
Partnering Assists Successful Completion of Loudoun County's New \$180 Million Water Reclamation Plant

By Bill Spragins, Director, FMI



The timely completion of the \$180 million Broad Run Water Reclamation Facility (BRWRF) is an example of how a fully committed ongoing partnering effort can assist in the development of a consistent teamwork effort across multiple contracts in the delivery of an exceptional construction program. It is also an excellent demonstration of how overall performance objectives can be achieved while still preserving the contractual and proprietary integrity of the contractors involved.

According to Rick Thoesen, Deputy General Manager for Loudoun Water, “the collaborative process employing goal-setting, problem solving, and structured partnering can create “win-win” opportunities for all concerned.”

The Project

The Loudoun County Sanitation Authority (LCSA) was formed in 1959 and is responsible for providing comprehensive water and sewer services to approximately 58,000 customer accounts comprised of residents and businesses. The new BRWRF (a regional wastewater treatment plant) is intended to further supplement the existing 1,000 miles of water and sewer pipelines that predominantly serve the eastern portion of the county. This new Greenfield facility will provide water reuse opportunities to the County and included the following key components:

- Contract 1 (\$86 million): Site, yard work and liquid treatment facilities
- Contracts 2 (\$43 million): Secondary treatment/membrane treatment facility
- Contract 3 (\$27 million): Digesters and solids treatment facility
- Contract 4 (\$14 million): Operations complex
- Contract 5 (\$10): Influent sewage pumping station

Key Project Stakeholders

- LCSA – Owner and Operator
- CH2M Hill – Design Engineer and Construction Services Manager for Contracts 1, 2, 3 and 4
- Black & Veatch – Design Engineer and Construction Services Manager for Contract 5
- Hill International – Owner Consultant
- Pizzagalli – General Contractor for Contracts 2, 3 and 5
- Fru-Con – General Contractor for Contracts 1 and 4

Project Successes

The project achieved success in a number of key goal areas, including:

- **Safety:** the overall program enjoyed a rate of less than 2.0 OSHA Recordable Incidents per 200,000 person-hours compared to the industry benchmark of 6.9. The Pizzagalli projects completed with zero lost workday incidents in more than 1,000 days and won the company's “Safety Project of the Year” in 2006.

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- **Schedule:** A complex treatment plant was completed in just under four years. Construction started in June 2004 and Loudoun Water met their new discharge goal by discharging treated effluent in May 2008
 - **Quality:** Treated effluent has met all permit parameters since June 2008 – the discharge limits are among the most stringent in the world and meet Virginia’s highest water reuse standards.
 - **Budget:** the program budget met high expectations as measured by the magnitude of change orders. The change order experience of less than 3.0 percent on the BRWRF program was less than 50 percent of the industry average.
 - **Effective Communication and Problem Solving:** Heavy emphasis was placed upon decision-making at the working levels. Rather than encourage escalation of conflict to higher management, supervisors and superintendents were encouraged to resolve issues at their level of engagement. Such emphasis created pride in the work effort and string ownership in the outcome of the product. According to Rick Thoesen, “Leadership was expected from everyone, not just management, and a project culture was established where face-to-face dialog or phone calls for the purpose of resolving issues was emphasized. Emails to resolve issues were discouraged. This resulted in avoidance of “claim missiles” and helped to provide empathy and resolution for all parties.” The direct open dialogue within the weekly submittal/RFI meeting process was critical to getting things resolved, as well as supplemental submittal review meetings. Early submission of O&M manual information was critical to the success of the Start-Up Program.

Ongoing Partnering Process

During program planning for the Construction Services Organization, Loudoun Water decided to pursue an ongoing formal partnering process as opposed to the typical approach of just a “kickoff” session with “optional” follow-ups as needed. According to Dick Bedard, Senior Vice President for CH2M Hill, “There had been several large water/wastewater projects in the Mid-Atlantic that had not gone well. We knew there was a better way to get projects done for all parties and set out to create a model for the entire industry.” The process adopted by the team was developed based on the principles of collaboration, accountability and consistency. On a program of this scale, collaboration among all primary stakeholders was accomplished by development and use of a Team Charter, establishing values and goals, and managing expectations. Accountability was achieved by having a series of ongoing “internal customer satisfaction surveys requiring all participants to score the team’s ability to reach expectations and to account for the various actions needed by each to progress the project. Consistency in approach involved the use of the same evaluation process for all contracts from all parties between partnering forums.

Elements of the ongoing process included:

- *Executive-Level Kickoff Session:* For each General Contractor a smaller group of senior-level personnel from the parties initially met to agree on overall project values and goals, issue escalation process and communication protocol as well as the path forward for an ongoing partnering process. Says Dick Bedard, “We employed FBDM (Fact Based Decision Making). Everyone has opinions and emotion, but we demanded a full fact base to be developed which drove good decisions. The notion to utilize formal levels for decision-making was especially relevant; it fostered resolutions at the working levels and avoided micro-management from

the top.” The key piece of this was to establish the value that relationships at the senior levels of the organization were essential to project success. The relationships at the senior level extended beyond the formal partnering sessions, as executives continued to meet in impromptu lunches and phone conversations during the course of the project.

- *Project-Level Kickoff Session:* In subsequent sessions for each General Contractor, the team expanded to include all on-site supervisory personnel and project engineers, where the Team Charter and Issue Escalation Process were finalized. Additionally, potentially key issues or “Rocks in the Road” were identified and initial actions defined.

Issue Escalation Process: The backbone of the partnering process was the implementation of five-level tiered collaborative teams composed of representatives for each business organization at each level of the organization (Exhibit A). As potential disputes were identified, the intent was to level the playing field and ensure the issues were first dealt with at the project level, and then, if no resolution was reached, escalated equitably upwards *as a team* to the next level of management. According to Rick Thoesen, “designing the five levels of decision-making up front was genius. Executive management was allowed to influence the outcome and provide conflict resolution at their level of the organization, but the process was largely controlled by project management; executives did not micromanage or second-guess field decisions. Field empowerment resulted in a confident and efficient project without interference from executive egos.”

In fact, for all of the contracts combined, only three issues escalated to the Executive Level (the 5th Level). Those issues involved 1) evaluation of blasting operations and the effect of subsurface rock on the predictability of the outcomes when compared to the geotechnical reports provided for construction, 2) the effect of the change in building pad elevation and related changes in backfill material to accommodate deeper levels of bedding and 3) concrete cracking controls – due to the acceleration of work by one of the contractors, the effect on project efficiency and extra manpower needed to stack trades to match the schedule for move-in and start-up.

- *Quarterly Executive Sessions:* To preserve contractual and proprietary information of the contractors, separate sessions were held on a quarterly basis for each of the two General Contractors. At these sessions, Project Managers for the key organizations for each contract provided a joint project update and then the group would assess team performance against the goals developed in the Project Charter (see Exhibit B). The assessment would be based on a one to five point scale where “four” was considered “meeting expectations,” “five” was “exceeding expectations” and anything less than a “four,” “less than meeting expectations.” The assessment trend for the project duration is displayed in Exhibit C. These ratings provided the format for any team member to provide input on positive aspects of the work, the success or failure of relationships to date as well as raising issues of concern or opportunities for improvement. Action items were developed for each key issue. Thirteen of these sessions were held for each General Contractor during the course of the project.

In a truly collaborative fashion, competitive engineering firms, CH2M Hill and Black & Veatch, involved on three different contracts with Pizzagalli, agreed to meet together at the quarterly sessions.

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- *Team Evaluation Process (Internal Customer Satisfaction Survey):* As a supplement to the Executive-Level sessions, a separate rating tool called the Team Evaluation was administered and compiled by FMI on a quarterly basis for each of the five contracts. Similar to the goal assessment format, this tool asked project and on-site supervisory personnel a different set of questions to the project and on-site supervisory personnel. Results and comments generated by the surveys were reviewed at the quarterly Executive-Level session. A graph of the combined results of this evaluation on the major contracts is displayed in Exhibit D.
 - *Early Commissioning and Start-Up Session:* In August 2005, approximately one year after the initial partnering sessions and once all contracts were up and running, the team held an “all projects, all hands” session attended by all supervisory personnel from all projects. The intent of this session was to generate collective input from the considerable expertise in the room on everything to be considered to properly commission and start-up the plant across the five separate contracts. The foresight of project leaders made this session more than two years before the scheduled completion of the project. The result of this session was the initiation of a Commissioning and Start-up Team comprised of representatives from all business organizations. The team took the initial input from the August 2005 session, developed an initial strategy and then met on a regular basis for the duration of the project.



The above comprehensive partnering effort involved a total of 31 sessions and 24 Team Evaluation conference calls over 3½ years.

There were a number of factors that contributed to the successful completion of this project. The use of this partnering model demonstrates that a structured approach to collaboration based on consistency and accountability can assist a multiple-contract program, especially when the partners demonstrate good character and leadership from all levels. For Loudoun Water customers, it meant a quality facility built on time and within budgetary constraints to meet the needs of the surrounding community for many years to come.

Exhibit A: Issue Escalation Process

Level	Engineering Purchasing Submittal Generation	Document Change Order Admin Submittal Tracking	Schedule Change Impact	Mechanical (self)	Plumbing & HVAC (self/ sub)	Electrical (sub)	Concrete Digester/ Concrete (sub)	Site Work (sub)	Safety
1 Discipline Teams									
2 Discipline Co-Leads									
3	<i>Project Leaders</i> CH2M Hill Contractors								
4	<i>Sponsor Team</i> LCSA CH2M Hill Contractors								
5	<i>Executive Team</i> LCSA CH2M Hill Contractors								

Exhibit C: Goal Rating Chart

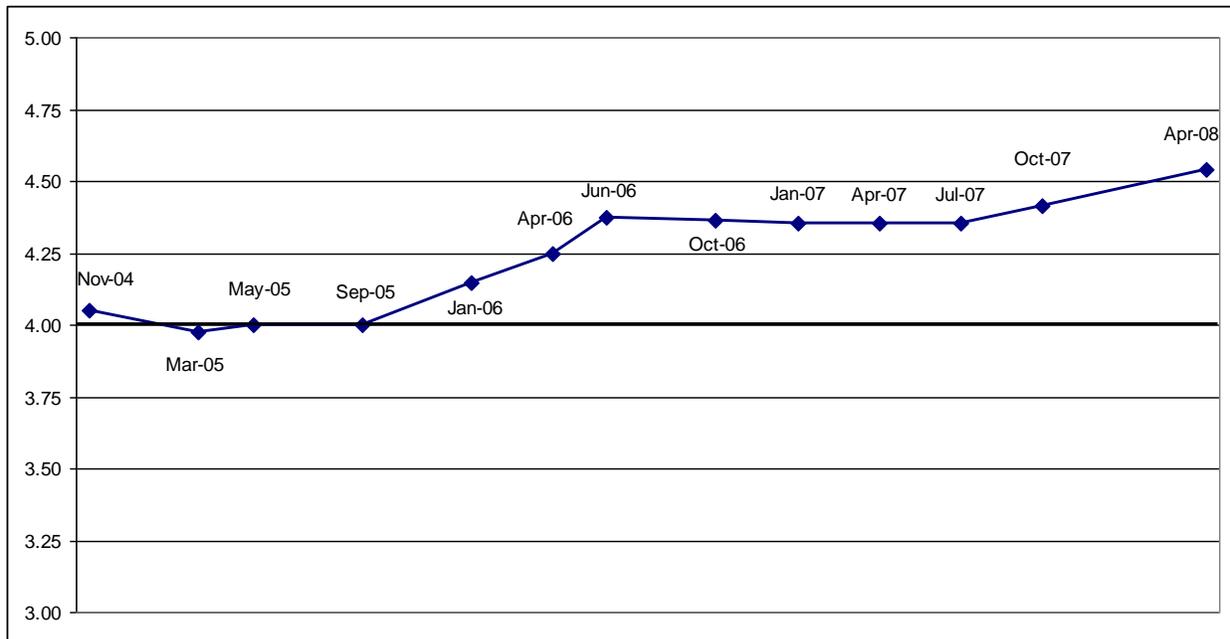


Exhibit D: Team Evaluation Process

