December 12, 2012
Item No. 6
Supporting Document No. 3

INFORMATION SHEET

TENTATIVE ORDER NO. R9-2012-0056, WASTE DISCHARGE REQUIREMENTS FOR LEUTHE RESIDENCE ONSITE WASTEWATER TREATMENT SYSTEM, ESCONDIDO, SAN DIEGO COUNTY

This Information Sheet describes the legal requirements and technical rationale that serve as the basis for the requirements of Order No R9-2012-0056.

I. PERMIT INFORMATION

The following table summarizes administrative information related to the facility.

Table 1. Facility Information

WDID	9000002489
Discharger	Mr. Bill Leuthe
Name of Facility	Leuthe Residence Onsite Wastewater Treatment System
Facility Address	Camino Elena Road Escondido, CA 92026 San Diego County
Facility Contact, Title and Phone	Mr. Bill Leuthe, Property Owner, (760)-622-8764
Authorized Person to Sign and Submit Reports	Mr. Bill Leuthe
Mailing Address	753 Via Bahia, San Marcos, CA 92069
Billing Address	753 Via Bahia, San Marcos, CA 92069
Type of Facility	Residential Property with Onsite Wastewater Treatment System/Advanced Treatment Unit (OWTS/ATU)
Threat to Water Quality	3
Complexity	B
Facility Permitted Flow	600 gallons per day
Facility Design Flow	600 gallons per day
Receiving Water	Moosa HSA (903.13)
Receiving Water Type	Groundwater

A. Mr. Bill Leuthe (hereinafter Discharger) submitted a Report of Waste Discharge to the San Diego Water Board on April 4, 2012 for the treatment and subsurface disposal of wastewater from a proposed Onsite Wastewater Treatment System/Advanced Treatment Unit (OWTS/ATU) that will serve a 4-bedroom residence to be located on Camino Elena Road, Escondido, San Diego County. The San Diego Water Board notified the Discharger by letter dated, June 4, 2012, that the ROWD was deemed complete.

For the purposes of this Order, references to the "discharger" in applicable state laws, regulations, plans, or policy are held to be equivalent to references to the Discharger herein.

B. The proposed residence and OWTS/ATU are located in the Moosa hydrologic subarea (HSA) 903.13 of the Lower San Luis hydrologic area (HA) 903.10.

II. FACILITY DESCRIPTION

A. Description of OWTS/ATU. The Discharger proposes to install an OWTS/ATU that will treat wastewater generated at a proposed 4-bedroom residence. The OWTS/ATU will be designed for an average daily flow of 600 gallons per day, and will consist of a 1,500-gallon primary concrete tank with an Advantex AX20N filter unit, and a 1,000-gallon concrete pump basin. The Advantex AX20 unit is a synthetic filter fabric unit which provides supplemental treatment of effluent from the septic tank. The supplemental treatment system provides additional removal of pollutants such as organics, suspended solids, oil and grease, and nitrogen before effluent disposal.

The Advantex AX20 system is designed to meet or exceed the American National Standards Institute/National Science Foundation Standard 40 for a flow of 600 gallons per day. ANSI/NSF Standard 40 is an evaluation criterion that has been developed for residential wastewater treatment systems, and applies to treatment systems having a rated capacity between 400 to 1,500 gallons per day (gpd). Treatment systems that are designed to meet ANSI/NSF Standard 40 must produce effluent which complies with secondary wastewater treatment standards. In addition, treatment systems that are certified pursuant to ANSI/NSF Standard 40 must also meet minimum requirements for structural integrity, leakage, noise, electrical certification, access ports, failure sensing and signaling equipment (visual and audible alarms), flow design, data plate, and service labels.

B. Disposal Area and Receiving Waters. A drip irrigation system will be used for subsurface disposal of wastewater from the OWTS/ATU**.** The discharge from the OWTS/ATU will occur within the Moosa HSA 903.13 of the Lower San Luis HA 903.10. Section C.1.c.ii of this Order requires that a minimum of 6,430 square feet (ft^2) of land area covered with vegetation be used for disposal of wastewater from the OWTS/ATU to ensure that wastewater is applied on the disposal area at agronomic rates.

The disposal area required to ensure that wastewater from the OWTS/ATU is disposed of at agronomic rates was calculated using the following formulas:

$A = N_L / N_D$ *where*
A = area of landscaping needed in square feet
N_D = Nitrogen demand of landscaping in pounds per square feet
N_L = Total nitrogen loading in pounds from wastewater = $Q \times 10^{-6} \times 365 \times 8.34 \times C_N \times DF$ *where*
Q = Average design flow of the OWTS/ATU
365 = days per year
8.34 = pounds of water per gallon of water
DF = denitrification factor

The following assumptions were made:

N_D = 6.4 lbs/1,000 ft^2 /yr based upon instructions from J.R.Simplot Company for application of its Best Fertilizer product.
Q = 600 gallons per day (Design flow of OWTS/ATU in Report of Waste Discharge)
C_N = 30 mg/L based upon expected concentration of total nitrogen in the effluent from the OWTS/ATU.
DF = 0.75 based on an assumption that denitrification occurring in the soil will reduce concentration of nitrogen in effluent discharged by 25 percent.

III. APPLICABLE PLANS, POLICIES, AND REGULATIONS

The requirements contained in the proposed Order are based on the requirements and authorities described in this section.

A. Legal Authorities. This Order is issued pursuant to section 13263 of the California Water Code.

B. California Environmental Quality Act. The San Diego Water Board adopted a Mitigated Negative Declaration on December 12, 2012 in accordance with California Environmental Quality Act (Public Resources Code, section 21000 et seq.) for the discharge of waste from the proposed OWTS/ATU. The mitigated negative declaration concluded that the project will not have a significant effect on the environment.

C. Water Quality Control Plans. The *Water Quality Control Plan for the San Diego Basin* (hereinafter Basin Plan) designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan. In addition, the Basin Plan implements State Water Resources Control Board (State Water Board) Resolution No. 88-63, which established State policy that all waters, with certain exceptions, should be considered suitable or potentially suitable for municipal or domestic supply. Beneficial uses applicable to the Lower San Luis HA 903.10 are municipal and domestic supply, agricultural supply, and industrial service supply. Requirements of this Order implement the Basin Plan by prescribing waste discharge requirements that will ensure groundwater quality supports the beneficial uses.

D. Antidegradation Policy. The State Water Board established California's antidegradation policy in State Water Board Resolution No. 68-16. Resolution No. 68-16 requires that existing quality of waters be maintained unless degradation is justified based on specific findings. These findings are discussed in detail in Section IV.B (Antidegradation analysis).

IV. RATIONALE FOR DISCHARGE SPECIFICATIONS

A. Discharge Specifications

The Order establishes technology based discharge specifications. The technology based discharge specifications for Biological Oxygen Demand (BOD), Total Suspended

Solids (TSS), and pH contained in the Order are based on minimum standards for removal of these constituents by secondary wastewater treatment technology (specified in Title 40 Code of Federal Regulations, section 133.102). In addition, the Order specifies that the OWTS/ATU must be certified as capable of producing effluent which meets secondary wastewater treatment standards pursuant to the American National Standards Institute/National Science Foundation Standard 40.

Nitrate is typically the main constituent of concern in discharges from OWTS. The Order establishes a discharge specification for nitrogen of 50 percent removal, based on the nitrogen removal efficiency expected to be achieved by the OWTS/ATU. The Order also requires disposal of domestic wastewater at agronomic rates via subsurface drip irrigation systems, which will ensure that disposal of wastewater from the OWTS/ATU does not contribute to exceedances of the nitrate water quality objective in the receiving water.

Typical septic tank effluent is expected to have a total nitrogen concentration of about 60 milligrams per liter as nitrogen (mg/L as N)[1], while the effluent produced from the OWTS/ATU is expected to have a total nitrogen concentration of about 30 mg/L as N. In addition, denitrification in the soil and dilution of effluent by rainfall recharge is expected to further reduce the concentration of nitrogen in effluent leaching to groundwater. The Statewide Onsite Wastewater Treatment System Policy (policy) recommends a lot size of 2.5 acres per single family dwelling[2] in areas with an annual average rainfall between 0 to 15 inches per year to ensure that there will be sufficient rainfall recharge on the property to ensure groundwater does not exceed the nitrate drinking water limit of 10 mg/L as N. This project complies with the lot size density specified in the State Water Board OWTS policy since the property occupies 2.5 acres, and the annual average rainfall in the Escondido area is approximately 9.81 inches.[3] Dilution of effluent by rainfall recharge will provide an additional safety factor to ensure that the discharge will not cause the concentration of nitrate in the groundwater to exceed the water quality objective. This Order also requires the Discharger to maintain a disposal field with a minimum area of 6,430 ft^2 to ensure that there is sufficient vegetation on the disposal area to utilize nitrogen in applied wastewater.

Organic chemicals and bacteria will also be assimilated as wastewater percolates in the soil in the disposal area thereby minimizing the threat of groundwater degradation from the discharge. A discharge specification for TDS is not specified in the Order because the concentration of TDS in effluent from the OWTS/ATU is expected to be below the water quality objective for TDS, established at 1,200 mg/L. As a practical measure to

[1] From US Environmental Protection Agency Onsite Wastewater Treatment Systems Manual 2002

[2] See section 7.8 and Table 1 in the OWTS policy (http://www.waterboards.ca.gov/water_issues/programs/owts/docs/owts_policy_06192012.pdf) The OWTS/ATU will produce significantly better effluent quality than conventional OWTS such as septic tank leach field systems. The lot size density requirements established in the policy are based on effluent quality produced by conventional OWTS.

[3] Average annual rainfall in the Escondido area from 2009-2011 obtained from California Irrigation Management Information System Website, www.cimis.water.ca.gov)

reduce salinity concentrations, the Order also prohibits the discharge of self regenerating water softener brine to the OWTS/ATU.

B. Antidegradation Analysis

State Water Board Resolution No. 68-16 (also known as the State Antidegradation Policy) requires that high quality waters of the State are maintained to the maximum extent possible, even when the quality is better than needed to protect beneficial uses, and that changes in water quality are only allowed if the change is consistent with maximum benefit to the people of the State, does not unreasonably affect present and anticipated beneficial uses, and does not result in water quality less than that prescribed in water quality control plans or policies.

1. Discussion on maintaining high quality waters to the maximum extent possible

   The Order requires disposal of domestic wastewater at agronomic rates via subsurface drip irrigation systems, which will minimize the threat of groundwater degradation resulting from nutrient loading. As noted previously, organic chemicals and bacteria will be assimilated as wastewater percolates through the soil in the disposal areas and therefore also poses a minimal threat to groundwater degradation.

2. Discussion on maximum benefit to the people of the State

   Maximum benefit to the people of the State is achieved when people are permitted to freely use and develop their property. Property development, however, must be done in a manner that is protective of beneficial use of groundwater and surface water. Homes require sanitary systems to treat and dispose of wastewater. This Order allows the Discharger to develop his property, but requires him to do so using an advanced treatment unit with subsurface drip irrigation. This system produces a higher quality effluent than a conventional septic tank leach field system or a mound system.

V. RATIONALE FOR MONITORING AND REPORTING REQUIREMENTS

Water Code section 13267 authorizes the San Diego Water Board to require technical and monitoring program reports. Monitoring and Reporting Program No. R9-2012-0056 requires that the effluent be analyzed for BOD, TSS, pH, and total nitrogen; and the influent be analyzed for total nitrogen to verify compliance of the discharge with the discharge specifications. The monitoring and reporting program also requires that the effluent be analyzed for TDS, to verify that this constituent is not present in the discharge at a level that will adversely affect water quality. The use of laboratories certified for federally standardized test methods, and quality assurance and control procedures ensures the reliability and validity of the data as well as consistency and comparability with regulations. Implementing the Monitoring and Reporting Program ensures that the discharge from the OWTS/ATU will not adversely affect water quality. The cost to implement the Monitoring

and Reporting Program is reasonable in relationship to the need for the reports and the benefits to be obtained from the reports.

VI. RATIONALE FOR PROVISIONS

A. Standard Provisions

The standard provisions allow the San Diego Water Board obtain information needed to enforce the Order. Provisions include allowing access for inspections, spill and emergency reporting, records maintenance. Standard provisions apply to all WDRs and are consistent with San Diego Water Board findings.

B. Monitoring and Reporting Program Requirements

The MRP is a requirement of the Order. Details on the rationale are provided in section V of the Information Sheet above.

C. Special Provisions

1. Treatment and Disposal System Design and Operation Specifications.

The Order includes design and operation specifications to ensure proper operation, monitoring, and maintenance of the onsite treatment and disposal system. Effluent discharged from the OWTS/ATU will be disposed via a subsurface drip irrigation system. Proper operation and operation of the subsurface drip irrigation systems is essential to comply with Discharge Prohibitions specified in the Order. For example, if the drip irrigation system is not designed to reduce orifice clogging and root intrusion (Tentative Order No. R9-2012-0056, Special Provision C.1.c.vi), the discharge is less likely to be confined underground and could violate Discharge Prohibitions A, D, G, etc. In addition, proper operation of the drip irrigation system is essential because further removal of organic chemicals, nutrients, and bacteria occurs as wastewater percolates into the soil in the disposal areas, and poorly operated and designed drip irrigation systems can result in discharge of pollutants to groundwater. Proper operation of the onsite treatment and disposal systems is also required to protect public health.

The treatment and disposal systems design and operation specifications contained in the Order require the Discharger to submit a design plan prior to installation of the onsite treatment and disposal system, which includes measures to ensure proper operation and adequate maintenance of the system. Several of these measures are based on manufacturer guidelines for design and operation of subsurface drip irrigation systems, and Florida Department of Health (Florida DOH) standards for operation of onsite treatment and disposal systems. The specific criteria from these documents were incorporated into the Order because the *Proposed Water Quality Control Policy for Siting, Design, Operation, and Maintenance of Onsite Wastewater Treatment Systems* does not include prescriptive standards for the operation and maintenance of subsurface drip irrigation systems.

2. **Certification Report.** The Discharger is required to submit a certification report signed by a professional civil engineer which certifies that the installed onsite treatment and disposal systems complies with the design plan. The certification report also serves as an acknowledgment by the Discharger that the onsite treatment and disposal systems have been designed and installed to meet the requirements of the Order.

3. **Operation and Maintenance Manual.** The Order requires the Discharger to maintain an onsite operation and maintenance (O&M) manual which will provide guidance to operation personnel on proper operation and monitoring of components of the OWTS/ATU in accordance with manufacturers standards.

4. **Service Provider.** The Order requires the Discharger to maintain a contract with a service provider to ensure that the OWTS/ATU is adequately operated, maintained, and monitored by a qualified individual in a manner consistent with the requirements of the Order.

5. **Sale of Property.** Upon the sale of the property, it is the obligation of the Discharger is to provide the new owner with a complete copy of the Order, and the O&M manual. This will ensure that the new owner is aware of requirements of this Order.

6. **Sewage Solids and Sludge Specifications.** These specifications are included in the Order to ensure that septic tanks are properly operated and maintained, and sewage solids generated from septic tanks are disposed of in a manner that does not pose a threat to public health or the environment.

7. **Notifications.** The notifications inform the Discharger of administrative issues regarding this Order.