

MONTHLY PROGRESS REPORT FOR CONTRACT NO. 500-00-036

PROJECT 2.1 – ENHANCED LANDFILL GAS PRODUCTION USING BIOREACTORS

REPORT PREPARED BY: COMMONWEALTH ENERGY TEAM

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**What we planned to accomplish this period:**

A primary focus of activity in December was expected to be the coordination with San Bernardino County's engineer on conceptual design issues related to the bioreactor project and preparation of a schedule and budget for the development of a commercial scale demonstration project. The overall intent of the project will be to have the PIER Program test the concept of the bioreactor in a portion of Unit 3 at Mid-Valley. It could then be expanded to include all of Unit 3. Also in December, a draft *Memorandum of Understanding* (MOU) was to be reviewed with San Bernardino County outlining the goals, roles and responsibilities of the County and the PIER project team. It was also anticipated that efforts on completing the *Waste Characteristic Report* would be finalized. Minimal modifications were anticipated given the decision to proceed with the Mid-Valley project.

**What we actually accomplished this period:**

Task 2.1.1 Characterize Waste to be Placed in Bioreactor:

- The *Waste Characterization Report* previously submitted was approved by the Commission, based upon the decision by San Bernardino County to focus its efforts at the Mid-Valley site.

Task 2.1.3 Conceptual Design for First Bioreactor

- In December, activities continued on the preparation of the *Conceptual Design Report*, as well as on-going coordination with the host, San Bernardino County. There were numerous consultations with BAS, the County's design engineer as part of the effort to develop more detailed plans for developing the bioreactor at Mid-Valley. As reported previously, the approach being implemented is the development of a bioreactor in a portion of the Unit 3 cell at Mid-Valley in order to expand it in the future to include the entire cell. This approach involves having

the PIER work conducted so that it can be undertaken in support of future commercial scale projects.

- Detailed plans were formulated in conjunction with the County's design engineer, BAS. In general, the conceptual approach involved developing a detailed plan in cooperation with the County that integrates the PIER bioreactor project elements with the on-going design of the Unit 3 cell expansion. This approach is consistent with the project review and direction received from the Project TAC and the RPAC and can be accomplished in the timeframe required by reallocating task activities within the Project. Of most importance is the additional planning and design activity associated with preparing the bioreactor project for public bidding. Because it is anticipated that the bioreactor project, which will be developed in conjunction with the anticipated \$4 to \$5 million expansion of Unit 3 later this summer, it is most important that the PIER bioreactor conceptual design work proceed expeditiously. The CE Team worked closely with the County's design engineer and developed a plan to jointly implement the proposed expansion/bioreactor project. This plan included a permitting component as well as the design efforts needed to execute this integrated public bidding effort. The proposed plan and funding reallocation was presented to Commission staff and discussed in a conference call.
- As noted in previous monthly reports, another key activity in this task is the continued inclusion of Brian A Stirrat and Associates (BAS) into the Commonwealth Team. By bringing BAS onto the team, who is completing the next phase of the design on the Mid-Valley project, it will be possible to integrate the County's design efforts for the next phase of development at Mid-Valley with those of the Commonwealth Team. CH<sub>2</sub> staff is working closely with BAS to develop a detailed plan for completing the bioreactor project at Mid-Valley.
- Consistent with this integrated approach, regular conference calls involving BAS and CH<sub>2</sub> continued. The primary focus of these calls in December were to refine the integrated plan for linking the on-going work at Mid-Valley and the PIER program's bioreactor project in light of environmental, schedule and funding considerations. An overall approach for achieving the project's goals and objectives at a commercial scale facility was developed.

### **How we are doing compared to our plan:**

Work is generally proceeding as anticipated. As reported previously, gaining regulatory acceptance has been an important challenge, EPA activity regarding an R&D bioreactor exemption, has been, and will continue to be, closely followed, as this regulation is very important to successfully permitting the bioreactor project. Also important on this project is the development of an approach involving key stakeholders in San Bernardino County and elsewhere. Staff from the County, its operator and engineer, the Regional Water Quality Board, the Commission and various other State and local entities were consulted and continue to contribute valuable input into the development of the project. After a series of

key meetings, San Bernardino County staff decided to undertake the bioreactor work at the Mid-Valley facility. Because this is an active commercial landfill and accepts most of San Bernardino County's waste, it is important that efforts be undertaken to closely coordinate the work of the PIER program with those of the County's design engineer, BAS, to ensure this work is completed in a timely and efficient manner

**Significant problems or changes:**

There are no significant fiscal problems to report during this period and work is proceeding within Project budget. Progress and expenditures will result in the project being completed on time under the revised Exhibit B schedule and within budget.

**What we expect to accomplish during the next period:**

In January, the primary focus of activity will be the continued coordination with San Bernardino County's engineer on conceptual design issues related to the bioreactor project. This will include clarification of tasks and activities identified in the proposed Project 2.1 plan submitted and discussed with the Commission in December. It is anticipated that this will include preparation of a more complete schedule and budget reallocation for the development of a commercial scale demonstration project. Also in January further steps will be undertaken to incorporate BAS into the project team. This will ensure that activities completed by the Commonwealth PIER team are closely linked with the on-going activities of San Bernardino County. As indicated above, San Bernardino County's ongoing design activities are proceeding in accordance with a schedule for expansion of Unit 3 this summer and fall. The CE Team will work closely with County staff to ensure that appropriate activities are undertaken so that the overall project schedule can be met. Additional discussions of the draft *Memorandum of Understanding* with San Bernardino County outlining the goals, roles and responsibilities of the County and the PIER project team on this project will continue.

**Status of Milestones and Deliverables:**

Table 1 on the following page summarizes the status of Project 2.1 task deliverables as of the end of the current reporting period.

**Table 1: Summary of Project Status and Deliverables – Project 2.1**

Task No.	Description	Start Date		Due Date		Status (%)
		Planned	Actual	Planned	Actual	
2.1.1a	Characterize MSW and Source-Separated Organic Waste to be Placed in Both Bioreactors	01/10/02	1/24/03	05/31/02 08/21/03	DR: 08/20/03	100%
2.1.1b	Characterize Food or Animal Wastes to be Placed as Amendment in the Second Bioreactor	03/25/02	1/24/03	On Hold		7%
2.1.2	Identify Amendment Source Locations for the Second Bioreactor	05/26/02		On Hold		
2.1.3a	Prepare Conceptual Design for the First Bioreactor	09/28/02		12/18/03		15%
2.1.6	Coordinate with RPAC/TAC	01/10/02		04/26/06		

*Explanation of any Difference(s) in Schedule:*

*Task 2.1.1a – Landfill Feedstock Characterization Report* – Information needed to complete this report took longer to collect than anticipated as the primary data to be used was not available in an electronic format. This delay will not affect the overall schedule for the project as that is being affected by the issuance of R&D exemption mentioned above and other developments that could affect the overall development of the bioreactor.

**Overall Schedule for Project 2.1:**

Task Name	Duration	Start Date	End Date	2004				2005				2006			
				Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1
<b>Project 2.1 - Enhanced Landfill Gas Production Using Bioreactors</b>	<b>799 days</b>	<b>Mon 4/7/03</b>	<b>Thu 4/27/06</b>												
Task 2.1.1a - Characterize MSW and Source Separated Organics	99 days	Mon 4/7/03	Thu 8/21/03												
Task 2.1.1.b - Characterize Food or Animal Wastes to be Placed in Bioreactors	119 days	Mon 4/7/03	Thu 9/18/03												
Task 2.1.2 - Identify Amendment Source Locations for the Second Bioreactor	88 days	Mon 4/7/03	Wed 8/6/03												
Task 2.1.3.a - Prepare Conceptual Design for the First Bioreactor	97 days	Wed 8/6/03	Thu 12/18/03												
Task 2.1.3.b - Prepare Test and Construction Plans for the First Bioreactor	62 days	Thu 12/11/03	Fri 3/5/04												
<b>Critical Project Review Meeting</b>	12 days	Tue 3/16/04	Wed 3/31/04												
Task 2.1.3.c - Prepare Conceptual Design for the Second Bioreactor	85 days	Thu 2/5/04	Wed 6/2/04												
Task 2.1.3.d - Prepare Test and Construction and Plans for the Second Bioreactor	83 days	Wed 4/7/04	Fri 7/30/04												
Task 2.1.4.a(1) - Construct and Operate the First Bioreactor	219 days	Fri 4/30/04	Wed 3/2/05												
<b>Critical Project Review Meeting</b>	21 days	Wed 8/18/04	Wed 9/15/04												
Task 2.1.4.a(2) - Construct and Operate the First Bioreactor	208 days	Fri 5/14/04	Tue 3/1/05												
Task 2.1.4.a(3) - Construct and Operate the First Bioreactor	218 days	Fri 4/30/04	Tue 3/1/05												
Task 2.1.4.a(4) - Construct and Operate the First Bioreactor	262 days	Fri 4/30/04	Mon 5/2/05												
Task 2.1.4.a(5) - Construct and Operate the First Bioreactor	262 days	Fri 4/30/04	Mon 5/2/05												
Task 2.1.4.a(6) - Construct and Operate the First Bioreactor	215 days	Mon 1/31/05	Fri 11/25/05												
<b>Critical Project Review Meeting (Optional)</b>	54 days	Fri 10/28/05	Wed 1/11/06												
Task 2.1.4.b(1) - Construct and Operate the Second Bioreactor	218 days	Wed 10/27/04	Fri 8/26/05												
Task 2.1.4.b(2) - Construct and Operate the Second Bioreactor	218 days	Wed 10/27/04	Fri 8/26/05												
Task 2.1.4.b(3) - Construct and Operate the Second Bioreactor	218 days	Wed 10/27/04	Fri 8/26/05												
Task 2.1.4.b(4) - Construct and Operate the Second Bioreactor	261 days	Wed 10/27/04	Wed 10/26/05												
Task 2.1.4.b(5) - Construct and Operate the Second Bioreactor	261 days	Wed 10/27/04	Wed 10/26/05												
Task 2.1.4.b(6) - Construct and Operate the Second Bioreactor	169 days	Fri 3/4/05	Wed 10/26/05												
Task 2.1.5.a - Prepare Final Report Outline for Project 2.1	22 days	Mon 2/16/04	Tue 3/16/04												
Task 2.1.5.b - Prepare Draft Final Report for Project 2.1	215 days	Mon 1/31/05	Fri 11/25/05												
Task 2.1.5.c - Prepare Final Report for Project 2.1	21 days	Mon 2/27/06	Mon 3/27/06												
Task 2.1.6 - Coordinate with RPAC	798 days	Mon 4/7/03	Wed 4/26/06												
Task 2.1.7.a - Evaluate Project 2.1: Draft Report	76 days	Mon 11/28/05	Mon 3/13/06												
Task 2.1.7.b - Evaluate Project 2.1: Final Report	19 days	Mon 4/3/06	Thu 4/27/06												

**Overview of Fiscal Status:**

Table 2 below summarizes the fiscal status of Project 2.1 by task/deliverable as of the end of the current reporting period.

**Table 2: Fiscal Status By Task – Project 2.1**

<b>Task Number</b>	<b>Budget</b>	<b>Invoiced To-Date</b>	<b>Fiscal Status *</b>
2.1.1 a	\$52,117	\$0	OT
2.1.1 b	\$53,064	\$0	OT
2.1.2	\$40,476	\$0	OT
2.1.3 a	\$103,578	\$0	OT
2.1.6	\$45,024	\$0	OT

\*Fiscal Status – Please indicate if you are “On Track” (OT), OverBudget (OB), or UnderBudget (UB)