CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2010-XXXX

FOR
BUENA VISTA BIOMASS POWER, LLC
BUENA VISTA BIOMASS POWER PROJECT
CLASS II SURFACE IMPOUNDMENT
AMADOR COUNTY

Compliance with this Monitoring and Reporting Program, and with the companion Standard Provisions and Reporting Requirements dated September 2003, is ordered by Waste Discharge Requirements Order No. R5-2010-XXXX. Failure to comply with this Program, or with the Standard Provisions and Reporting Requirements, constitutes noncompliance with the WDRs and with the Water Code, which can result in the imposition of civil monetary liability.

This Monitoring and Reporting Program shall be implemented as of the adoption of Waste Discharge Requirements Order No. R5-2010-XXXX. Therefore, all monitoring and reporting requirement shall be completed per the schedule established in this Program. If no discharge took place during the reporting period, the Monitoring Report shall state this. The groundwater monitoring shall start as of the adoption of Waste Discharge Requirements Order No. R5-2010-XXXX.

A. REPORTING

The Discharger shall report monitoring data and information as required in this Monitoring and Reporting Program and as required in the Standard Provisions and Reporting Requirements. Reports which do not comply with the required format will be rejected and the Discharger shall be deemed to be in noncompliance with the WDRs. In reporting the monitoring data required by this program, the Discharger shall arrange the data in tabular form so that the date, the constituents, the concentrations, and the units are readily discernible. The data shall be summarized in such a manner so as to illustrate clearly the compliance with waste discharge requirements or the lack thereof. Historical and current monitoring data shall be graphed at least once annually. Graphs for the same constituent shall be plotted at the same scale to facilitate visual comparison of monitoring data. A short discussion of the monitoring results, including notations of any water quality violations shall precede the tabular summaries. Data shall also be submitted in a digital format acceptable to the Executive Officer

Method detection limits and practical quantitation limits shall be reported. All peaks shall be reported, including those which cannot be quantified and/or specifically identified. Field and laboratory tests shall be reported in the quarterly monitoring reports. The results of any monitoring done more frequently than required at the locations specified herein shall be reported to the Board.

B. REQUIRED MONITORING REPORTS AND SUBMITTAL DATES

1. Quarterly Groundwater, Vadose Zone, and Leachate Monitoring Reports

All Quarterly monitoring reports shall include all water quality data and observation collected during the reporting period and submitted per the **Reporting Due Dates** in Section B.6. of this Monitoring and Reporting Program. At a minimum, the sampling and data collection in Section D of this Monitoring and Reporting Program, Standard Provisions and Reporting Requirements (2003), and Waste Discharge Requirements shall be reported.

2. Annual Monitoring Summary Report

The Discharger shall submit an Annual Monitoring Summary Report to the Board covering the previous monitoring year. The annual report shall contain the information specified in Standard Provisions and Reporting Requirements (2003), Section VIII.B. of the "*Reports to be Filed with the Board*."

3. Facility Monitoring Report

Annually, prior to the anticipated rainy season, but no later than **30 September**, the Discharger shall conduct an inspection of the facility. The inspection shall assess needed maintenance, damage to the drainage control system, groundwater monitoring equipment (including wells, etc.), and shall include the Standard Observations contained in Section XII.S. of Standard Provisions and Reporting Requirements (2003). Repairs and maintenance shall be completed by **31 October**, and a report shall be submitted to the Board by **15 November**.

4. Response to a Release

If the Discharger determines that there is significant statistical evidence of a release (i.e. the initial statistical comparison or non-statistical comparison indicates, for any Constituent of Concern or Monitoring Parameter, that a release is tentatively identified), the Discharger shall immediately notify the Board verbally as to the Monitoring Point(s) and constituent(s) or parameter(s) involved, shall provide written notification by certified mail within seven days of such determination and implement Response to Release section of the Standard Provisions and Reporting Requirements (2003).

5. Water Quality Protection Standard Report

Any proposed changes in a statistical method or concentration limits for a constituent of concern or monitoring parameter a Water Quality Protection Standard Report shall be submitted and include the information required in Section C.1 of this Monitoring Reporting Program. Any changes to Water Quality Protection Standard shall be approved by the Executive Officer in a Revised Monitoring and Reporting Program prior to its being implemented.

6. Submittal Dates

Quarterly Groundwater, Unsaturated Zone and Leachate Monitoring Reports

Reporting Type	Sampling Frequency and Data Reported	Reporting Period	Report Date Due
Quarterly	Weekly, Monthly and Quarterly	1 January – 31 March 1 April – 30 June 1 July – 30 September 1 October – 31 December	**1 May** **1 August** **1 November** **1 February**

Report	Due Date
Annual Monitoring Summary Report:	1 February
Facility Monitoring Report:	15 November
Response to a Release:	As necessary
Water Quality Protection Standard Report:	Before placing waste into the surface impoundment and as necessary thereafter.

C. WATER QUALITY PROTECTION STANDARD AND COMPLIANCE PERIOD

1. Water Quality Protection Standard Report

For each waste management unit (Unit), the Water Quality Protection Standard shall consist of all constituents of concern, the concentration limit for each constituent of concern, the point of compliance, and all water quality monitoring points.

The Water Quality Protection Standard for waste constituents consists of the constituents of concern, the concentration limits, and the point of compliance and all monitoring points. The Executive Officer shall review and approve the Water Quality Protection Standard, or any modification thereto, for each monitored medium.

The report shall:

a. Identify **all distinct bodies of surface and groundwater** that could be affected in the event of a release from a Unit or portion of a Unit. This list shall include at least the uppermost aquifer and any permanent or ephemeral zones of perched groundwater underlying the facility.

b. Include a map showing the surface trace of the Point of compliance along the downgradient boundary of the impoundment, as well as the monitoring points and background monitoring points for the surface water monitoring program, groundwater monitoring program, and the unsaturated zone monitoring program. The map shall include the point of compliance in accordance with §20405 of Title 27.

c. Evaluate the perennial direction(s) of groundwater movement within the uppermost groundwater zone(s).

If subsequent sampling of the background monitoring point(s) indicates significant water quality changes due to either seasonal fluctuations or other reasons unrelated to waste management activities at the site, the Discharger may request modification of the Water Quality Protection Standard.

2. Constituents of Concern

The constituents of concern include all the waste constituents, their reaction products, and hazardous constituents that are reasonably expected to be in or derived from waste contained in the Unit. The constituents of concern for all Units at the facility are those listed in Tables 1 through 4 for the specified monitored medium.

3. Monitoring Parameters

Monitoring parameters are constituents of concern that are the waste constituents, reaction products, hazardous constituents, and physical parameters that provide a reliable indication of a release from a Unit. The monitoring parameters for all Units are those listed in Tables 1 through 5 for the specified monitored medium.

4. Concentration Limits

The concentration limit for each constituent of concern shall be determined as follows:

a. By calculation in accordance with a statistical method pursuant to §20415 of Title 27;

b. By an alternate statistical method acceptable to the Executive Officer in accordance with §20415 of Title 27; or

c. For a constituent whose background data set (concentration limit) is comprised of at least 90% non-detect (ND) values, the Threshold Value is the constituent's Practical Quantitation Limit (PQL).

The laboratory analytical methods to be used with each respective constituent of concern are listed in Table 6.

5. Point of Compliance

The point of compliance for the water standard at each Unit is a vertical surface located at the hydraulically downgradient limit of the Unit that extends through the uppermost aquifer underlying the Unit. The Discharger shall include in the Water Quality Protection Standard Report, a map showing the surface trace of the point of compliance (along the downgradient boundary of the Unit, relative to the local flow direction of groundwater in the uppermost aquifer).

D. MONITORING

The Discharger shall comply with the monitoring program provisions of Title 27 for groundwater, surface water, and the unsaturated zone, in accordance with Monitoring Specifications in Standard Provisions and Reporting Requirements (2003). Detection monitoring for a new facility or a new Unit shall be installed, operational, and one year of quarterly monitoring data collected **prior to** the discharge of wastes. A minimum of 8 samples should be used to develop background concentrations for COCs. All monitoring shall be conducted in accordance with a Sample Collection and Analysis Plan, which includes quality assurance/quality control standards, that is acceptable to the Executive Officer.

All point of compliance monitoring wells established for the detection monitoring program shall constitute the monitoring points for the Water Quality Protection Standard for groundwater. All detection monitoring program groundwater monitoring wells, unsaturated zone monitoring devices, leachate, and surface water monitoring points shall be sampled and analyzed for monitoring parameters and constituents of concern as indicated and listed in Tables 2 through 5.

Method detection limits and practical quantitation limits shall be reported. All peaks shall be reported, including those which cannot be quantified and/or specifically identified. Metals shall be analyzed in accordance with the methods listed in Table 6.

The Discharger may, with the approval of the Executive Officer, use alternative analytical test methods, including new USEPA approved methods, provided the methods have method detection limits equal to or lower than the analytical methods specified in this Monitoring and Reporting Program.

1. Surface Impoundment

The Discharger shall monitor the Class II surface impoundment per the schedule in Table 1 and report the results in the quarterly Monitoring Reports. Surface impoundment samples shall be collected in a convenient location at least 50 feet, if possible, from the influent structure. Any liquids in the surface impoundments shall be sampled for the parameters in Table 1 and if no liquid is present this shall be stated in the Monitoring Report.

Table 1 - Surface Impoundment Monitoring

Field Parameter	**Units**	**Frequency**[1]
Quantity Discharged(with a flow meter)	gallons	Monthly
Freeboard	feet (0.1)	Weekly
Remaining Capacity	acre-feet & %	Monthly
Temperature	^{o}C	Quarterly
Specific Cond. (field and lab)	µmhos/cm	Quarterly
pH (field and lab)	pH	Quarterly
Analytical Parameters		
Total Dissolved Solids	mg/l	Quarterly
Total Suspended Solids	mg/l	Quarterly
Chemical Oxygen Demand	mg/l	Quarterly
Volatile Organic Compounds	ug/l	Quarterly
Total Alkalinity	meq/l	Quarterly
Total Hardness	mg/l $CaCO_3$	Quarterly
Calcium	mg/l	Quarterly
Chloride	mg/l	Quarterly
Magnesium	mg/l	Quarterly
Potassium	mg/l	Quarterly
Sodium	mg/l	Quarterly
Sulfate	mg/l	Quarterly
Nitrate - Nitrogen	mg/l	Quarterly
Dissolved Metals:	mg/l	Quarterly
Aluminum	ug/l	
Arsenic		
Barium		
Boron		
Cadmium		
Copper		
Iron		
Lead		
Manganese		
Mercury		
Selenium		
Zinc		

[1] If liquids are present in the surface impoundment for less that the specified time interval of sampling frequency listed, sampling shall occur once per discharge episode.

2. Groundwater

The Discharger shall operate and maintain a groundwater monitoring system that complies with the applicable provisions of Title 27 §20415. The Discharger shall also collect, preserve, and transport groundwater samples in accordance with the approved Sample Collection and Analysis Plan. The approved groundwater monitoring system and Sample Collection and Analysis Plan must be **completed before any discharge** to the Class II Surface Impoundment.

Quarterly, the Discharger shall determine the groundwater flow rate and direction in the uppermost aquifer, and in any zones of perched water and in any additional zone of saturation monitored pursuant to this Monitoring and Reporting Program, and report the results semiannually, including the times of highest and lowest elevations of the water levels in the wells.

Hydrographs of each well shall be submitted showing the elevation of groundwater with respect to the elevations of the top and bottom of the screened interval and the elevation of the pump intake. Hydrographs of each well shall be prepared quarterly and submitted annually.

Groundwater samples shall be collected from the monitoring wells, background wells, and any additional wells added as part of the approved groundwater monitoring system. Samples shall be collected and analyzed for the monitoring parameters in accordance with the methods and frequency specified in Table 2.

The monitoring parameters shall also be evaluated each reporting period with regards to the cation/anion balance, and the results shall be graphically presented using a Stiff diagram, a Piper graph, or a Schueller plot.

Table 2 - Groundwater Monitoring

Field Parameter	**Units**	**Frequency**
Groundwater Elevation	ft (0.01), MSL	Quarterly
Temperature	^{o}C	Semi-Annually
Specific Conductance	µmhos/cm	Semi-Annually
pH	pH	Semi-Annually
Analytical Parameters		
Total Dissolved Solids	mg/l	Semi-Annually
Chemical Oxygen Demand	mg/l	Semi-Annually
Volatile Organic Compounds	ug/l	Semi-Annually
Total Alkalinity	meq/l	Semi-Annually
Total Hardness	mg/l $CaCO_3$	Semi-Annually
Calcium	mg/l	Semi-Annually
Chloride	mg/l	Semi-Annually
Magnesium	mg/l	Semi-Annually

Table 2 - Groundwater Monitoring		
Potassium	mg/l	Semi-Annually
Sodium	mg/l	Semi-Annually
Sulfate	mg/l	Semi-Annually
Nitrate - Nitrogen	mg/l	Semi-Annually
Dissolved Metals:	ug/l	Semi-Annually
Aluminum		
Arsenic		
Barium		
Boron		
Cadmium		
Copper		
Iron		
Lead		
Manganese		
Mercury		
Selenium		
Zinc		

3. Unsaturated Zone Monitoring

The Discharger shall operate and maintain an unsaturated zone detection monitoring system that complies with the applicable provisions of Title 27 §20415. The Discharger shall collect, preserve, and transport samples in accordance with the quality assurance/quality control standards contained in the approved Sample Collection and Analysis Plan. The unsaturated zone detection monitoring system and Sample Collection and Analysis Plan must be **completed before any discharge** to the Class II Surface Impoundment.

Unsaturated zone samples shall be collected from the monitoring devices and background monitoring devices of the approved unsaturated zone monitoring system. The collected samples shall be analyzed for the listed constituents in accordance with the methods and frequency specified in Table 3. All monitoring parameters shall be graphed so as to show historical trends at each monitoring point.

The lysimeters shall be checked monthly for liquid and monitoring shall also include the total volume of liquid removed from the system. Unsaturated zone monitoring reports shall be included with the corresponding semiannual groundwater monitoring and shall include an evaluation of potential impacts of the facility on the unsaturated zone and compliance with the Water Quality Protection Standard.

Table 3- Unsaturated Zone Monitoring		
Field Parameter	**Units**	**Frequency**
Flow Rate	gallons/month	Monthly
Temperature	^{o}C	Quarterly
Specific Conductance	µmhos/cm	Quarterly
pH	pH	Quarterly
Analytical Parameters		
Total Dissolved Solids	mg/l	Quarterly
Volatile Organic Compounds	µg/l	Quarterly
Calcium	mg/l	Quarterly
Chloride	mg/l	Quarterly
Magnesium	mg/l	Quarterly
Potassium	mg/l	Quarterly
Sodium	mg/l	Quarterly
Sulfate	mg/l	Quarterly
Nitrate - Nitrogen	mg/l	Quarterly
Dissolved Metals (as per Table 1)	mg/l	Quarterly

4. Leachate Collection and Recovery System (LCRS) Monitoring

The LCRS sump shall be inspected quarterly for leachate. Upon detection of leachate in a previously dry LCRS, the Discharger shall immediately collect a grab sample of the leachate and shall continue to collect grab samples of the leachate at the following frequencies thereafter. The LCRS shall be sampled and analyzed for the following:

Table 4 - LCRS Monitoring		
Field Parameter	**Units**	**Frequency**
Flow Rate	gallons/month	Monthly
Temperature	^{o}C	Quarterly
Specific Conductance	µmhos/cm	Quarterly
pH	pH number	Quarterly
Analytical Parameters		
Total Dissolved Solids	mg/l	Quarterly
Volatile Organic Compounds	µg/l	Quarterly
Calcium	mg/l	Quarterly
Chloride	mg/l	Quarterly
Magnesium	mg/l	Quarterly
Potassium	mg/l	Quarterly
Sodium	mg/l	Quarterly
Sulfate	mg/l	Quarterly
Nitrate - Nitrogen	mg/l	Quarterly
Dissolved Metals (as per Table 1)	mg/l	Quarterly

All LCRSs shall be tested annually to demonstrate operation in conformance with waste discharge requirements. The results of these tests shall be reported to the Board and shall include comparison with earlier tests made under comparable conditions.

5. Surface Water Monitoring

The Discharger shall maintain a *Storm Water Pollution Prevention Plan* and *Monitoring Program and Reporting Requirements* in accordance with State Water Resources Control Board Order No. 97-03-DWQ, or retain all storm water on-site.

6. Solids Monitoring

Fly ash from the power plant incinerators and flocculated solid waste from the filter presses will be stored onsite for a maximum of 30 days prior to removal and disposal off-site. There will be no storage of fly ash in open exposed piles. The amount of these solid wastes removed from the facility each month will be reported in the facility annual report along with the receiver of the material and the location of ultimate disposal.

7. Water Supply Monitoring

A sample of the process water supply for the facility will be collected annually, and will be analyzed for total dissolved solids, chloride, sulfate, nitrogen as nitrogen, and the minerals and metals listed in Table 1. The resulting date will be included in the facility's annual report.

8. Facility Monitoring

a. Facility Inspection

Annually, prior to the anticipated rainy season, but no later than **30 September**, the Discharger shall conduct an inspection of the facility. The inspection shall assess needed maintenance, damage to the drainage control system, groundwater monitoring equipment (including wells, etc.), and shall include the Standard Observations contained in section F.4.f. of Standard Provisions and Reporting Requirements. Any necessary construction, maintenance, or repairs shall be completed by **31 October**. By **15 November** of each year, the Discharger shall submit an annual report describing the results of the inspection and the repair measures implemented, including photographs of the problem and the repairs.

b. Storm Events

The Discharger shall inspect all precipitation, diversion, and drainage facilities for damage **within 7 days** following major storm events. Necessary repairs shall be completed **within 30 days** of the inspection. The Discharger shall report any

damage and subsequent repairs within 45 days of completion of the repairs, including photographs of the problem and the repairs.

Analytical Methods

Table 6 provides the laboratory analytical methods. The Discharger may, with the approval of the Executive Officer, use alternative analytical test methods, including new USEPA approved methods, provided the methods have method detection limits equal to or lower than the analytical methods specified in this Monitoring and Reporting Program.

Table 6—Analytical Methods

Analytical Parameters	Units	Analytical Methods
Total Dissolved Solids	mg/L	SM 2540C
Chemical Oxygen Demand	mg/L	SM 5220D
Biological Oxygen Demand	mg/L	SM 5210B
Sulfur	mg/L	EPA 200.7
Major Anions:		
chloride	mg/L	EPA 300.0
sulfate	mg/L	EPA 300.0/9038
carbonate	mg/L	SM 2320B
bicarbonate	mg/L	SM 2320B
Major Cations:		
calcium	mg/L	EPA 6010
magnesium	mg/L	EPA 6010
sodium	mg/L	EPA 6010
potassium	mg/L	EPA 6010
Dissolved Metals:		
aluminum	mg/L	EPA 6010 or 6020
boron	mg/L	EPA 6010
iron	mg/L	EPA 6010 or 6020
lead	mg/L	EPA 6010 or 6020
manganese	mg/L	EPA 6010 or 6020
copper	mg/L	EPA 6010 or 6020
zinc	mg/L	EPA 6010 or 6020
Nitrate – Nitrogen	mg/L	EPA 300.0 /SM 4500-NO3
Total Kjeldahl Nitrogen	mg/L	SM 4500-N ORG bg
Volatile Organic Compounds	ug/l	EPA 8260

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

Ordered by: _____
PAMELA C. CREEDON, Executive Officer

_____
Date