

CALIFORNIA REGIONAL WATER QUALITY CONTROL REGIONAL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2005-0116

WASTE DISCHARGE REQUIREMENTS

FOR
JAMES H. WHEELER AND EIE LAMBDA, LLC
BRIDGES ON THE RIVER RESTAURANT
SACRAMENTO COUNTY

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

1. On 17 June 2004, James H. Wheeler submitted a Report of Waste Discharge (RWD) for a wastewater treatment facility to treat and dispose of domestic wastewater generated at the proposed Bridges on the River Restaurant in Sacramento. Additional information was received from the Discharger on 29 June, 17 August, 9 September, 10 November, and 7 December 2004, and on 28 March 2005.
2. The restaurant and associated wastewater treatment facility (WWTF), which are owned by James H. Wheeler are at 2125 Garden Highway, Sacramento in Section 28, T9N, R4E, MDB&M. The land, which is owned by EIE Lambda, LLC, is on Assessor's Parcel No. 274-0220-024. James H. Wheeler and EIE Lambda, LLC are hereafter known as "Discharger".
3. Surrounding land uses are residential, commercial, and agricultural. The facility site location is shown on Attachment A, which is attached hereto and made part of this Order by reference.

Proposed Facility and Discharge

4. The restaurant will operate year-round, and will seat up to 300 customers during the dinner service, when approximately 20 employees will be working. Lunch service patronage is expected to be approximately 150 customers, who will be served by nine employees.
5. Domestic wastewater from the restrooms, janitorial, and kitchen facilities will be discharged to an on-site gravity sewer system that will convey the wastewater to an existing 1,200-gallon septic tank. A new 4,000-gallon septic tank will act as an aerated equalization tank, from which wastewater will be pumped to a prefabricated wastewater treatment system (package plant). Kitchen wastewater will flow through a grease trap before entering the equalization tank. A site plan is depicted on Attachment B, which is attached hereto and made part of this Order by reference.
6. The package plant will provide secondary aerobic treatment, clarification, and ozone disinfection by batch sequencing. Disinfected effluent will be further treated by pressure filtration through sand and carbon filters and reverse osmosis prior to discharge to either of two shallow groundwater injection wells. Inadequately treated wastewater will be automatically returned to the equalization tank.
7. The package plant will include a system of liquid level alarm lights to alert the operator of operational problems. The reverse osmosis unit will provide continuous electrical conductivity monitoring, and alarm lights linked to the conductivity meter will alert the operator of seal failure.

8. The package plant is designed to treat up to 5,000 gallons per day (gpd) in 350-gallon batches every 100 minutes. A batch counter will measure influent and effluent flows. The reverse osmosis system can treat up to 6,800 gpd at 98 percent efficiency (98 percent TDS reduction).
9. Biosolids will be pumped from the clarifier back to the aeration chamber several times per day. Approximately once every five years, biosolids will be pumped and taken off-site for disposal at a landfill or permitted land application site. Reverse osmosis reject brine will be temporarily stored on-site in a tank and periodically disposed of off-site. Two 10-inch diameter injection wells screened from 35 to 55 feet below ground surface (bgs) near the package plant will provide an estimated maximum disposal capacity of 7,900 gpd.
10. The Discharger will contract with a certified wastewater treatment plant operator to perform routine operation, maintenance, and monitoring of the wastewater treatment and disposal system.
11. Influent flows to the treatment system will vary, with peak flows of 3,250 gpd during the 4.5-hour dinner service. Total daily influent flows are estimated to be no more than 5,000 gpd.
12. Based on the RWD, overall influent wastewater character is expected to be similar to typical restaurant wastewater, with a BOD of 100 to 400 mg/L and a total nitrogen concentration of 20 to 85 mg/L.
13. Water for the restaurant will be supplied by an on-site well approximately 220 feet from the wastewater injection wells. Depth and construction information for the supply well were not included in the RWD. Based on a single sample obtained from the supply well in May 2004, the water supply is characterized as follows.

Constituent/Parameter	Analytical Result	Water Quality Limit ¹
Calcium, mg/L	22.6	none
Magnesium, mg/L	19.4	none
Potassium, mg/L	1.62	none
Sodium, mg/L	38.8	69
Chloride, mg/L	10.8	106
Fluoride, mg/L	<0.10	1
Nitrate as NO ₃ , mg/L	<0.050	45
Sulfate, mg/L	15.3	250
pH	7.8	6.5 to 8.4
Total Alkalinity, mg/L	226	none
Hardness, mg/L	133	none
Electrical conductivity, umhos/cm	331	700

Constituent/Parameter	Analytical Result	Water Quality Limit ¹
Total dissolved solids	267	450

¹ Water quality limit translated from narrative water quality objectives specified in the Basin Plan for protection of the beneficial uses of groundwater.

These data indicate that the facility water supply is of good to excellent quality.

Site-Specific Conditions

14. The facility site is on the north bank of the Sacramento River approximately 2.5 miles upstream of the confluence of the American and Sacramento Rivers. The site is within the Sacramento River Hydrologic Subarea No. 519.22, as depicted on interagency hydrologic maps prepared by the Department of Water Resources in August 1986.
15. The facility site is on the river side of the flood protection levee, and portions of the site (excluding the restaurant itself) are within the 100-year floodplain. The proposed wastewater treatment plant and injection wells are not within the 100-year floodplain.
16. The 1.52-acre site includes an extended driveway that slopes from the crest of the levee (elevation approximately 43 feet MSL) to a gently sloped overbank area (elevation approximately 32 feet MSL).
17. Based on the RWD, shallow soils near the proposed injection wells consist of approximately 15 feet of silty sand fill underlain by at least 12 feet of silty clay and fine sand.

Groundwater Considerations

18. Shallow groundwater at the site occurs at approximately 18 feet MSL (approximately 15 feet bgs), and is hydraulically connected to the adjacent Sacramento River. As such, the groundwater depth and gradient (both direction and magnitude) will change with the river level. During the dry season, groundwater will generally be deeper and flow southeast towards the river. During the rainy season, groundwater should be shallower, with flows generally toward the northeast.
19. The Discharger performed limited analyses of one groundwater sample in September 2004, and subsequently installed three shallow groundwater monitoring wells near the proposed wastewater treatment plant in January 2005. Analytical data for the September 2004 sample and a single monitoring well sampling event in January 2005 are summarized in the following table. These data serve as a pre-discharge baseline for groundwater quality within the proposed wastewater injection zone.

Constituent/Parameter	Analytical Result (mg/L except as noted)				Water Quality Limit ¹
	September 2004	January 2005			
	Open Boring	MW-1	MW-2	MW-3	
Total coliform (MPN/100mL)	>23	<1600	900	<1600	<2.2
Fecal coliform (MPN/100mL)	>23	<2	<2	30	--
E. coli (MPN/100mL)	--	<2	<2	17	--
pH	8.1	7.9	7.6	7.6	6.5 to 8.4
Total dissolved solids	554	147	157	135	450
Nitrate as N	0.67	<0.012	<0.012	0.380	10
Nitrite as N	<0.2	<0.015	<0.015	<0.015	none
Ammonia		<0.050	<0.050	<0.050	1.5
Total Kjeldahl nitrogen	8.66	1.40	1.50	1.50	none
Alkalinity as CaCO ₃	380	104	116	92	none
Hardness	250	57.6	90.0	78.8	none
Aluminum (ug/L)	--	863	1,280	1,350	200
Arsenic (ug/L)	--	<80	<80	<80	0.004
Barium (ug/L)	--	<100	<100	<100	1,000
Boron (ug/L)	--	121	132	<100	700
Cadmium (ug/L)	--	<5	<5	<5	0.07
Copper (ug/L)	--	<200	<200	<200	170
Iron (ug/L)	--	1,420	2,340	2,560	300
Lead (ug/L)	--	10	10	10	2
Manganese (ug/L)	--	157	448	397	50
Mercury (ug/L)	--	<0.2	<0.2	<0.2	1.2
Nickel (ug/L)	--	<40	<40	<40	12
Zinc (ug/L)	--	<15	<15	<15	2,000
Magnesium	40	8.10	14.5	12.4	none
Potassium	2.3	1.98	1.89	1.51	none
Sodium	120	27.6	23.6	14.4	69
Calcium	33	9.67	12.1	11.1	none
Chloride	9.88	7.06	10.0	8.61	106

Constituent/Parameter	Analytical Result (mg/L except as noted)				Water Quality Limit ¹
	September 2004	January 2005			
	Open Boring	MW-1	MW-2	MW-3	
Fluoride	<1	<0.10	<0.10	<0.10	none
Sulfate	32.6	7.59	11.3	9.81	250
Orthophosphate	--	<0.20	<0.20	<0.20	none
Bromide	--	<0.10	<0.10	<0.10	none

¹ Water quality limit translated from narrative water quality objectives specified in the Basin Plan for protection of the beneficial uses of groundwater.

These data indicate strong seasonal variability in groundwater quality, with higher groundwater quality during the rainy season, when the river level is higher.

Basin Plan and Beneficial Uses

20. 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 Board. Pursuant to Section 13263(a) of the California Water Code, waste discharge requirements must implement the Basin Plan.
21. Surface water drainage is to the Sacramento River. The designated beneficial uses of the Sacramento River are municipal and domestic supply; agricultural supply; water contact recreation; non-contact water recreation; warm freshwater habitat; cold freshwater habitat; migration of aquatic organisms; spawning, reproduction, and/or early development; wildlife habitat; and navigation.
22. The designated beneficial uses of the underlying groundwater are municipal and domestic supply, agricultural supply, industrial service supply, and industrial process supply.
23. The Basin Plan establishes numerical and narrative water quality objectives for surface water and groundwater within the basin. Numerical water quality objectives are maximum limits directly applicable to the protection of designated beneficial uses of the water. The Basin Plan requires that the Regional Board, on a case-by-case basis, follow specified procedures to determine maximum numerical limitations that apply the narrative objectives when it adopts waste discharge requirements.
24. The Basin Plan includes a water quality objective for Chemical Constituents that, at a minimum, requires waters designated as domestic or municipal supply to meet the maximum contaminant

levels (MCLs) specified in the following provisions of Title 22, California Code of Regulations: Tables 64431-A (Inorganic Chemicals) and 64431-B (Fluoride) of Section 64431, Table 64444-A (Organic Chemicals) of Section 64444, Table 64449-A (Secondary Maximum Contaminant Levels-Consumer Acceptance Limits) of Section 64449, and 64449-B (Secondary Maximum Contaminant Levels-Ranges) of Section 64449. The Basin Plan's incorporation of these provisions by reference is prospective, and includes future changes to the incorporated provisions as the changes take effect. The Basin Plan recognizes that that the Regional Board may apply limits more stringent than MCLs to ensure that waters do not contain chemical constituents in concentrations that adversely affect beneficial uses.

25. The Basin Plan contains narrative water quality objectives for Chemical Constituents, Tastes and Odors, and Toxicity. The Toxicity Objective, in summary, requires that groundwater be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life associated with designated beneficial uses. The Chemical Constituents 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". Chapter IV, Implementation, of the Basin Plan contains the "Policy for Application of Water Quality Objectives". This Policy specifies, in part, that compliance with narrative water quality objectives may be evaluated considering numerical criteria and guidelines developed and/or published by other agencies and organizations.

Groundwater Degradation

26. 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. 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.
27. The Regional Board has considered antidegradation pursuant to State Board Resolution No. 68-16, and finds that the Discharger has not provided the required demonstration to be allowed to cause groundwater degradation, and therefore none is authorized.
28. The WWTF will provide treatment and control of the discharge that incorporates:
 - a. Complete wastewater containment during treatment;
 - b. Secondary treatment;
 - c. Disinfection by ozonation to tertiary disinfection standards;

- d. Filtration;
 - e. Reverse osmosis; and
 - f. A certified wastewater treatment plant operator to assure proper operation and maintenance.
29. The WWTF will be equipped with liquid level alarm lights and a pipe to direct excess wastewater back to the equalization tank in the event of a pump or power failure. However, the system will operate 24 hours per day and the certified operator will not be on-site at all times to observe the alarm lights. The system has no backup power supply or auto dialer system, and there is no method to return inadequately filtered effluent to the reverse osmosis unit. This lack of system redundancy could lead to discharge of inadequately treated wastewater to the ground surface and/or groundwater, thus posing a potential threat to groundwater and the restaurant water supply. Therefore, it is appropriate to require that the Discharger submit a specific plan for design modifications to ensure adequate containment and prevent discharges of inadequately treated effluent to the injection wells.
30. The wastewater treatment and disposal system is complex and will be constructed from unit process equipment obtained from more than one manufacturer. Therefore, it is appropriate to require that the Discharger submit a detailed Operation and Maintenance Manual to ensure that the operator understands the appropriate inspection, monitoring, and maintenance protocols. Additionally, operation, maintenance, and monitoring are expected to be costly relative to other similar-sized systems. It is therefore appropriate to require that the Discharger submit a detailed cost estimate for operation, maintenance, and monitoring to ensure that the Discharger fully understands this obligation.
31. The WWTF utilizes direct shallow aquifer injection as the sole means of wastewater disposal. Although reverse osmosis treatment should remove the majority of the dissolved constituents, bacteria, and viruses remaining in the disinfected effluent, groundwater quality protection relies on the integrity of the reverse osmosis unit seals. Because of the proximity of the injection wells to the restaurant's potable water supply well, the discharge may pose a threat to a public water supply. Therefore, it is appropriate to require frequent treatment system and effluent monitoring, as well as water supply and shallow groundwater monitoring to ensure that best practicable treatment and control (BPTC) and the highest water quality consistent with the maximum benefit to the people of the State will be achieved.
32. The WWTF utilizes direct shallow aquifer injection as the sole means of treated wastewater disposal. Therefore, it is appropriate to establish effluent limitations that will ensure optimal operation of the WWTF. Derivation of these limitations is presented in the Information Sheet.

Other

33. 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. While the wastewater treatment facility 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.

34. The California Department of Health Services (DHS) has established statewide water reclamation criteria in Title 22, CCR, Section 60301 et. seq. (hereafter Title 22), and has drafted proposed regulations for aquifer storage and reuse. The existing Title 22 regulations are not applicable to the proposed discharge, and the Regional Board cannot enforce aquifer storage and reuse regulations that have not yet been promulgated. DHS was consulted about the discharge and expressed concern that, despite the high level of treatment, the shallow injection wells may pose a threat to the restaurant's water supply, which is regulated as a small community water system by DHS and the County of Sacramento. DHS recommended that the system be equipped with sufficient fail-safe systems, and that the Discharger be required to monitor the treated effluent for virus surrogates (MS-2 coliphage). The Sacramento County Environment Management Department was informed of DHS' recommendations and agreed to work with Regional Board staff to ensure that the discharge does not pose a health threat to restaurant patrons and employees.
35. 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.
36. On 9 October 1996, in accordance with the California Environmental Quality Act (CCR, Title 14, Section 15261 et. seq.), the Sacramento County Board of Supervisors certified a Negative Declaration and approved a Use Permit for the restaurant project.
37. On 16 April 2004, the State Reclamation Board issued Permit No. 16837-R-2 GM to allow construction of the WWTF and groundwater injection wells on the waterside of the levee. Special Condition No. 31 of the permit states:

“When public sewers become available landside of the levee, the permittee will apply for a permit from the Board to relocate and connect the sewage lateral to a through levee crossing and abandon the injection wells and treatment plant located on the waterside of the levee.”
38. The State 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 Dischargers' facility is exempt from those requirements, and is therefore not required to obtain coverage under General Permit No. CAS000001.
39. Section 13267(b) of the California Water Code 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. R5-2005-0116” are necessary to assure compliance with these waste discharge requirements. The Discharger operates the facility that discharges the waste subject to this Order.

40. This discharge is exempt from the requirements of *Consolidated Regulations for Treatment, Storage, Processing, or Disposal of Solid Waste*, as set forth in Title 27, CCR, Division 2, Subdivision 1, Section 20005, et seq., (hereafter Title 27). The exemption pursuant to Section 20090(a), is based on the following:
 - a. The waste consists primarily of domestic sewage;
 - b. The waste discharge requirements are consistent with water quality objectives, and
 - c. The treatment and storage facilities described herein are associated with a domestic wastewater treatment facility.
41. Pursuant to California Water Code 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

42. 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.
43. The Discharger and interested agencies and persons have been notified of the intent to prescribe waste discharge requirements for this discharge, and they have been provided an opportunity for a public hearing and an opportunity to submit their written views and recommendations.
44. All comments pertaining to the discharge were heard and considered in a public meeting.

IT IS HEREBY ORDERED that, pursuant to Sections 13263 and 13267 of the California Water Code, James H. Wheeler and EIE Lambda, LLC, their 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 waste to the injection wells is prohibited unless and until the Executive Officer expressly approves in writing the technical reports required pursuant to Provisions G.1.a, G.1.b, G.1.c, and G.1.d of this Order.
2. Discharge of waste to surface waters or surface water drainage courses is prohibited.
3. Bypass or overflow of untreated or partially treated waste is prohibited.
4. Discharge of waste classified as 'hazardous' under Section 2521, Chapter 15 of Title 23 or 'designated', as defined in Section 13173 of California Water Code is prohibited.
5. Discharge of wastewater in a manner different than described in Finding Nos. 5 through 9 is prohibited.
6. Surfacing of wastewater from the injection wells or wastewater storage tanks is prohibited.

B. Discharge Specifications

1. The daily influent flow to the package plant shall not exceed 5,000 gpd.
2. The Discharger shall operate all systems and equipment to maximize treatment of wastewater and optimize the quality of the discharge.
3. The conveyance, treatment, and disposal systems shall have sufficient capacity to accommodate actual wastewater flows at all times.
4. Wastewater storage and disposal shall not cause pollution or a nuisance as defined by Section 13050 of the California Water Code (CWC).
5. Public contact with wastewater shall be precluded or controlled through such means as fences and signs, or acceptable alternatives.
6. 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.
7. Objectionable odors originating at the facility shall not be perceivable beyond the limits of the property owned by the Discharger.

8. All wastewater treatment, storage, and disposal facilities shall be designed, constructed, operated, and maintained to prevent inundation or washout due to floods with a 100-year return frequency.

C. Solids Disposal Specifications

Sludge, as used in this document, means the solid, semisolid, and liquid residues from the equalization tank and the package plant, including grease and biosolids.

1. Sludge shall be removed from WWTF system components as needed to ensure optimal operation and compliance with this Order.
2. Any on-site storage of sludge shall be temporary, and the waste shall be controlled and contained in a manner that minimizes leachate formation and precludes infiltration of waste constituents into soils.
3. Sludge shall be disposed of in a manner consistent with Title 27 and approved by the Executive Officer. Removal for further treatment, disposal, or reuse at a disposal site (i.e., landfill, WWTF, composting site, soil amendment site) operated in accordance with valid waste discharge requirements issued by a regional water quality control board will satisfy this specification.

D. Brine Disposal Specifications

Brine, as used in this document, means the liquid waste rejected by the reverse osmosis unit.

1. Any on-site storage of brine shall be temporary, and the waste shall be controlled and contained in a manner that precludes discharge of the waste to the ground surface and surface waters.
2. Brine shall be disposed of in a manner consistent with Title 27 and approved by the Executive Officer. Removal for further treatment or disposal at a disposal site (i.e., a publicly owned WWTF or Class II surface impoundment) operated in accordance with valid waste discharge requirements issued by a regional water quality control board will satisfy this specification.

E. Effluent Limitations

1. Effluent discharged into the injection wells shall not exceed the following limits:

<u>Constituent</u>	<u>Units</u>	<u>Limitation</u>
Total coliform organisms	MPN/100mL	<2.2 as a 7-day median
MS-2 coliphage	pfu ¹	None detected
pH	Std. units	6.5 minimum; 8.4 maximum

¹ Plaque forming units.

F. Groundwater Limitations

Release of waste constituents from any system component associated with the wastewater treatment facility shall not cause groundwater under and beyond that system component (as determined by an approved well monitoring network) to contain any constituents in concentrations greater than ambient background conditions, and shall not cause or contribute to the violation of any Basin Plan narrative or numeric water quality objective.

G. Provisions

1. All of the following reports shall be submitted pursuant to Section 13267 of the California Water Code and shall be prepared as described by Provision G.2.
 - a. By **30 September 2005**, the Discharger shall submit documentation demonstrating that a certified wastewater treatment plant operator has been retained to perform all operation, maintenance, and routine monitoring of the wastewater treatment system.
 - b. By **30 September 2005**, the Discharger shall submit an *Alarm and Fail-Safe Systems Certification Report* that describes wastewater treatment and disposal system modifications that have been implemented to ensure that:
 - i. The wastewater system operator is immediately notified of any conditions that could lead to a spill or discharge of inadequately treated wastewater to the injection wells;
 - ii. Inadequately treated wastewater will be automatically re-routed for additional treatment prior to discharge to the injection wells; and
 - iii. The system is equipped with a back-up power supply or other positive means of assuring complete waste treatment and containment during power failures of any duration.
 - c. By **30 September 2005**, the Discharger shall submit an *Operation and Maintenance (O&M) Manual* for the wastewater treatment facility. The O&M Manual shall include complete descriptions, manufacturer's specifications, and recommended operation and maintenance procedures for all equipment, including pumps, blowers, motors, meters, valves, electrical controls and systems, filters, and any system component which requires inspection, testing, and/or maintenance to ensure compliance with this Order. The manual shall include specific inspection and maintenance procedures, recommended inspection and maintenance frequencies, system testing and troubleshooting procedures, and detailed operational procedures. It shall also include a copy of this Order, the Standard Provisions and Reporting Requirements, and monitoring/reporting procedures to ensure compliance with the Monitoring and Reporting Program. A copy of the O&M Manual shall be kept at the facility for reference by operating personnel. Key personnel shall be familiar with its contents.

- d. By **30 September 2005**, the Discharger shall submit an *Engineer's Operation, Maintenance and Monitoring Cost Estimate* for the wastewater treatment and disposal facility. Based on the plan and procedures set forth in the O&M Manual, the cost estimate shall include a detailed list of all work associated with operation, maintenance, and monitoring of the wastewater treatment and disposal system each year. The cost estimate shall include estimated expenditures for the certified operator; energy; equipment maintenance, repairs, and cyclical replacement; and system monitoring (both routine operational monitoring and monitoring and reporting required pursuant to the Monitoring and Reporting Program).
 - e. By **30 September 2005**, the Discharger shall submit a *Groundwater Monitoring Well Installation Workplan*. The workplan shall describe the proposed installation of additional groundwater monitoring wells around the injection wells to allow evaluation of the groundwater quality upgradient and downgradient of the injection wells. In particular, there must be one monitoring well that is always upgradient or cross-gradient of the injection wells. Monitoring wells shall be constructed to yield representative samples from the uppermost layer of the uppermost aquifer and to comply with applicable well standards. The workplan shall be consistent with, and include the items listed in, the first section of Attachment C, which is attached hereto and made part of this Order by reference.
 - f. By **30 January 2006**, the Discharger shall submit a *Groundwater Monitoring Well Installation Report* that describes the installation of groundwater monitoring wells and contains the items found in the second and third sections of Attachment C.
 - g. By **30 March 2007**, the Discharger shall submit a *Background Groundwater Quality Study Report*. For each groundwater monitoring parameter/constituent identified in the MRP, the report shall present a summary of all monitoring data and calculation of the concentration in background monitoring well(s). Determination of background quality shall be made using the methods described in Title 27, Section 20415(e)(10), and shall be based on data from at least 12 consecutive monthly (or more frequent) groundwater monitoring events. For each monitoring parameter/constituent, the report shall compare the measured concentration in each compliance monitoring well with the proposed background concentration.
 - h. **Within 60 days** of availability of community sewer service to the restaurant, the Discharger shall submit a report detailing a plan and schedule for connecting to the community sewer and decommissioning the on-site wastewater treatment plant and injection wells. The schedule for physical connection shall be no greater than **180 days**.
2. All technical reports required herein that involve planning, investigation, evaluation, or design, or other work requiring interpretation and proper application of engineering or geologic sciences, shall be prepared by or under the direction of persons registered to practice in California pursuant to California Business and Professions Code sections 6735, 7835, and 7835.1. To demonstrate compliance with sections 415 and 3065 of Title 16, CCR, all technical reports must contain a statement of the qualifications of the responsible registered professional(s). As required by these laws, completed technical reports must bear the signature(s) and seal(s) of the registered professional(s) in a manner such that all work can be clearly attributed to the professional responsible for the work.

3. The Discharger shall comply with the Monitoring and Reporting Program No. R5-2005-0116, which is part of this Order, and any revisions thereto as ordered by the Executive Officer.
4. 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)."
5. The Discharger shall provide certified wastewater treatment plant operators in accordance with Title 23 CCR, Division 3, Chapter 26.
6. If effluent or groundwater monitoring results show that the discharge is in violation of the Effluent and Groundwater Limitations then, within **60 days** of the request of the Executive Officer, the Discharger shall submit a report showing that degradation of the groundwater complies with SWRCB Resolution No. 68-16, i.e., that it is (a) in the best interest of the people of the state, (b) that best practical treatment and control measures have been implemented to reduce the amount of degradation, (c) that the groundwater degradation will not exceed applicable water quality objectives, and (d) that the degradation is confined within a specified boundary. If the Discharger cannot comply with Resolution No. 68-16 then, within **120 days** of request by the Executive Officer, the Discharger shall submit a workplan and timeline detailing the facility modifications that shall be implemented such that it complies with the Effluent and Groundwater Limitations of this Order.
7. As described in the Standard Provisions, the Discharger shall report promptly to the Regional Board any material change or proposed change in the character, location, or volume of the discharge.
8. Upon the reduction, loss, or failure of the sewer or wastewater treatment system resulting in a sewer overflow or wastewater spill, the Discharger shall take any necessary remedial action to (a) control or limit the volume of wastewater discharged, (b) terminate the discharge as rapidly as possible, and (c) recover as much as possible of the waste discharged (including wash down water) for proper disposal. The Discharger shall implement all applicable remedial actions including, but not limited to, the following:
 - a. Interception and rerouting of sewage flows around the sewage line failure;
 - b. Vacuum truck recovery of wastewater spills and wash down water;
 - c. Use of portable aerators where complete recovery of the sanitary sewer overflows and spills is not practicable and where severe oxygen depletion is expected in surface waters;
and
 - d. Cleanup of sewage-related debris at the overflow site.
10. 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."

11. The Discharger shall not allow pollutant-free wastewater to be discharged into the wastewater collection, treatment, and disposal system in amounts that significantly diminish the system's capability to comply with this Order. Pollutant-free wastewater means rainfall, groundwater, cooling waters, and condensates that are essentially free of pollutants.
12. 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 Discharger shall state the reasons for such noncompliance and provide an estimate of the date when the Discharge will be in compliance. The Discharger shall notify the Regional Board in writing when it returns to compliance with the time schedule.
13. 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.
14. 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.
15. A copy of this Order shall be kept at the discharge facility for reference by operating personnel. Key operating personnel shall be familiar with its contents.
16. 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 Regional Board, Central Valley Region, on 5 August 2005.

THOMAS R. PINKOS, Executive Officer

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2005-0116

FOR
JAMES H. WHEELER AND EIE LAMBDA, LLC
BRIDGES ON THE RIVER RESTAURANT
SACRAMENTO COUNTY

This Monitoring and Reporting Program (MRP) describes requirements for monitoring treated wastewater discharged to the injection wells, groundwater, the restaurant water supply, biosolids, and reverse osmosis reject brine. 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.

All samples shall 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 electrical conductivity) may be used provided that:

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

WASTEWATER MONITORING

Wastewater samples shall be obtained from the outlet of the reverse osmosis unit or a sampling port in the pipeline connecting the reverse osmosis unit to the injection wells. At a minimum, the Discharger shall perform wastewater monitoring as follows:

<u>Constituent</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
Electrical Conductivity	umhos/cm	Meter reading	Continuous	Monthly ¹
Total coliform organisms ²	MPN/100mL	Grab	Daily ³	Monthly
MS-2 coliphage ⁴	pfu	Grab	Weekly	Monthly
Standard minerals ⁵	mg/L	Grab	Monthly	Monthly

<u>Constituent</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
Metals ⁶	ug/L	Grab	Monthly	Monthly

¹ Provide strip charts or tabulated datalogger report.

² Samples shall be analyzed using a minimum of 15 tubes or three dilutions.

³ Sampling shall be performed each and every day that the WWTF is operating.

⁴ Samples shall be tested using EPA Method 1601.

⁵ Standard Minerals shall include, at a minimum, the following elements/compounds: pH, boron, bromide, calcium, chloride, fluoride, magnesium, nitrate as nitrogen, phosphate, potassium, sodium, sulfate, total alkalinity (including alkalinity series), total hardness as CaCO₃, and total dissolved solids.

⁶ At a minimum, the following metals shall be included: aluminum, arsenic, cadmium, copper, lead, iron, manganese, nickel, and zinc. Analytical methods shall be selected to provide reporting limits below the Water Quality Limit for each constituent.

GROUNDWATER MONITORING

Beginning upon adoption of this Order, the Discharger shall establish a monthly sampling schedule for groundwater monitoring. Beginning with the fourth quarter of 2005, the groundwater monitoring frequency shall be quarterly, with samples obtained approximately every three months. Regardless of the sampling frequency, the reporting frequency shall be quarterly.

Prior to construction of any groundwater monitoring wells, the Discharger shall submit plans and specifications to the Regional Board for review and approval. Once installed, all new wells shall be added to the MRP and shall be sampled and analyzed according to the schedule below.

Prior to sampling, the groundwater elevation shall be measured in each well, and the wells shall be purged of at least three casing volumes until temperature, pH and electrical conductivity have stabilized. Depth to groundwater shall be measured to the nearest 0.01 feet. Samples shall be collected and analyzed using standard EPA methods. Groundwater monitoring shall include, at a minimum, the following:

<u>Constituent</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u> ¹	<u>Reporting Frequency</u>
Depth to groundwater	0.01 feet	Measurement	Quarterly	Quarterly
Groundwater elevation ²	0.01 feet	Calculated	Quarterly	Quarterly
Gradient	feet/feet	Calculated	Quarterly	Quarterly
Gradient direction	Degrees	Calculated	Quarterly	Quarterly

<u>Constituent</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u> ¹	<u>Reporting Frequency</u>
Total dissolved solids	mg/L	Grab	Quarterly	Quarterly
Electrical conductivity	umhos/cm	Grab	Quarterly	Quarterly
Nitrate nitrogen	mg/L	Grab	Quarterly	Quarterly
pH	standard	Grab	Quarterly	Quarterly
Total coliform organisms	MPN/100 ml	Grab	Quarterly	Quarterly
Title 22 metals ³	ug/L	Grab	Annually	Annually
Standard minerals ⁴	mg/L	Grab	Annually	Annually

¹ Beginning upon adoption of this Order, the sampling frequency shall be monthly for all constituents. Beginning with the fourth quarter of 2005, the groundwater sampling frequency shall be as specified in the table.

² Groundwater elevation shall be determined based on depth-to-water measurements using a surveyed measuring point elevation on the well and a surveyed reference elevation.

³ At a minimum, the following metals shall be included: antimony, arsenic, total chromium, hexavalent chromium, copper, lead, mercury, molybdenum, nickel, selenium, silver, thallium, vanadium, and zinc. Analytical methods shall be selected to provide reporting limits below the Water Quality Limit for each constituent.

⁴ Standard Minerals shall include, at a minimum, the following elements/compounds: boron, calcium, chloride, iron, magnesium, manganese, potassium, sodium, sulfate, total alkalinity (including alkalinity series), and hardness. Analytical methods shall be selected to provide reporting limits below the Water Quality Limit for each constituent.

WATER SUPPLY MONITORING

Water supply monitoring shall include, at a minimum, the following:

<u>Constituent</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling and Reporting Frequency</u>
Total dissolved solids	mg/L	Grab	Quarterly
Electrical conductivity	umhos/cm	Grab	Quarterly
Nitrate nitrogen	mg/L	Grab	Quarterly
pH	standard	Grab	Quarterly
Total Coliform organisms	MPN/100 ml	Grab	Quarterly
Title 22 metals ¹	ug/L	Grab	Semi-Annually

<u>Constituent</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling and Reporting Frequency</u>
Standard minerals ²	mg/L	Grab	Semi-Annually

¹ At a minimum, the following metals shall be included: antimony, arsenic, total chromium, hexavalent chromium, copper, lead, mercury, molybdenum, nickel, selenium, silver, thallium, vanadium, and zinc. Analytical methods shall be selected to provide reporting limits below the Water Quality Limit for each constituent.

² Standard Minerals shall include, at a minimum, the following elements/compounds: boron, calcium, chloride, iron, magnesium, manganese, potassium, sodium, sulfate, total alkalinity (including alkalinity series), and hardness. Analytical methods shall be selected to provide reporting limits below the Water Quality Limit for each constituent.

BIOSOLIDS MONITORING

When sludge (biosolids) is removed from the treatment system, at least one composite sample of biosolids shall be collected in accordance with EPA's POTW Sludge Sampling and Analysis Guidance Document, August 1989, and tested for cadmium, copper, nickel, chromium, lead, and zinc

Sludge sampling and analysis records shall be retained for a minimum of five years. A log shall be kept of sludge quantities generated and of handling and disposal activities. The frequency of entries is discretionary; however, the log should be complete enough to serve as a basis for part of the annual report.

REVERSE OSMOSIS REJECT BRINE MONITORING

When reverse osmosis brine is removed from the storage tank for off-site disposal, the Discharger shall document the date, volume of brine removed, hauling contractor, and disposal site. A log shall be kept of all brine handling and disposal activities. The frequency of entries is discretionary; however, the log must be complete enough to serve as a basis for part of the annual report.

REPORTING

In reporting monitoring data, the Discharger shall arrange the data in tabular form so that the date, sample type (e.g., effluent, pond, 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 to the Regional Board.

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 and stamped by the registered professional.

A. Monthly Monitoring Reports

All daily, weekly, and monthly monitoring data shall be reported in 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 wastewater, water supply, biosolids, and reverse osmosis brine monitoring;
2. A comparison of monitoring data to the discharge specifications and effluent limitations and an explanation of any violation of those requirements. Data shall be presented in tabular format;
3. Copies of all 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 Monitoring Reports

Quarterly monitoring reports shall be submitted to the Regional Board by the **1st day of the second month after the quarter** (i.e. the January-March quarterly report is due by May 1st) and may be combined with the monthly report. The Quarterly Report shall include the following:

1. Results of groundwater monitoring for all groundwater sampling activities during the quarter;
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, an assessment of groundwater flow direction and gradient on the date(s) of measurement, comparison of previous flow direction and gradient data, and discussion of seasonal trends if any;

4. A narrative discussion of the analytical results for all groundwater locations monitored including spatial and temporal trends, with reference to summary data tables, graphs, and appended analytical reports (as applicable);
5. A comparison of 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;
8. Copies of laboratory analytical report(s) for groundwater monitoring.

C. Annual Report

Beginning in **February 2006**, an Annual Report shall be prepared and submitted to the Regional Board by **1 February** each year. The Annual Report shall include all monitoring data required in the monthly/quarterly schedule. In addition, the Annual Report shall include the following:

1. The contents of the regular groundwater monitoring report for the last quarter of the year;
2. If requested by staff, tabular and graphical summaries of all data collected during the year;
3. An evaluation of the groundwater quality downgradient of the injection wells;
4. An evaluation of the restaurant water supply quality;
5. A discussion of 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;
6. A discussion of any data gaps and potential deficiencies/redundancies in the monitoring system or reporting program;
7. The results for analyses that are performed annually (as set forth above);
8. A summary of information on the management and disposal of biosolids and reverse osmosis reject brine;
9. The results from any analytical testing performed to characterize the biosolids prior to off-site disposal;
10. A forecast of influent flows for the coming year, as described in Standard Provision No. E.4;

11. Name and contact information for the certified wastewater operator responsible for operation, maintenance, and system monitoring.

A letter transmitting the self-monitoring reports shall accompany each report. The 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 the penalty of perjury statement by the Discharger, or the Discharger's authorized agent, as described in the Standard Provisions General Reporting Requirements Section B.3.

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

Ordered by:

THOMAS R. PINKOS, Executive Officer

5 August 2005

(Date)

ALO:8/5/2005

INFORMATION SHEET

ORDER NO. R5-2005-0116
JAMES H. WHEELER AND EIE LAMBDA, LLC
BRIDGES ON THE RIVER RESTAURANT
SACRAMENTO COUNTY

The Bridges on the River Restaurant is on Garden Highway near Interstate 80 in northwestern Sacramento County. Domestic wastewater from the restrooms and janitorial/kitchen facilities will be discharged to an on-site package treatment plant that will provide secondary aerobic treatment, clarification, and ozone disinfection by batch sequencing. Disinfected effluent will be further treated by pressure filtration and reverse osmosis prior to discharge to either of two shallow groundwater injection wells. Total daily influent flows are estimated to be no more than 5,000 gpd. Water for the restaurant will be supplied by an on-site well approximately 220 feet from the wastewater injection wells.

The site is on the banks of the Sacramento River on the river side of the flood protection levee. Shallow groundwater occurs at approximately 15 feet below the ground surface, and is hydraulically connected to the river. As such, the groundwater depth and gradient (both direction and magnitude) will change with the river level. During the dry season, groundwater will generally be deeper and flow southeast towards the river. During the rainy season, groundwater should be shallower, with flows generally toward the northeast. Based on limited pre-discharge monitoring of shallow groundwater near the proposed injection wells, groundwater quality beneath the site is very good, with seasonal variation associated with seasonal gradient changes.

The derivation of key specifications and provisions in the proposed Order is discussed below.

Effluent Limitations and Effluent Monitoring

The WWTF utilizes direct shallow aquifer injection as the sole means of wastewater disposal. Although reverse osmosis treatment should remove the majority of the dissolved constituents, bacteria, and viruses remaining in the disinfected effluent, groundwater quality protection relies on the integrity of the reverse osmosis unit and its seals. Because of the proximity of the injection wells to the restaurant's potable water supply well, the discharge may pose a threat to a public water supply. Therefore, it is appropriate to require frequent treatment system and effluent monitoring to ensure that best practicable treatment and control (BPTC) and the highest water quality consistent with the maximum benefit to the people of the State will be achieved.

The effluent limitations and monitoring requirements for total coliform organisms and MS-2 coliphage conductivity were developed in consultation with the Department of Health Services Drinking Water Branch. These limitations should be easily achievable with proper system operation and maintenance. Because there is little groundwater monitoring data available, it is not possible to determine appropriate background concentrations from which to develop effluent limitations for inorganic constituents. Additionally, it is not possible to determine the optimal treatment capabilities of the system until after it is in operation. However, continuous electrical conductivity monitoring will show changes in effluent salinity, thereby providing adequate warning of reverse osmosis system malfunction and potential violations of the groundwater limitations. Likewise, coliform and coliphage breakthrough, which will be associated with reverse osmosis system failure, will be monitored regularly.

Groundwater Limitations and Groundwater Monitoring

As stated above, the quality of shallow groundwater at the injection wells site is generally good, with expected seasonal variations that are not fully known. Although some analytical data for groundwater are available, the RWD did not include a statistical analysis to formally determine background groundwater concentrations.

The Discharger has not provided any documentation showing that it should be allowed to degrade groundwater consistent with State Board Resolution No. 68-16, and therefore no groundwater degradation is allowed. This Order requires the installation of groundwater monitoring wells around the injection wells, as well as quarterly groundwater monitoring to determine whether the discharge causes degradation. If degradation is detected, then the Discharger must either show that it complies with Resolution No. 68-16 or propose facility improvements to prevent such degradation.

Provision G.1.a

The wastewater treatment system is mechanically complex and relies on diligent attention to inspection, monitoring, and maintenance to ensure compliance with the Effluent and Groundwater Limitations of this Order. The Report of Waste Discharge states that the Discharger will retain a certified wastewater treatment plant operator. Therefore, Provision G.1.a requires that the Discharger submit documentation demonstrating that a certified wastewater treatment plant operator has been retained to perform all operation, maintenance, and routine monitoring of the wastewater treatment system.

Provision G.1.b

The WWTF will be equipped with liquid level alarm lights and a pipe to direct excess wastewater back to the equalization tank in the event of a pump or power failure. However, the system will operate 24 hours per day and the certified operator will not be on-site at all times to observe the alarm lights. The system has no backup power supply or auto dialer system, and there is no method to return inadequately filtered effluent to the reverse osmosis unit. This lack of system redundancy could lead to discharge of inadequately treated wastewater to the ground surface and/or groundwater, thus posing a potential threat to groundwater and the restaurant water supply. Therefore, Provision G.1.b requires that the Discharger submit a specific plan for design modifications to ensure adequate containment and prevent discharges of inadequately treated effluent to the injection wells.

Provisions G.1.c and G.1.d

The wastewater treatment and disposal system is complex and will be constructed from unit process equipment obtained from more than one manufacturer. Therefore, Provision G.1.c requires that the Discharger submit a detailed Operation and Maintenance Manual to ensure that the operator understands the appropriate inspection, monitoring, and maintenance protocols. Additionally, operation, maintenance, and monitoring are expected to be costly relative to other similar-sized systems. Therefore, Provision G.1.d requires that the Discharger submit a detailed cost estimate for operation, maintenance, and monitoring to ensure that the Discharger fully understands this obligation.

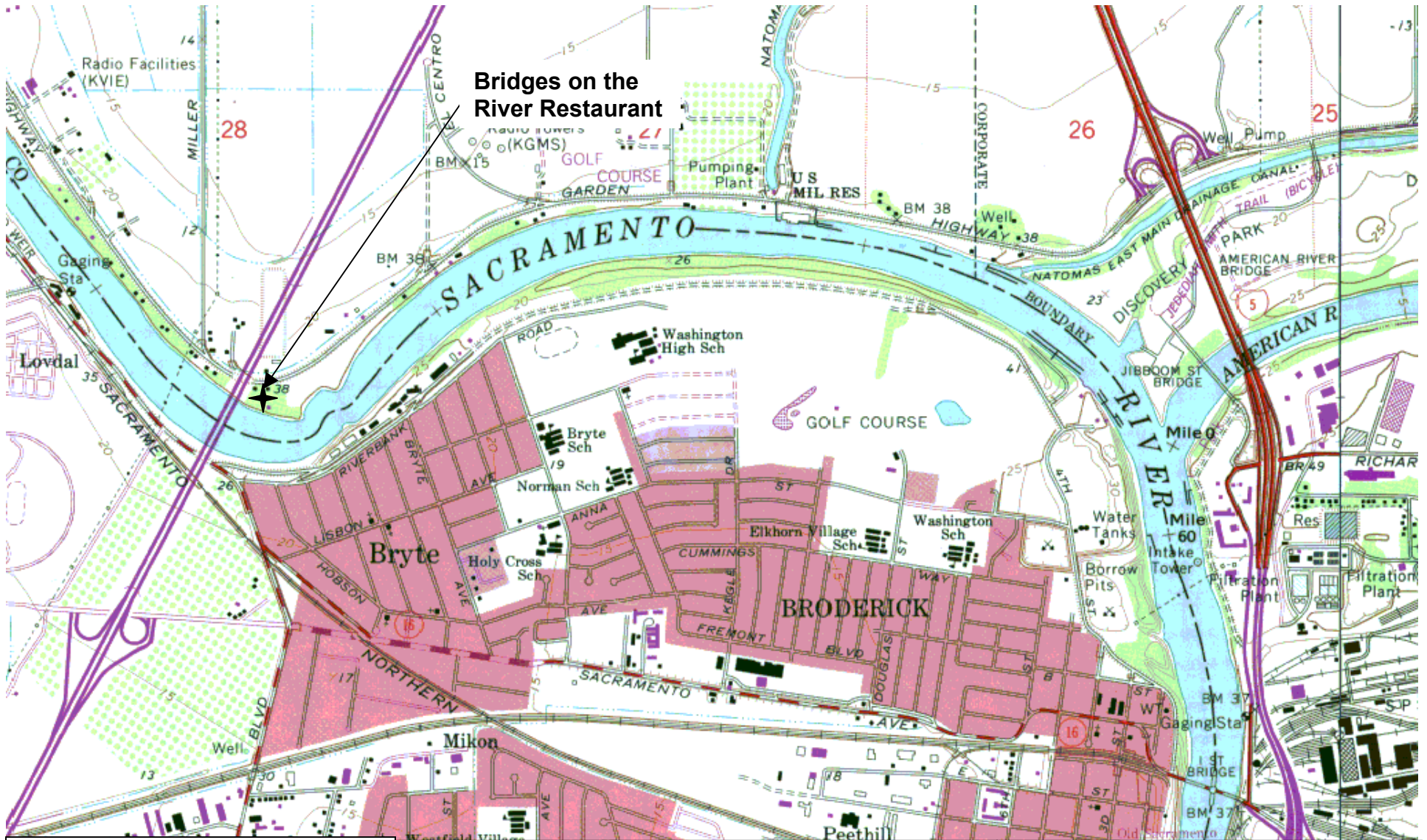
INFORMATION SHEET FOR ORDER NO. R5-2005-0116
JAMES H. WHEELER AND EIE LAMBDA, LLC
BRIDGES ON THE RIVER RESTAURANT
SACRAMENTO COUNTY

-3-

Provision G.1.e

At least one additional groundwater monitoring well is needed to ensure that there is at least one background well that is consistently upgradient or crossgradient from the injection wells. Therefore, Provision G.1.e requires that the Discharger submit a Groundwater Monitoring Well Installation Workplan.

ALO:8/18/05



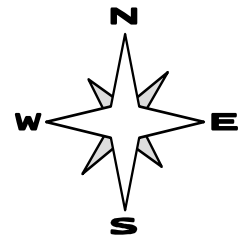
Bridges on the River Restaurant

Drawing Reference:
 U.S.G.S TOPOGRAPHIC MAP
 7.5 MINUTE QUADRANGLE
 SACRAMENTO WEST

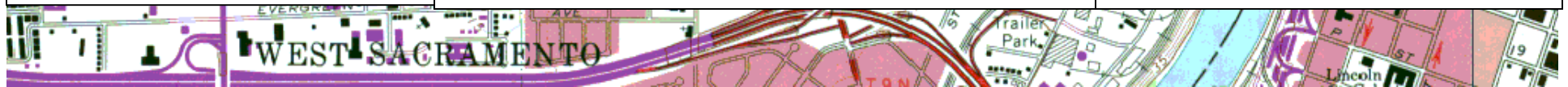
**ATTACHMENT A
 SITE LOCATION MAP**

BRIDGES ON THE RIVER RESTAURANT
 SACRAMENTO COUNTY

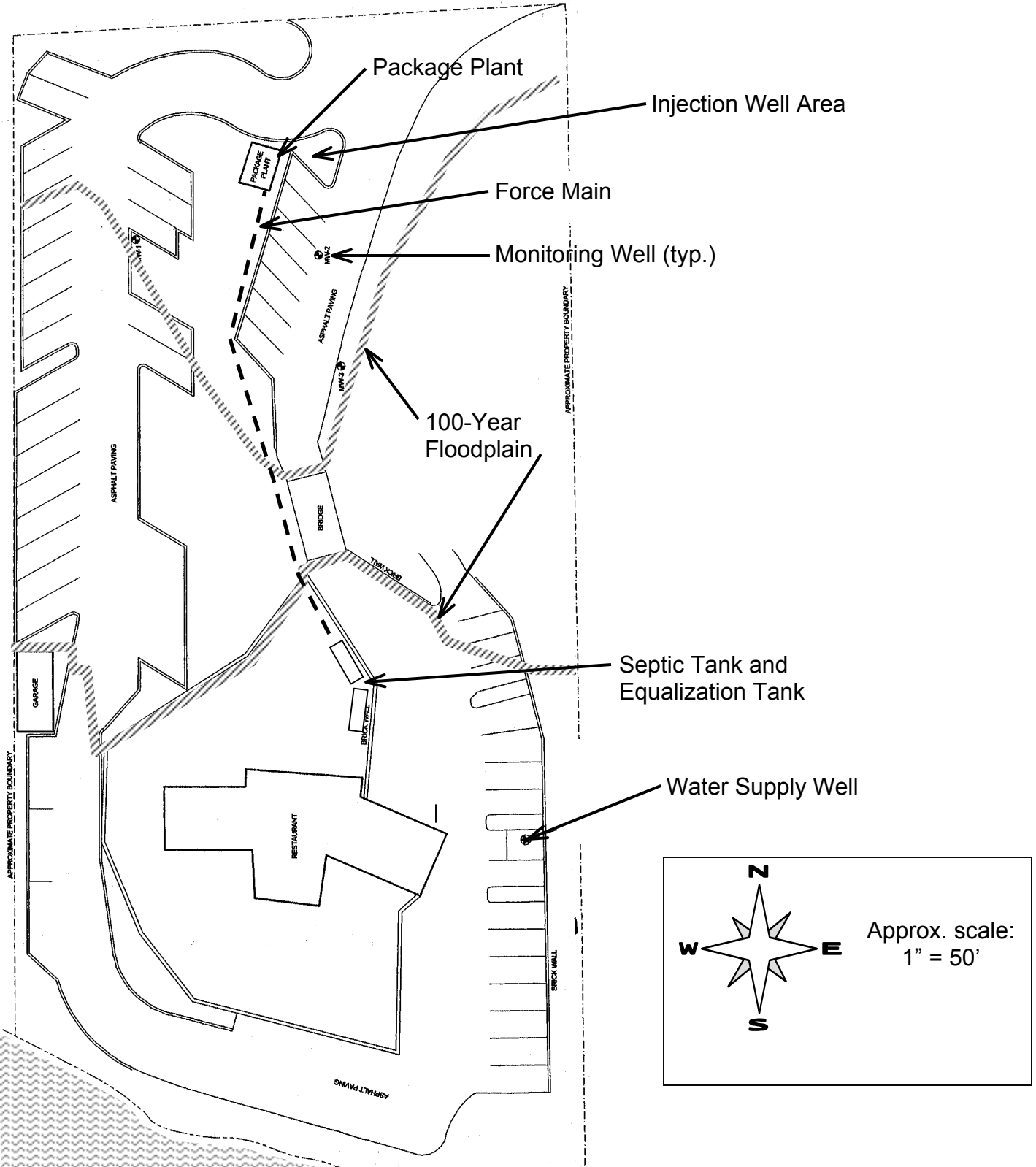
ORDER NO. R5-2005-0116



Approx. scale:
 1" = 2,800'



Garden Highway (Levee)



Sacramento River

**ATTACHMENT B
SITE PLAN**

Drawing Reference:
Report of Waste Discharge Addendum
Western Resource Management
March 2005

BRIDGES ON THE RIVER RESTAURANT
SACRAMENTO COUNTY

ORDER NO. R5-2005-0116

ATTACHMENT C

REQUIREMENTS FOR MONITORING WELL INSTALLATION WORKPLANS AND MONITORING WELL INSTALLATION REPORTS

Prior to installation of groundwater monitoring wells, the Discharger shall submit a workplan containing, at a minimum, the information listed in Section 1, below. Wells may be installed after staff approve the workplan. Upon installation of the monitoring wells, the Discharger shall submit a well installation report which includes the information contained in Section 2, below. All workplans and reports must be prepared under the direction of, and signed by, a registered geologist or civil engineer licensed by the State of California.

SECTION 1 - Monitoring Well Installation Workplan and Groundwater Sampling and Analysis Plan

The monitoring well installation workplan shall contain the following minimum information:

A. General Information:

- Purpose of the well installation project
- Brief description of local geologic and hydrogeologic conditions
- Proposed monitoring well locations and rationale for well locations
- Topographic map showing facility location, roads, and surface water bodies
- Large scaled site map showing all existing on-site wells, proposed wells, surface drainage courses, surface water bodies, buildings, waste handling facilities, utilities, and major physical and man-made features

B. Drilling Details:

- On-site supervision of drilling and well installation activities
- Description of drilling equipment and techniques
- Equipment decontamination procedures
- Soil sampling intervals (if appropriate) and logging methods

C. Monitoring Well Design (in narrative and/or graphic form):

- Diagram of proposed well construction details
 - Borehole diameter
 - Casing and screen material, diameter, and centralizer spacing (if needed)
 - Type of well caps (bottom cap either screw on or secured with stainless steel screws)
 - Anticipated depth of well, length of well casing, and length and position of perforated interval
 - Thickness, position and composition of surface seal, sanitary seal, and sand pack
 - Anticipated screen slot size and filter pack

D. Well Development (not to be performed until at least 48 hours after sanitary seal placement):

- Method of development to be used (i.e., surge, bail, pump, etc.)
- Parameters to be monitored during development and record keeping technique
- Method of determining when development is complete
- Disposal of development water

- E. Well Survey (precision of vertical survey data shall be at least 0.01 foot):
Identify the Licensed Land Surveyor or Civil Engineer that will perform the survey
Datum for survey measurements
List well features to be surveyed (i.e. top of casing, horizontal and vertical coordinates, etc.)
- F. Schedule for Completion of Work
- G. **Appendix: Groundwater Sampling and Analysis Plan (SAP)**
The Groundwater SAP shall be included as an appendix to the workplan, and shall be utilized as a guidance document that is referred to by individuals responsible for conducting groundwater monitoring and sampling activities.
- Provide a detailed written description of standard operating procedures for the following:
- Equipment to be used during sampling
 - Equipment decontamination procedures
 - Water level measurement procedures
 - Well purging (include a discussion of procedures to follow if three casing volumes cannot be purged)
 - Monitoring and record keeping during water level measurement and well purging (include copies of record keeping logs to be used)
 - Purge water disposal
 - Analytical methods and required reporting limits
 - Sample containers and preservatives
 - Sampling
 - General sampling techniques
 - Record keeping during sampling (include copies of record keeping logs to be used)
 - QA/QC samples
 - Chain of Custody
 - Sample handling and transport

SECTION 2 - Monitoring Well Installation Report

The monitoring well installation report must provide the information listed below. In addition, the report must also clearly identify, describe, and justify any deviations from the approved workplan.

- A. General Information:
Purpose of the well installation project
Brief description of local geologic and hydrogeologic conditions encountered during installation of the wells
Number of monitoring wells installed and copies of County Well Construction Permits
Topographic map showing facility location, roads, surface water bodies
Scaled site map showing all previously existing wells, newly installed wells, surface water bodies, buildings, waste handling facilities, utilities, and other major physical and man-made features.
- B. Drilling Details (in narrative and/or graphic form):
On-site supervision of drilling and well installation activities

Drilling contractor and driller's name

Description of drilling equipment and techniques

Equipment decontamination procedures

Soil sampling intervals and logging methods

Well boring log

- Well boring number and date drilled
- Borehole diameter and total depth
- Total depth of open hole (same as total depth drilled if no caving or back-grouting occurs)
- Depth to first encountered groundwater and stabilized groundwater depth
- Detailed description of soils encountered, using the Unified Soil Classification System

C. Well Construction Details (in narrative and/or graphic form):

Well construction diagram, including:

- Monitoring well number and date constructed
- Casing and screen material, diameter, and centralizer spacing (if needed)
- Length of well casing, and length and position of perforated interval
- Thickness, position and composition of surface seal, sanitary seal, and sand pack
- Type of well caps (bottom cap either screw on or secured with stainless steel screws)

E. Well Development:

Date(s) and method of development

How well development completion was determined

Volume of water purged from well and method of development water disposal

Field notes from well development should be included in report

F. Well Survey (survey the top rim of the well casing with the cap removed):

Identify the coordinate system and datum for survey measurements

Describe the measuring points (i.e. ground surface, top of casing, etc.)

Present the well survey report data in a table

Include the Registered Engineer or Licensed Surveyor's report and field notes in appendix