districts or outside the county.

The EHD currently permits 80 active pumper trucks and requires the septage to be disposed of at waste water treatment plants permitted by the CVRWQCB, in accordance with *California Health and Safety Code* Sections 117415-117420 and San Joaquin County Ordinance Code, Title 9, Section 9-1110.8. Required pumping reports are to be submitted to the EHD each month following the pumping activity. These reports are reviewed and maintained for future reference. San Joaquin County Ordinance Code, Title 5, Section 5-9102 prohibits the land spreading or land discharge of sewage sludge or septage in the unincorporated areas San Joaquin County.

SECTION 3: PLAN SCOPE AND LOCAL RESPONSIBILITY

Scope of Regulated OWTS

The EHD has jurisdiction over OWTSs that receive only domestic wastewater from residential or commercial buildings with an average daily flow of less than 10,000 gallons per day. The RWQCB regulates the larger wastewater treatment systems that treat average daily flows of 10,000 gallons or more per day and systems receiving significant amounts of waste from RV holding tanks. Most OWTS are installed using standardized designs based on percolation rates, soil types and depth to water. Standard systems consist of shallow filter beds or leach lines or shallow leach lines with terminal pits or sumps, depending on the area. These standard designs meet or exceed the design criteria in *Table 3-Application Rates as Determined from Stabilized Percolation Rates*. Alternative Engineer Designed Systems are used when needed to mitigate certain issues, such as low permeability soils or shallow depth to water, and these may include mound and pressure dose systems. In addition, Alternative Treatment or Advance Treatment systems are utilized to address potential water quality issues.

Local Responsibility

The EHD has regulated OWTS in San Joaquin County for over 60 years using local ordinance and standards and is regulated, in part, as a function of our local land use processes. Ordinance requirements for OWTS are found in San Joaquin County Ordinance Code, Title 9, Chapters 9-1105 and 9-1110. Local Sewage Standards adopted pursuant to the Ordinance provide requirements for the site evaluation, permitting, siting, design and construction of OWTS. These standards are in place to ensure systems are adequately designed, located, sized, spaced, constructed and maintained to prevent creation of a nuisance, ensure there are no hazards to public health, and to protect potable water supplies, and groundwater, or surface waters within San Joaquin County boundaries.

Permit Records and Permit Tracking

San Joaquin County has maintained OWTS permit records since 1950, with our oldest known permit dating from September 25, 1950. These records were kept in paper form until around 2000 when the Department's imaging program began. Currently, all permits are imaged into a safe and secure imaging database. These records are available for review within ten days upon request.

Since 1993, in addition to the paper permit, data relating to the location and type of permit has been collected within the Department's EnvisionConnect database. The database contains information from a variety of data fields that include the location, property owner, permit issuance date, details of the permit, installation contractor, EHD inspection details, and permit type. All permits issued by the EHD will be considered Tier 2 permits for the purposes of reporting pursuant to Policy section 3.3.3.

Where a variance is granted from the standard OWTS requirements, a special permit is issued and is specifically tracked in the database.

This database also tracks all complaints relating to OWTS, including surfacing sewage and improper wastewater discharges. In addition, records relating to local land use projects are stored in the EnvisionConnect database, including percolation test and water well sampling results from soil suitability/nitrate loading studies. The database also stores groundwater quality data from the Small Public Water Program.

The EHD is able to query the EnvisionConnect database and export specific information in multiple formats, such as excel spread sheets. The reports required to be submitted to the RWQCB as specified in the OWTS Policy will be compiled from this database. In addition, data is exported from the database and used in ESRI mapping software to create maps which are consulted during the permit issuance process.

Reporting

San Joaquin County will submit by February 1 of each year an annual report to the CVRWQCB organized in a tabular spreadsheet format to include the following information:

- The number and location of complaints.
- The applications and registrations issued as part of the local septic tank cleaning registration program.
- The number, location, and description of permits issued for new and replacement OWTS. The Tier the permit was issued under will also be reported. All permits issued by the EHD will be considered Tier 2 permits for the purposes of reporting pursuant to Policy section 3.3.3.

Every fifth year, an evaluation report of the local Water Quality Assessment Program (WQAP) will be submitted to the CVRWQCB. This report will evaluate the monitoring program, will assess whether water quality is being impacted by OWTS, and will identify any further actions, including changes to the LAMP, that may be warranted to protect water quality or public health.

The EHD will provide any OWTS records to the CVRWQCB within ten days of being requested. Any groundwater monitoring data generated will be submitted in electronic deliverable format for inclusion into Geotracker. Surface water data will be provided in a Surface Water Ambient Monitoring Program (SWAMP) compatible format for inclusion into California Environmental Data Exchange Network (CEDEN).

SECTION 4: PERMITTING, INSTALLATION, INSPECTION REQUIREMENTS

Land Use Process

OWTS considerations begin with each new land use project. All land use projects in San Joaquin County are required to conform to the goals and strategies noted in the *San Joaquin County General Plan* (General Plan) and the requirements in the *San Joaquin Development Title* (Development Title). The General Plan goal for new land use projects is to provide a well-balanced and orderly development pattern to protect the County's natural resources, public health, and the environment. The Development Title requires that provisions of adequate infrastructure for waste water disposal are consistent with the General Plan's goal and do not degrade the quality of waters of the state.

The EHD serves as an integral part of the land use referral process. Land use referrals are categorized as two types as follows: 1) Referrals from the San Joaquin County Community Development Department (CDD); and 2) Referrals from outside agencies. The EHD sets conditions to ensure that the proposed project does not cause a negative impact to public health and the environment, that adequate infrastructure for waste water disposal is provided in accordance with the General Plan, the Development Title, and the EHD *Onsite Wastewater Disposal Standards* (OWTS Standards). CDD is the lead agency for subdivisions of land and development projects in the unincorporated area. The review process by EHD is initiated when CDD refers and routes applications to EHD for comments and approval.

The EHD conducts site inspections for referred subdivisions and projects to determine the conditions to be met to be in compliance with Development Title requirements, including for waste water disposal. Conditions for the project's approval are determined and submitted to the CDD, including requirements for OWTS siting and design. A soil suitability/nitrate loading study is required for projects where an OWTS is utilized or proposed and does not fall under the jurisdiction of the CVRWQCB.

Soil Suitability and Nitrate Loading Studies

The soil suitability/nitrate loading study determines if the site conditions are suitable for the use of an OWTS based on the following criteria:

- The intensity and extent of the existing and the proposed development project's use of septic tanks within and around the area;
- The suitability of the soil for utilizing septic systems, including percolation rates and soil profiles;
- The depth and gradient of the water table;
- The history of past uses in the project area to assess potential problems;
- And other information as required to determine the cumulative effect of the existing and the proposed development project on groundwater contamination, including nitrate loading estimates.

Persons performing the site evaluation activities relating to percolation tests, soil suitability/nitrate loading studies and OWTS design activities are required to be a Registered Environmental Health Specialist, a licensed Civil Engineer, or a Professional Geologist, depending on the work to be performed. Other than an owner/builder, persons who install and construct OWTS must have the appropriate license issued by the California State Licensing Board (CSLB). There currently are no

local requirements for the training and certification of service providers, maintenance personnel, and septage pumpers and haulers.

After the project has been approved with the conditions of approval, the EHD tracks the project implementation including the OWTS permitting and construction. The San Joaquin County Community Development Department requires a Certificate of Occupancy for Commercial building projects to be signed off by EHD before the building maybe occupied. This allows for the EHD to hold up the occupancy of the building until all EHD's requirements have been met.

Project referrals from outside agencies are reviewed and any action to be taken relating to sewage disposal and OWTS are provided to the referral agency. Outside agencies may include city, state, and federal government agencies, San Joaquin County Local Agency Formation Commission (LAFCO), and the Department of Real Estate.

Permitting Requirements

The EHD issues permits for OWTS that require a repair, replacement, or new installation. The permit specifies the location, type of permit, construction specifications, and contractor and property owner information. Permit applications can be submitted by the property owner or a contractor licensed with the CSLB. The contractor must have an appropriate, current valid license issued from the CSLB which is verified at the CSLB website at the time of the permit issuance. Permits are issued after an evaluation has determined the OWTS is in compliance with established ordinance and standards requirements. The EHD performs a site inspection at the time the OWTS is built to ensure the system was installed as permitted. The EHD will not final a OWTS permit until the installation is complete and is in compliance with the issued permit requirements. Maps of OWTS permitted in San Joaquin County since 1993 are shown at the end of this Section in Figures 4-1 for new OWTS and 4-2 for repairs.

Residential Systems

Residential OWTS are designed based on the findings of the soil suitability and nitrate loading studies required to be performed at the time of the division of land. Most studies find that the lots are suitable for a standard OWTS design criteria established for specific geological areas in San Joaquin County as noted in the Sewage Standards, Section 8.0.

For standard residential OWTS, sizing is based on the number of bedrooms and the geological area where the lot is located. The number of bedrooms is relative to occupancy and is indicative of wastewater usage. Shallow filter beds and leach lines are required for sandy soils and areas of shallow depth to water. No sumps or seepage pits are allowed in these areas. In areas of less permeable soils and where there is a greater separation to groundwater deeper sumps and seepage pits are allowed at the terminal ends of shallow leach trenches.

For residential OWTS where the soil suitability and nitrate loading study indicate issues precluding a standard OWTS design, a site specific OWTS design is required based on the identified particular characteristics of the lot.

Commercial Systems

Commercial OWTS are designed based on the findings of the soil suitability and nitrate loading studies required to be performed at the time of the project development or prior to a building permit

issuance. These systems are sized either using a calculation in the Sewage Standards, Section 8.6 or using percolation rates to determine application rates and infiltrative areas. Most OWTS designers utilize the percolation rate method which is consistent with Policy Section 8, Table 3. Comparing the commercial design calculations found in the Sewage Standards to the percolation rate method shows that the Sewage Standards method results in dispersal system sizes that far exceed those using the percolation rate method. Although the Sewage Standards method is more conservative, both methods are acceptable.

Failing Systems

Failing OWTS usually become known to the EHD either when a voluntary repair permit application is submitted or as a complaint forwarded to the EHD. Complaints are assigned to EHD staff and the property owner is issued a Notice to Abate to correct the failing septic system by obtaining a repair permit. EHD staff tracks and monitors compliance until a satisfactory repair is complete and the repair permit for the work has been finaled. When surfacing sewage is present, the owner is required to pump the septic tank as often as needed to prevent continuing surfacing sewage until the repair is completed.

The EHD will notify the owner of the public water system and the SWRCB Drinking Water Program Staff as soon as practicable, but not later than 72 hours, after the discovery and confirmation of a failing OWTS that is located:

- Within 1,200 feet of an intake point for a surface water treatment plant for drinking water;
- In the drainage area catchment in which the intake point is located; and
- Such that it may impact water quality at the intake point such as upstream of the intake point for a flowing water body; or
- Within a horizontal sanitary setback from a public well.

Enforcement

The owner of any OWTS not in compliance with established laws, regulations, and standards are issued a Notice to Abate citing the violation or violations and providing a date for compliance. If the OWTS remains out of compliance, the case is moved forward in the enforcement process, which may include the issuance of a citation, a referral to the San Joaquin County District Attorney's Office, action by County Counsel, involuntary abatement by the County, referral to the CVRWQCB, or other appropriate action. Prior to referral to the CVRWQCB, the EHD may collaborate with and request technical assistance from Regional Board staff during complex and challenging enforcement efforts.

Operating Permits

In addition to the initial design, construction and permitting requirements, alternative or supplemental treatment systems installed in San Joaquin County are require to obtain an annual operating permit and are inspected on an annual basis. In addition, these systems must submit operating and monitoring reports, including effluent sampling results, at least on a semi-annual basis.

Permitting and Notification of OWTS near Surface Water Intakes

When the EHD determines a permit has been submitted for an OWTS installation, including repair permits for failing systems, that is located:

- Within 1,200 feet of an intake point for a surface water treatment plant for drinking water;
- In the drainage area catchment in which the intake point is located; and
- Such that it may impact water quality at the intake point such as upstream of the intake point for a flowing water body; or
- Within a horizontal sanitary setback from a public well.

The EHD will notify and provide a copy of the permit to the owner of the public water system and the SWRCB Drinking Water Program Staff (if the owner cannot be found or if a large Public Water System). The permit will be issued only after all applicable conditions have been met to provide the highest protection of these sources in compliance with the SWRCB Policy.

Currently, there are six public surface water treatment plants operating in San Joaquin County that are regulated by the SWRCB Drinking Water Program. The SWRCB has provided EHD with the location details of surface water intakes and catchment of drainage areas for these systems. They are located in rural areas or within city limits where development is served by public sewer systems. The EHD does not anticipate new OWTS installations or OWTS impacts by surfacing sewage occurring within 2500 feet of the surface water catch basin or intake lines in the areas the EHD has jurisdiction. The surface water intake and catch basin of one public water system is located in an adjacent county. Another surface water intake line is currently within 1200 feet of an OWTS package treatment plant that is under CVRWQB oversight and serves a mobile home park and marina.

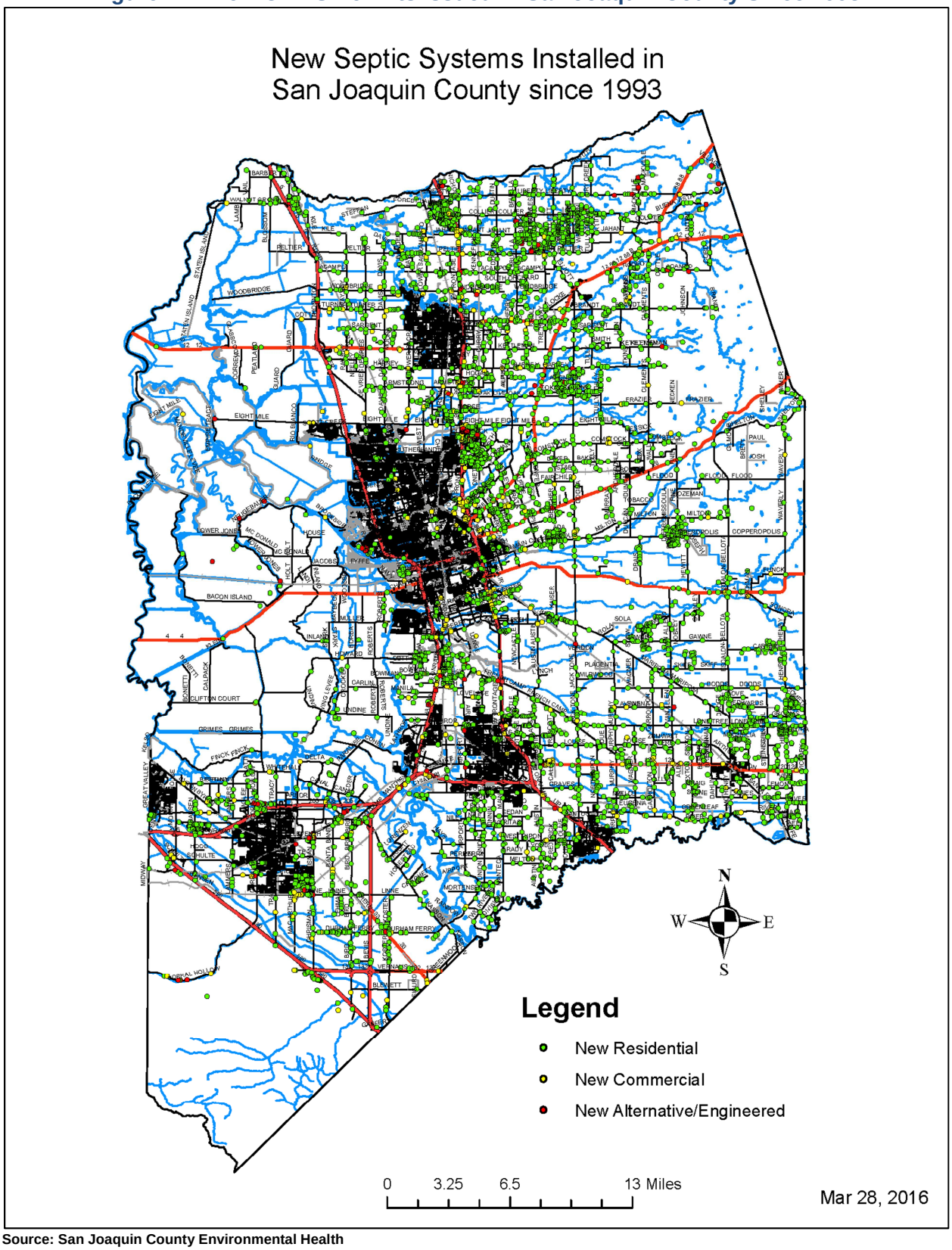
When an OWTS dispersal area is proposed to be installed within the horizontal sanitary setback of a public well or surface water intake point, the EHD will require a soil suitability/nitrate loading study to determine if supplemental treatment for nitrogen and pathogens is required, in accordance with Sections 10.9 and 10.10 of the Policy, or if appropriate alternative siting and operational criteria can be proposed to similarly mitigate the potential adverse impact to the public water source. For a dispersal system exceeding 20 feet in depth proposed to be installed within 600 feet of a public well, a two-year travel time for microbiological contaminants will be required to be conducted by a qualified professional.

Additionally, the EHD Well Standards require annular seals of at least 100 feet for domestic and public water system wells, more protective than the 20 and 50 foot annular seals required by the California Water Well Standards, Bulletins 74-81 and 74-90. The depths of these deeper annular seals may be preemptively mitigating possible water quality impacts by an OWTS that is located within established setbacks and may be a mitigating factor when these distances cannot be achieved for OWTS repairs and installations on existing, constrained parcels.

Permitting OWTS near Public Sewer and Water Utilities

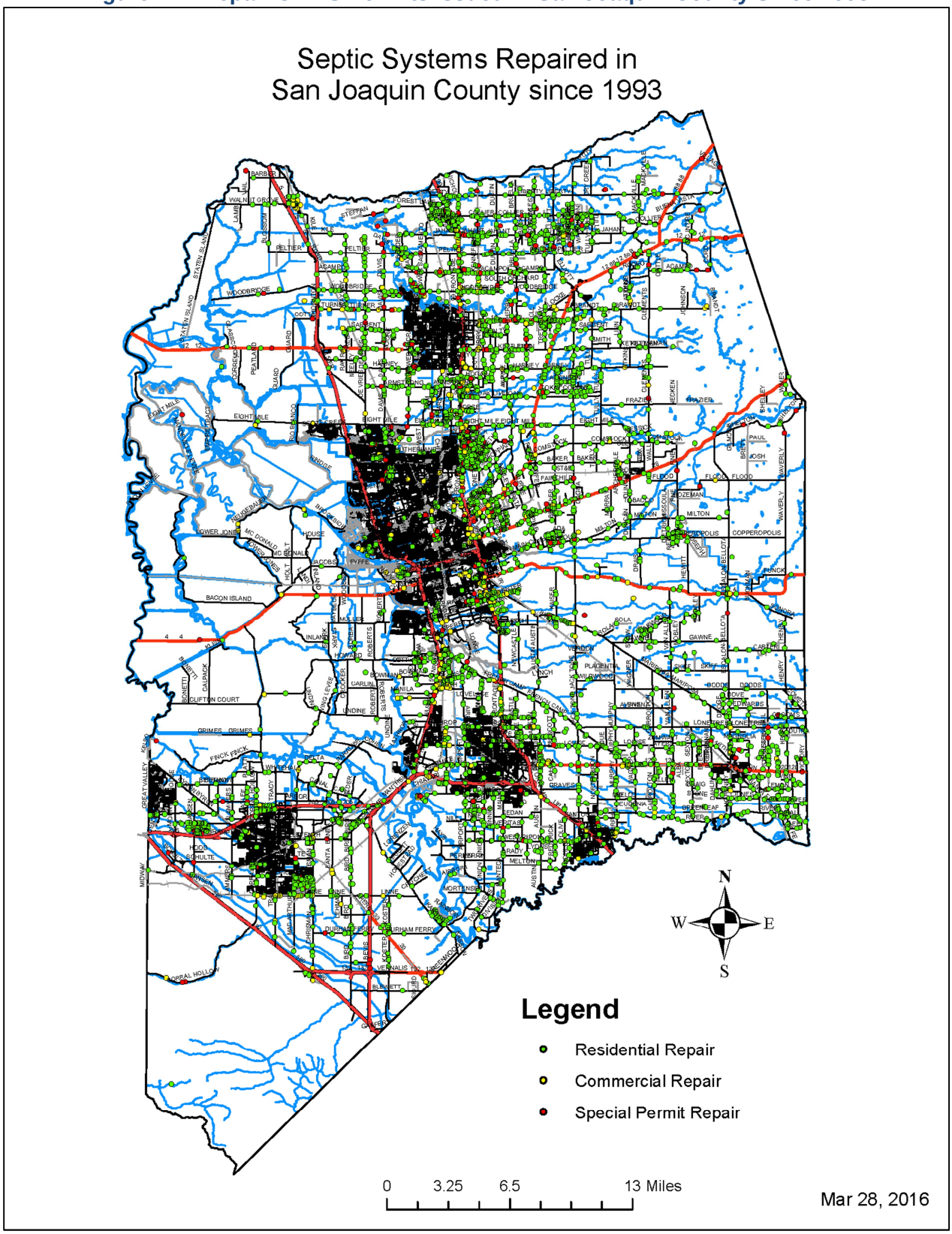
The EHD has access to the web-based mapping application that provides information for each parcel in the county, including if the parcel is within a public sewer utility district. The utility company may be contacted the sewer utility is within 200 feet of the parcel to determine if a connection could be made instead of issuing the permit. At times there is a need to repair an OWTS in former unincorporated areas that are not currently served by a public sewer system. In these cases, the EHD will issue a permit for these repairs but only after receiving written approval from the local agency with jurisdiction.

Figure 4-1: New OWTS Permits Issued in San Joaquin County Since 1993



Source: San Joaquin County Environmental Health

Figure 4-2: Repair OWTS Permits Issued in San Joaquin County Since 1993



Source: San Joaquin County Environmental Health

SECTION 5: MAINTENANCE AND EDUCATION PROGRAMS

Voluntary Maintenance Program

Other than OWTS with supplemental treatment and holding tank systems, San Joaquin County currently does not have any local requirement for OWTS maintenance and reporting. The Sewage Standards requires that owners maintain their sewage disposal system in such that it will function in a sanitary manner and will not create a nuisance of endanger the safety of any water supply, groundwater or surface water.

When conditions warrant, the EHD may require an owner to perform a system evaluation and submit the findings to the EHD. This evaluation would be conducted by a qualified professional to examine the tank, and other associated appurtenances, for signs of deterioration, corrosion, malfunction, or failure, and the dispersal field for evidence of failure. Modifications or repairs needed would be determined based on the results of the evaluation.

Education and Outreach

The EHD provides education to OWTS owners, contractors, and others in a variety of ways, including the following.

Direct Staff Contact - The primary method of education and outreach is by direct interaction between EHD staff and the public. EHD routinely receives and responds to phone calls and office visits by private property owners, consultants and contractors with questions about the regulations and or the permit process. As part of EHD's role in the planning process, we will regularly answer questions and provide information to consultants, staff from other departments or agencies, and occasionally directly to decision makers such as members of the Planning Commission and the Board of Supervisors.

The EHD educates property owners on how to provide preventative management of their OWTS which will prolong the useful life of the system, usually at the time the system is initially installed and when owners call in to the EHD with concerns. In addition, the EHD educates property owners of discharges prohibited per county ordinance, such as automobile and garage waste, storm drainage, solvents and toxics, solids, garbage, grease wastes, back wash from water softeners, filters, and swimming pools, and truck terminal wastes.

EHD Website - All OWTS permit application forms and instructions are available on the EHS website. In addition to the forms, EHD posts or provides links to the various regulations such as the applicable sections of the Central Valley Regional Water Quality Control Board's Basin Plan and the County's OWTS ordinance. There is also general information on the website about proper OWTS maintenance as well as downloadable pamphlets as described below.

Informational Pamphlets – Information for homeowners on the care and maintenance of their OWTS will also be available in a pamphlet format, which can be handed out during inspections, accessed at the EHD public counter, or downloaded from the EHD website. This information will include guidance to OWTS owners on steps to take within 48 hours of experiencing a failure of their system.

OWTS Repair Information

In the event a homeowner experiences a system failure, information on permitting and repairs will be available by phone (staff available 24 hours a day) and by posting on the EHD website. A list of contractors is posted on the EHD website.

SECTION 6: MINIMUM SITE EVALUATION AND SITING STANDARDS

This section of the LAMP compares the EHD requirements for the minimum site evaluation and siting standards with those contained in Section 7 of Tier 1 of the Policy. Each section is addressed in the table below and shows if the EHD standards meet the Tier 1 requirements or if an alternative standard is used. Following this table, a narrative is presented providing more detailed discussion for each section.

Table 6-1: Summary of Comparison

Comparison of San Joaquin County (SJC) OWTS Standards with Policy Section 7 Minimum Site Evaluation and Siting Standards		
OWTS Policy for Tier 1 Section Number	SJC Meets Tier 1?	Comments
7.1 Qualified Staff	Met	Soil/Site Evaluation: Licensed or registered EHS, Civil Engineer, or geologist. Design: Civil Engineer or REHS. Installer: Licensed contractor per CLSB requirements or owner/builder.
7.2 Site Evaluations	Met	A site evaluation is performed at the time the lots are created.
7.3. High Groundwater Determination	Met	Historical data and direct observation methods are primarily used.
7.4 Percolation Test Results	Met and Exceeds	Fastest Rate Allowed is 1 MPI Slowest Rate Allowed is 60 MPI
7.5.1 Setbacks to Property Line and Structures	Met and Exceeds	Minimum distance is 5 feet to property line and to structures
7.5.2 Setbacks to Water Wells	Met and Alternative	All new OWTS meet this provision. Variance allowed for old lots of record only when cannot meet this provision.
7.5.3 Setback to Unstable Land Mass	Met	SJC has not encountered this issue in the past.
7.5.4 Setback to Springs and Flowing Surface Water Bodies	Met and Alternative	All new OWTS meet this provision. Variance allowed for old lots of record only when cannot meet this provision.
7.5.5 Setback to Vernal Pools, Wetlands, Lakes, Ponds	Met and Alternative	All new OWTS meet this provision. Variance allowed for old lots of record only when cannot meet this provision.
7.5.6 Setback to Public Water Well	Met and Alternative	All new OWTS meet this provision. Variance allowed for old lots of record only when cannot meet this provision.
7.5.7 Setback to Reservoir, Lake, Flowing Water Body for OWTS within 1,200 feet of Surface Water Intake	Met	Current and new OWTS meet this provision.
7.5.8 Setback to Reservoir, Lake, Flowing Water Body for OWTS between 1,200-2,500 feet of Surface Water Intake	Met	Current and new OWTS meet this provision.
7.6 Notification of OWTS within 1200' of Surface Water Intake	Met	Notification and permit requirements will be met for this provision.
7.7 Slope For Effluent Disposal < 25%	Alternative	SJC standards allow up to 30% slope.
7.8 Allowable Density for Dwelling Units	Met	This provision is met for initial dwelling unit. Additional units allowed only upon acceptable soil suitability/nitrate loading study.

Discussion of Comparison

Policy Section 7.1 - Qualified Professional – SJC meets requirement

The Sewage Standards, Section 10.3.3 requires the soil and site evaluation to be performed by a Registered Engineer or Registered Environmental Health Specialist. OWTS design activities are to be performed by an REHS or Civil Engineer. Section 1.1 of the Sewage Standards requires all OWTS installations to be performed by licensed contractor per CSLB requirements or by an owner/builder. Section 6.1.1 requires any plans for pre-fabricated septic tanks to be performed by a Registered Structural Engineer. Sewage Standards, Sections 1.6 and 4.1 require designs for all package treatment plant installations be prepared by a Registered Civil Engineer.

Policy Section 7.2 – Site Evaluation: Soil Depth – SJC meets requirement

San Joaquin County Ordinance Code, Section 9-1105.2 requires the suitability of an area for OWTS to be determined prior to certain development projects and prior to the issuance of a building permit. A soil suitability and nitrate loading study are required for all new lot splits, site approvals, and certain building permits, and includes soil depth and profiles. Most areas in San Joaquin County used for OWTS have adequate soil depth for standard dispersal areas.

Policy Section 7.3 - Site Evaluation: Groundwater Depth – SJC meets requirement

Sewage Standards Section 8.8.10 prohibit seepage pits in areas of normal high ground water and perched water table and requires the water table to be determined at the time when water is closest to the surface.

Section 3.1.3 of the Sewage Standards prohibits the installation of dispersal systems in low areas and orchards subject to flooding or in areas where groundwater reaches the surface at certain time of the year.

Section 10.3.5 requires a soil profile for divisions of land or land developments to a depth of at least ten feet where the water table or clay strata are unknown. This information is included in the soil suitability study.

In accordance with San Joaquin County Ordinance Code, Title 9, Section 9-1105.2(d), the depth to historical high groundwater is required to be included and evaluated as part of the soil suitability study when new lots are created. EHD also uses historical data, such as depth to water maps produced by San Joaquin County Public Works, Flood Control Division and static water level data from pump installation or repair permits. A site evaluation is conducted when there is a conflict between the depth of water noted from historical data and other sources or there is no historical data available. Section 10.3.12 of the Sewage Standards requires a current direct observation determination in areas where the depth to water is known to be shallow to ensure the minimum setback of 5 feet from leach trench to groundwater is met.

Policy Section 7.4 – Percolation Results - SJC meets or exceeds requirement

The EHD accepts percolation results for percolation tests in shallow borings of up to 42 inches to ranging from 1 minute per inch (MPI) to 60 MPI. In areas of less permeable soil where the shallow percolation results exceeded 60 MPI, percolation tests are required to be performed at a deeper depth (no greater than 25 feet) consistent with the expected design of the OWTS with a passing percolation rate not to exceed 30 MPI.

Policy Section 7.5 - Minimum Horizontal Setbacks – SJC meets requirements for new lots and provides alternative for non-conforming old lots

Overall, OWTS will meet the horizontal setback requirements specified in Tier 1. However, alternative minimum setbacks consistent with those previously established for existing old lots of record are allowed should the lot not be able to meet the current standards. The minimum setbacks are referenced in the Sewage Standards, Sections 3.1.1, 8.1, and 10.3.8 and a summary is shown below.

Table 6-2: San Joaquin County Setback Requirements

	New Lots/OWTS (Meets or Exceeds Tier 1 Requirements)			Existing, Non-Conforming Lots (Lots that Cannot Meet Tier 1 Requirements)		
Setback Descriptions	Septic Tank	Leach up to 8' Depth	Seepage Pits or Sumps >8' Depth	Septic Tank	Leach up to 8' Depth	Seepage Pits or Sumps >8' Depth
Water Well – Private	100'	100'	150'	50'	50'	100'
Water Well – Public	150'	150'	200'	100'	100'	150'
Streams, Waterways	100'	100'	100'	50'	100'	100'
Lakes, Reservoirs	200'	200'	200'	50'	200'	200'
Property Line	5'	5'	5'	5'	5'	5'
Structures	5'	10'	10'	5'	10'	10'
Unstable Land Mass	100'	100'	100'	100'	100'	100'
Lake, Reservoir, Flowing Water Body for OWTS 0 - 1,200 feet of Surface Water Intake of Public Water System	100'	400'	400'	n/a	n/a	n/a
Lake, Reservoir, Flowing Water Body for OWTS 1,200-2,500 feet of Surface Water Intake of Public Water System	100'	200'	200'	n/a	n/a	n/a

Policy Section 7.6 – Notification and Permitting Requirements for OWTS within 1200' of Water Intake Line/Catchment – SJC meets requirement

For new OWTS that are proposed to be installed within 1200 feet and 2500' feet of a public surface water intake line or catchment area, the EHD will provide a copy of the permit application to the owner of the water system describing the proposal to install on OWTS. In a case where an owner cannot be identified, the notification will be made to the State Water Resources Control Board, Drinking Water Division. The agency with lead regulatory oversight of the water system will also be notified. In addition, the EHD will ensure that the permit application includes the following:

- A topographical plot plan for the parcel showing the OWTS components, the property boundaries, proposed structures, physical address, and name of property owner.
- The estimated wastewater flows, intended use of the proposed structure generating the wastewater, soil data, and estimated seasonal high depth to water.

The EHD will wait at least 15 days from the date the information is received by the water system owner to issue the permit. The EHD will consider any recommendations and comments provided by the water system owner prior to permit issuance.

Policy Section 7.7 - Ground Slope < 25 percent - SJC has alternative requirement

The Sewage Standards, Section 10.3.10 allow for the ground slope in the dispersal field to be no greater than thirty percent. In addition, Section 10.3.7 requires any division of land or new land development having a slope greater than 10 percent to be evaluated on an individual basis. Any impacts from a slope between 25 and 30 percent will be identified and evaluated during this process. Most of OWTS in San Joaquin County are installed in areas of little or no slope and the issue of slopes exceeding 25-30 percent rarely occurs. As this issue is rare and these current requirements are protective of any impacts, no change in local standards is warranted and the maximum allowable slope for the LAMP is 30 percent.

Policy Section 7.8 - Allowable Density for a Subdivision - SJC has alternative requirement

The overall annual average rainfall for the county is 15.6 inches, allowing for an average density of two acres per single family dwelling according to Tier 1, Table 1. San Joaquin County Ordinance Code allows for minimum parcel sizes of two acres when utilizing a well and OWTS. In these instances EHD does meet this requirement.

However, a minimum one acre parcel size is allowed when the parcel utilizes OWTS and is provided water service from a public water system. These parcels do not meet this requirement.

In addition, with the intent of providing adequate and reasonable housing, state law and local ordinance have provisions for second unit dwellings and farm labor housing to be allowed in appropriate areas. These parcels may or may not meet this requirement, depending on the parcel.

This LAMP will continue to allow the development of additional housing units over the minimum average density of two acres per single family dwelling only where a soil suitability/nitrate loading study have been conducted and shows that the area is suitable for OWTS and that any impact to groundwater has been mitigated.

SECTION 7: MINIMUM DESIGN AND CONSTRUCTION STANDARDS

This section of the LAMP compares the EHD requirements for the minimum site evaluation and siting standards with those contained in Section8 of Tier 1 of the Policy. Each section is addressed in the table below and shows if the EHD standards meet the Tier 1 requirements or if an alternative standard is used. Following this table, a narrative is presented providing more detailed discussion for each section.

Table 7-1: Summary of Comparison

Comparison of San Joaquin County (SJC) OWTS Standards with Policy Section 8 Minimum Design and Construction Standards		
OWTS Policy for Tier 1 Section Number	SJC Meets Tier 1?	Comments
8.1.1 Qualified Professional to design OWTS	Met	Design: Civil Engineer or REHS.
8.1.2 No Surfacing Sewage, No Impact to Beneficial Uses of Water	Met	OWTS are sited, designed, and constructed to prevent surfacing sewage or impact to groundwater.
8.1.3 OWTS Design Criteria	Met	OWTS are designed based on domestic, low strength wastewater with flows not exceeding 10,000 gallons per day.
8.1.4 Dispersal System Soil Cover	Met	OWTS have a minimum soil cover of at least 12 inches over dispersal field and at least six inches for pressure distribution systems.
8.1.5 Minimum Depth to High Groundwater to Bottom of Leach Trench	Met and Alternative	The minimum distance from bottom of leach trench to seasonal high groundwater is 5 feet.
8.1.6 Minimum Trench Infiltrative Rate and Width, Maximum Application Rates	Met	Dispersal systems consist of shallow leach trenches. Sumps and seepage pits up to 25 feet total depth are used in conjunction with shallow leach trenches in appropriate areas. All leach trenches have a maximum width of two feet and a maximum infiltrative surface of four square feet per linear foot. OWTS application rates meet provisions of Tier 1, Table 3 for dispersal systems.
8.1.7 Maximum Depth of Dispersal System	Alternative	Dispersal systems with sumps and seepage pits up to 25 feet in depth are allowed in certain areas.
8.1.8 100% Replacement Area	Met	All new OWTS meet this provision.
8.1.9 Dispersal System Not Covered	Met	All dispersal systems shall not be covered or paved over.
8.1.10 Rock Fragment Content Not Exceed 50% Cobbles or Larger	Met	Dispersal systems are not installed in areas where the rock fragment content exceeds 50% by volume rock fragments sized as cobbles or larger.
8.1.11 No Allowance for IAPMO Certified Dispersal System	Met	Dispersal systems using IAPMO Certified systems receive no allowance or credit for use – foot by foot equivalency is used.
8.2.1 Tank Standards	Met	Tanks used for OWTS meet these provisions.
8.2.2.1 Watertight Risers	Met and Alternative	Risers are required to be installed when tank has more than two feet of cover.
8.2.2.2 Access Lids at Grade Secured	Met	EHD requires all access lids at grade to be locked or otherwise secured.
8.2.3 Septic Tank Approval	Met	All septic tanks are either IAPMO approved or are designed and certified by a California Registered Civil Engineer.
8.2.4 Prevention of Solids into Dispersal System	Met	Septic tanks are designed and sized for appropriate retention time. NSF/ANSI certified filters are required for new and replacement tanks.

Table 7-1: Summary of Comparison (Cont.)		
8.2.5 Installer Requirements	Met	OWTS are installed by licensed CSLB contractors or owner/builders. All systems are inspected when installed.

Discussion of Comparison

Policy Section 8.1.1 - Qualified Professional – SJC meets requirement

OWTS design is performed only by a California Registered Civil Engineer or a REHS.

Policy Section 8.2.1 – No Surfacing Sewage, No Impact to Beneficial Uses of Water – SJC meets or exceeds requirements

The existing ordinance and standards requires OWTS to 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. These provisions are discussed in more detail in Sections 6 and 7 relating to land use development and OWTS are sufficient to prevent surfacing sewage issues and water quality impacts.

Policy Section 8.1.3 – OWTS Design Criteria – SJC meets requirements

The EHD has historically regulated domestic OWTS with wastewater flows up to 10,000 gallons per day and intends to continue to regulate these systems under the LAMP. Per Sewage Standards Section 6.1.13, residential OWTS are sized based on average daily flow of 150 gallons per bedroom per day. Tank capacity is based on 400 gallons per bedroom with a minimum tank size of 1200 gallons. Tank components are based on peak wastewater flow rates with a minimum tank retention time of 24-hours for all sewage (Section 6.1.8). Average daily flows and site specific data collected from the site evaluation are used to design dispersal system absorption areas. Package treatment plants or alternative or supplemental treatment are required to mitigate any impacts to water quality, as determined based on site specific soil suitability/nitrate loading studies.

Policy Section 8.1.4 – Dispersal System Soil Cover - SJC meets requirement

The Sewage Standards Sections 8.3.10 and 8.3.11 provide for a minimum of six inches and a maximum of 24 inches of soil cover over the dispersal system. All standard dispersal systems have a minimum of 12 inches of soil cover over the dispersal system. A minimum of six inches soil cover is allowed only for pressure distribution systems.

Policy Section 8.1.5 – Minimum Depth to High Groundwater – SJC meets most requirements and has alternative requirement

San Joaquin County meets most of the minimum depth to high groundwater requirements with the exception of the minimum depth to water based on percolation rates as shown in Table 2 of Policy Section 8. However, fast percolation rates are addressed when the initial soil suitability and nitrate loading study is conducted and mitigations are required as part of the design parameters. Mitigations can range from engineered fill in the dispersal area to the installation of a supplemental treatment system. The standard provisions for this requirement are provided below.

Section 3.1.3 of the Sewage Standards prohibits the installation of dispersal systems in low areas and orchards subject to flooding or in areas where groundwater reaches the surface at certain time of the year.

Sewage Standards Section 10.3.11 requires a minimum five foot separation from the bottom of the leach trench to groundwater.

Section 10.3.13 requires a ten foot separation from the bottom of a seepage pit and the groundwater table. Greater depths are required if the soils do not provide adequate filtration. Section 8.8.10 prohibits seepage pits in areas of normal high ground water and perched water table and requires the water table to be determined at the time when water is closest to the surface. Section 8.8.11 requires a test hole to 35 feet be installed in areas where the depth of the water table is unknown.

Policy Section 8.1.6 – Minimum Trench Infiltrative Rate and Width – SJC meets requirement

All OWTS must have shallow dispersal systems. The Sewage Standards, Section 8.3.2 provides for the maximum width of these leach trenches to be two feet. Section 8.4.5 states no addition credit is given for trench widths greater that two feet. The maximum infiltrative surface used to determine dispersal system area for leach trenches is four square feet per linear foot.

Policy Section 8.1.6 – Maximum Application Rates – SJC meets requirement

Section 3.2 of the Sewage Standards requires the design of the OWTS to be determined based on the location, type of soil and groundwater level or as determined by percolation test and/or soil profile. This section is the basis for the standardized design criteria used for residential OWTS on parcels with acceptable soil suitability and nitrate loading study results. To determine how San Joaquin County criteria compares to the Policy, local percolation rates and standard OWTS design infiltrative areas were compared to the application rates and infiltrative areas found in Table 3, Policy Section 8 (page 24). As residential systems are designed based on number of bedrooms, a daily flow rate of 150 gallons per day per bedroom was used for the comparison. The percolation data used included shallow and deeper test holes.

It is important to note that all site evaluations are required to perform shallow percolation tests up to a maximum depth of 42 inches in accordance with Sewage Standards Section 10.3.2. In cases where shallow percolation tests show a rate exceeding 60 MPI, adequate absorption soil strata must be located at deeper depths up to 25 feet below surface and a percolation test is performed representative of this strata. These areas are typically located in the eastern part of the county in clay and hard pan soils with significant depths to water. These deeper percolation tests must show a rate of 30 MPI or less to be considered an acceptable rate per Sewage Standards Section 10.3.9. Any area where the shallow percolation rates exceed 60 MPI and the deeper percolation rates exceed 30 MPI, an engineered system is required designed specifically to the site characteristics.

The evaluation showed that over 80% of OWTS design criteria meet or exceed the application rates and minimum infiltrative surfaces found in Table 3 of the Policy. The data showed all OWTS design criteria with percolation rates of 40 MPI or less with infiltrative areas exceeding those required in Table 3, representing approximately 75% of all percolation test data. A small percentage of OWTS design criteria for percolations rates over 45 MPI showed less infiltrative area than that presented in Table 3. However, these data are misleading as they represent areas where sumps or pits are required to be used in conjunction with the shallow leach trenches. As discussed above, these areas must have percolation rates of 30 MPI or less in order to install a standard septic design. Therefore, these dispersal designs are representative of the application rates prescribed by percolation rates of 30 MPI or less as shown in the table and do indeed meet the required infiltrative areas.

Commercial systems are designed based on average daily flows calculated from maximum estimated usage. Section 6.1.15 of the Sewage Standards provides a table with minimum gallons per day for various typical land uses. Dispersal system design is generated from application rates

as provided for in Policy Section 8, Table 3. The minimum septic tank volume for commercial systems is determined using calculations found in Section 6.1.14 of the Sewage Standards with a minimum 1200 gallon septic tank size required.

Policy Section 8.1.7 – Maximum Depth of Dispersal System – SJC has alternative requirement

Dispersal systems consist of shallow leach trenches up to 42 inches in total depth and a minimum of 40 feet in length. The Sewage Standards Section 3.2.2(b) allows, in certain areas, shallow trenches that terminate in sumps or pits up to a maximum depth of 25 feet from ground surface. These conjunctive dispersal systems are used only in areas of lower permeability soils and the bottom infiltrative surface of the deeper component is maintained at least ten feet from seasonal high depth to water.

The construction requirements for seepage pits in Section 8.8.1 of the Sewage Standards provide for the shallow leach line to be fully utilized before the effluent is discharged into the seepage pit. Seepage pits are required to be installed at the terminal end of a shallow leach line, with a minimum five foot soil barrier between the end of the leach trench and the seepage pit. In addition, perforated pipe at the terminal end of the leach trench is connected to a solid tight line, which is elevated by at least four inches in the area of the soil barrier before terminating in the seepage pit. This provides for maximum retention time for treatment and evapotranspiration in the shallow zone.

Policy Section 8.1.8 – 100% Replacement Area – SJC meets requirement

The Sewage Standards Section 10.3.4 requires new OWTS to meet a minimum usable disposal area from 6,000 square feet to 12,000 square feet, based on percolation rates. These minimum areas are equivalent to the 100% replacement areas required based on standardized dispersal areas. Sewage Standards Section 3.3.2 requires a 100% replacement area for multiple dwellings, trailer courts, mobile home parks, and commercial or industrial systems.

Policy Section 8.1.9 – Dispersal System Not Covered - SJC meets requirement

Section 8.4.4 of the Sewage Standards provides that no leach line shall be placed under concrete, blacktop, roadway, or structure. Leach lines and disposal fields must be maintained in an open area and not compacted. Barricades may be required to maintain this area.

Policy Section 8.1.10 – Rock Fragments not Exceed 50% Cobbles or Larger - SJC meets requirement

Although not expressly addressed in the Sewage Standards, this requirement is addressed as part of a soil suitability study. Cobbles and other rock fragments are only found in specific, limited areas in the County and these areas are sparsely populated. To date, no area has been identified meeting the amount of rock fragments listed in this section.

Policy Section 8.1.11 – No Allowance for IAPMO Certified Dispersal System - SJC meets requirement

Although not expressly addressed in the Sewage Standards, a written policy memo, dated February 21, 2002, was provided to local contractors with guidance relating to chambered and rock-less dispersal systems. This memo stated no credit or allowance to reduce the dispersal field requirements is given when using these systems and the maximum leach trench width remained at two feet.

Policy Section 8.2.1 – Plumbing Code, Appendix K, Tank Standards - SJC meets requirement

Section 6.1 of the Sewage Standards provides septic tank requirements that are equivalent to the provisions found in the Plumbing Code, Appendix K, K 5-Septic Tan Construction.

Policy Section 8.2.2.1 – Watertight Risers - SJC has alternative requirement

Most septic tank installations are placed at depths such that the effluent flows by gravity to the dispersal field, usually less than two feet below grade. Risers installed on tanks at this shallow depth are unnecessary and may create a hazard if not maintained properly. However, tanks installed below this depth are required to install watertight risers.

Policy Section 8.2.2.2 – Tank Access Lids at Grade Secured - SJC meets requirement

Unsafe access to septic tanks is a very serious matter and, when identified, violations are required to be abated immediately. The requirement to secure the tank access is accomplish using California Health and Safety Code Section 115700(a) – unsafe open excavation or pit; San Joaquin County Ordinance Code, Title 9, Section 9-1110.4 - all OWTS must not be injurious to health or to create a nuisance; and San Joaquin County Ordinance Code, Title 8, Chapter 2 – nuisances and Chapter 7 – securement of unsafe condition.

Policy Section 8.2.3 – Septic Tank Approval - SJC meets requirement

Sewage Standards Section 6.1 provides for septic tanks to be approved by a Registered Civil Engineer and for installation requirements.

Policy Section 8.2.4 – Prevention of Solids into Dispersal System - SJC meets requirement

Current septic tank design parameters and regular maintenance minimize the movement of solids out into the dispersal system. Filters are recommended for use on OWTS but are not required for standard installations. Filters are a requirement for OWTS requiring a special permit or experiencing frequent failures, as warranted.

Policy Section 8.2.5 – OWTS Installer Requirements - SJC meets requirement

The Sewage Standards, Section 1.1 requires installers to be a contractor appropriately licensed by the CSLB or an owner builder.

SECTION 8: AREAS OF CONCERN, VARIANCES, PROHIBITIONS

Areas of Concern in the County

Standard criteria for siting and design are intended to prevent adverse impacts on ground and surface waters from onsite sewage disposal systems. An important factor is the provision of sufficient depth of unsaturated soil below the dispersal field where filtering and breakdown of wastewater constituents can take place. Without adequate separation distance to the water table, groundwater becomes vulnerable to contamination with pathogenic bacteria and viruses, as well as other wastewater constituents (e.g., nitrogen).

Highly permeable soils (e.g., sands and gravels) also provide minimal treatment of the percolating wastewater and normally require greater separation distances to afford proper groundwater protection.

Additionally, where there is a high concentration or density of septic systems in a given area (i.e., small lot sizes), groundwater can be degraded from the accumulation of nitrate, chloride and other salts that are not filtered or otherwise removed to a significant extent by percolation through the soil. Adverse effects on groundwater quality from septic systems can show up in the form of degraded or contaminated well water supplies, or potentially as subsurface seepage into streams, lakes, lagoons or delta waters.

Consistent and conservative planning policies and public service entity requirements have precluded any major issues with growth and development in San Joaquin County. There has not been a need for smaller homeowner associations or special maintenance districts for OWTS. Historical areas of high density OWTS have been gradually served with public sewer eliminating the potential for surfacing sewage and water quality issues relating to OWTS. At this time, EHD does not have resources to consider the development and implementation of a Regional Salt and Nutrient Management Plan. However, this may be considered if resources and funding are identified. The EHD currently partners with San Joaquin County Public Works and local water districts to address water quality and management issues affecting the subbasins, including the requirement of the Sustainable Groundwater management Act. A few areas of San Joaquin County have been identified as areas of concern and a discussion of each area is provided below.

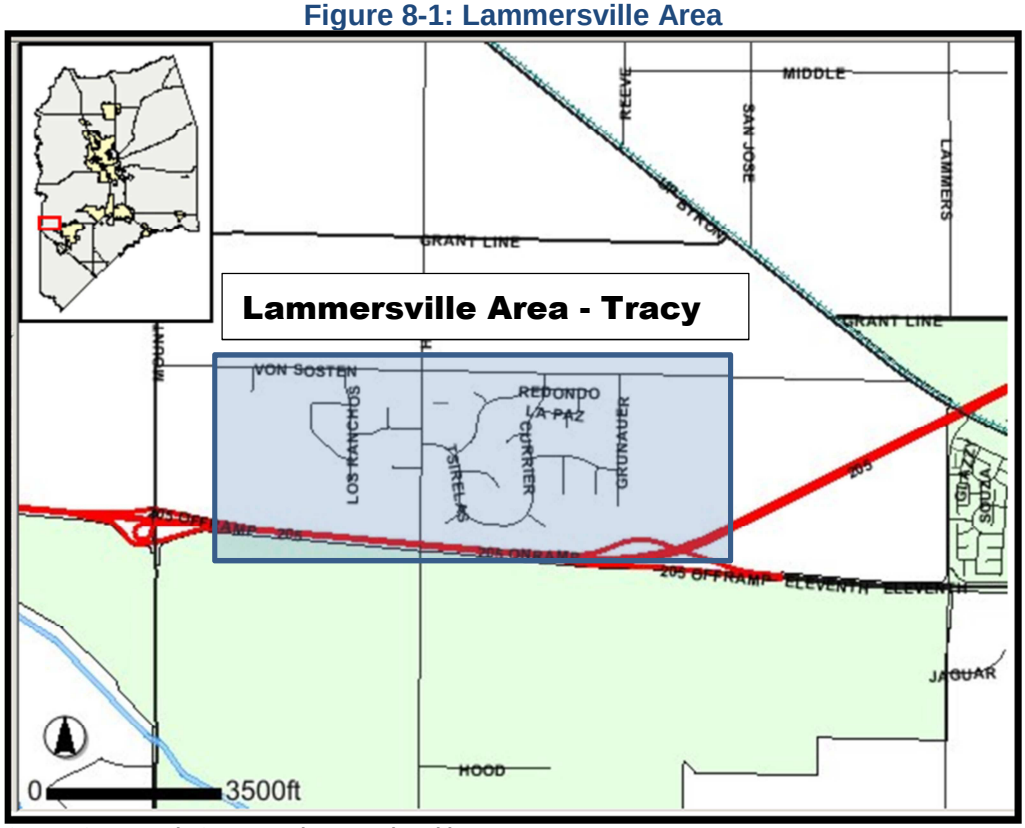
Areas with High OWTS Density

Most areas in San Joaquin County with higher density developments were built with the provision for public services, including some utilizing OWTS but with water provided by a public water system. In areas with medium to higher density developments with OWTS and private domestic water wells, the minimum parcel size is two acres and these developments were processed with the benefit of soil suitability/nitrate loading studies. A discussion of the zones where higher densities of residential OWTS are allowed is presented below and in Figure 8-1. However, there has been no data collected indicating that OWTS in these areas discussed below are contributing to groundwater degradation.

Rural Residential
Zoned rural residential, these parcels are intended to provide for large lot rural home sites within or adjacent to existing rural communities. The lots will generally have sufficient area to allow for individual water supply and sewage disposal. Typically, densities greater than one dwelling unit per two net acres will require community water systems. This zoning is found in various pocket areas outside of the seven incorporated cities within San Joaquin County and includes the Lammersville

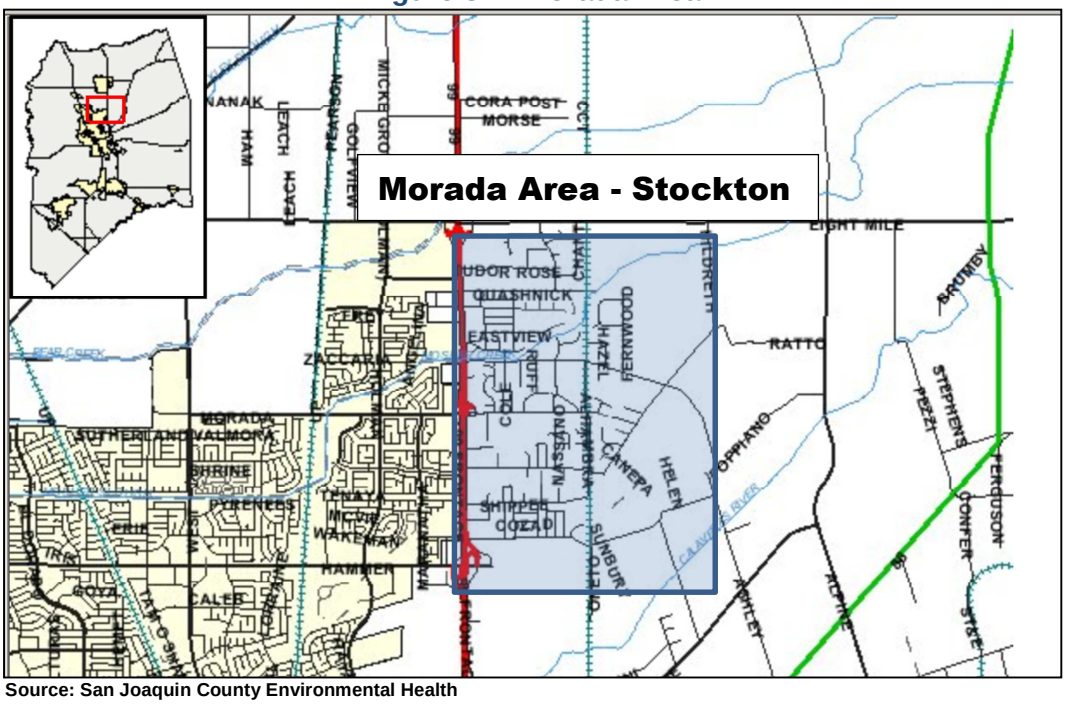
area located outside the City of Tracy limits (Figure 8-1) and the Morada area located east of the City of Stockton (figure 8-2).

Figure 8-1: Lammersville Area



Source: San Joaquin County Environmental Health

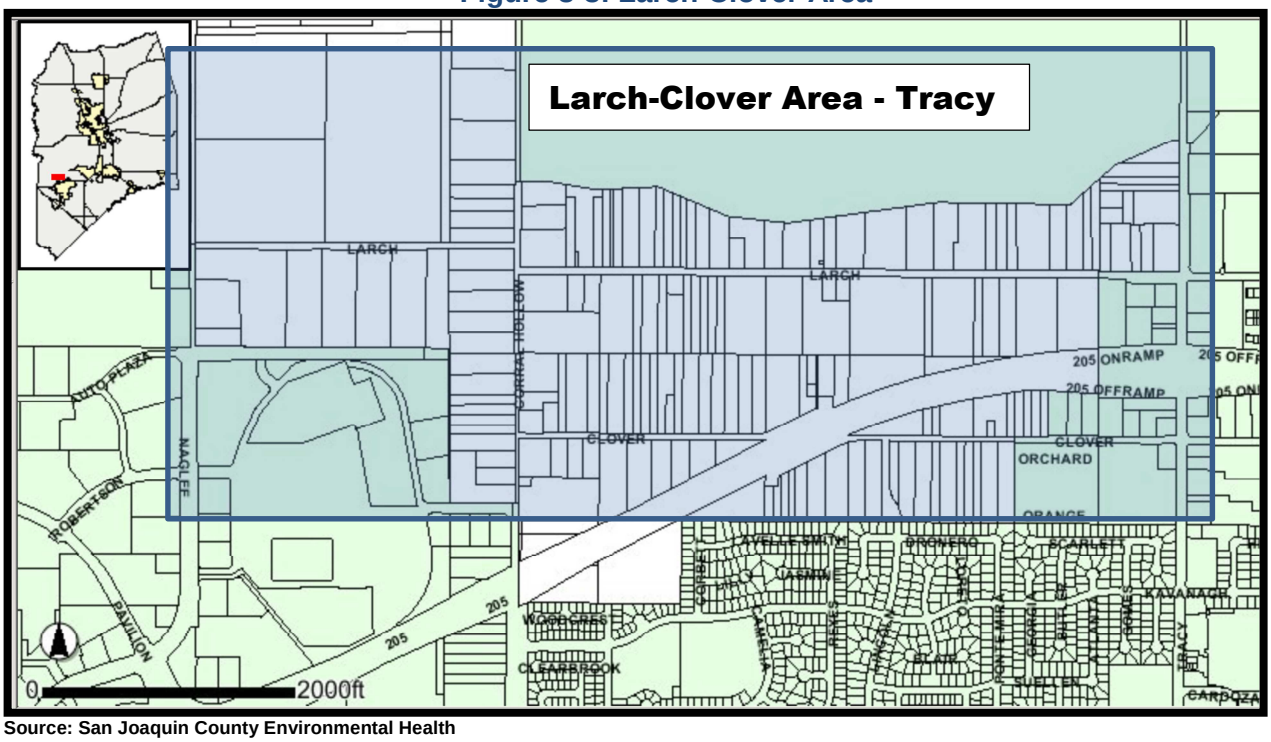
Figure 8-2: Morada Area



Source: San Joaquin County Environmental Health

Low Density Residential
Zoned low density residential, these parcels are intended to provide for neighborhoods consisting of detached single family dwellings, located within or immediately adjacent to populations centers which are served by a public water supply and a sanitary sewer system. However, there are areas where this zoning exists and the parcels are still served by OWTS and individual water wells, such as the Larch-Clover area just outside of the City Tracy (Figure 8-3) and in pockets of unincorporated areas located within the boundaries of the City of Stockton.

Figure 8-3: Larch-Clover Area



Source: San Joaquin County Environmental Health

Limited Agriculture
Zone is intended to recognize and preserve areas that contain existing concentrations of small-scale agricultural operations and dwellings. Parcels are typically five to ten acres but home sites of two acres in size are allowed. These parcels rely on OWTS and individual water wells.

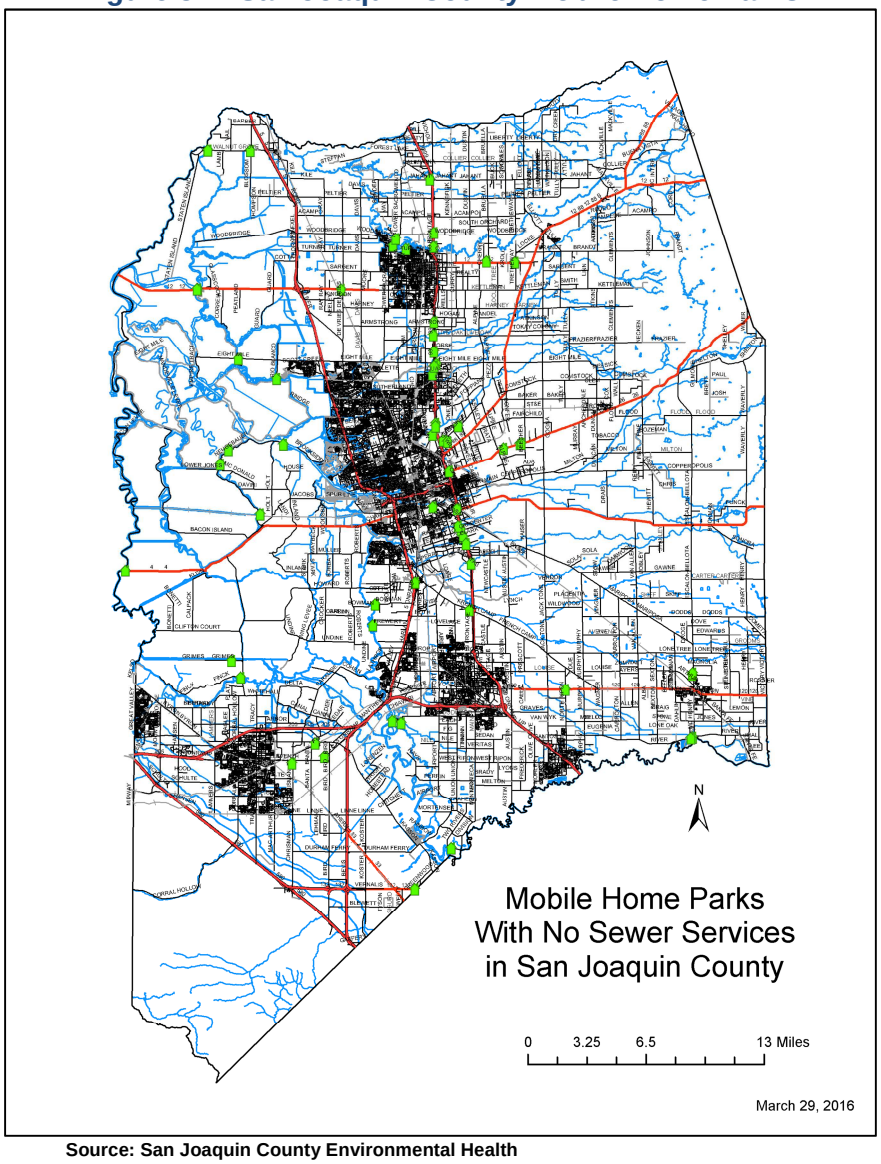
Agriculture-Urban Reserve
Zone is intended to retain in agriculture those areas planned for future urban development in order to facilitate compact, orderly urban development and to assure the proper timing and economic provision of services and utilities. These parcels, usually a minimum of 20 acres in size, while slated in the future for urban development, currently rely on OWTS and individual water wells.

Mobile Home and Recreational Vehicle Parks
Review of groundwater data for small public water system wells located within existing Mobile Home Parks with OWTS show some with nitrate concentrations above the action levels and many near the maximum contaminant level for nitrates. These parks may also have very old wells with unknown annular seal depths, 50 foot annular seals, or 100 foot annular seals. A few have exceeded the maximum contaminant levels and replacement wells were constructed with 200 foot annular seals. All these replacement wells currently meet the nitrate standards and consistently test well below the action level of 5 ppm (as Nitrogen), with many testing with non-detectable nitrate levels.

Review of groundwater data for small public water system wells located within existing Mobile Home Park with OWTS package treatment plants found nitrate concentrations below the action level. These parks also have very old wells with unknown annular seal depths, 50 foot annular seals, or 100 foot annular seals. The data supports package treatment plants are effective in lowering the nitrate concentrations in the effluent and do to not adversely affect groundwater quality for nitrates.

Taking into consideration economic concerns and the need for housing, OWTS in parks are evaluated during times of repair to determine if OWTS should continue to be utilized or if a package treatment plant should be incorporated. More parks may take advantage of upgrading their systems if funding sources were available for this purpose. A map of the Mobile Home Parks within San Joaquin County is shown in Figure 8-4.

Figure 8-4: San Joaquin County Mobile Home Parks



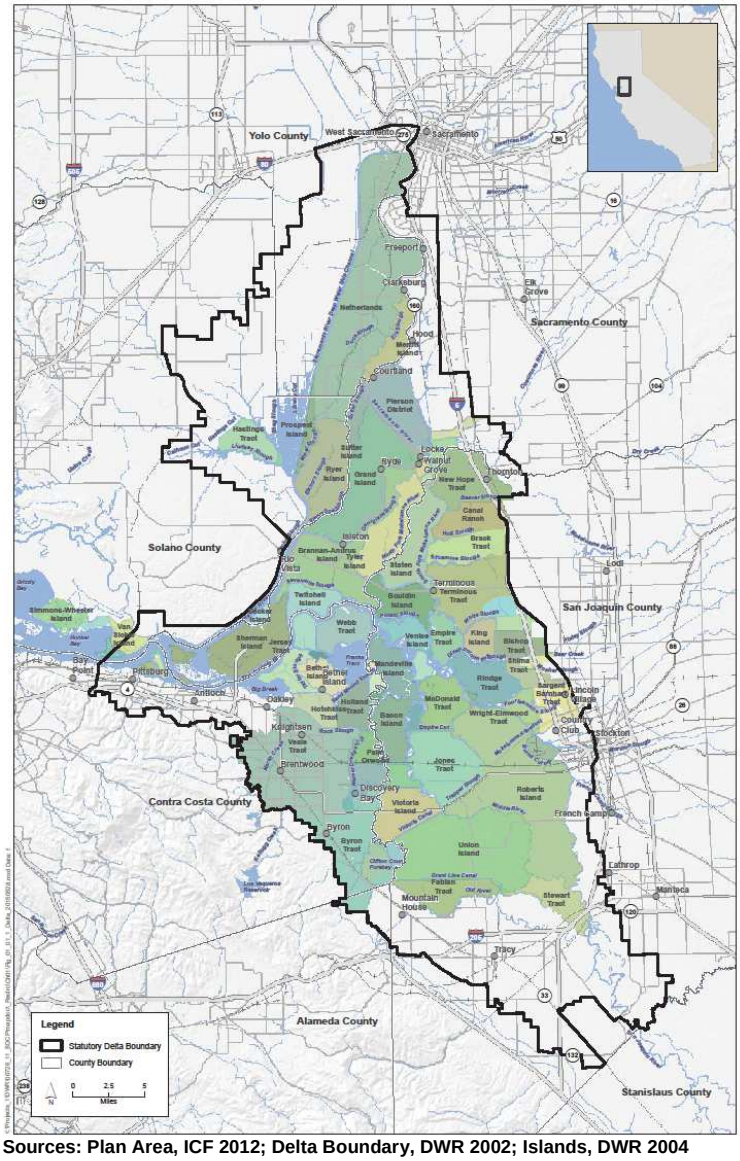
Source: San Joaquin County Environmental Health

Areas with Shallow Depth to Water

Delta Area

A great part of San Joaquin County encompasses the Sacramento-San Joaquin Delta area as shown in Figure 8-4. This area has a depth to groundwater from three feet to seven feet below ground surface. With a few exceptions, this area is mostly zoned agriculture with a minimum parcel size of eighty acres and the development that has occurred in this area has been very low density. OWTS in this area are typically installed for a farm home site, farm labor housing, agricultural accessory activities such as packing sheds, and marinas or other recreational activities. Most systems installed are required to be elevated and mound systems have been used. Although this area has very shallow depth to water, the implementation of appropriate OWTS design and construction has been standard practice and the EHD does not have data indicating an adverse impact from these systems to ground or surface water.

Figure 8-5: Map of the San Joaquin Delta Region



Sources: Plan Area, ICF 2012; Delta Boundary, DWR 2002; Islands, DWR 2004

Variances and Special Permits

As previously described, OWTS must be located, designed, installed and operated in accordance with policies, regulations, and standards. Systems built to these standards should last decades if they are regularly maintained. However, even a properly maintained OWTS will likely eventually fail and require repair. When repairs are necessary, it is the general policy to upgrade the system to the standards in effect at the time of the failure to the extent feasible. However, there are a number of OWTS in use in the County that pre-date current standards or in some cases, previous standards. Some of these systems are located on severely constrained parcels, and have inadequate area available for dispersal system installation or inadequate setback to wells, property lines, or structures. These lots are considered to be existing, non-conforming lots.

When the existing OWTS on these lots fail, it is often not possible to make repairs that meet all current standards. It has been and will remain the policy of the EHD to be flexible when dealing with systems on existing, non-conforming lots. The EHD recognizes that there is a need to address these parcels within the scope of the LAMP to provide owners with a process that allows them to continue to live on their property while at the same time ensuring that public health and water quality are protected. In these situations, the EHD issues variances or special permits. These permits are issued only after all information is obtained to verify that an OWTS cannot be installed that meets current standards. These permits are tracked and will be included as part of the reporting information required to be submitted to the State.

In practice, all repairs to OWTS are required to be made to current applicable standards to the maximum extent feasible. This approach results in the installation of an OWTS that is often better than the original, keeps the wastewater below the ground surface and protects water quality and public health. This may include reducing setback requirements, utilizing space between existing leach lines, relocating an existing water well, and the removal of accessory structures and landscaping to accommodate the installation of the repair. In instances where there is no other possible location for the repair to be placed, the original dispersal field and all consumed surrounding soil is completely removed. New suitable fill is brought in and the entire OWTS is replaced and installed to current standards. This situation is a very rare occurrence. In instances where a variance to a setback is needed, only setbacks affecting the OWTS parcel is considered with no neighboring parcels being impacted.

In situations where there is a potential for groundwater impact from an existing, non-conforming OWTS installation, a soil suitability/nitrate loading study may be warranted. Where these reports indicate an impact, mitigation would be required and an alternative or supplemental treatment system may be installed. With advances in OWTS technology, depending on the type of site constraint, there may be multiple alternative solutions available. For example, if it were not possible to provide adequate vertical separation between the bottom of the dispersal field and groundwater, the use of a shallow drip dispersal field or mounded system could be considered. In almost all situations, it is possible to design an OWTS that will adequately serve the structure and be protective of the environment and public health.

The EHD does not issue variances or special permits for new OWTS for new developments or building permits where it does not meet current standards.

Prohibitions

Consistent with Section 9.4 of the Policy, the EHD does not allow or permit the following:

- Installation or use of cesspools, pit privies, sewer wells, or open or brick-lined seepage pits per San Joaquin County Ordinance code (SJCOC) Title 9, Section 9-1110.6 and Sewage Standards Section 3.6.2. Most existing cesspools have already been eliminated. However, any existing cesspools found by the EHD are required to be destroyed under EHD permit.
- OWTS that receive project flows greater than 10,000 gallons per day. These systems are referred to CVRWQCB for oversight.
- OWTS that permits effluent to be discharged above the surface by any method. Systems that utilize ponds are referred to the CVRWQCB for oversight.
- Installation of OWTS on slopes greater than 30 percent per Sewage Standards Section 10.3.10.
- No decreased leaching area is granted for use of IAPMO certified dispersal systems, such as leaching chambers.
- OWTS utilizing supplemental treatment without requirements for periodic monitoring or inspections per Sewage Standard 4.13.
- OWTS dedicated to receiving significant amounts of wastes dumped from RV holding tanks.
- Separation of the bottom of dispersal system to groundwater less than five feet, except for seepage pits, which must be at least 10 feet in separation per Sewage Standards Sections 10.3.11, 8.8.11, and 8.10.
- In compliance with SJCOC Title 9, Chapter 9-1105, the installation of a new or replacement OWTS where a public sewer system has issued or indicated a Will Sever letter could be issued. Exceptions would be if the connection and construction fees would cost twice the cost for the OWTS or the connection is greater than 200 feet away, provided EHD determines that groundwater and surface waters would not be impaired by the operation of the OWTS.

In addition, in accordance with state law and the SJCOC, the EHD does not allow or permit the following:

- The discharge sewage or other waste, or the effluent of treated sewage or other waste, in any manner which will result in contamination, pollution or a nuisance (Health and Safety Code, Section 5411).
- The land spreading or land discharge of sewage sludge or septage (SJCOC Title 5, Division 9).
- The discharge of sewage sludge or septage to surface waters or surface water drainage courses, including wetlands and waterways (SJCOC Title 5, Division 9).
- The discharge of any waste within 150 feet of the high water mark of any watercourse or impoundment for either natural or unnatural surface water (SJCOC Title 9, Chapter 9-1125).
- The discharge of any of the following into a dispersal system: Automobile and garage wastes, storm drainage, solvents and toxics, solid materials, garbage, food waste from commercial activities unless first directed through an approved grease trap, air conditioner drainage, hazardous wastes, water softener, filter, or swimming pool backwash water, and truck terminal waters (SJCOC Title 9, Chapter 9-1110).

SECTION 9: ALTERNATIVE TREATMENT SYSTEMS/ SUPPLEMENTAL SYSTEMS

San Joaquin County, through existing land use and building permit processes, utilizes soil suitability and nitrate loading studies to define the characteristics of each parcel and determine its suitability for use with OWTS, including any potential impact to ground or surface water. At times, these studies have indicated a potential impact and alternative or supplemental treatment systems are installed as a mitigation measure. The types of alternative or supplemental treatment systems are discussed below.

Alternative System Types

The most common alternative systems are those that are evaluated and designed taking into consideration additional site specific characteristics and using the latest technologies and design innovations. These systems may include organic fill systems, pressure dose systems, and expanded treatment and dispersal systems.

Mounded Systems
A mounded system is a soil adsorption system that is elevated above the natural soil surface. The purpose of the design is to overcome site restrictions that prohibit the conventional use of OWTS. Such restrictions include slowly permeable soils, slowly permeable soils with high water tables, and permeable soils with high water tables. The design of the system must conform to the EPA Design Manual for OWTS, October 1980 and the EHD Sewage Standards.

Package Treatment Plants and Supplemental Treatment Plants
For parcels where a potential for groundwater impact has been identified, package treatment plants or supplemental treatment plants are used. A Registered Civil Engineer is required to evaluate and design these systems. Regular monitoring and reporting is required for these systems as well as an annual inspection by the EHD.

Holding Tanks
Holding tanks with regular pumping have been used as a means for sewage management as a temporary measure and, in very limited cases, where an OWTS could not be repaired due to limitations of the parcel. The owners of these systems are required to maintain a current contract with a licensed sewage hauler and keep pumping records available for review by the EHD.

Chemical Toilets
Chemical toilets are acceptable for temporary use only and are used for special events, agricultural field operations, and construction projects. Development projects are required to install a permanent sewage disposal system and chemical toilets are not used as a permanent method of waste management.

Permitting and Construction

Section 4 of the Sewage Standards requires plans for an alternative or supplemental treatment system be completed by a Registered Civil Engineer and submitted to the EHD for review. Once approved, a construction permit is issued. Only a contractor appropriately licensed by the CSLB is issued a permit to construct the system. The EHD performs inspections during the construction to ensure the system is built as approved. The EHD consults with CVRWQCB staff when issues or concerns arise.

Maintenance and Operation

The system must be operated and maintained in accordance with procedures established by the manufacturer and/or the designer. Water Code Section 13627.1 and Section 4.5 of the Sewage Standards require that person operating the system be properly licensed with the SWRCB.

Monitoring and Reporting

The owner of a supplemental treatment system must monitor the system in accordance with the manufacturer's or designer's specifications. A sampling and reporting program for the system is determined at the time of the design review and approval. The EHD consults with the CVRWQCB staff during this process for supplemental guidance and direction, if needed. Sampling and reporting is required to be conducted at least semi-annually. Reports are submitted to the EHD for review to determine the system is performing as expected. Should the system not perform to the required performance standards, an evaluation of the system may be requested and changes to the system implemented.

SECTION 10: WATER QUALITY ASSESSMENT PROGRAM

The purpose of this LAMP is to establish standards and policies for the installation, operation and maintenance of OWTS in order to protect water quality and public health. The water quality monitoring element is intended to track the impact of OWTS effluent on groundwater and surface water as well as the effectiveness of this LAMP in addressing those impacts over time.

Surface bodies of water consist of a very limited portion of the Camanche Reservoir and Lodi Lake. Primarily they are in the form of flowing rivers, sloughs, and creeks that flow into the Delta. This includes Dry Creek, Mormon Sough, Little Johns Creek, and the Stanislaus, San Joaquin, Mokelumne and Calaveras rivers. The Delta, Stanislaus, Mokelumne, and San Joaquin rivers receive discharged waters from waste water treatment plants under CVRWQCB oversight. The Stanislaus and San Joaquin rivers contain water released from reservoirs to maintain water quality parameters in the Delta to protect the health and wellbeing of the Delta Smelt and Chinook salmon. The Delta, rivers, creeks, and sloughs are either located adjacent to rural land with a very low density of OWTS or adjacent to developed land served by public services. Additionally, none of the water ways in San Joaquin County are listed as an impaired water body from OWTS pursuant to Section 303(d) of the Federal Clean Water Act.

Because of the factors discussed above, the water quality monitoring element of the LAMP will focus on the groundwater resources of the County, especially on areas where higher density of OWTS are used, representing the highest risk to groundwater quality.

Monitoring Program Elements

The water quality assessment program consists of the following elements.

- Water quality data collection from various sources
- Water quality data management, tabulation, mapping and evaluation
- OWTS permit types, volumes, and locations data management and evaluation
- OWTS sewage complaint data management, tabulation and mapping
- Wastewater treatment plant and alternative systems reporting evaluation
- Septage pumping reports evaluation
- Percolation test results, mapping and evaluation

Water Quality Data Collection

Individual Wells – Individual wells are sampled for dibromochloropropane (DBCP) and nitrate as part of the soil suitability and nitrate loading study required for development projects. In addition, the San Joaquin County Well Standards, Section 9.2.1, allows for newly constructed individual wells to be sampled for bacteriological and chemical analysis after well development, pump installation, and disinfection to determine the quality of the water produced by the well. This provision has not been implemented yet due to lack of funding. However, funding will be part of this next fiscal year's budget proposal. San Joaquin County does not have a real estate transfer sampling program.

Food Facilities – California Health and Safety Code, Section 113869 requires food facilities utilizing individual wells to meet the requirements of transient, non-community water systems per the Safe Drinking Water Act. These systems are required to sample for nitrate annually and for bacteria quarterly. This information is submitted to the EHD as part of the food protection program.

Small Public Water Systems – In San Joaquin County, all Small Public Water Systems (SPWS) utilize groundwater exclusively at this time and must perform routine water quality monitoring as required under the California Code of Regulations and Safe Drinking Water Act. The SPWS are required to submit the results of their monitoring to EHD in electronic and or paper formats. The bacteriological and chemical results obtained from the SPWS are maintained and managed in the EHD database.

Site Mitigation and Water Quality Sites – Through the Site Mitigation program, EHD maintains information or has access to information relating to the investigation, cleanup, and waste discharge activities at sites within the County under the oversight of a State of Federal agency, such as the CVRWQCB and/or Department of Toxic Substance Control. This information includes water quality data from monitoring activities, which may include depth to groundwater, groundwater gradients, nitrate and nitrite levels, heavy metals, specific conductivity, dissolved oxygen, salts and other constituents impacting ground and surface water. The EHD may use data from NPDES permits, from the California Water Quality Assessment Database, from Geotracker, and from the Groundwater Ambient Monitoring and Assessment Program, depending on access and information available.

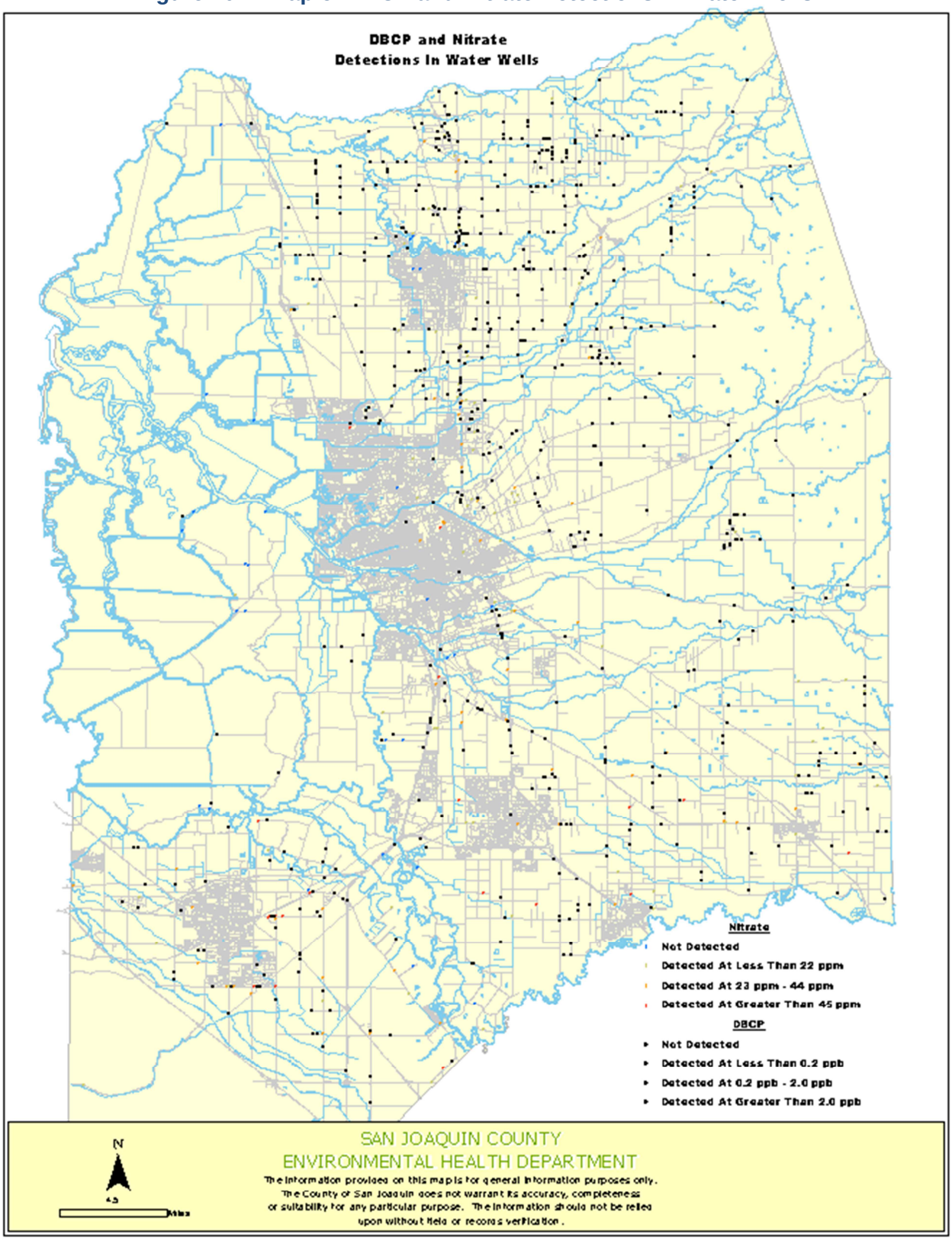
Other Local Monitoring Programs - Since 1971, the San Joaquin County Flood Control and Water Conservation District (FCWCD) has collected groundwater elevation data and has provided this information in a Groundwater Report published semi-annually in the fall and spring. In addition to the groundwater elevation data, the FCWCD is also involved in various projects and studies which generate other types of groundwater quality data. These data sources will be reviewed periodically to determine if they will be useful to the OWTS Water Quality Assessment Program.

Beach Water Quality Testing - The EHD receives bacteriological test results from several recreational beach areas throughout the summer months. These sampling events are voluntary as these beaches are not saltwater beaches and testing is not a requirement per Section 115885 of the Health and Safety Code. Because these freshwater beaches are in areas where there are no nearby OWTS, this information may not be useful for the OWTS Water Quality Assessment Program. However, EHD does use this information to ensure the water is safe for recreation and to ensure proper notification is made if bacteria reach unsafe levels from other sources.

Water Quality Data Management, Tabulation, Mapping and Evaluation

The water quality data received at the EHD is entered into a database management system, EnvisionConnect. This database also stores information on OWTS, including percolation rates, and water wells and therefore can provide a mechanism for relational evaluations. Data can be queried, tabulated, mapped and then evaluated for trends and impacts. Figure 10-1 is an example of a map showing water quality data for DBCP and Nitrate in water wells.

Figure 10-1: Map of DBCP and Nitrate Detections in Water Wells



Source: San Joaquin County Environmental Health

OWTS Permit Numbers, Descriptions, and Locations Data Management and Evaluation
The EnvisionConnect database also stores the information relating to OWTS permitting, including the total number of permits issued, the descriptions of the permits issued, and the locations of the permits issued. The number and locations of permits issued under variance are tracked in this system and can be easily exported and reported. The data can also be mapped as part of the OWTS Water Quality Assessment Program.

OWTS Sewage Complaint Evaluation and Mapping
The EnvisionConnect database stores all complaint information for the EHD including complaints related to OWTS and surfacing sewage. This information can also be exported and mapped for reporting and evaluation purposes.

Wastewater Treatment Plant and Supplemental Systems Reporting Evaluation
The data received from the monitoring and reporting from wastewater treatment plants and supplemental treatment systems will be evaluated and included in the OWTS Water Quality Assessment Program.

Septage Pumping Reports Evaluation
The monthly septage pumping reports received at the EHD are maintained and archived in an imaging database and will be evaluated and included in the OWTS Water Quality Assessment Program.

Evaluation of the Monitoring Program
As the EHD evaluates and prepares for the annual reporting, any trends or issues of concern that become apparent will be reviewed and the sources identified. Based on the findings, appropriate changes will be made to the program to mitigate any issues. These activities will be summarized and reported as part of the five year Evaluation and Assessment Report required to be submitted to the CVRWQCB per Section 9.3.3 of the Policy.

Annual Reports
By February 1 of each year, the EHD will submit an annual report to CVRWQCB. This report will summarize the water quality data the EHD has collected through OWTS Water Quality Assessment Program. Any groundwater monitoring data the EHD has collected for the OWTS Water Quality Assessment Program will be submitted in EDF format to be uploaded into Geo-Tracker and any surface water monitoring will be submitted to CEDEN in a SWAMP comparable format.