OWNERS' PROJECT DELIVERY OBJECTIVES AND PERFORMANCE MEASURES

TECHNICAL MEMORANDUM

BUCKMAN DIRECT DIVERSION PROJECT

Prepared For: **City of Santa Fe and Santa Fe County**

Prepared By: **CDM**

Date: **September 16, 2005**

Purpose and Contents

The Owners' Objectives are an essential foundation of the Buckman Direct Diversion Project Delivery Process. These are objectives that will be referenced throughout the Project and used to guide development of project delivery strategies. In additional, the Performance Measures developed alongside the objectives are to be used throughout the Project to measure how well the objectives are being met. Such final objectives and performance measures will guide project procurement and delivery activities of the Owners, the Owners' Consultant (OC), and the Design Build (DB) Contractor.

This memorandum initially served as background material for the May 25, 2005, Project Delivery Objectives Workshop, where the City of Santa Fe and Santa Fe County (the Owners) reviewed and prioritized the objectives for delivery of the Buckman Direct Diversion Project (the Project). Subsequently, this memorandum has been revised based on the outcome of the Workshop, the discussions at the July 12, 2005 Monthly Progress Meeting, and follow-up meetings on schedule, risk and project delivery strategy.

This memorandum also includes a listing of specific Owners' Objectives for the Project that has been compiled from various sources to date. These various objectives have been itemized and some re-stated as project needs, constraints, preferences, requirements, and criteria. The remaining objectives have been organized under five major objectives, see Table 1. Suggested performance measures for these Major Objectives have been included in Table 2. This technical memorandum has been organized as follows:

- Summary of Owners' Objectives
- Background
- Project Description
- Operations and Maintenance Objectives
- Understanding of Owners' Objectives
- Project Considerations

- Recommendations for Owners' Objectives
- Owners' Final Objectives and Relative Importance
- Recommended Project Performance Measures

Summary of Owners' Objectives

Below are the resulting objective statements developed by the Owners and OC through the many meetings and discussions performed under this task:

Quality – *Provide high quality project facilities and equipment that meet performance requirements in order that the Owners can reliably operate the Project to produce high quality drinking water*

Cost – *Minimize the Owners' life-cycle cost of the Project*

Schedule – *Initially establish and maintain the project schedule in order to delivery the completed project in the shortest practicable time and eliminate (to the greatest extent achievable) future occurrences of material project completion delays*

Risk – *Minimize the risks of project delivery to all parties, maximize the clarity and acceptance by all parties of the risk allocation, and eliminate (to the greatest extent achievable) the Owners' risks – subsequent to award of the DB Contract – of increased costs and of the completed Project not meeting performance requirements*

These objective statements will be utilized throughout the development of the Project delivery strategy and the resulting tasks.

Background

A Design Build (DB) method of project delivery has been chosen by the City of Santa Fe and Santa Fe County (Owners) for the Project to accomplish a number of specific objectives not readily achievable with the traditional design-bid-build method of public works construction. The Owners has engaged CDM as their OC to develop a comprehensive process and implementation plan for delivery of the Project. The first task in the OC scope of work, Task A1, is to prepare a detailed set of Project Delivery Objectives and Performance Measures that will guide the Owners, OC, and the selected DB Contractor throughout all phases of project delivery.

The Owners have developed specific objectives for DB delivery of the Project in the Owners' Consultant Request for Proposals (RFP) and other documents. Through a number of steps under this task, the Owners and the OC have prioritized, reviewed, and finalized the objectives.

Project Description

The proposed Buckman Direct Diversion Project (Project) is designed to address the immediate need for a sustainable means of accessing water supplies for the City of Santa Fe, Santa Fe County, and Las Campanas Limited Partnership. The proposed point of diversion is located on the east bank of the Rio Grande in northern New Mexico, near the historic Buckman town site. The proposed diversion site is about 15 miles northwest of the City of Santa Fe. It is located about 3 miles downstream from where Route 4 crosses the Rio Grande at the Otowi Bridge, which is where stream flow data have been recorded by the U.S. Geological Survey for more than a century. In addition to the diversion, the Project involves treatment and conveyance of water through new pipelines that generally follow existing roads and utility corridors. Water will be conveyed through the proposed facilities to Las Campanas as well as the City and County. Extensive new facilities must be designed and constructed to divert, convey, and treat river water diverted from the Rio Grande as part of the Buckman Direct Diversion Project and to deliver the finished drinking water to points of connection with existing City and County drinking water distribution pipelines. The new facilities to be designed and constructed are summarized in the following paragraphs.

Water will be diverted from the Rio Grande through an intake structure (entitled "Diversion Structure") with a 28 to 32-cfs peak capacity. A low-head pump station (entitled "Raw Water Lift Station") with an equipment and controls building (entitled "Diversion Support Facility Building"), will pump water through new pipelines from the Diversion Structure to the sedimentation facility (entitled "Sediment Removal Facility"). The Sediment Removal Facility will consist of either high-rate settling basins or high-rate mechanical solids separation equipment to remove sand and grit to protect pumping equipment. If approved by the USEPA and NMED, a return pipeline will be constructed connecting the Sediment Removal Facility to the river to return approximately 4-cfs of water containing settled sand back to the Rio Grande. If the return pipeline is not approved, drying lagoons will be constructed to dry the sand to be hauled away for disposal or reuse (possibly to be used as daily cover at the local landfill nearby).

Two 18.25-mgd capacity high-head pump stations, one located near the sedimentation facility (Booster Station 1A) and one adjacent to existing Buckman Booster Station 2 (Booster Station 2A) will convey raw water from the sedimentation facility through one or two conveyance pipelines to Las Campanas and the City/County water treatment plant (WTP). The portion of Booster Station 2A that pumps to Las Campanas is not part of this project.

Treatment of the diverted water will be accomplished through the City/County 15-mgd water treatment plant (WTP) located at the Municipal Recreation Complex (MRC) which will be contained within a 20- to 25- acre site. The related Las Campanas WTP is not part of this project. Two new booster stations (4A and 5A) will be located at the City/County WTP. Booster Station 4A will have a capacity of 8.9-mgd and will pump

treated water to the existing Buckman pipeline for distribution of treated water into the City's distribution system via the existing 10-million-gallon tank. Booster Station 5A will convey up to 15 mgd of finished water to the southwest portion of Santa Fe and will be connected to the County's distribution system in two locations.

The Project includes over 40 miles of 12- to 36-inch raw and finished water pipelines that extend from the river to as far as the intersection of Interstate 25 and NM 599. The Project may also include the realignment and upgrade of approximately 9 miles of Buckman Road to improve access to all facilities and/or to facilitate exportation of sand and grit from the sedimentation facilities. An additional quarter mile of an existing utility corridor road into the WTP will be upgraded and paved for plant access. Ancillary work includes construction of a new electrical substation adjacent to Caja del Rio Road, upgrades to the existing Buckman Substation near existing Buckman Booster Station 2, and installation of electrical service facilities by the electric utility, which will be performed by PNM.

Within the scope of the Project, there are a few features that need to be addressed as the Project moves forward:

- Will a sediment return pipeline be utilized at the Sediment Removal Facility, or will the sediment be stored for hauling?
- Are the two County connections to the finished water piping in the correct location?
- How many pipelines will be utilized between the near river facilities and the Sediment Removal Facility and the City/County WTP?
- What are the needed flow ranges at each of the facilities?

Operations and Maintenance Objectives Interview

As part of the City/County Water Treatment Plant (WTP) Water Quality Studies and Evaluations Project, CDM held workshops with the Owners' operations and maintenance (O&M) staff to discuss the results of bench-scale testing and to obtain input on the conceptual design of the City/County WTP. From these and other workshops and documents, a number of objectives were developed by the O&M staff. However, some of these objectives are in conflict or compete with one another. Therefore as part of Task A1, CDM held a workshop with O&M staff to further define the objectives, develop a ranking of the objectives, and receive important input on other project issues.

The workshop, held on May 13, 2005, was attended by nine members of the City's O&M department and input from the Count was obtained at a later date. The following is their ranking (from most to least important) of objectives presented in CDM's paired comparison exercise:

1. Early and thorough training of City/County O&M staff to facilitate early take-over of the BDD Facilities
2. Robust treatment processes for meeting water quality goals throughout the year
3. Innovative treatment processes to drive down life-cycle costs
4. Maximize treatment flexibility to meet water quality goals throughout the year
5. Treatment processes similar to Canyon Road WTP for familiarity, consistency and exchange of staff
6. Extended DB operation and maintenance of the BDD facilities, such as more than 2 years, to provide a gradual staff buildup over time

In ranking these objectives, the following preferences were expressed:

- The group was almost evenly divided as to the need for innovation and the need for similarity with Canyon Road WTP processes
- Early training and take over of the plant was favored by over two-thirds of the participants over an extended DB operations and maintenance period
- Robust treatment processes (i.e., single set of processes conservatively designed and able to handle a wide range of water quality) were favored by over two-thirds of the participants over a high degree of plant flexibility (an array of process and chemicals brought on-line as needed to treat the particular water quality).

In addition to the comparison and ranking of objectives, the O&M staff was also asked open ended questions on: concerns with the new BDD facilities, concerns with the project delivery approach, DB operation and maintenance of the facilities, perceived project risks, maintenance requirements, needed redundancy, and preferences for individual facilities. A summary of the responses to these questions, and the objectives ranking, is provided under Attachment 1. The specific objectives ranked at the workshop, as well as the general objectives, preferences and concerns from these questions, have been added to the comprehensive list of Owners' Objectives.

Understanding of Owners' Objectives

This section summarizes the OC's current understanding of the various objectives expressed by the Owners for delivery of the Project. These lists are intended to be comprehensive and are not intended to analyze or indicate relative importance of the various objectives.

These Owners' objectives are analyzed later in this memorandum. The objectives that are more appropriately included as project needs, constraints, preferences, requirements, or criteria, are included under Project Considerations. The objectives list in the section "Recommendations for Owners' Objectives" strives to reduce and

otherwise simplify the Owners' Objectives and were used to facilitate the important process conducted at the May 25th workshop.

Detailed Owners' Objectives

A comprehensive list of specific objectives, as expressed by the Owners for delivery of the Project, has been developed and is provided under Attachment 2. The list has been compiled from several sources, including the Owners' RFP for Owners' Consultant services, the Design/Build White Paper submitted to City Council, the City's Purchasing Manual (Section 23.B for Design Build Projects), the Draft Environmental Impact Statement, discussions between the Owners and the OC during contract negotiations for Phase A services, the O&M interview conducted by the OC on May 13, 2005, and existing knowledge of the OC regarding the Owners' goals and vision for the delivery of the Project. It is recognized that several of the listed objectives overlap, compete or conflict with one another; however, the list is not intended to resolve such conflicts or to indicate the relative importance of the objectives.

Table 1 under "Recommendations for Owners' Objectives" provides an organized and consolidated list of the Owners' objectives for delivery of the Project. This in large part is intended to facilitate the process of finalizing and ranking of the Owners' objectives.

Environmental Objectives

Environmental objectives have been compiled from the Projects Draft Environmental Impact Statement (DEIS) and the OC's existing knowledge of outside agency concerns and constraints and the Owners' goals and vision for the Project. As above, the list is not intended to resolve conflicts or to indicate the relative importance of the objectives.

1. Comply with all applicable regulations for avoiding and mitigating natural and cultural environmental impacts.
2. Understand and comply with all requirements and commitments in the Environmental Impact Statement (EIS) and the Record of Decision.
3. Identify environmental compliance requirements and constraints early to minimize risk of additional costs to Owners.
4. Mitigate/minimize claims, change orders, and the risk of disputes and litigation in the project's environmental compliance.
5. Minimize costs of environmental compliance costs through combined expertise and cooperative efforts of all parties working together.

Project Considerations

This section summarizes readily-available and current information about project needs, constraints, preferences, requirements, and criteria that may impact the finalization of the Owners' objectives and performance measures. As indicated earlier, it also includes those expressed objectives of the Owners that are more appropriately

listed as a Project need, constraint, preference, requirement, or criterion. As with the objectives listed earlier, this compilation includes items that may overlap or conflict with one another, and no attempt is made at this point to prioritize or resolve such conflicts.

Attachment 1 includes additional project considerations obtained through the O&M Objectives Workshop. More detailed information in each of these areas will be developed in later phases of Project implementation and changes will be made based on comments from the Owners and the results of the Project Delivery Workshop.

Project Needs

1. Obtain necessary expertise and labor resources, thereby reducing the Owners' workload in managing delivery of the project.
2. Provide early and thorough training of Owners' operations and maintenance staff for early take over of the Project.
3. Implement the phased hiring of new management and O&M staff by Owners.
4. Provide for the seamless transfer of responsibility for project operations from the DB contractor to the Owners.
5. Provide for the careful monitoring of operation and maintenance of the completed project by the DB contractor, including the preparation of documentation on downtime, water quality results, repairs, use of spare parts, and other activities, to ensure that accurate records are generated, unacceptable water quality is not delivered, and equipment and facilities are not "run down."
6. Identify environmental compliance requirements and constraints early to minimize risk of delay and additional costs.
7. Identify and plan for environmental compliance scheduling conflicts to establish and maintain a firm project delivery schedule and to minimize claims, change orders, and disputes.

Project Constraints

1. Minimize impact on the public through the use of expedited construction processes.
2. Provide for the continuation of reliable and compliant water utility operations by Owners during delivery of the project.
3. Recognize the wide range of variability in both quality and available quantities associated with the raw water source during the course of a given year and otherwise.

4. Comply with the requirements of applicable laws at the local, state, and federal levels, including regulations for avoiding and mitigating natural and cultural environmental impacts
5. Understand and comply with all requirements and commitments set forth in the EIS and the Record of Decision.
6. Obtain all permits in a timely manner so the Project is not delayed.

Owners Preferences

1. Provide innovation and creativity in design (including treatment processes) and construction.
2. Provide treatment processes similar to Canyon Road WTP for familiarity, consistency, and exchange of operating staff.
3. Provide extended operation by DB contractor (>2 years) to allow gradual buildup of Owners operations and maintenance staff.
4. Provide maximum flexibility in unit treatment processes to meet finished water quality criteria under variable raw water conditions throughout the year.
5. Provide robust treatment processes to meet finished water quality criteria under variable raw water conditions throughout the year.

Project Requirements

1. Provide unit treatment processes that have been selected and sized to meet finished water quality requirements for taste and odor.
2. Provide a specified margin of safety between the completed project's capability to produce water quality and the applicable regulatory standards and requirements.
3. Ensure that selected water treatment processes are based upon the results of pilot testing to provide treatment that meets water quality goals, anticipated future regulations, possible arsenic removal from Buckman Wells, and that is expandable
4. Incorporate maintenance considerations into the design of the project, including adequate accessibility, available parts, good parts storage, limited confined space, and expandable for future needs.
5. Provide a high degree of redundancy in the project (2 to 3 extra units in some cases), with good spare parts and shelf-spares to provide a high degree of reliability.
6. Provide for equipment warranties that are well defined resulting in an adequately long coverage that ensures repairs and replacements are provided and no "lemons" are accepted.

Design Build Proposal Evaluation Criteria

As part of the scope of work for this task, the OC was to provide example criteria for the evaluation of DB proposals. Two general categories of project criteria can be identified at this stage of the project for evaluating DB proposals:

1. Performance criteria for operation of the completed project, including average and peak water transmission capacities, finished water quality criteria and related raw water criteria, and operational efficacy or efficiency criteria.
2. Proposal evaluation criteria for selection of the best value proposal.

An example of criteria that can be used for evaluating the technical components of DB bidders' proposals is shown in Attachment 3. Project specific evaluation criteria will be developed in Phase B.

Recommendations for Owners' Objectives

This section builds upon the Owners' objectives listed in Attachment 2 and provides recommendations for organizing and consolidating the objectives (excluding the objectives re-stated as Project needs, constraints, preferences, requirements, and criteria).

The Owners' objectives for delivery of the Project have been organized in Table 1 in terms of five themes or objectives with the following preliminary objective statements:

Quality: Maximize the quality of the completed project and tailor the facilities to meet the specific needs and minimum requirements of the Owners.

Cost: Minimize total costs of the project to the Owners.

Schedule: Reduce the overall time for delivery of the completed project.

Risk: Minimize the risks of delivery to all parties and reduce the risks of performance of the completed Project to the Owners.

Management: Support the Owners' efficient management of project delivery.

Table 1 - Owners' Major and Specific Objectives

Objective Statement	Specific Objectives
QUALITY (Maximize the quality of the completed project and tailor the facilities to meet the specific needs and minimum requirements of the Owners.)	Q.1 – Very high level of reliability to meeting finished water quality criteria (including taste and odor) under variable raw water conditions. Q.2 – High level of reliability in meet other performance requirements (including the transmission of raw and finished water). Q.3 – Meet Owners' standards of quality in all aspects of the completed project (design, construction, equipment, and materials). Q.4 – Meet the specific project requirements and preferences of the Owners (including ease of operation).
COST (Minimize the total costs of the project to the Owners.)	C.1 – Establish total Design/Build cost with a high degree of certainty to Owners early in the delivery process. C.2 – Determine costs of operations and maintenance early in the delivery process. C.3 – Minimize the life-cycle cost of the project . C.4 – Minimize the project's operational requirements (including energy consumption, O&M staffing, supplies, chemicals, and equipment renewal and replacement costs).
SCHEDULE (Reduce the overall time for delivery of the completed project.)	S.1 – Establish schedule with a high degree of certainty early in the delivery process. S.2 – Deliver the project in the shortest practicable time (not later than Spring 2008).
RISK (Minimize the risks of project delivery to all parties and eliminate the risks of performance of the completed project to the Owners.)	R.1 – Shift all performance risks of the completed project to the Owners' contractors. R.2 – Minimize the risk of disputes and litigation during delivery of the project. R.3 – Minimize the risks of project delivery (costs and delay) to all parties. R.4 – Provide for reasonable risk sharing among the parties to ensure a competitive DB procurement process and cost-effective bids.
MANAGEMENT (Support the Owners' efficient management of project delivery.)	M.1 – Provide a single point of responsibility to the Owners for delivery of the project. M.2 – Minimize Owners' workload.

Owners' Final Objectives and Relative Importance

At the May 25th Objectives Workshop, CDM lead a discussion on the objectives to bring about an Objective Statement within each category. These Objectives Statements were then revised through discussions with the Owners at subsequent meetings.

Quality

From the discussion of the quality objectives the following four objectives were crafted:

> Q1 – Very high level of reliability to meeting finished water quality criteria (including taste and odor, and blending) under variable raw water conditions.
>
> Q2 – High level of reliability in meeting other performance requirements (including the transmission of raw and finished water).
>
> Q3 – Meeting or exceeding Owners' standards of quality in all aspects of the completed project (design, construction, equipment, materials and operations.
>
> Q4 – Meet or exceed the specific project requirements and preferences of the Owners (including ease of operations).

From these quality objectives, the group developed the following Quality Objective Statement:

Quality Objective Statement: Maximize the reliability of the completed project to meet finished water quality criteria and tailor the Project to meet the specific needs, quality standards and requirements of the Owners.

Cost

From the discussion on cost, the group developed the following cost objectives:

> C1– Determine the total Design/Build cost, including O&M costs, with a high degree of certainty to the Owners early in the delivery process.
>
> C2 – Minimize the life-cycle cost of the Project.

There were two objectives that were discarded since it was felt that they were in conflict and were actually better captured within C2 above: Minimize the Project's operations requirements; and minimize the project DB cost. Therefore the group developed the following objective statement for cost:

Cost Objective Statement: Minimize the life-cycle cost of the Project to the Owners.

Schedule

From the group's discussion of schedule, the following objectives were agreed to:

S1 – Establish a schedule with a high degree of certainty early in the delivery process.

S2 – Deliver the Project in the shortest practicable time.

The Objective Statement developed by the group was as follows:

Schedule Objective Statement: Reduce the overall time for delivery of the completed project.

Risk

There was a lengthy discussion on "risk." Two items were brought up in the discussions: (1) the County must be brought in on the discussions of risk, and (2) it is difficult to define the risk objectives without going through the risk discussions that are apart of Task A3.

Two competing objectives were discussed:

R1 – Sift all performance risks of the completed project to the Owners' contractors.

R4 – Provide for reasonable risk sharing among the parties to ensure a competitive DB procurement process and cost-effective bids.

It was suggested that these two objectives be merged into one workable objective, something like: *The Owners' contractors are to be given the majority of the performance risks for the completed project except those that need to be shared to provide a more competitive DB procurement process to obtain competitive cost-effective bids.* This objective still needs to be decided on and the group wanted to have Norm Gaume weigh in on the topic.

Two other objectives were provided under risk:

R2 – Minimize the risk of dispute and litigation during delivery of the Project.

R3 – Minimize the risks of project delivery to the Owners.

These two objectives are not in conflict with the others and are to stay as part of this major objective. As a "place holder" the following Objective Statement was used:

Risk Objective Statement: Minimize the risks of project delivery to all parties and eliminate the risks of performance of the completed project to the Owners. However, this will be revised when the Task A1 Technical Memorandum is finalized.

Management

There were three objectives discussed under Management. The first one, which everyone agreed was:

M2 – Minimize Owners' workload

The other two objectives were discussed but no final resolution was developed:

M1 – Provide a single point of responsibility to the Owners for delivery of the Project

M3 – Utilize no more than two points of responsibility for the delivery of the Project, the OC and the DB.

It was decided that Management would be dropped from the Objectives discussions and would be an on-going discussion as the Project progresses. The focus of these future discussions will be on what the "single point" of responsibility should be, the DB or the OC, or if there are two points (OC and DB) of responsibility, depending on the stage of the Project.

Objectives Weighting

A weighting process was used at the May 25th Owners' Objectives Workshop which clearly demonstrated that "Quality" was the highest objective. However, as it was pointed out in subsequent meetings, Cost, Schedule and Risk can easily trade places in the ranking as different worst-case scenarios are presented. Therefore it was finally concluded that these three objectives categories all support the highest objective of Quality, and that their relative importance to each other needs to be looked at in the context of the specific discussion or evaluation.

Final Owners' Objectives Statements and Project Statement

Quality – *Provide high quality project facilities and equipment that meet performance requirements in order that the Owners can reliably operate the Project to produce high quality drinking water*

Cost – *Minimize the Owners' life-cycle cost of the Project*

Schedule – *Initially establish and maintain the project schedule in order to delivery the completed project in the shortest practicable time and eliminate (to the greatest extent achievable) future occurrences of material project completion delays*

Risk – *Minimize the risks of project delivery to all parties, maximize the clarity and acceptance by all parties of the risk allocation, and eliminate (to the greatest extent achievable) the Owners' risks – subsequent to award of the DB Contract – of increased costs and of the completed Project not meeting performance requirements*

The project mission statement developed at the Owners' Objectives Workshop was as follows: *To develop and implement a project delivery procurement process in a timely manner that provides the best value to the Owners based on the Owners' objectives for the Project.*

Recommended Project Performance Measures

At the O&M Objectives Workshop, the staff was asked "how would you measure success of this project." The responses are included in Attachment 1. Table 2 provides OC developed Performance Measures for the delivery of the Project. The measures were developed for the five major objectives, shown in Table 1.

Distribution:

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Table 2 – Project Performance Measures

	Project Delivery	Owners	Owners' Consultant	Environmental and Cultural	DB Contractor
Cost Measures	Life cycle cost expressed as annualized cost for a defined operations period with identified discount rate. Annual revenue requirement for Owners' payment of capital and operating costs.	Owners adopt capital budget and obtain financing commitments for the Project before issuing the RFP. Owners implement all necessary financial management systems in timely manner to account for Project funds, including payments under the DB Contract.	Awarded DB contract price is within +/-15% of OC's final cost estimate. Change orders initiated by DB Contractor attributable to OC's preliminary design or technical requirements do not exceed 1% of DB price.	Environmental and cultural resource compliance costs are anticipated and accounted for in OC and DB Contractor cost estimates. Unanticipated environmental costs do not exceed 3% of estimates (with exception of costs for unknown conditions)	DB Contractor's payment requests are within the fixed contractual price and related conditions.
Quality Measures	Unplanned and planned facility downtimes are within industry standards. No significant (unexcused) violation of finished water quality criteria during first year of Owners' operation. No significant (unexcused) failure to deliver raw or finished water within operating capacities of facilities during the first year of Owners' operation.	Owners effectively communicate their minimum requirements and preferences to guide OC's preliminary design.	OC procurement documents accurately reflect Owners' objectives and requirements. OC review or DB Contractor's QA/QC procedures identify significant failures, if any, by DB Contractor to comply with design or construction quality requirements.	Project compliance plans meet all agency requirements and permit stipulations. Design incorporates all environmental and cultural resource compliance, impact mitigation measures, and agency stipulations. Construction activities are carried out consistent with environmental requirements found in design and environmental plans.	DB Contractor's rework of construction is within industry standards. DB Contractor's design submittals do not require extensive revisions to meet contractual requirements. DB Contractor successfully completes performance testing of completed facilities within required testing period. OC's QA program confirms that DB's QC procedures are being effectively implemented.
Schedule Measures	Project delivery milestones completed within the scheduled dates, except for excused delay.	Owners provide feedback on OC deliverables within required time frames.	Completion of OC tasks that fall on the project's critical path are within the scheduled dates.	Completion of all environmental compliance activities that fall on the project's critical path are within the scheduled dates.	Progress of design and construction complies with DB Contractor's initially submitted and approved schedule.

Table 2 – Project Performance Measures

	Project Delivery	Owners	Owners' Consultant	Environmental and Cultural	DB Contractor
Schedule Measures (continued)		Owners complete their activities and deliverables within deadlines set forth in Project schedule.	Timely updating of project schedule to reflect changing circumstances and to mitigate controllable delays. OC provided permits and easements prior to DB Contractor's NTP. Review and comment on DB Contractor submittals within allowed time frame.	Identification and completion of all environmental compliance measures that can be completed prior to DB Contractor NTP	DB Contractor obtains permits to allow timely performance of construction, testing and operation of the facilities. DB Contractor shutdowns and tie-ins accomplished within required durations and constraints.
Risk Management Measures	Additional costs associated with risks allocated to Owners are covered by risk contingency fund or insurance. No additional costs are incurred by Owners for risks allocated to other parties.	Owners accept reasonable allocation of risks. Owners' insurance program is implemented in timely and cost-effective manner.	Execution of Permit Plan and site studies significantly reduces project delivery risks to all parties. New risks are identified and mitigated in a timely manner through OC's ongoing risk management process. No major disputes are attributable to lack of clarity in risk allocation. DB proposers accept the allocation of risks set forth in the final request for proposals or identify allocation or mitigation that is more beneficial to Owners.	New environmental and cultural risks are identified and mitigated in a timely manner through OC's ongoing risk management process. No major disputes are attributable to lack of clarity in environmental and cultural risk allocation. The Owners and DB proposers accept the allocation of environmental and cultural risks set forth in the final request for proposals at the time of proposal submission. Risks associated with changes in environmental and cultural regulations, or new discoveries are accepted by Owners.	Any disputes regarding risk allocation are resolved in timely manner. Performance testing is successfully completed without significant modifications to completed facilities.

Attachment 1
Results and Responses from
May 13, 2005 O&M Objectives Workshop

O&M Objective Weighting

Attendee	Objectives									
	1	2	3	4	5	6	total	1 or 2	3 or 4	5 or 6
1		2		2	1		5	2	4	5
2	4	1		3	2	5	15	1	4	6
3	1		3	2	4	5	15	1	3	6
4	1	2		5	4	3	15	2	4	5
5	4		1	4	2	4	15	1	4	6
6	5	2	1	2	2	2	14	1	0	6
7	1		1	2	1	2	7	1	3	0
8	2	2	1	0	0	0	5	2	0	0
9		4	1	5	1	3	14	2	4	6
Total	**18**	**13**	**8**	**25**	**17**	**24**	**105**	**five 1s**	**two 3s**	**two 5s**
Percentage	**17%**	**12%**	**8%**	**24%**	**16%**	**23%**		**four 2s**	**five 4s**	**five 6s**

Objective Ranking (highest to lowest importance) According to Above Results

Objective #	Subject
4	Early and thorough training for early take-over of facilities
6	Robust treatment processes
1	Innovative treatment processes
5	Maximize treatment flexibility
2	Treatment processes similar to Canyon Rod WTP
3	Extended DB O&M of BDD facilities

Paired Comparison

1 vs. 2	56% for innovation over Canyon Rd WTP type processes
3 vs. 4	71% for early training and take over vs. extended DB O&M
5 vs. 6	71% for robust treatment processes over increased flexibility of plant

1. From your O&M experience at Buckman Booster Pump Stations, Canyon Road WTP or elsewhere:
What would you like incorporated into BDD Project:
Good quality training during turnover.
"Large" parts supply room and shop, backup generator, SCADA located at site; gas engine at each booster?
City staff; heavy security cameras; presedimentation ponds; extended clarification
Simple, ease of operation, flexible, available space for O&M activities, redundancy
Build with ability to expand processes, arsenic removal from selected Buckman wells.
Ability to expand system, ease of access to booster stations, natural gas engines for boosters
Redundancy big time
What would you NOT like incorporated into BDD Project:
Too much old technology.
New and separate SCADA, use same software and products; confined spaces and hard to get to areas
Short circuit potential
All electric operation
Someone other than the City running the facility

2. What concerns do you have with the planned Buckman Direct Diversion Facilities?
Permitting issues, staffing issues and warranty issues.
The pipeline being common to the Buckman Wells field instead of separate lines to storage using up capacity.
Who and what degree of operation; QC control on piloting; variable flow in river
The sedimentation aspect of the facilities would like many possible options to deal with taking costs into account
Ability to accommodate future regulations. Ability to handle water quality changes. What if water can not be taken from Rio Grande.
Sediment, diversion area and ability to get water, permits

3. What concerns, if any, do you have with the Design-Build delivery approach being used for the Buckman Direct Diversion Project?
The use of quality equipment versus cost savings.
QC, possibly core review with expertise in drinking water; water blendability
Cheap product created by innovation and profit incentive
Staff input lost through design.
You end up with crappy equipment not what you want; extended warranty for redundant equipment

4. Why do you, or don't you, feel that an extended DB O&M period (>2 years) would benefit the Project and the City/County?
The initial staff before turnover to the city would not be concerned for the long term objectives.
Don't combine system controls - will have to coordinate with other entities that may not agree on operation of the combined system.
This is proof positive to be operated beyond 2 years after warranty period.

I believe that the maintenance period extended over two years would be beneficial. The operations will not be to our best interest since this could create many conflicts of operational decision between groups.
It is not going to get cheaper. Santa Fe could use water and revenue. Could get a better design.
The extended time would allow for all problems to be worked out, but it would also allow possible equipment failures after the turnover
To hard to go through records and trust if everything is listed

5. What "risks" do you see with operating and maintaining the BDD Facilities?

Equipment (filter etc.) would not meeting performance standards.
Partnering with several entities; taking over after the plant has already been broke in; without inputting the flaws in construction or design.
Potential violations, bad quality water, lack of personnel, lack of satisfactory wages to retain employees.
Excessive cost due to design. Possibility of not meeting regulations.
County and City staffing and who is responsible.
Use the city not running the facility; spare parts

6. What requirements can be used to make sure the facilities have a high degree of "maintainability"?

Constant oversight during design phase to ensure standard will be met, manufacturer's training on equipment.
Same manufactures and products throughout the plant (1 Allen Bradley VFD spec'd then all VFDs are Allen Bradley); local distributors for equipment.
TOC, Turbidity, Water Quality, data, downtimes, and plant loading rate.
Performance standards based on actual pilot testing results, design accordingly.
City staff involvement. Design is critical.
All repairs documented and downtime logged
The maintenance department should help
Records and checked weekly, this would ensure falsification does not take place; spare parts

7. What type and level of "redundancy" would you like to see in the facilities?

Each major piece of equipment or process should have a 3 tier redundancy factor.
Depends on the process in most cases
Double and triple at minimum, VFDs.
Simple, at least one spare for each process and equipment above design rate. Initial spare parts purchased and turned over to the city or manufacturers recommended requirements.
Level III (33% capacity)
Double standby in case of failure
Two standbys

8. What "preferences" do you have for the Buckman Direct Diversion Facilities?

River Diversion/Pump Station:
VFD, backup power or gas engine driver; built for ease of maintenance
Hydraulic load diversion dam with variable flow options for sediment.
Non-clog, VFD style
Redundancy - easy exchange and maintenance; VFD, all pumps same.
Dry submersible

Raw Water Booster Stations:
VFD, Backup power or gas engine driver
150 to 200% of plant capacity for future and raw water utilization with back-up generators
Non-clog, VFD style
Redundancy - easy exchange and maintenance, VFD

WTP Treatment Processes:
Quality analyzers to be recommended by experienced operators
No square basins with rakes
UV and oxidation at raw; GAC media - Anthracite filtration
Gravity feed processes. Simplistic process, ability to run parallel or in series
Progressive

WTP Solids Handling
Redundancy and more space for solids handling
Extended surface drying beds or centrifugal press
Sand beds, filter press, centrifugal, flexibility
Rapid removal, Gravity Thicken, DAF, presses, drying bed minimum for emergency
No lagoons
No lagoons
Progressive

Finished Water Pump Stations:
VFD, backup power or gas engine driver
Ability to combine by pass and finished water, i.e. golf courses and irrigation deliveries
Excessive water storage, VFD
Close coupled

General Comment
All pumps to be non-submersible.
Ensure we get the equipment we want, not what they give us.

Quality

Even though cost is an issue, pay strict attention to reliability, parts and equipment - don't base design on poor quality equipment

A completed project that meets all regulations easily and easily maintained with good parts availability.

Optimize diversion rights. Meet water quality data. Safety concerns in design.

Meets regulatory requirements (SWDA), meets design capacity, no taste and odor complaints, consistent!

At maximum flow 1/2 of all MCL

All equipment should be of highest quality, not those that are the cheapest to purchase

Slow but progressive, ensure we get what we want not what they build or give us, we run these facilities we know what works best.

Time

Consider good quality training to improve overall operations

Time delays would sometimes benefit the project instead of hurrying unresolved issues.

Better to be successful then timely!

3 years (on-line by May 2008)

Specific time for completion of project and heavy cost for any overage

Cost

Out of my control

Not to have our hands tied with respect to minimizing dollars for quality equipment.

Best price for what we want. Tired and true, proven. Cost is important but do not sacrifice product.

Less than $100 million

Risk Management

The finished product overall has to become the burden of several entities? How is this stressed relationship and legal issues resolved?

We will always be faced with risk. How we manage it, will determine success.

Extended warranties, excellent customer service from venders, contractor, consultants and engineers

Attachment 2
Owners' Objectives

Owner's Project Delivery Objectives

1. Minimize the risk of additional costs to the Owner (high degree of maximum cost certainty) after the DB contract is signed by shifting the risk of additional costs.
2. Shift all risks of Project performance to the OC and the DB Contractor.
3. Know the costs of the Project early in the delivery process.
4. Obtain necessary expertise and labor resources through the OC and the DB Contractor (sharply reduce the workload of Owner's professional staff) to manage the delivery of the Project.
5. Provide for a single point of contact for the Owner for delivery of the Project.
6. Deliver a Project with a high level of quality that reliably meets performance requirements.
7. Minimize claims, change orders, and the risk of disputes and litigation in delivery of the Project.
8. Efficiently manage claims and change orders in the delivery of the Project.
9. Reliably meet finished water quality criteria for the Project.
10. Provide unit treatment processes that have been selected and sized with a strong focus on taste and odor criteria.
11. Establish a firm (high degree of certainty) delivery schedule early in the delivery process.
12. Maintain the firm delivery schedule (timely delivery).
13. Deliver the completed, reliable Project in the shortest practicable period of time (save design and construction time), but not later than Spring 2008.
14. Provide for innovation and creativity in design (including innovative treatment process) and construction.
15. Provide for efficiency and speed in delivery of the Project and total cost savings to the Owner.
16. Optimize the features and the costs of the Project.
17. Assure high quality of the Project's equipment and construction work.
18. Minimize operational requirements for the Project, including energy consumption, O&M staffing level, use of supplies and chemicals, and equipment renewal and replacement costs.

19. Assure that the completed Project will provide virtually perfect system reliability to delivery high quality and aesthetically acceptable drinking water to the Owner's customers.
20. Provide a specified margin of safety between actual finished water quality and applicable regulatory standards and requirements.
21. Provide for the continued reliable water utility operations of the Owner (minimizing service interruptions and disruptions) in full compliance with regulatory standards and requirements throughout delivery of the Project, including the interconnection of the Project with existing infrastructure and the transfer of responsibility for Project operations and management to the Owner.
22. Implement new Owner's staff positions to manage, operate, and maintain the Project in a phased and timely manner.
23. Obtain higher Project quality through combined expertise and cooperative efforts of designer and builder working together.
24. Minimize impact on the public through use of expedited construction processes.
25. Effectively address unusual and unique aspects of the Project.
26. Provide best value solution with value engineering.
27. Identify alternative uses for solids removed from raw water at the intake sedimentation facilities and possible at the water treatment plant.
28. Develop a thorough training and staffing plan that provides for the effective takeover of the BDD facilities by the Owner.
29. Obtain thorough and constant input into the project from Owner's operations and maintenance staff.
30. Ensure that finished water quality produced by the project will be compatible with potable water from other City and County sources.
31. Achieve the lowest possible life-cycle cost for the project and establish design requirements where higher capital expenditures will be off-set by reduced annual operations and maintenance costs and Owner workload requirements.
32. Appropriately balance the allocation of project delivery responsibilities and risks against cost impacts.
33. Provide incentives to encourage the participation of in-state and local businesses in project design and construction.
34. Provide treatment processes similar to Canyon Road WTP for familiarity, consistency, and exchange of operating staff.
35. Extended operation by DB Contractor (> 2 years) to allow gradual buildup of Owner staff
36. Early and thorough training of Owner O&M staff to facilitate early takeover of the Project.

37. Maximize treatment processes flexibility to meet finished water quality criteria throughout the year.
38. Robust treatment processes for meeting finished water quality criteria throughout the year.
39. Selected processes should build upon results of pilot testing to provide treatment that meets water quality goals, anticipated future regulations, possible arsenic treatment of Buckman Wells, and should be expandable.
40. Facilities must include adequate maintenance considerations including adequate accessibility, available parts, good parts storage, limited confined space, and expandable for future needs.
41. A high degree of redundancy is needed in the facilities (2 to 3 extra units in some cases), with good spare parts and shelf-spares to provide a high degree of reliability.
42. Equipment warranties need to be well defined resulting in an adequately long coverage that ensures repairs and replacements are provided and no "lemons" are accepted.
43. Operation and maintenance by the DB needs to be well monitored, documenting downtime, water quality results, repairs, use of spare parts, etc. to prevent falsification of O&M, distribution of unacceptable water quality and "running down" of equipment and facilities.

Attachment 3
Example of DB Proposal Evaluation Criteria

Attachment 3 – Example of DB Proposal Evaluation Criteria

Factors/Subfactors	Maximum Points
Performance Reliability	
-Soundness of treatment process design	10
-Soundness of ancillary facilities design	5
-Likelihood of continuous compliance with Product Water Guarantee for quantities	20
-Likelihood of continuous compliance with Product Water Guarantee for quality	20
-Degree of redundancy	10
-Availability of spare parts and equipment	10
Subtotal Maximum Points	**75**
Design Flexibility	
-Ability to treat variations in Raw Water quality	5
-Ability to expand capacity of Plant	5
-Ability to produce more stringent Product Water quality	5
Subtotal Maximum Points	**15**
Ease of Operation and Maintenance	
-Level of expertise required for operations	10
-Level of expertise required for maintenance	10
-Complexity of instrumentation and controls	5
Subtotal Maximum Points	**25**
Environmental Impacts	
-Impacts from construction activities	5
-Impacts from operational activities	5
-Suitability of physical profile and appearance	5
-Consistency with environmental impact report	10
Subtotal Maximum Points	**25**
Design and Construction	
-Effectiveness of quality management procedures	5
-Reasonableness of schedule for permits and approvals, design deliverables, and construction milestones	5
-Responsiveness of Guaranteed Acceptance Date	5
-Adequacy of design and construction staffing	5
-Quality of major equipment	5
Subtotal Maximum Points	**25**
Operations and Maintenance	
-Effectiveness of quality management procedures	5
-Soundness of operations and staffing plan	5
-Effectiveness of maintenance program	10
-Soundness of safety plan	5
Subtotal Maximum Points	**25**
Operations efficiency	
-Energy consumption per cubic meter of Product Water	10
-Chemical consumption per cubic meter of Product Water	20
Subtotal Maximum Points	**30**
Requested modifications to draft agreements	
-Increased risks or costs to Owner caused by modifications to draft DB Agreement	15
-Increased risks or costs to Owner caused by modifications to draft O&M Agreement	15
Subtotal Maximum Points	**30**
Total Maximum Points	**250**