CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2004-0036

WASTE DISCHARGE REQUIREMENTS

FOR
AMADOR WATER AGENCY
PINE GROVE COMMUNITY LEACHFIELD SYSTEM
AMADOR COUNTY

The California Regional Water Quality Control Board, Central Valley Region, (hereafter Regional Board) finds that:

1. On 1 October 2003, the Amador Water Agency (hereafter Discharger) submitted a Report of Waste Discharge (RWD) for an existing community leachfield system (CLS) that treats and disposes of domestic wastewater generated by the town of Pine Grove in Amador County.

2. The town of Pine Grove is on State Route 88, approximately eight miles east of the town of Jackson. The Pine Grove community leachfield is in Section 4, T7N, R12E, MDB&M (Assessors Parcel Number 038-010-135) as shown on Attachment A, which is attached hereto and made part of this Order by reference.

3. The Discharger is responsible for assuring that the design, operation, and maintenance of the entire community collection and treatment system satisfies the terms of this Order. In addition, the Discharger serves as the authorized public agency (California Water Code section 13282) that ensures that the septic systems described herein are adequately designed, located, sized, spaced, constructed, and maintained to assure compliance with terms of this Order.

4. The term "CLS" includes the effluent collection system (commencing at each septic tank effluent outlet), and the community leachfield.

Background

5. Prior to construction of the Pine Grove CLS, the community of Pine Grove was unsewered and served by individual waste treatment and disposal systems, many of which were identified as being deficient and placed in areas with poor soils and high groundwater. On 22 April 1997, the Amador County Environmental Health Department's Health Officer issued a declaration stating that failing and inadequate individual waste treatment and disposal systems created a continuing health hazard and posed a potential threat to surface and groundwater quality. Therefore, both the community of Pine Grove and Amador County were in support of constructing a wastewater collection system and disposal system, which was to be operated by the Discharger.

6. The construction of the Pine Grove CLS was funded using the State Revolving Fund Loan Program. The Pine Grove CLS began operation in April 2001, and until adoption of these Waste Discharge Requirements (WDRs), the CLS was regulated by Regional Board Wavier Resolution Order No. 99-026. As required by legislation, all waivers adopted prior to 1 January 2003, including this waiver, are now invalid.

Wastewater System and Discharge

7. The Pine Grove CLS service area comprises a total of 144 equivalent dwelling units (EDUs), which consist of both residential homes and commercial properties. As of August 2003, 51 EDUs had been connected to the CLS. Another 40 users, with an equivalent EDU count of 64, are on standby for future hookups to the CLS. Without expansion of the leachfield, no further hookups will be possible once the designed maximum number of 144 EDUs is reached. However, it is not anticipated that the leachfield will need to be expanded within the next ten years.

8. Prior to connection to the CLS, the Discharger inspects all onsite wastewater systems (i.e. septic tanks, electrical, alarms, pumps, etc) to determine if any retrofits or new construction is required.

9. Each residential parcel has, or will have, a 1,500-gallon dual compartment concrete septic tank (or equivalent) equipped with an effluent filter screen and pump assembly installed in the secondary chamber. The septic tanks systems for commercial parcels vary. Each system is designed by a registered Professional Engineer and the design is submitted to the Discharger for approval. To preclude spills, all commercial systems are designed to provide two days of storage in case of a power outage. All commercial sites issued a permit to serve food by the Amador County Environmental Department must install grease traps.

10. Each septic tank hooked to the CLS has two chambers. Both chambers capture and store solids while they undergo anerobic decomposition. The heavier solids settle and form sludge at the bottom. The lighter solids, including fats and greases, rise to the surface and form a scum layer. The scum and sludge undergo decomposition and digestion, which both liquifies some solids (which are then discharged) and also produces carbon dioxide and methane gas, which are volatilized from the tank. Both the liquefaction and gasification processes reduce the solids volume in the tank and therefore reduce the frequency of septic tank cleaning.

11. The septic tanks have two basic functions, waste treatment and solids storage, but it is essential to the long-term function of the community leachfield that particulate (i.e., non-liquefied sludge) solids and scum be kept from exiting the tank. For this reason, the exit of the second chamber draws from the tank below the scum and above the sludge, and it is imperative that regular inspections and cleanings assure that neither the sludge layer nor the scum layer increases to the extent that particulates are scoured and discharged from the tanks. As an added safety measure, each tank effluent port is fitted with a 1/8 inch polyethlyene screen to capture errant solids.

12. Each individual on-site septic system hooked up to the CLS is equipped with dual check valves to prevent any collection system backflow into the septic tanks.

13. Since the CLS began operating in April 2001, the Discharger has modified its septic tank monitoring requirements. Annual tank inspections of both septic tank chambers, including measurement of the top of solids, and the top and bottom of the scum layer, are now required. Pumping of solids is required whenever the solids clear space or scum clear space is inadequate (less than three inches and less than eight inches, respectively). Whenever septic tanks fail the annual inspection, pump orders are issued to the septic tank owner. The Discharger then performs a follow-up inspection to ensure the tank was pumped.

14. A high head submersible pump within each individual septic tank is utilized to pump the effluent to one of two 4-inch schedule 40 HDPE main trunk lines. These main trunk lines have been installed on both the north and south sides of State Route 88. The 4-inch trunk lines manifold into a 6-inch welded HDPE pipe for delivery to the dosing tanks located near the intersection of State Route 88 and Ridge Road. The hydraulic capacity of the north and south 4-inch trunk lines is 280 and 310 gallons per minute (gpm), respectively. The hydraulic capacity of the 6-inch HDPE trunk line is 590 gpm.

15. The collection system does not contain any manholes and has only enough cleanouts to allow flushing of each line. To allow the collection system to breath, air relief valves located at the system's high points.

16. Septic tank effluent flows through a meter vault with a 2-inch diameter meter that measures flow entering the disposal system. Once through the meter vault, septic tank effluent enters a flow splitter box that splits the flow into five equal flows which is discharged into five individual dosing tanks, each with a capacity of 4,000 gallons. Each dosing tank has two dosing siphons, which discharge the flow to an individual leachfield. The dose per discharge is approximately 1,740 gallons. Discharge to each disposal line is controlled by 1-1/2 inch ball valves which allow equal distribution to all lines despite varying elevation heads.

17. The leachfield disposal area consists of approximately 21,300 linear feet of pressure dosed leachline on a 16.7-acre parcel, as shown on Attachment B, which is attached hereto and made part of this Order by reference. The disposal area is divided into 10 individual leachfields, each of which contains approxmately 2,130 lineal feet of leachline. The disposal trenches are approximately three feet wide by two feet deep.

18. The RWD states that no surface or subsurface diversion features have been installed around the leachfield to prevent surface or subsurface flows from entering the leachfield areas. On 21 January 2004, staff conducted an inspection of the leachfield disposal areas and observed significant surface erosion in disposal area number 3. This Order requires the Discharger to divert the surface water runoff away from the eroded leachfield area, and to evaluate whether additional surface or subsurface diversion features are needed in other areas of the disposal system.

19. Monitoring of wastewater depth in disposal trenches can aid in estimating the condition of leachfields and in adjusting distribution of wastewater within the leachfield, and is key to determining when replacing a leachfield is necessary. Each individual leachfield lateral has an inspection riser tube at each end to monitor the drainage capabilities of the disposal line. Each lateral also has a flow control valve to distribute an equal volume of effluent to each disposal trench.

20. The leachfield inspection riser observation tubes are constructed of substandard material, and several of the observation tubes are bent. Bent observation tubes prevent the Discharger from being able to measure effluent levels in the disposal trenches. The Discharger must replace bent observation tubes as necessary to comply with the Monitoring and Reporting Program and the Operation and Maintenance Plan.

21. The design flow of the CLS is limited by the leaching rate of the leachfield. The design leaching rate is approximately 1.35 gpd per lineal foot of lateral leachline. With each foot of leachline lateral providing 3 square feet on infiltration surface, the design percolation rate is approximately 0.45 gpd/ft^3. The entire leachfield is reported to contain 63,846 cubic feet of infiltration area along the bottom of the disposal trenches and can therefore dispose of approximately 28,730 gpd.

22. An operation and maintenance manual*, "Pine Grove Wastewater Treatment System",* was developed for the CLS; however, the manual does not address operation and maintainence that are necessary to assure complance with this Order and therefore must be revised.

23. Several surface water drainage courses, which are tributary to Jackson Creek, as well as Jackson Creek, are near the bottom of some of the leachfield disposal fields. Due to the moderate to steep sloping hillsides on which the leachfield disposal areas were constructed, there is the potential for wastewater to flow into the surface drainages and Jackson Creek. Therefore, this Order requires the Discharger to monitor surface water in Jackson Creek.

Effluent Characteristics

24. Potable water for the community is provided by the Discharger and originates from the Mokelumne River. The TDS of the source water is approximately 29 mg/L.

25. On 8 September 2003, the Discharger collected samples of wastewater discharged from the Pine Grove leachfield dosing tanks. In addition, on 9 September 2003, the Discharger collected wastewater samples from one of the leachfield lateral line observation ports. The sample data from each monitoring event is presented below.

Constituent	Units	September 8 Dosing tank Concentration	September 9 Leachfield Observation Port Concentration
pH	Standard Units.	6.5	7.0
Total Dissolved Solids (TDS)	mg/l	236	352
Electrical Conductivity	umhos/cm	582	640
BOD_5	mg/l	72	67
Total Coliform Organisms	MPN/100 ml	>2400	>2400
Total Fecal Organisms	MPN/100 ml	>2400	1600
Total Kjeldahl Nitrogen	mg/l	41	12
Nitrate as NO_3	mg/l	<0.05	3.6
Ammonia as N	mg/l	36	9.7
Chloride	mg/l	48	48
Sodium	mg/l	38	53

26. The sample data indicate that the septic tanks provide primary treatment. Wastes that pass through the septic tanks are discharged to the soil underlying the leach lines; the soil then treats some of the remaining wastes. However, the amount of treatment depends on the waste type and

concentrations, soil type and depth, percolation rates, wastewater application rates, and depth to groundwater. Under the best of circumstances, some waste constituents may migrate through the soil column to the underlying groundwater.

27. Waste brines from water softeners could adversely affect the functioning and life of the community leachfields, as well as cause unnecessarily elevated concentrations of sodium and chloride that can degrade groundwater and adversely affect agricultural use of the groundwater. Because the Pine Grove homeowners receive excellent quality supply water, the use of water softeners is unnecessary, and if the Discharger allows them, they must exclude self-regenerating models.

28. Acid and organic chemical solvent septic system additives typically contain halogenated and aromatic hydrocarbons that are highly mobile in soils and groundwater. The additives can impede effective treatment and pollute groundwater, and their use must be restricted as monitoring and cleanup can be costly.

Sanitary Sewer Overflows

29. A collection system "overflow" is a discharge to ground surface or to surface water from the effluent collection system at any point upstream of the dosing tanks. Temporary storage or collection facilities may be utilized during maintenance operations and discharges to these facilities are not considered overflow events, provided that the waste is fully contained and properly disposed.

30. Potential causes of overflows within this system include grease blockages, root blockages, debris blockages, sewer line flood damage, air relief/vacuum valve failures, vandalism, storm or groundwater inflow/infiltration, lack of capacity, and contractor caused blockages.

31. Sanitary sewer overflows often contain high levels of suspended solids, pathogenic organisms, nutrients, oxygen demanding organic compounds, oil and grease, and other wastes. Sanitary sewer overflows can cause temporary exceedences of applicable water quality objectives, pose a threat to public health, adversely affect aquatic life, and impair the public recreational use and aesthetic enjoyment of surface waters in the area.

32. The Discharger is expected to take all necessary steps to adequately maintain and operate, and thereby prevent overflows from, its effluent collection system. A reasonable means to accomplish this is to prepare and implement an operation and maintenance manual that includes overflow prevention and response features.

Groundwater Concerns

33. No specific information on depth to groundwater exists for the site. According to the Discharger, typical depths to groundwater in similar geologic rock in the Sierra Foothills roughly mirrors togography and ranges from ten feet or less below ground surface along the lower stream beds to 50 to 100 feet below ground surface along the ridge crests. Based on the location of the leachlines, the Discharger estimates that groundwater would range between 20 and 95 feet below the leachlines.

34. A soils report, prepared in 1991, indicates that the soil depth measured in test trenches ranged from 0 to 120 inches, with an average soil depth of 50 inches. The RWD states "*Assuming a mean soil depth at the site of 50 inches and the design depth of 27 inches for each leachfield lateral, there would be an average of 23 inches of soil between the bottom of the leachlines and bedrock.*"

35. Seventeen shallow groundwater monitoring wells (shown on Attachment C, which is attached hereto and made part of this Order by reference) were installed within and around the Pine Grove leachfield as part of the design requirements of the State Revolving Fund Loan Program. The wells are 10-15 feet deep, and their purpose is to monitor shallow perched groundwater that may collect along the soil-bedrock interface. When installed, no perched water was reported to be encountered. According to the RWD, the Discharger has only monitored the depth of groundwater in the wells twice, in April 2002 and January 2003. The water level monitoring results are presented in the table below. It is noted that the Discharger has never analyzed the perched water for chemical constituents.

Date Measured	Monitoring Well #	Total Depth of Well (inches)	Depth to Water (inches)	Height of water (inches)
4/15/02	A2	99.0	98	1.0
4/15/02	B3	141.0	133	8.0
4/15/02	B4	133.0	131	2.0
4/16/02	3	78.0	55.5	22.5
4/16/02	4	137.0	135.5	4.5
1/8/03	E10 12 B	130	130	dry
1/8/03	D8B 6 A	130	125	5.0
1/8/03	D8B 1 A	135	134	1.0
1/8/03	D8B 1 B	150	149	1.0
1/8/03	D8A 6 A	143	136	7.0
1/8/03	D8A 4 B	165	160	5.0
1/8/03	C5B 6 A	84	64	20.0
1/8/03	C5B 1 B	108	78	30.0
1/8/03	D8A 3 A	131	122	9.0
1/8/03	C6 1 B	177	174	3.0

36. According to construction design drawings presented in the RWD, the groundwater monitoring wells were drilled to a depth of approximately ten feet below ground surface or until refusal of the drill rig auger. The wells were designed to consist of 4-inch diameter PVC perforated casing, wrapped with a Geotextile fabric. Three-eighth inch pea gravel was used for the filter pack and approximately six inches of bentonite or cement was used for the annular seal. The Discharger has not provided as-built diagrams, and if the wells were installed as per the construction design drawings, they do not meet standard well construction design and therefore may not provide true groundwater quality data. The Discharger is required to evaluate whether the existing wells will provide accurate groundwater monitoring data, and if not, install properly constructed wells.

37. No surfacing of wastewater has been observed at any of the leachfields. AWA reports that in April 2002 standing water was observed in the site tubes in some of the laterals on leachfields 1 through 4, but the amount of water in the sight tubes did not exceed the acceptable limits. Staff determined that the actual dosing rate exceeded the designed dosing rate of one dose per 20 hours. In order to

achieve the designed dosing rate, Tanks C, D, & E (Leachfields 5 through 10) were put into service and Tanks A & B (Leachfields 1 through 4) were taken out of service. The Discharger states that when the dose rate exceeds one dose per 20 hours in fields 5 through 10, then fields 1 through 4 will be placed back into service.

Site Specific Conditions

38. The average annual rainfall for Pine Grove is approximately 46.3 inches per year.

39. All portions of the leachfield are outside of the 100-year flood zone.

40. The land uses around the leachfield disposal areas are primarily medium and low density residential, commercial, and some limited agricultural uses.

41. The leachfield is within the Sutter Creek Hydrologic Area No. 532.40, as depicted on interagency hydrologic maps prepared by the Department of Water Resources in August 1986.

42. Soils within the leachfield area are of the Josephine-Mariposa and Sites-Mariposa series. The soils, which range from 18 to 48 inches deep, consists of loams and clay loams. The RWD describes the soil to be well drained soils with rapid runoff (due to slope) and moderate permeability.

43. Slopes in the Pine Grove leachfield areas range from 18 to 50 percent. Soil stability could be an issue under saturated soil conditions. The leachfields may also receive additional water from stormwater runoff from the land surrounding the leachfield.

Basin Plan, Beneficial Uses, and Regulatory Considerations

44. The *Water Quality Control Plan for the Sacramento River and San Joaquin River Basins, Fourth Edition*, (hereafter Basin Plan) designates beneficial uses, establishes water quality objectives, contains implementation plans and policies for protecting waters of the basin, and incorporates by reference plans and policies adopted by the State Water Resources Control Board. Pursuant to Section 13263(a) of the CWC, waste discharge requirements must implement the Basin Plan.

45. Surface water drainage from the Pine Grove leachfield area is to Jackson Creek, a tributary to Dry Creek; Dry Creek flows into the Mokelumne River downstream of Camanche Reservoir.

46. The designated beneficial uses of the Mokelumne River downstream of the Camanche Reservoir are agricultural supply; water contact recreation; non-contact water recreation; warm and cold freshwater habitat; migration of aquatic organisms; spawning, reproduction, and/or early development; and wildlife habitat.

47. The designated beneficial uses of the underlying groundwater are municipal and domestic supply, agricultural supply, industrial service supply, and industrial process supply.

48. The Basin Plan establishes numerical and narrative water quality objectives for surface water and groundwater that waste discharge requirements must implement. To implement narrative water

quality objectives, relevant water quality criteria and guidelines are to be considered on a case-by-case basis to determine the appropriate numerical limitation.

49. The Chemcial Constituent objective in the Basin Plan requires, at a mimimum, compliance with California maximum contaminant levels (MCLs) for waters designated as municipal supply. More stringent criteria than MCLs are sometimes necessary to ensure that waters do not contain chemical constituents in concentrations that adversely affect beneficial uses.

50. The Basin Plan contains narrative water quality objectives for chemical constituents, tastes and odors, and toxicity. The toxicity objective requires that groundwater be maintained free of toxic substances in concentrations that produce detrimental physiological responses in humans, plants or animals associated with beneficial uses. The chemical constituent objective requires that groundwater shall not contain chemical constituents in concentrations that adversely affect beneficial uses. The tastes and odors objective requires that groundwater shall not contain taste or odor producing substances in concentrations that cause nuisance or adversely affect beneficial uses.

51. The Basin Plan allows the use of septic tank/leachfield systems where a conventional municipal sewerage system is not available provided construction guidelines referenced in the Basin Plan are met and provided a properly empowered entity assumes responsibility for the systems. This entity must assure proper operation and maintenance, and assure system replacement as necessary to preclude nuisance, pollution, and health impacts. In addition to the requirements of CWC section 13282, the Basin Plan requires that the public entity be empowered to finance its actions and empowered to issue permits, conduct monitoring and surveillance, and maintain control of pumping and disposal of septage, as well as to abandon properly, if necessary, any CLS. This Order requires that the Amador Water Agency be empowered with these actions in relation to the Pine Grove CLS.

Groundwater Degradation

52. State Water Resources Control Board (State Board) Resolution No. 68-16 ("Policy with Respect to Maintaining High Quality Waters of the State") (hereafter Resolution No. 68-16) requires a regional board in regulating the discharge of waste to maintain high quality waters of the state (i.e., background water quality) until it is demonstrated that any change in quality will be consistent with maximum benefit to the people of the State, will not unreasonably affect beneficial uses, and will not result in water quality less than as described in plans and policies (e.g. violation of any water quality objective). The discharge is required to meet waste discharge requirements that will result in the best practicable treatment or control of the discharge necessary to assure that pollution or nuisance will not occur and highest water quality consistent with maximum benefit to the people will be maintained.

53. Some degradation of groundwater in the leachfield area is consistent with Resolution No. 68-16 provided that degradation:

    a. is confined to a reasonable area;

b. is minimized by means of full implemention, regular maintenance, and optimal operation of best practicable treatment and control (BPTC) measures;

c. is limited to waste constituents typically encountered in domestic wastewater; and

d. does not result in water quality less than that prescribed in the applicable basin plan.

Antidegradation Analysis

54. The CLS provides minimal treatment of wastewater and is highly dependent upon proper management and waste constituent attenuation in the disposal field to prevent pollution of groundwater and to protect beneficial uses. While the Basin Plan conditionally allows septic tanks with leachfield systems for rural development, it includes the expectation of optimal site selection and conservative design which meet minimum guidelines, and attentive and judicous operation and maintenance. The Pine Grove leachfield areas may fail to meet Basin Plan criteria for depth of soil below leaching trenches and for degree of slope. This Order requires the discharger to prevent pollution, nuisance, or contamination, and requires the discharger to appropriately operate and maintain the systems consistent with CWC section 13282. In addition, this Order include provisions to implement Resolution 68-16.

55. The two effluent samples collected to date shows that TDS concentrations in the effluent are below 450 mg/L, the relevant numerical water quality limit used through Basin Plan procedures to apply the narrative water quality objective for chemical constituents that requires protection of agricultural supply, the beneficial use most sensitive to TDS. The individual salt components can safely be assumed to be proportionately low such that TDS can be an effective indicator parameter in their regulation. Restricting the use of water softeners should make these components unimportant in regulating water quality. The threat of toxic chemicals can reasonably be controlled through periodic education of homeowners.

56. The incremental addition of dissolved salts though water useage (about 200 mg/L; Finding No. 22) is within the normal range for domestic use, and is reasonable considering modern water conservation practices. A TDS effluent limitation of 310 mg/L represents no cost or change in practice for the Discharger, and limits salt degradation to a reasonable amount while providing some protection of the groundwater beneath the community leachfields.

57. Waste constituents in effluent that represent the greatest risk of exceeding a water quality objective and may be used as indicator parameters regarding the performance of the CLS are nitrogen and coliform. As demonstrated from effluent samples, both must be effectively attenuated within the soil to assure water quality objectives are met. The constraining water quality limit for nitrogen prescribed by the Basin Plan, pursuant to the chemical constituent objective, is the MCL for nitrate, which is equivalent to 10 mg/L when expressed as nitrogen. The Basin Plan numeric water quality objective for total coliform less than 2.2 MPN/100 mL.

58. Groundwater limitations equal to water quality objectives for indicator waste constituents and parameters are appropriate, as is a more restrictive TDS groundwater limitation, and consistent with maximum benefit to the people of the State for this CLS. Accordingly, the discharge as authorized is consistent with the antidegradation provisions of Resolution 68-16.

59. As data are insufficient to establish that the discharge complies with all conditions of authorization, a schedule of tasks to evaluate the CLS and characterize groundwater for indicator waste constituents is appropriate and necessary. Completion of these tasks may show that some conditions are not met and necessitate modifications to the CLS (e.g., sand filters, disinfection) to allow continued discharge.

60. Section 13241 of the CWC requires that various factors, including economic considerations, be considered when adopting water quality objectives into a Basin Plan. Water Code Section 13263 requires that factors in Section 13241 be considered in adopting waste discharge requirements. The State Board has held that factors of section 13241 need not be specifically addressed when implementing existing water quality objectives in waste discharge requirements because the factors were already considered in adopting the objectives through amendments to the Basin Plan. Although there is no obvious cost to the TDS limitation, cost savings in life of the leachfield and less degradation of groundwater should be realized. No additional analysis of Section 13241 factors is required.

Other

61. The State Water Resources Control Board adopted Order No. 97-03-DWQ (General Permit No. CAS000001) specifying waste discharge requirements for discharges of storm water associated with industrial activities, and requiring submittal of a Notice of Intent by all affected industrial dischargers. The collection system and leachfields are underground and are not exposed to stormwater runoff. Because there is no stormwater discharge, the Discharger is not required to obtain coverage under General Permit No. CAS000001.

62. On 25 March 1999, in accordance with the California Environmental Quality Act (Title 14, California Code of Regulations (hereafter CCR), section 15261 et seq.), the Amador County Planning Commission adopted a Negative Declaration for the Pine Grove CLS.

63. The projects, as approved by Amador County may degrade water quality, possibly to the degree that water quality objectives will be violated, beneficial uses impacted, and pollution, contamination, or nuisance created. However, Prohibition A.6, Discharge Specification B.8, Effluent Limitations C, Groundwater Limitations E, and Provisions F.1, F.4, F.6, and F.8, among others, should mitigate or avoid pollution, nuisance, contamination, exceedance of water quality objectives, and impacts on beneficial uses.

64. Section 13267(b) of the CWC provides that: "In conducting an investigation specified in subdivision (a), the regional board may require that any person who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge waste within its region, or any citizen or domiciliary, or political agency or entity of this state who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge, waste outside of its region that could affect the quality of waters within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the regional board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports. In requiring those reports, the regional board shall provide the person with a written explanation with regard to the need for the reports, and shall identify the evidence that supports requiring that person to provide the reports."

The technical reports required by this Order and the attached "Monitoring and Reporting Program No. R5-2004-0036" are necessary to assure compliance with these waste discharge requirements. The Discharger operates the facility that discharges waste subject to this Order.

65. The California Department of Water Resources sets standards for the construction and destruction of groundwater wells, as described in *California Well Standards Bulletin 74-90* (June 1991) and *Water Well Standards: State of California Bulletin 94-81* (December 1981). These standards, and any more stringent standards adopted by the state or county pursuant to CWC section 13801, apply to all monitoring wells.

66. State regulations that prescribe procedures for detecting and characterizing the impact of waste constituents from waste management units on groundwater are found in Title 27, CCR, section 20005, et seq. (hereafter Title 27). While the CLS is exempt from Title 27, the data analysis methods of Title 27 may be appropriate for determining whether the discharge complies with the terms for protection of groundwater specified in this Order.

67. The discharge authorized herein and the treatment and storage facilities associated with the discharge, except for discharges to land of residual sludge and solid waste, are exempt from the requirements of Title 27. The exemption, pursuant to Title 27 section 20090(a), is based on the following:

    a. The waste consists primarily of domestic sewage and treated effluent;

    b. The waste discharge requirements are consistent with water quality objectives; and

    c. The treatment and storage facilities described herein are comparable in function to a municipal wastewater treatment plant.

68. Pursuant to CWC section 13263(g), discharge is a privilege, not a right, and adoption of this Order does not create a vested right to continue the discharge.

Public Notice

69. All the above and the supplemental information and details in the attached Information Sheet, which is incorporated by reference herein, were considered in establishing the following conditions of discharge.

70. The Discharger and interested agencies and persons were notified of the intent to prescribe waste discharge requirements for this discharge, and provided an opportunity to submit written views and recommendations and to be heard in a public meeting.

71. In a public meeting, all comments pertaining to the discharge were heard and considered.

IT IS HEREBY ORDERED that, pursuant to CWC sections 13263 and 13267, the Amador Water Agency, its agents, successors, and assigns, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted hereunder, shall comply with the following:

[Note: Other prohibitions, conditions, definitions, and some methods of determining compliance are contained in the attached "Standard Provisions and Reporting Requirements for Waste Discharge Requirements" dated 1 March 1991.]

A. Discharge Prohibitions

1. Discharge of wastes to surface waters or surface water drainage courses is prohibited.

2. Bypass or overflow of untreated or partially treated waste is prohibited.

3. Discharge of sewage from the sanitary sewer system at any point upstream of the dosing tanks, including septic tanks, is prohibited. Discharge of treated wastewater outside of the leachfield area is prohibited.

4. Surfacing of waste within or downgradient of the community leachfields is prohibited.

5. Discharge of waste classified as 'hazardous' under Title 23, CCR, Section 2521, or as 'designated' under of CWC section 13173 is prohibited, including any discharge of sludge.

6. The presence of leachate within one foot of the lowest finished disposal field grade is prohibited.

B. Discharge Specifications

1. The monthly average inflow to the Pine Grove leachfield shall not exceed 28,700 gpd.

2. The wastewater treatment and leachfield areas shall not cause pollution or a nuisance as defined by Section 13050 of the CWC.

3. Public contact with wastewater in the leachfield area shall be precluded or controlled through such means as fences and signs, or acceptable alternatives.

4. No waste constituent shall be released or discharged, or placed where it will be released or discharged, in a concentration or in a mass that causes violation of the Groundwater Limitations.

5. Objectionable odor originating from the leachfield area shall not be perceivable beyond the limits of the leachfield area.

6. All treatment, storage, and community leachfields shall be designed, constructed, operated, and maintained to prevent inundation or washout due to floods with a 100-year return frequency.

7. Disposal of wastewater shall be confined to each leachfield area defined in this Order.

8. The Discharger shall operate all systems and equipment to maximize treatment of wastewater and optimize the quality of the discharge. In particular, the Discharger shall comply with the following items, and shall describe their implementation in the Operation and Maintenance Plan required by the Provisions. The frequency of each task may be modified upon written request by the Discharger and written approval by the Executive Officer. The written request must clearly show that the reduction in frequency will not have the potential to impact water quality. The Discharger shall:

    a. Inspect each septic tank at least annually.

    b. Cut vegetation in the leachfield area as needed to prevent threat of root intrusion into the leachlines and drainage rocks, and remove the vegetative litter.

    c. Annually evaluate whether wastewater is evenly distributed to all the disposal trenches and make modifications to the distribution system as necessary to optimize distribution and preclude the depth of wastewater in any disposal trench within 12 inches of the ground surface.

    d. Annually inspect, and if necessary, clean the leachfield's distribution piping.

    e. Properly maintain the septic tanks, including pumping a tank when any one of the following conditions exist, or can be reasonably projected to occur before the next inspection of a tank:

        1. The combined thickness of sludge and scum exceeds one-third of the tank depth of the second compartment,
        2. The scum layer is within three inches of the outlet device; or,
        3. The sludge layer is within eight inches of the outlet device.

    f. Require septic tanks that are cracked or otherwise damaged be promptly repaired or replaced.

    g. Require that septic tank filters be cleaned on a regular basis.

    h. Inform homeowners, through a public education program, about the chemicals and actions which have the potential to impair the proper and sustained functioning of the CLS. Chemicals of concern include self-regenerating water softeners, acid and organic chemical solvent septic system additives, and kitchen greases and oils. Actions of concern include the excessive use of garbage disposal systems, connecting rainfall drainage controls to the collection system, and draining swimming pools into the collection system.

9. The CLS shall have sufficient treatment, storage, and disposal capacity to accommodate allowable wastewater flow, inflow and infiltration, and design seasonal precipitation during the winter months. Design seasonal precipitation shall be based on total annual precipitation

using a return period of 100 years, distributed monthly in accordance with historical rainfall patterns.

10. A 100-foot buffer zone shall be maintained between the nearest point of the leachfields and (a) the edge of Jackson Creek (measured from the 10 year high water mark), and (b) any spring, domestic well, or irrigation well. A 50-foot buffer zone shall be maintained between the nearest point of the leachfields and any seasonal drainage course.

11. A 50-foot buffer zone shall be maintained between the leachfields and the nearest property boundary.

C. Effluent Limitations

1. Effluent discharged from the dosing tanks shall not have a pH less than 6.5 or greater than 8.4.

2. Effluent discharged from the dosing tanks shall not have a monthly average TDS exceeding 310 mg/L.

D. General Solids Disposal Specifications

Sludge means the solid, semisolid, and liquid residues removed during the wastewater treatment processes.

1. Sludge shall be removed from septic tanks and dosing tanks as needed to ensure optimal operation and optimal life of the community leachfields, but no less frequent than as specified in Discharge Specification B.8.

2. Sludge that accumulates in the dosing tanks shall be removed as needed to ensure the protection and optimal life of the community leachfields.

3. Sludge removal shall be by a licensed liquid waste hauler and documented by copies of manifests. The Discharger may also remove sludge using its vacuum trailer if the waste is hauled to a licensed disposal facility by an operator with a current Department of Transportation hazardous material certification.

4. Disposal of residual sludge and solid waste must be to a facility operated in accordance with valid waste discharge requirements issued by a regional water quality control board.

E. Groundwater Limitations

1. Release of waste constituents from the leachfields shall not cause groundwater, as determined by an approved well monitoring network, to:

a. Contain any of the following constituents in concentration greater than as listed or greater than natural background quality, whichever is greater:

Constituent	Units	Limitation
Total Coliform Organisms	MPN/100 mL	Less than 2.2
Total Dissolved Solids[a]	mg/L	310
Total Nitrogen	mg/L	10

a. A cumulative impact limit that accounts for several dissolved constituents in addition to those listed here separately [e.g., alkalinity (carbonate and bicarbonate), calcium, hardness, phosphate, and potassium].

b. Exhibit a pH of less than 6.5 or greater than 8.4 pH units.

c. Impart taste, odor, toxicity, or color that creates nuisance or impairs any beneficial use.

F. Provisions

1. All of the following reports shall be submitted pursuant to Section 13267 of the California Water Code and shall be prepared by a registered professional as described by Provision F.3.

   a. By **1 June 2004**, the Discharger shall submit a *Surface Water Diversion Report* that (1) provides a description of the measures that will be implemented to divert surface water drainage away from leachfield disposal area number 3, and (2) evaluates whether surface water and/or subsurface water diversion features are needed around the leachfields to prevent, surface ersosion at other disposal areas, and/or overloading and failures of the leachfield disposal system. The report shall describe the methodology and assumptions used in evaluating whether diversion features are needed.

   b. By **30 July 2004**, the Discharger shall submit a *Monitoring Well Evaluation Report.* This report shall contain an evaluation of whether the existing network of groundwater monitoring wells have been (a) placed in appropriate locations and (b) constructed in a standard manner such that they may be used in a quarterly groundwater monitoring program. If the wells have been constructed in such a manner that they will not provide representative groundwater samples, or if they were not placed in the locations necessary to demonstrate whether the leachfield is, or has the potential to, degrade the first encountered groundwater, then they must be replaced. The *Monitoring Well Evaluation Report* shall clearly show the construction details of each well and shall contain the results of at least one sampling event (conducted per the "Groundwater Monitoring" section of MRP No. R5-2004-0036).

   c. By **30 September 2004**, the Discharger shall submit and implement an *Operation and Maintenance (O&M) Plan* for the Pine Grove CLS. The O&M Plan shall instruct field personnel on how to manage the day-to-day discharge operations to comply with the terms and conditions of this Order and how to make field adjustments, as necessary, to optimize the effectiveness and life of the leachfields and preclude nuisance conditions

(e.g., surfacing wastewater). It shall also include a troubleshooting flowchart with recommend remedial actions and a description of notification requirements. The O&M Plan shall address management of the CLS in sufficient detail to optimize compliance with this Order, and most particularly Discharge Specification B.8, including the following:

i. An inspection procedure for checking the integrity of septic tanks.

ii. A description of the type, location, and procedure for calibration of the flow meter(s) installed to comply with the Monitoring and Reporting Program.

iii. The procedures to be implemented to assure that wastewater is evenly distributed within the disposal trenches and wastewater will not be disposed of when the depth of wastewater in any trench is within 12 inches of the ground surface.

The Discharger shall ensure that an up-to-date O&M Plan is readily available to operating personnel at al times, and that personnel are familiar with it.

d. If the *Monitoring Well Evaluation Report* contains the recommendation, or if the Executive Officer's review of the report determines, that the existing network of groundwater monitoring wells is not sufficient to accurately monitoring groundwater, then by **30 October 2004**, the Discharger shall submit a *Groundwater Monitoring Well Workplan* for the installation of additional wells. The workplan shall describe the installation of a sufficient amount of groundwater monitoring wells to allow evaluation of the groundwater quality upgradient, beneath, and downgradient of the site. Every monitoring well shall be constructed to yield representative samples from the uppermost layer of the uppermost water bearing zone and to comply with applicable well standards. The workplan shall be consistent with, and include the items listed in, the first section of Attachment D, "*Items to be Included in a Monitoring Well Installation Workplan and a Monitoring Well Installation Report of Results."* If necessary, the workplan shall also describe the abandonment of the unusable wells.

e. If the *Surface Water Diversion Report* recommends that surface water and/or subsurface water diversion features are needed to prevent potential leachfield failures, or if the Executive Officer determines that such features are necessary, then by **1 November 2004**, the Discharger shall submit a *Surface Water Diversion Installation Report* showing that these features have been installed. The report shall describe the type of diversion features were installed and provide a map showing the location of the diversion features.

f. By **30 December 2004**, the Discharger shall submit an *Effluent Collection System Operation, Maintenance, Overflow Prevention, and Response Plan* (ECS Plan) that describes the actions designed to prevent or minimize the potential for collection system overflows. The Discharger shall maintain the ECS Plan in an up-to-date condition and shall amend the ECS Plan whenever there is a change (e.g., in the design, construction, operation, or maintenance of the effluent collection system) that materially affects the potential for overflows, or whenever there is an overflow. The Discharger shall ensure

that the up-to-date ECS Plan is readily available to operating personnel at all times and that the personnel are familiar with it.

i. At a minimum, the operation and maintenance portion of the ECS Plan shall contain or describe the following:

1. Detailed maps of the effluent collection system, identifying locations of cleanouts and air relief valves;

2. A detailed listing of elements to be inspected, a description of inspection procedures and inspection frequency, and sample inspection forms;

3. A schedule for routine inspection of all pipelines, valves, and other key system components. The inspection/testing program shall be designed to reveal problems that might lead to accidental spills and ensure that preventive maintenance is completed;

4. Provisions for repair or replacement of defective equipment.

ii. At a minimum, the overflow prevention and response portion of the ECS Plan shall contain or describe the following:

1. Identification of areas of the collection system that historically have overflowed and an evaluation of the cause of the overflow;

2. Maintenance activities that can be implemented to address the cause of the overflow and means to prevent future overflows;

3. Procedures for responding to overflows designed to minimize the volume of overflow that enters surface waters, and minimize the adverse effects of overflows on water quality and beneficial uses; and

4. Steps to be taken when an overflow or spill occurs, and procedures that will be implemented to ensure that all overflows and spills are properly identified, responded to and reported to appropriate agencies, and if necessary, the public.

g. If a *Groundwater Monitoring Well Workplan* is submitted as per the requirements in Provision F.1.d, then by **15 May 2005**, the Discharger shall submit a *Groundwater Monitoring Well Installation* report. The report shall be consistent with, and include the items listed in, the second section of Attachment D. The report shall describe the installation and development of the monitoring wells, explain any deviation from the approved workplan, and clearly show that Discharger has the expertise and equipment necessary to collect groundwater samples. Alternatively, the report may describe the qualified consultant that the Discharger will use to collect groundwater samples.

h. By **1 June 2006**, the Discharger shall submit a *Groundwater Quality Study Report*. For each groundwater monitoring parameter/constituent identified in the Monitoring and Reporting Program, the report shall present a summary of monitoring data from each monitoring well. Determination of groundwater quality shall be made using the methods described in Title 27, Section 20415(e)(10), and data from at least four consecutive quarterly (or more frequent) groundwater monitoring events.

i. If the *Groundwater Quality Study Report* or quarterly monitoring reports show that groundwater exceeds Groundwater Limitations at any section of the leachfield, then within **120 days** of the Executive Officer's request, the Discharger shall submit a technical report in the form of a *CLS Evaluation Report and Implementation Workplan.* The technical report shall include a comprehensive evaluation of treatment and control measures that address full mitigation of the source of the exceedance(s). The report shall describe treatment and control alternatives studied, the alternative(s) recommended for implementation, and any specific methods the Discharger proposes to monitor and assure continuous optimal performance, the source of funding, and proposed schedule for implementation. The recommended improvements and implementation schedule are subject to the Executive Officer's approval, but the schedule for full implementation shall be as short as practicable and not exceed two years unless specifically approved by the Regional Board.

2. Upon completion of tasks set forth in Provision F.1, the Regional Board may consider the evidence provided and make a determination regarding whether the Discharger has justified continued discharge from the CLS as consistent with water quality policies and plans and the CWC or whether substantial evidence indicates continued discharge should not be permitted due to violated water quality objectives, impaired beneficial uses, pollution, nuisance or contamination, or unreasonable degradation.

3. In accordance with California Business and Professions Code sections 6735, 7835, and 7835.1, engineering and geologic evaluations and judgments shall be performed by or under the direction of registered professionals competent and proficient in the fields pertinent to the required activities. All technical reports specified herein that contain workplans for, that describe the conduct of investigations and studies, or that contain technical conclusions and recommendations concerning engineering and geology shall be prepared by or under the direction of appropriately qualified professional(s), even if not explicitly stated. Each technical report submitted by the Discharger shall contain a statement of qualifications of the responsible licensed professional(s) as well as the professional's signature and/or stamp of the seal.

4. The Discharger shall comply with the Monitoring and Reporting Program No. R5-2004-0036, which is part of this Order, and any revisions thereto as ordered by the Executive Officer of the CLS in accordance with terms prescribed by this Order.

5. The Discharger shall comply with the "Standard Provisions and Reporting Requirements for Waste Discharge Requirements", dated 1 March 1991, which are attached hereto and made part of this Order by reference. This attachment and its individual paragraphs are commonly referenced as "Standard Provision(s)."

6. The Discharger shall use the best practicable treatment and control techniques, including proper operation and maintenance, to assure compliance with terms of this Order.

7. In event of overflow from the effluent collection system, the Discharger shall take all necessary remedial action to control and limit the volume of sewage discharged, and

terminate the overflow as rapidly as possible. Necessary remedial actions may include, but are not limited to, the following:

a. Interception and rerouting of sewage flows around the collection line failure;

b. Vacuum truck recovery to the extent practical of sanitary sewer overflows and wash down water;

c. Use of portable aerators in surface waters where complete recovery of the spilled sewage is not feasible and severe oxygen depletion is expected; and

d. Cleanup of sewage-related debris at the overflow site;

e. Disinfection and posting of the area.

8. The Discharger shall report to the Regional Board any toxic chemical release data it reports to the State Emergency Response Commission within 15 days of reporting the data to the Commission pursuant to section 313 of the "Emergency Planning and Community Right to Know Act of 1986."

9. The Discharger shall not allow waste-free wastewater to be discharged into the wastewater collection, treatment, and disposal system. Waste-free wastewater means rainfall (roof gutters, yard drainage), groundwater, cooling waters, and condensates that are essentially free of wastes.

10. The Discharger shall submit to the Regional Board on or before each compliance report due date, the specified document or, if appropriate, a written report detailing compliance or noncompliance with the specific schedule date and task. If noncompliance is being reported, then the Discharge shall state the reasons for such noncompliance and provide an estimate of the date when the Discharger will be in compliance. The Discharger shall notify the Regional Board in writing when it returns to compliance with the time schedule.

11. In the event of any change in control or ownership of land or waste discharge facilities described herein, the Discharger shall notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be immediately forwarded to this office.

12. The Discharger must comply with all conditions of this Order, including timely submittal of technical and monitoring reports as directed by the Executive Officer. Violations may result in enforcement action, including Regional Board or court orders requiring corrective action or imposing civil monetary liability, or in revision or recession of this Order.

13. When it appears that any leachfield within the system is showing signs of failure (sustained wastewater in disposal trenches at or near the maximum design depth), then the Discharger shall increase the frequency of observation well monitoring and shall inititate construction of the replacement community leachfield when this condition cannot be mitigated by distribution system adjustments and the surfacing of effluent will be otherwise unavoidable.

14. A copy of this Order shall be kept at the CLS for reference by operating personnel. Key operating personnel shall be familiar with its contents.

15. The Regional Board will review this Order periodically and will revise requirements when necessary.

I, THOMAS R. PINKOS, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on 19 March 2004.

_____
THOMAS R. PINKOS, Executive Officer

JSK: 19 March 2004

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2004-0036

FOR
AMADOR WATER AGENCY
PINE GROVE COMMUNITY LEACHFIELD SYSTEM
AMADOR COUNTY

This Monitoring and Reporting Program (MRP) describes requirements for monitoring domestic wastewater, treated effluent, leachfields, and groundwater. This MRP is issued pursuant to Water Code Section 13267. The Discharger shall not implement any changes to this MRP unless and until a revised MRP is issued by the Executive Officer. Regional Board staff shall approve specific sample station locations prior to implementation of sampling activities.

All samples should be representative of the volume and nature of the discharge or matrix of material sampled. The time, date, and location of each grab sample shall be recorded on the sample chain of custody form.

Field test instruments (such as those used to test pH and dissolved oxygen) may be used provided that:

1. The operator is trained in proper use and maintenance of the instruments;
2. The instruments are field calibrated prior to each monitoring event;
3. Instruments are serviced and/or calibrated per the manufacturer's recommended frequency; and
4. Field calibration reports are submitted as described in the "Reporting" section of this MRP.

SEPTIC TANK MONITORING

The Discharger shall monitor the septic tanks and report this information in the annual reports. Septic tanks shall be inspected annually for the presence of sludge in the second compartment of each septic tank. If sludge is encountered, then the septic tank shall be inspected as described in the table below. In addition, the first compartment of each tank shall be monitored as described below once every three years, even if no sludge is encountered in the second compartment.

Parameter	Units	Type of Measurement	Minimum Inspection	Reporting Frequency
Sludge depth and scum thickness in the first compartment of each septic tank [1]	Feet	Staff Gauge	Annually	Annually
Distance between bottom of scum layer and bottom of outlet device [1]	Inches	Staff Gauge	Annually	Annually
Distance between top of sludge layer and bottom of outlet device [1]	Inches	Staff Gauge	Annually	Annually

[1] The Discharger shall visually inspect the tanks for signs of damages, leakage, or deterioration

The Discharger shall retain records of each inspection, by street address, noting the date and measured

readings and calculations. The Discharger will also record when cleaning is required, the date of notice to the homeowner, the condition of the tank, and the date that cleaning or repair occurred and by whom. Copies of the Liquid Waste Hauler manifests shall be retained for review as with any other record concerning documentation of compliance with the Order.

EFFLUENT MONITORING

The Discharger shall conduct effluent monitoring of the wastewater entering each leachfield; samples shall be collected at a point prior to discharge into the leachfield dosing tanks. Effluent monitoring shall include, at a minimum, the following:

Constituents	Units	Type of Sample	Sampling Frequency	Reporting Frequency
Total Flow to the CLS	gpd	Meter	Weekly	Monthly
Flow to each leachfield	gpd	Calculated[1]	Weekly	Monthly
Total Dissolved Solids	mg/l	Grab	Quarterly	Quarterly
Nitrates as Nitrogen	mg/l	Grab	Quarterly	Quarterly
Total Kjeldahl Nitrogen	mg/l	Grab	Quarterly	Quarterly
Standard Minerals[2]	mg/l	Grab	Annually	Annually

[1] Per dose counter

[2] Standard Minerals shall include, at a minimum, the following elements and compounds: Boron, Calcium, Iron, Magnesium, Manganese, Sodium, Potassium, Chloride, Sulfate, Total Alkalinity (including alkalinity series), and Hardness.

LEACHFIELD AREA MONITORING

The Discharger shall conduct a visual inspection of the leachfields on a **weekly basis**. Results shall be recorded and submitted with the monthly monitoring report. Photocopies of entries into an operator's log are acceptable. Evidence of surfacing wastewater, erosion, field saturation, runoff, or the presence of nuisance conditions shall be noted in the report. If surfacing water is found, then a sample shall be collected and tested for total coliform organisms and total dissolved solids. In addition to the visual inspections, monitoring of the leachfields shall include the following:

Constituent	Units	Type of Sample	Sampling Frequency	Reporting Frequency
Application Rate[1]	gal/acre•day	Calculated	Monthly	Monthly
Leachline Riser Inspection[2]	Inches	Measurement	October, December, February, April, July	Monthly

[1] The application rate for each leachfield

[2] The Discharger shall measure and record the distance from the surface of the liquid in the observation port to the surface of the ground in the active lateral(s). In addition, AWA shall record when lateral distribution lines are switched.

GROUNDWATER MONITORING

If the well evaluation report required by Provision F.1.b shows that the existing wells are adequate to monitor groundwater quality, then groundwater monitoring is to begin with the third quarter of 2004. If the existing wells need to be replaced with new groundwater monitoring wells, then the groundwater monitoring shall begin starting with the second quarter 2005.

Prior to sampling, groundwater elevations shall be measured and the wells shall be purged at least three well volumes until pH and electrical conductivity have stabilized. Depth to groundwater shall be measured to the nearest 0.01 feet. Water table elevations shall be calculated and used to determine groundwater gradient and direction of flow. Samples shall be collected using approved EPA methods. Groundwater monitoring shall include, at a minimum, the following:

Constituent	Units	Type of Sample	Sampling and Reporting Frequency
Groundwater Elevation[1]	0.01 Feet	Measurement	Quarterly
Depth to Groundwater	0.01 Feet	Calculated	Quarterly
Gradient	Feet/Feet	Calculated	Quarterly
Gradient Direction	Degrees	Calculated	Quarterly
Coliform	MPN/100ml	Grab	Quarterly
pH	S.U.	Grab	Quarterly
Total Dissolved Solids	mg/l	Grab	Quarterly
Nitrates as Nitrogen	mg/l	Grab	Quarterly
Total Kjeldahl nitrogen	mg/l	Grab	Quarterly
Standard Minerals[3]	mg/l	Grab	Annually

[1] Groundwater elevation shall be based on depth-to-water using a surveyed measuring point elevation on the well and a surveyed reference elevation.
[2] Using a minimum of 15 tubes or three dilutions
[3] Standard Minerals shall include, at a minimum, the following elements and compounds: Boron, Calcium, Iron, Magnesium, Manganese, Sodium, Potassium, Chloride, Sulfate, Total Alkalinity (including alkalinity series), and Hardness.

SURFACE WATER MONITORING

The Discharger shall observe Jackson Creek weekly for the presence of water in the creek. When water is present, the following surface water monitoring shall apply. The Discharger shall establish three sampling stations: one station (S-1) shall be 100 feet upstream of leachfield disposal area number No. 2, one station (S-2) shall be in an area beneath leachfield disposal area No. 6, and one station (S-3) shall be 100 feet downstream of leachfield disposal area No. 10.

Constituents	Units	Type of Sample	Sampling and Reporting Frequency
Total Dissolved Solids	mg/l	Grab	Monthly
Nitrate as Nitrogen	mg/l	Grab	Monthly
Chloride	mg/l	Grab	Monthly

If samples cannot be collected because water is not present in Jackson Creek, then the Discharger shall so note on the monthly monitoring report.

REPORTING

In reporting monitoring data, the Discharger shall arrange the data in tabular form so that the date, sample type (e.g., effluent, leachfield, etc.), and reported analytical result for each sample are readily discernible. The data shall be summarized in such a manner to clearly illustrate compliance with waste discharge requirements and spatial or temporal trends, as applicable. The results of any monitoring done more frequently than required at the locations specified in the Monitoring and Reporting Program shall be reported in the next scheduled monitoring report.

As required by the California Business and Professions Code Sections 6735, 7835, and 7835.1, all Groundwater Monitoring Reports shall be prepared under the direct supervision of a Registered Engineer or Geologist and signed by the registered professional.

A. Monthly Monitoring Reports

Monthly reports shall be submitted to the Regional Board on the **1st day of the second month following sampling** (i.e. the January Report is due by 1 March). At a minimum, the reports shall include:

1. Results of effluent, leachfield area, and surface water monitoring;

2. A comparison of monitoring data to the discharge specifications and an explanation of any violation of those requirements. Data shall be presented in tabular format;

3. If requested by staff, copies of laboratory analytical report(s); and

4. A calibration log verifying calibration of all hand held monitoring instruments and devices used to comply with the prescribed monitoring program.

B. Quarterly Report

The Discharger shall establish a quarterly sampling schedule for effluent monitoring such that samples are obtained approximately every three months. If the existing wells are adequate to monitor groundwater quality, groundwater monitoring shall begin the third quarter of 2004. If the existing wells need to be replaced with new groundwater monitoring wells, then the groundwater monitoring shall begin starting with the second quarter 2005. The Discharger shall establish a quarterly sampling schedule for groundwater monitoring. Quarterly monitoring reports shall be submitted to the Board by the **1st day of the second month after the quarter** (i.e. the January-March quarterly reports is due by May 1st) each year. The Quarterly Report shall include the following:

1. Results of effluent and groundwater monitoring. The results of regular monthly monitoring reports for March, June, September and December may be incorporated into their corresponding quarterly monitoring report;

2. A narrative description of all preparatory, monitoring, sampling, and analytical testing activities for the groundwater monitoring. The narrative shall be sufficiently detailed to verify compliance with the WDR, this MRP, and the Standard Provisions and Reporting Requirements. The narrative shall be supported by field logs for each well documenting depth to groundwater; parameters measured before, during, and after purging; method of purging; calculation of casing volume; and total volume of water purged;

3. Calculation of groundwater elevations and discussion of seasonal trends if any;

4. A narrative discussion of the analytical results for all groundwater locations monitored including spatial and temporal tends, with reference to summary data tables, graphs, and appended analytical reports (as applicable);

5. A comparison of the monitoring data to the groundwater limitations and an explanation of any violation of those requirements;

6. Summary data tables of historical and current water table elevations and analytical results;

7. A scaled map showing relevant structures and features of the facility, the locations of monitoring wells and any other sampling stations, and groundwater elevation contours referenced to mean sea level datum; and

8. Copies of laboratory analytical report(s) for groundwater monitoring.

C. Annual Report

An Annual Report shall be prepared as the December monthly monitoring report. The Annual Report will include all monitoring data required in the monthly schedule. The Annual Report shall be submitted to the Regional Board by **1 February** each year. In addition to the data normally presented, the Annual Report shall include the following:

1. The contents of the regular monthly and quarterly monitoring report for the last month and quarter of the year, respectively;

2. If requested by staff, tabular and graphical summaries of all data collected during the year;

3. Results of the effluent annual monitoring;

4. A description of any activity to control vegetation in the leachfield area;

5. Annual summary of the septic tank inspections for the year, including the number of tanks on which notifications for cleaning were issued, and verification that those tanks were pumped and that waste was removed by a licensed hauler;

6. A statement of when the O&M Manual was last reviewed for adequacy, and a description of any changes made during the year;

7. A description of the annual evaluation of effluent distribution and adjustments made, if any;

8. A summary of maintenance and repairs activities which were performed on the effluent collection system;

9. A statement regarding whether flow meter was calibrated during the year;

10. Attached documents as verification of each operator's certification;

11. Attached documentation describing user education actions; and

12. A discussion of any compliance and the corrective actions taken, as well as any planned or proposed actions needed to bring the discharge into full compliance with the waste discharge requirements.

A letter transmitting the self-monitoring reports shall accompany each report. Such a letter shall include a discussion of requirement violations found during the reporting period, and actions taken or planned for correcting noted violations, such as operation or facility modifications. If the discharger has previously submitted a report describing corrective actions and/or a time schedule for implementing the corrective actions, reference to the previous correspondence will be satisfactory. The transmittal letter shall contain a statement by the discharger, or the discharger's authorized agent, under penalty of perjury, that to the best of the signer's knowledge the report is true, accurate and complete.

The Discharger shall implement the above monitoring program as of the date of this Order.

Ordered by: _____
THOMAS R. PINKOS, Executive Officer

19 March 2004
(Date)

AMENDED

JSK: 3/19/04

INFORMATION SHEET

ORDER NO. R5-2004-0036
AMADOR WATER AGENCY
PINE GROVE COMMUNITY LEACHFIELD SYSTEM
AMADOR COUNTY

The Amador Water Agency (Discharger) owns and operates the Pine Grove community leachfield system (CLS), and is responsible for the proper design, operation, and maintenance of the CLS. Prior to construction of the Pine Grove CLS, the community of Pine Grove was unsewered and served by individual waste treatment and disposal systems, many of which were identified as being deficient and placed in areas with poor soils and high groundwater. In April 1997, the Amador County Environmental Health Department's Health Officer issued a declaration stating that failing and inadequate individual waste treatment and disposal systems created a continuing health hazard and posed a potential threat to surface and groundwater quality. Therefore, the both community of Pine Grove and Amador County were in support of constructing a wastewater collection system and disposal system, which was to be operated by the Discharger.

The Pine Grove CLS began operation in April 2001, and until adoption of these Waste Discharge Requirements (WDRs), the CLS was regulated by Regional Board Waiver Resolution Order No. 99-026. As required by legislation, all waivers adopted prior to 1 January 2003, including this waiver, are now invalid. Therefore, staff have prepared WDRs.

The Pine Grove CLS service area comprises a total of 144 equivalent dwelling units (EDUs), which consist of both residential homes and commercial properties. As of August 2003, 51 EDUs had been connected to the CLS. Another 40 users, with an equivalent EDU count of 64, are on standby for future hookups to the CLS. Each existing or future parcel connected to the CLS will have 1,500-gallon septic tank, which provides primary treatment for the raw sewage discharged from each dwelling. Prior to connection to the CLS, the Discharger inspects all onsite wastewater systems (i.e. septic tanks, electrical, alarms, pumps, etc) to determine if any retrofits or new construction is required. The Discharger is responsible for overseeing maintenance issues associated with the septic tanks.

Septage and Sludge Disposal
Septic tanks provide primary treatment of the domestic wastewater. In order to ensure the proper operation of the septic tanks, the Discharger performs annual inspections of septic tanks. Whenever septic tanks fail the annual inspection, pump orders are issued to the septic tank owner. The Discharger then performs a follow-up inspection to ensure the tank was pumped. This Order requires that Amador Water Agency inspect the septic tanks on an annual basis and if necessary, homeowners and business owners must have the septic tank pump out in a timely manner by a licensed septic hauler.

Effluent Disposal System
Each dwelling unit contains a septic tank. Effluent is pumped via a submersible pump to sewer trunk lines installed on either side of Highway 88. The trunk lines manifold into a welded HDPE pipe for delivery to the dosing tanks located near the intersection of State Route 88 and Ridge Road. The septic tank effluent then flows through a meter vault that measures flow entering the disposal system. Once through the meter vault, septic tank effluent enters a flow splitter box that splits the flows into five equal flows which is discharged into five individual dosing tanks, each with a capacity of 4,000 gallons. Each dosing tank has two dosing siphons, which discharge the flow to an individual

leachfield. The dose per discharge is approximately 1,740 gallons. Discharge to each disposal line is controlled by 1-1/2 inch ball valves which allow equal distribution to all lines despite varying elevation heads.

The leachfield disposal area consists of approximately 21,300 linear feet of pressure dosed leachline on a 16.7-acre parcel. The disposal area is divided into ten individual leachfields, each of which contains approximately 2,130 lineal feet of leachline. Only one surface water diversion feature has been installed around a leachfield to prevent surface or subsurface flow from entering the leachfield area. The Discharger is required by this Order to evaluate the need to install additional features.

Basin Plan, Beneficial Uses, and Regulatory Considerations
Surface water drainage from the Pine Grove leachfield area is to Jackson Creek, a tributary to Dry Creek; Dry Creek flows into the Mokelumne River, downstream of Camanche Reservoir. The *Water Quality Control Plan for the Sacramento River and San Joaquin River Basins, Fourth Edition* (Basin Plan), designates beneficial uses, establishes water quality objectives, and contains implementation plans and policies for all waters of the Basin. Beneficial uses often determine the water quality objectives that apply to a water body. For example, waters designated as municipal and domestic supply must, at a minimum, meet the California maximum contaminant levels (MCLs) for drinking water. The Basin Plan sets forth the applicable beneficial uses (industrial supply, agricultural supply, and municipal and domestic supply in this instance) of groundwater, procedure for application of water quality objectives, and the process for and factors to consider in allocating waste assimilation capacity.

Antidegradation
The antidegradation directives of State Water Board Resolution No. 68-16, "Statement of Policy With Respect to Maintaining High Quality Waters in California" require that waters of the State that are better in quality than established water quality objectives be maintained "consistent with the maximum benefit to the people of the State." Waters can be of high quality for some constituents or beneficial uses and not others. Policies and procedures for complying with this directive are set forth in the Basin Plan.

Resolution 68-16 is applied on a case-by-case, constituent-by-constituent basis in determining whether a certain degree of degradation can be justified. It is incumbent upon the Discharger to provide technical information for the Board to evaluate that fully characterizes:

- All waste constituents to be discharged;
- The background quality of the uppermost layer of the uppermost aquifer;
- The background quality of other waters that may be affected;
- The underlying hydrogeologic conditions;
- Waste treatment and control measures;
- How treatment and control measures are justified as best practicable treatment and control;
- The extent the discharge will impact the quality of each aquifer; and

- That expected degradation will never exceed any water quality objectives.

In allowing a discharge, the Board must comply with CWC section 13263 in setting appropriate conditions. The Board is required, relative to the groundwater that may be affected by the discharge, to implement the Basin Plan and consider the beneficial uses to be protected along with the water quality objectives essential for that purpose. The Board need not authorize the full utilization of the waste assimilation capacity of the groundwater (CWC 13263(b)) and must consider other waste discharges and factors that affect that capacity.

This discharge to the Pine Grove leachfield began in April 2001. Certain waste constituents in domestic wastewater are not fully amenable to waste treatment and control and it is reasonable to expect some impact on groundwater in certain situations. Provided the technology and control measures in place are reasonable under the circumstances, degradation for certain constituents may be found consistent with maximum benefit to the people of California. The proposed Order conditionally authorizes some degradation subject to further studies and decisions regarding consistency with Resolution 68-16.

Groundwater monitoring at the site has not been performed to establish the most appropriate groundwater limits. In addition, certain aspects of waste treatment and control practices have not been and are unlikely to be justified as representative of best practicable treatment and control (BPTC). Reasonable time is necessary to gather specific information about the CLS and the site to make informed, appropriate, long-term decisions. This proposed Order, therefore, establishes interim receiving water limitations to assure protection of the beneficial uses of groundwater of the State pending the completion of certain tasks and provides time schedules to complete specified tasks. The Discharger is expected to identify, implement, and adhere to BPTC as individual practices are reviewed and upgraded in this process. During this period, degradation may occur from certain constituents, but can never exceed any water quality objective (or natural background water quality should it exceed objectives) or cause nuisance.

Water quality objectives define the least stringent limits that could apply as water quality limitations for groundwater at this location, except where natural background quality unaffected by the discharge of waste already exceeds the objective. The values below reflect water quality objectives that must be met to maintain specific beneficial uses of groundwater. Unless natural background for a constituent proves higher, the groundwater quality limit established in proposed Order is the most stringent of the values listed for the listed constituents.

Constituent	Units	Value	Beneficial Use	Criteria or Justification
Ammonia	mg/L	1.5	MUN [1]	Taste and Odor [2]
Nitrate as N	mg/L	10	MUN [1]	Primary MCL [6]
Nitrite as N	mg/L	1	MUN [1]	Primary MCL [6]
Total Dissolved Solids	mg/L	450[7]	AGR [3]	Protection of salt sensitive crops [4]
		500	MUN [1]	Recommended Secondary MCL [5]
		1,000	MUN [1]	Recommended Upper MCL [5]
Total Coliform Organisms	MPN/100 ml	Less than 2.2	MUN [1]	Basin Plan

Constituent	Units	Value	Beneficial Use	Criteria or Justification
pH	pH Units	6.5 to 8.4	MUN [1]	Secondary MCL [4]

1 Municipal and domestic supply
2 J.E. Amoore and E. Hautala, *Odor as an Aid to Chemical Safety: Odor Thresholds Compared with Threshold Limit Values and Volatilities for 214 Industrial Chemicals in Air and Water Dilution*, Journal of Applied Toxicology, Vol. 3, No. 6 (1983).
3 Agricultural supply
4 Ayers, R. S. and D. W. Westcot, Water Quality for Agriculture, Food and Agriculture Organization of the United Nations – Irrigation and Drainage Paper No. 29, Rev. 1, Rome (1985)
5 Title 22, California Code of Regulations (CCR), section 64449, Table 64449-B
6 Title 22, CCR, section 64431, Table 64431-A
7 Title 22, CCR, section 64439

Domestic wastewater contains numerous dissolved inorganic waste constituents (i.e., salts, minerals) that together comprise total dissolved solids (TDS). Not all component constituents are necessarily individually critical to any beneficial use. Critical constituents are individually listed. The cumulative impact from these other constituents, along with the cumulative affect of the constituents that are individually listed can be effectively controlled using TDS as a generic indicator parameter.

Not all TDS constituents pass through the treatment process and soil profile in the same manner or rate. Chloride tends to pass through both rapidly to groundwater. As chloride concentrations in most groundwaters in the region are much lower than in treated municipal wastewater, chloride is a useful indicator parameter for evaluating the extent to which effluent reaches groundwater. Boron is another TDS constituent that may occur in wastewater in concentrations greater than groundwater depending on the source water and the extent residents use cleaning products containing boron. Other indicator constituents for monitoring for groundwater degradation due to recharged effluent include total coliform bacteria, ammonia and total nitrogen.

Treatment Technology and Control

Treatment and control technologies are available that are better and as practicable as a CLS. Further, community leachfields can be better sited than this CLS to increase effectiveness of treatment, water quality protection and longevity. These leachfields, approved by the State Board and Amador County, are on slopes that range from 18 to 50%, some of which are greater than the maximum 30% slopes allowed by the Basin Plan. Disposal trench inverts are two feet or less above bedrock, less than the five-foot separation allowed by the Basin Plan. The two water-level monitoring events conducted by the Discharger show that the separation between groundwater and the bottom of the trenches does not comply with the Basin Plan's minimum five-foot separation from groundwater. Accordingly, the leachfields may pose slope stability problems when saturated and there is an increased probability that the effluent will fail to meet minimum performance standards (e.g., prevention of pollution) for subsurface disposal systems. These waste discharge requirements require that the Discharger implement corrective measures to meet water quality objectives and to appropriately maintain and operate the systems.

Given the character of municipal wastewater and limitation on resources for a small discharge, the Regional Board can focus on the water quality objective for three main indicator parameters to regulate an acceptable degree of impact on water quality: TDS, total coliform, and nitrogen.

Total coliform organisms, the indicator parameter for pathogenic organisms, should not be found in groundwater under a well-sited and designed subsurface disposal system. The applicable water quality objective and threshold of impact on beneficial use is less than 2.2. MPN/100 ml. To continue to discharge, the CLS must consistently reduce coliform organisms to this level, which should be achievable at the design percolation rates despite the substandard separation from groundwater. If not met, the Discharger must investigate additional treatment, including but not limited to disinfection, to assure the water quality objective is met.

Domestic wastewater typically contains nitrogen, in several forms, in concentrations greater than water quality objectives. Nitrogen may be removed to some degree during the soil infiltration/treatment process, but the reduction may not be sufficient in this concentrated leachfield application to assure compliance with the governing water quality objective, the MCL for nitrate of 10 mg/L. If the MCL is exceeded, the Discharger must investigate additional treatment to assure the water quality objective is met. This may include, but not be limited to, nitrification and denitrification.

Waste constituents that are forms of salinity pass through the treatment process and soil profile and effective control of long-term affects relies upon effective source control. Long-term discharge of domestic wastewater with higher concentrations of TDS than groundwater will degrade that groundwater until the groundwater concentrations reflect the balance of wastewater input and groundwater recharge, particularly for the more conservative components of TDS (e.g., sodium and chloride). The quality of source water for the Pine Grove CLS is exceptional, with a TDS of 29 mg/L. Salt addition through use is within the expected range, as effluent reveals a TDS of 230 mg/L. For comparison, the national average increment for TDS ranges from 100 to 300 mg/L, according to *Wastewater Engineering* by Metcalf & Eddy; the incremental maximum in the Basin Plan for the Tulare Lake Basin is 500 umhos/cm (about 300 mg/L); and the incremental average standard allowed in the Santa Ana Basin in 230 mg/L. Exceeding the governing water quality objective, 450 mg/L based on sensitive crop protection from irrigation use of water, is not at risk. However, degradation to 450 mg/L cannot be considered reasonable, as practices that might increase effluent concentrations such as the use of self-regenerating water softeners cannot be considered necessary with this quality of water supply and the brines would endanger the effectiveness of the leachfields. The proposed Order contains an effluent limit and groundwater limit of 310 mg/L. The limit is more restrictive than the water quality objective, but has no economic impact on the Discharger as it is no more stringent than existing water quality.

Other constituents in treated domestic waste that may pass through the treatment process and the soil profile include recalcitrant organic compounds (e.g., ethylene glycol, or antifreeze), and septic tank additives that homeowners might use to decrease the need for tank cleanings. This Order requires regular user education to control these types of constituents, and expressly prohibits the discharge of hazardous waste or designated waste to the septic tanks. Therefore, such constituents are not expected to be present in the effluent discharged to the leachfields.

This Order contains an effluent pH limitation, but as normal domestic waste falls within the prescribed range for groundwater quality, this effluent limitation should have no impact except to encourage user education about dumping acidic and basic chemicals into the sewerage system.

The leachfield design assumes sustained infiltration through the entire bottom and sidewall area of the disposal trenches, which is not uncommon but certainly not a conservative design. It is imperative that extraneous water sources be precluded from entering the effluent collection system and leachfield area. Pool drainage, rainfall drainage from individual homes, inflow and infiltration, and rainfall run-on to the leachfield area should all be controlled to the extent feasible. The proposed Order focuses on user rules and education, and requires an evaluation of whether surface water (or subsurface water) interceptor ditches above the leachfield need to be installed.

Title 27

Title 27, CCR, section 20005 et seq. ("Title 27"), contains regulations to address certain discharges to land. Title 27 establishes a waste classification system, specifies siting and construction standards for containment of classified waste, requires extensive monitoring of groundwater and the unsaturated zone for any indication of failure of containment, and specifies closure and post-closure maintenance requirements. Generally, no degradation of groundwater quality by any waste constituent is acceptable pursuant to these regulations.

Discharges of domestic sewage and treated effluent can be treated and controlled to a degree that will not result in unreasonable degradation of groundwater. For this reason, treatment and storage facilities associated with municipal wastewater treatment plants have been conditionally exempted from Title 27, except for the discharge to land of residual sludge and solid waste generated as part of the treatment process [section 20090(a) of Title 27]. The condition requires that the discharge be regulated by waste discharge requirements (WDRs), or that WDRs have been waived, and that the discharge not result in violation of any water quality objective in groundwater.

Proposed Order Terms and Conditions

Discharge Prohibitions and Specifications

The proposed Order establishes a monthly average discharge flow limit of 28,700 gpd. The proposed Order does not require the Discharger to disinfect effluent at this time.

Monitoring Requirements

Section 13267 of the CWC authorizes the Board to require monitoring and technical reports as necessary to investigate the impact of a waste discharge on waters of the state. In recent years there has been increased emphasis on obtaining all necessary information, assuring the information is timely as well as representative and accurate, and thereby improving accountability of any discharger for meeting the conditions of discharge. Section 13268 of the CWC authorizes assessment civil administrative liability where appropriate.

The proposed Order requires the Discharger to conduct septic tank, effluent, leachfield and groundwater monitoring. In order to adequately characterize its wastewater effluent, the Discharger is required to monitor for TDS, nitrogen, and TKN. Monitoring of additional minerals is required on an annual basis.

The Title 27 zero leakage protection strategy relies heavily on extensive groundwater monitoring to increase a discharger's awareness of, and accountability for, compliance with the prescriptive and performance standards. With a high volume, concentrated, uncontained discharge to land, monitoring takes on even greater importance. The proposed Order includes monitoring of applied waste quality, application rates, and groundwater.

Title 27 regulations pertaining to groundwater monitoring and the detection and characterization of waste constituents in groundwater have been in effect and successfully implemented for many years. No regulation currently specifies similar criteria more suitable for a situation where extensive infiltration into groundwater occurs. However, where, as here, such infiltration occurs, it is appropriate that the Title 27 groundwater monitoring procedures be extended and applied on a case-by-case basis under Water Code section 13267.

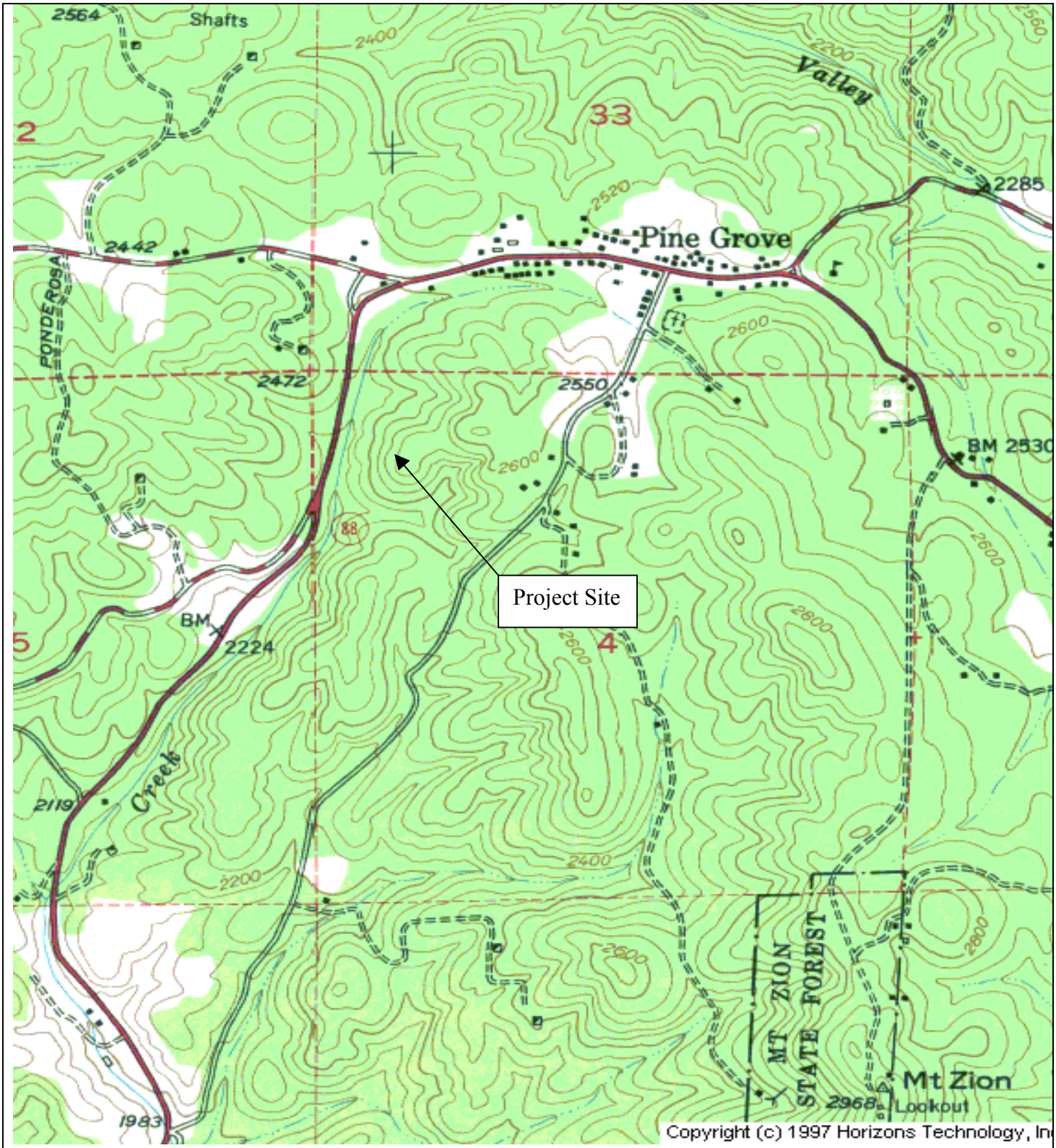
The Discharger must monitor groundwater for constituents present in the discharge and those constituents that the discharge may cause to be mobilized from soils and which are capable of reaching groundwater and violating groundwater limitations if its treatment and control, and any dependency of the process on sustained environmental attenuation, proves inadequate. It is unknown whether the Discharger's existing monitoring wells have been installed and/or constructed per current standards or whether they are placed in the locations necessary to properly monitor the leachfields. Therefore, the Discharger is required to evaluate the wells, and if they are inadequate, to install true groundwater monitoring wells.

For each constituent listed in the Groundwater Limitations section, the Discharger must, as part of each monitoring event, compare concentrations of constituents found in each monitoring well to the background concentration or to prescribed numerical limitations to determine compliance.

Effluent Collection System
The effluent collection system is subject to overflows that could expose the public to risks or waters of the State to the unnecessary threats of pollution and nuisance. Accordingly, conditions of the proposed Order require a spill prevention and response plan similar to what is required of larger wastewater treatment facilities to minimize these risks and threats.

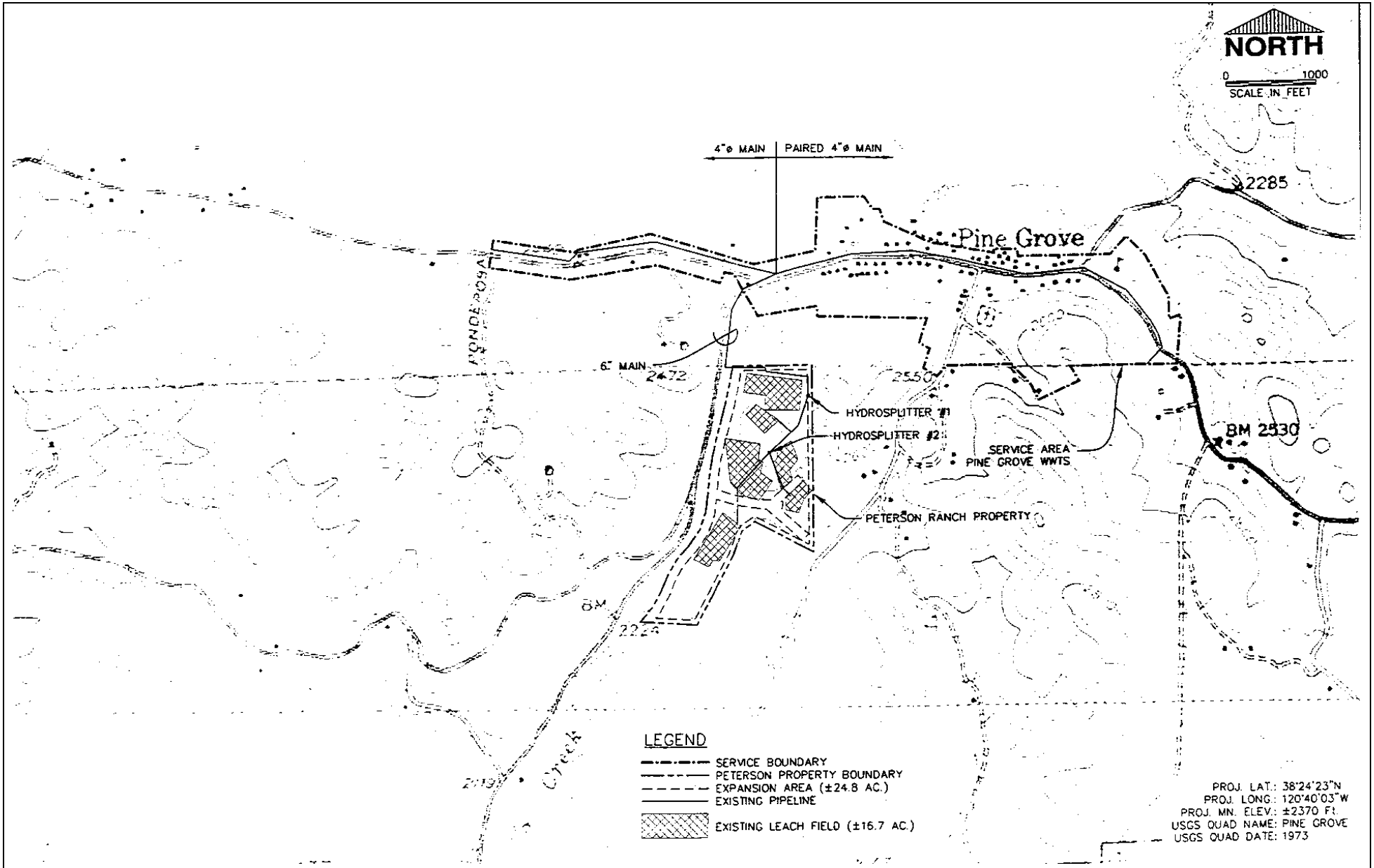
Reopener
Requirements for discharge in the proposed Order were developed based on currently available technical information and applicable water quality laws, regulations, policies, and plans, and are intended to assure conformance with them. Additional information must be developed and documented by the Discharger as required by schedules set forth in the proposed Order. As this additional information is obtained, decisions will be made concerning the ability of the existing CLS to comply with the requirements of discharge. If controls and treatment prescribed by the proposed Order prove insufficient for sustained compliance, modifications or replacement of the CLS will be necessary. The modifications will represent a significant change to the CLS and will be sufficient basis for reopening the proposed Order.

JSK: 3/19/04



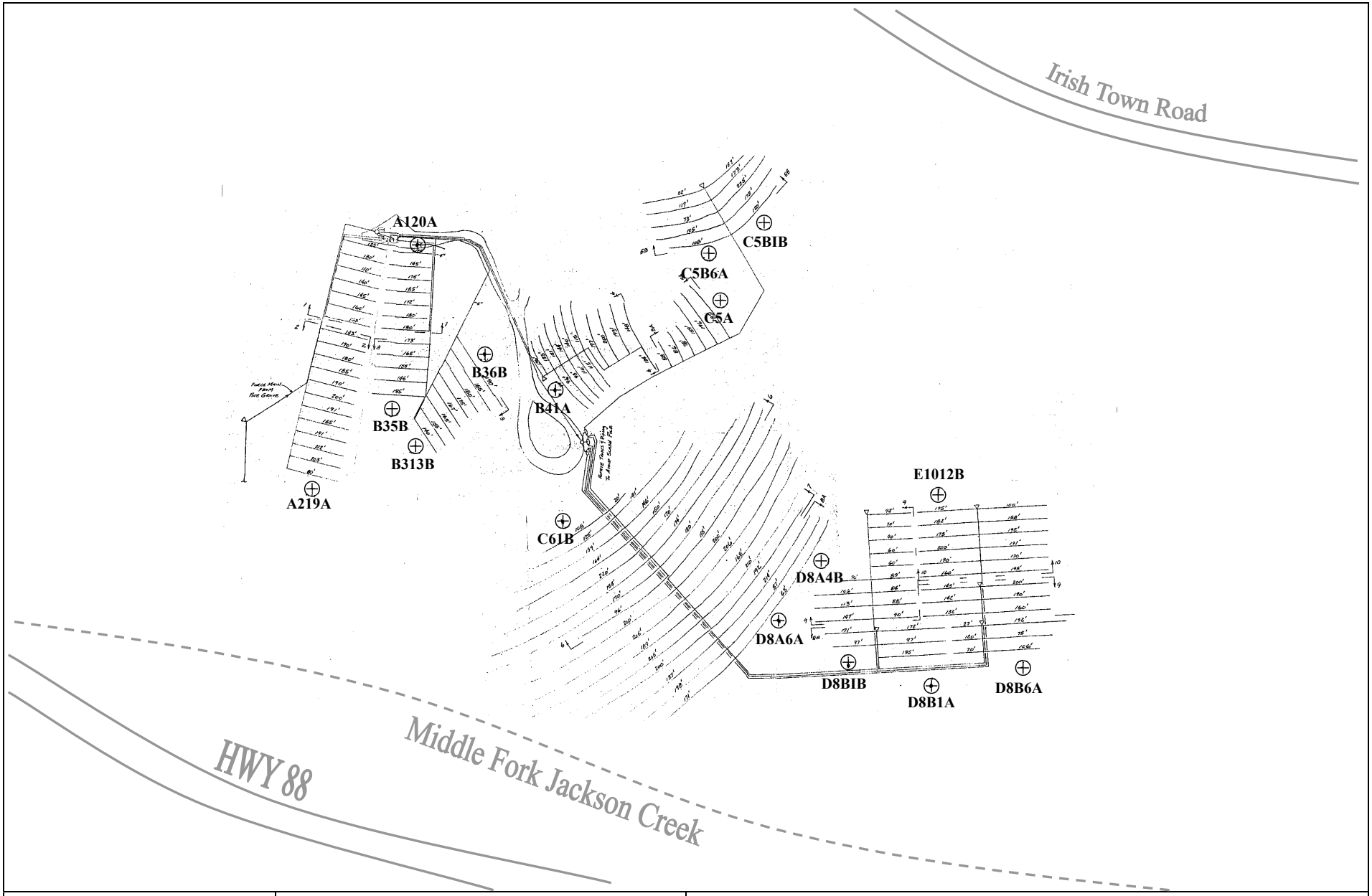
Drawing Reference: U.S.G.S TOPOGRAPHIC MAP 7.5 MINUTE QUADRANGLE	**VICINITY MAP** Amador Water Agency Pine Grove Community Leachfield System	N W E S approx. scale 1 in.= 24,000 ft.

ATTACHMENT B



Not to scale	Drawing Reference: Amador Water Agency	**AMADOR WATER AGENCY** PINE GROVE COMMUNITY LEACHFIELD SYSTEM ORDER NO. R5-2004-0036

ATTACHMENT B



Not to scale	Drawing Reference: Amador Water Agency	**GROUNDWATER MONITORING WELLS LOCATION MAP** Amador Water Agency Pine Grove Community Leachfield System ORDER NO. R5-2004-0036

ORDER NO. R5-2004-0036
AMADOR WATER AGENCY
PINE GROVE COMMUNITY LEACHFIELD SYSTEM
AMADOR COUNTY

ATTACHMENT D

ITEMS TO BE INCLUDED IN A
MONITORING WELL INSTALLATION WORKPLAN AND A
MONITORING WELL INSTALLATION REPORT OF RESULTS

Prior to installation of groundwater monitoring wells, the Discharger shall submit a workplan containing the minimum listed information. Wells may be installed after staff approval the workplan. Upon installation of the monitoring wells, the Discharger shall submit a report of results, as described below. All workplans and reports must be signed by a registered geologist, certified engineering geologist, or civil engineer registered or certified by the State of California.

Monitoring Well Installation Workplan

A. General Information:
   - Monitoring well locations and rationale
   - Survey details
   - Equipment decontamination procedures
   - Health and safety plan
   - Topographic map showing any existing monitoring wells, proposed wells, waste handling facilities, utilities, and other major physical and man-made features.

B. Drilling Details: describe drilling and logging methods

C. Monitoring Well Design:
   - Casing diameter
   - Borehole diameter
   - Depth of surface seal
   - Well construction materials
   - Diagram of well construction
   - Type of well cap
   - Size of perforations and rationale
   - Grain size of sand pack and rationale
   - Thickness and position of bentonite seal and sand pack
   - Depth of well, length and position of perforated interval

D. Well Development:
   - Method of development to be used
   - Method of determining when development is complete
   - Method of development water disposal

E. Surveying Details: discuss how each well will be surveyed to a common reference point

F. Soil Sampling (if applicable):
Cuttings disposal method
Analyses to be run and methods
Sample collection and preservation method
Intervals at which soil samples are to be collected
Number of soil samples to be analyzed and rationale
Location of soil samples and rationale
QA/QC procedures

G. Well Sampling:
Minimum time after development before sampling (48 hours)
Well purging method and amount of purge water
Sample collection and preservation method
QA/QC procedures

H. Water Level Measurement:
The elevation reference point at each monitoring well shall be within 0.01 foot.
Ground surface elevation at each monitoring well shall be within 0.1 foot.
Method and time of water level measurement shall be specified.

I. Proposed time schedule for work.

Monitoring Well Installation Report of Results

A. Well Construction:
Number and depth of wells drilled
Date(s) wells drilled
Description of drilling and construction
Approximate locations relative to facility site(s)
A well construction diagram for each well must be included in the report, and should contain the following details:
Total depth drilled
Depth of open hole (same as total depth drilled if no caving occurs)
Footage of hole collapsed
Length of slotted casing installed
Depth of bottom of casing
Depth to top of sand pack
Thickness of sand pack
Depth to top of bentonite seal
Thickness of bentonite seal
Thickness of concrete grout
Boring diameter

Casing diameter
Casing material
Size of perforations
Number of bags of sand
Well elevation at top of casing
Depth to ground water
Date of water level measurement
Monitoring well number
Date drilled
Location

B. Well Development:
Date(s) of development of each well
Method of development
Volume of water purged from well
How well development completion was determined
Method of effluent disposal
Field notes from well development should be included in report.

C. Well Surveying: provide reference elevations for each well and surveyor's notes

D. Water Sampling:
Date(s) of sampling
How well was purged
How many well volumes purged
Levels of temperature, EC, and pH at stabilization
Sample collection, handling, and preservation methods
Sample identification
Analytical methods used
Laboratory analytical data sheets
Water level elevation(s)
Groundwater contour map

E. Soil Sampling (if applicable):
Date(s) of sampling
Sample collection, handling, and preservation method
Sample identification
Analytical methods used
Laboratory analytical data sheets