E. Rapport, Revised 10 Feb 2015 Solano County Environmental Health Services Division, April 18, 2016 LOCAL CODES IN COMPLIANCE WITH OWTS POLICY

	GENERAL REQUIREMEN	TS FOR LAMPs		
OWTS Policy Section		Region 5 Comments (These do not replace your review of OWTS Policy. Italics and websites are specific explanations, more detailed than in the Policy.)	Relevant LAMP Section	Legal Authority/ Code Section
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.	Pgs 30-31	Solano County Code, Section 6.4-30
3.3.1	Complaints	Include numbers and locations of complaints, related investigations, and means of resolution.	Pg 31	Solano County Code, Section 6.4-30
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.	Pgs 25-26	Solano County Code, Section 25-300
3.3.3		Include numbers and locations of permits for new and replacement OWTS, and their Tiers.	Pg 31	Solano County Code, Section 6.4-30
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.	Pg 30	Government Code Title 1, Division 7, Chapter 3.5, section 6253(c_)
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.	Pgs 19 and 27	Solano County Code, Section 6.4-30
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.	Pgs 30-31	Solano County Code, Section 6.4-30 and Section 6.4- <u>56</u>

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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).	Pgs 10-19	<u>Solano County Code, Sections</u> <u>6.4-81 - 6.4-89</u>	
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. <i>Especially consider appropriate alternatives to those provided in Section 7.8, Allowable Average Density Requirements under Tier 1.</i> See also: State Water Resources Control Board Resolution No. 68-16.	Pg 12	Solano County Code Sections 6.4-31 and 26-82	
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.	Pgs 10-19	Solano County Code, Sections 6.4-81 and 6.4-82	
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.	Pgs 12, 13, and 26	Solano County Code, Sections 6.4-31 and 26-82	

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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.	Pg 9	<u>Solano County Code, Section</u> <u>6.4-81(d)</u>	
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.	Pgs 10,11,12,17,18, and 19	Solano County Code, Section 6.4-81.2	
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.	Pgs 17 and 18	<u>Solano County Code, Section,</u> <u>6.4-82(c) see Table 2</u>	
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.	Pg 20	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.	Pgs 26-27	Solano County Code, Section 6.4-89(g)	
9.1.10	Limits to parcel size	At minimum, consider hydraulic mounding, nitrate and pathogen loading, and sufficiency of potential replacement areas.	Pgs 12-13	Solano County Code, Sections 6.4-31 and 26-82	
9.1.11	areas with OWTS that predate adopted standards	This refers to areas with known, multiple existing OWTS.	Pgs 12, 13, and 16	<u>Solano County Code, Sections</u> <u>6.4-32, 6.4-40 - 6.4-44</u>	
9.1.12	areas with OWTS either within prescriptive, Tier 1 setbacks, or within setbacks that a Local Agency finds appropriate	This refers to areas with known, multiple existing OWTS.	Pgs 12, 13, and 16	<u>Solano County Code, Sections</u> <u>6.4-32, 6.4-40 - 6.4-44</u>	

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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.	Pgs 5-9	Solano County Code, Sections 6.4-12, 6.4-89(c), 6.4-89(d), and 6.4-89(e)
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.	Pgs 21_20	Solano County Code, Sections 6.4-50 - 6.4-55
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.	Pg 20	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.	Pgs 9 and 22	Solano County Code, Sections 6.4-12 (d), 6.4-53, 6.4-60, 6.4- .61, 6.4-62, and 6.4-82.
9.2.4	Qualifications for Persons who Work on OWTS	Water Association (COWA), see:	Pgs 24-25	Solano County Code, Sections 6.4-56, 6.4-81(a), 6.4-84.2, and 6.4-89(f)
		http://www.cowa.org/		
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.	Pgs 23-25	<u>Solano County Code, Sections</u> <u>6.4-12(e) 6.4-56, 6.4-81(a), 6.4-</u> <u>89(h) 6.4-89(i) and 6.4-89(j)</u>
9.2.6	Septage Disposal	Assess existing and proposed disposal locations, and their adequacy.	Pgs 25-26	Solano County Code, Section 25-300
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.	Pgs 4 and 12	Solano County Code, Sections 6.4-12(c)(2) and 6.4-80(h)
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:	Pgs 26-27	Solano County Code, Sections 6.4-80(c) and 6.4-80(d)

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		http://www.waterboards.ca.gov/centralvalley/water_issues/salinity/laws_regs_policies/r w_policy_implementation_mem.pdf		Solano County Code Section 6.4-89(g)
9.2.9	Watershed Management Groups	Coordinate with volunteer well monitoring programs and similar watershed management groups.	Pg 23	Not Applicable
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.	Pg 20	Solano County Code, Section 6.4-20
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.	Pgs 18 and 27	Solano County Code, Section 6.4-30
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; <i>however we will need rationale in detail.</i>	Pgs 18, 19, 20, and 27	Solano County Code, Section 6.4-30
9.2.13	Cesspool Discontinuance and Phase-Out	Provide plans and schedule.	Pg 8	Solano County Code Section 6.4-89(e)
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:	Pgs 28-31	Solano County Code, Sections 6.4-30 and 6.4-56
9.3.1	Permit Records, OWTS with Variances	Describe your records maintenance; numbers, locations, and descriptions of permits where you have granted variances.	Pgs 28-31	Solano County Code, Sections 6.4-56
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:	Pgs 28-31	<u>Solano County Code, Section</u> <u>6.4-55(e)</u>
		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/		<u>Solano County Code Section</u> <u>6.4-56(e)</u>

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		http://www.waterboards.ca.gov/gama/docs/hva_map_table.pdf			
		http://geotracker.waterboards.ca.gov/gama/			
		http://msc.fema.gov/portal			
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 δ^{16} O and δ^{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).	Pg 28	Not Applicable	
9.3.2.2	Domestic Well Sampling, Routine Real Estate Transfer Related	This applies only if those samples are routinely performed and reported.	Pg 28	Not Applicable	
9.3.2.3	Water Quality of Public Water Systems	Reviews can be by you or another municipality.	Pg 28	Solano County Code, Sections 6.4-30 and 6.4-82(f)	
9.3.2.4	Domestic Well Sampling, New Well Development	This applies if those data are reported.	Pg 28	Not Appllicable	
9.3.2.5	Beach Water Quality Sampling, H&S Code §115885	Public beaches include those on freshwater.	Pg 28	Not Applicble	
9.3.2.6	Receiving Water Sampling Related to NPDES Permits	This refers to existing data from other monitoring programs.	Pg 28	Solano County Code, Section 6.4-30	
9.3.2.7	Data contained in California Water Quality Assessment Database	This refers to existing data from other monitoring programs.	Pg 28	Solano County Code, Section 6.4-30	
9.3.2.8	Groundwater Sampling Related to Waste Discharge Requirements	This refers to existing data from other monitoring programs.	Pg 28	Solano County Code, Section 6.4-30	

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9.3.2.9	Groundwater Sampling Related to GAMA Program	This refers to existing data from other monitoring programs.	Pg 28	Solano County Code, Section 6.4-30	
9.3.3	Annual Status Reports	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.	Pgs 30-31	Solano County Code, Section 6.4-30	
9.4	Not Allowed or Authorized in LAMP:	For Section 9.4 et seq, ensure that your LAMP covers prohibitions.	Pgs 4 and 8	Solano County Code, Section 6.4-12 and 6.4-89(e)	
9.4.1	Cesspools	Local Agencies cannot authorize cesspools of any kind or size.	Pg 8	Solano County Code, Section 6.4-89(e)	
9.4.2	Projected Flow>10,000 gpd	Apply professional judgment to further limit projected flows.	Pg 5	Solano County Code, Section 6.4-12(a)	
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.	Pg 8	<u>Solano County Code, Section</u> <u>6.4-89(e)</u>	
9.4.4	Installation on Slopes >30% without Registered Professional's Report	See also earlier comments, Section 9.1.1, regarding potential geotechnical concerns.	Pg 13	<u>Solano County Code, Seciton</u> <u>6.4-82(d)</u>	
9.4.5		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.	Pg 14	Solano County Code, Section 6.4-87(a)(2) and 6.4-87(b)	
9.4.6	Supplemental Treatments without Monitoring and Inspection	Therefore, ensure that the LAMP describes periodic inspection and monitoring for OWTS with supplemental treatments .	Pgs 21, 24, and 28	Solano County Code, Sections 6.4-56, 6.4-89(h),and 6.4 -89(j)	
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.	Pg 4	<u>Solano County Code, Section</u> <u>6.4-12(e)</u>	

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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. <i>We interpret</i> 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.	Pg 9	<u>Solano County Code, Section</u> <u>6.4-82 see Table 1</u>	
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.)	Pg 20	Solano County Code, Section 6.4-20	
9.4.10	Minimum Setbacks:	These setbacks are from public water systems.	Pg 27	Solano County Code, Section 6.4-30 and 6.4-82(f)	
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.	Pg 18	Solano County Code, Section 6.4-82(f) and see Table 2 and footnotes	
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.	Pg 8	Solano County Code, Section 6.4-89(e)(2)	
9.4.10.3		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'.		<u>Solano County Code, Section</u> <u>6.4-30</u>	
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.	Pg 27	Solano County Code, Section 6.4-30	
9.4.10.5		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.	Pg 27	Solano County Code, Sections 6.4-30 snf 6.4-82(f)	
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.	Pgs 21,26, and 27	Solano County Code, Sections 6.4-82(f) and 6.4-82 see Table 2_	

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9.4.12	New OW IS That Do Not	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.	Pgs 17, 18 and 27	Solano County Code, Sections 6.4-82(f),6.4-82 see Table 2 and 6.4-89(g)		
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.	Pgs 1-32	Solano County Code, Sections 6.4-11(a) and 6.4-11(b)		
9.6	<i>.</i> ,	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.	Pgs 1-32	Solano County Code, Sections 6.4-11(a) and 6.4-11(b)		

References:

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

Crites, R and G. Tchobanoglous (1998), *Small and Decentralized Wastewater Management Systems*, McGraw-Hill, ISBN 0-07-289087-8, 1084 pages (see especially pages919-920).

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Buerge, Ignaz J., Hans-Rudolf Buser, Maren Kahle, Markus D. Muller, and Thomas Poiger (2009), *Ubiquitous occurrence of the artificial sweetener acesulfame in the aquatic environment: an ideal chemical marker of domestic wastewater in groundwater*. "Environmental Science and Technology," 43, pages 4,381 to 4,385.

Van Stempvoort, Dale R., James W. Roy, Susan J. Brown, and Greg Bickerton (2011). *Artifical sweeteners as potential tracers in groundwater in urban environments*. "Journal of Hydrology," 401, pages 126 to 133.

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