



# King County

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## MEMORANDUM

DATE: January 8, 2009

TO: King County Council Capital Budget Committee

FROM: Cheryle A. Broom, <sup>CB</sup>County Auditor

SUBJECT: Brightwater Project Quarterly Oversight Report

Attached is the sixth Brightwater Project Construction Phase Oversight Monitoring Consultant Report prepared by R.W. Beck, the Oversight Monitoring Consultant (OMC), issued under the mandated Capital Projects Oversight Program. This report provides an updated review of the Brightwater Project cost, schedule, and risks based on the Wastewater Treatment Division's (WTD) progress as of September 2008. Emerging issues that have recently surfaced are also highlighted in the report along with implementation status of past OMC recommendations.

The OMC maintains their position that the Brightwater Project costs are more likely to be in the \$1.843 to \$1.849 billion range, or \$41 to \$47 million higher than the WTD 2008 trend report estimate. The OMC will closely review the quality of and approach to WTD's 2009 Trend Report estimate update and provide input to ensure that it reflects the full project costs. The Brightwater Project Oversight Work Group will also focus on the estimate update during the next quarter.

The concerns about conveyance schedule delays continue since the last quarterly report. WTD's most recent schedule report (September 30, 2008) shows an 81-day delay in the overall critical path. This is three days longer than reported in the previous quarter, and extends the projected date for commencing wastewater treatment to May 26, 2011.

The critical path has shifted from the East Tunnel, where tunneling was completed on November 14, to the Central Tunnel, specifically the western segment known as BT-3. Oversight efforts will continue to be focused on the primary critical path and several secondary critical paths, and efforts to quantify the risks and mitigate the impacts of schedule delay.

Since the previous reporting period, WTD is amending the GC/CM contract with Hoffman to include the Environmental Education and Community Center and landscaping work. The OMC will monitor and report on the Maximum Allowable Construction Cost negotiation, subcontractor bidding, and savings buyout impacts in the next OMC quarterly report.

The OMC report also documents WTD's satisfactory and ongoing efforts to address previous recommendations made to help better manage cost and schedule risks on the project. In addition, the OMC makes one new oversight recommendation that is a restatement and consolidation of past recommendations:

*WTD should continue to update and refine its mitigation plans and strategies to manage the impacts of potential delays. Per existing confidentiality protocols, this information should be shared with the OMC as early as possible and promptly thereafter whenever updated.*

The Oversight Work Group, with representation from WTD, council staff, the R.W. Beck consultant team, and the auditor's office, continues to be a productive forum for providing effective oversight of the Brightwater Project consistent with council intent. We appreciate the collaborative efforts of all the members who participate in the monthly meetings which are anticipated to continue through 2009.

No formal presentation of this quarterly report has been scheduled for the Capital Budget Committee. We are available to brief you on this report upon request and will work with council staff and representatives from WTD to coordinate for those briefings. Please contact Tina Rogers, the Capital Projects Oversight Manager, or me should you have questions or comments on the report.

CB:TR:SB:jl

Attachments: Brightwater Project Construction Phase Oversight Monitoring Consultant Report, R.W. Beck, (Quarter Ending September 30, 2008)

cc: Metropolitan King County Councilmembers  
Ron Sims, County Executive  
Theresa Jennings, Director, Department of Natural Resources and Parks (DNRP)  
Christie True, Division Director, Wastewater Treatment Division, DNRP  
Bob Cowan, Budget Director, Office of Management & Budget (OMB)  
Dan Lawson, Internal Audit, Executive Audit Services, OMB  
David Jochim, Vice President, R.W. Beck, Inc.  
Tom Jacobs, Senior Management Consultant, R.W. Beck, Inc.  
Saroja Reddy, King County Council Policy Staff Director  
Mark Melroy, Senior Principal Legislative Analyst, King County Council  
Capital Budget Committee  
Beth Mountsier, Senior Principal Legislative Analyst, King County Council  
Regional Water Quality Committee

# Brightwater Project Construction Phase Oversight Monitoring Consultant Report (Quarter Ending September 30, 2008)

King County  
Brightwater Project Oversight Services  
Contract No. P43024



In association with



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# Brightwater Project Construction Phase Oversight Monitoring Consultant Report

Quarter Ending September 30, 2008

Final as of December 29, 2008

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This report has been prepared for the use of the client for the specific purposes identified in the report. The conclusions, observations and recommendations contained herein attributed to R. W. Beck, Inc. (R. W. Beck) constitute the opinions of R. W. Beck. To the extent that statements, information and opinions provided by the client or others have been used in the preparation of this report, R. W. Beck has relied upon the same to be accurate, and for which no assurances are intended and no representations or warranties are made. R. W. Beck makes no certification and gives no assurances except as explicitly set forth in this report.

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# Brightwater Project Construction Phase Oversight Monitoring Consultant Report Quarter Ending September 30, 2008

Final as of December 29, 2008

## Executive Summary

### OVERVIEW

This Executive Summary presents highlights of the Oversight Monitoring Consultant's (OMC's), quarterly briefing on the Brightwater Project. Major conclusions of this quarterly report include:

- We continue to be of the opinion, expressed in our previous quarterly report<sup>1</sup> that project costs are more likely to be in the \$1.843 to \$1.849 billion range, or about \$41 to \$47 million higher than WTD's *2008 Trend Report* estimate.
- WTD is projecting hydraulic completion on February 25, 2011 with the Project accepting wastewater for treatment on May 26, 2011. This represents an 81-day delay in the overall critical path – about the same amount of delay reported in our last quarterly report. The critical path has shifted from the East Tunnel construction to the Central Tunnel construction.
- Treatment Plant construction continues to be on schedule, good progress is being made on the West Tunnel, and the Marine Outfall is nearing substantial completion.
- Major risk issues include: unforeseen conditions during tunneling; further Central Tunnel delay; other delays that may arise; and contract coordination risks.
- A new consolidated recommendation from the OMC has been made with this report. WTD should update and refine strategies to manage the impacts of potential delays and should provide thorough information about this work to the OMC in a timely manner.

### OVERALL PROGRAM COSTS

We continue to be of the opinion that WTD's *2008 Trend Report* underestimated project costs by \$41 to \$47 million (see Table ES-1, which is unchanged from our previous

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<sup>1</sup> Previous quarterly report is the Oversight Monitoring Consulting Report for the quarter ending June 30, 2008, prepared in September 2008.

quarterly report). Our opinion, expressed in our previous quarterly report, in part reflected our concern that WTD's project contingencies<sup>2</sup> were low and had been reduced from projections WTD had made in 2007.

**Table ES-1. Estimated Project Costs (nominal \$million)**

	WTD 2004 Baseline 3% Infl. 5% Infl.	WTD 2007 Trend	WTD 2008 Trend	OMC Estimate Based on Review of 2007 Trend	OMC Estimate Based on Review of 2008 Trend
Conveyance	\$1,021 - \$1,106	\$928	\$927	\$946 - \$952	\$942 - \$944
Treatment Plant	\$640 - \$684	\$840	\$875	\$882 - \$911	\$901 - \$905
Total	\$1,660 - \$1,790	\$1,767	\$1,802	\$1,827 - \$1,862	\$1,843 - \$1,849

This opinion is also based on OMC's mid-year 2008 review (contained in the previous quarterly report) of the status of Treatment Plant GC/CM contract buyout savings, actual consultant and staff costs, and WTD's data on end of job costs for two other major capital projects. Based on this mid-year review, it appeared that the project contingency for the Treatment Plant will not be adequate to cover changes in buyout savings and staffing / consultant costs from those included in the *2008 Trend Report*. Similarly, for Conveyance, construction management costs were exceeding budgeted levels and, if they continue, could consume most of the Conveyance project contingency. Further delays would also increase costs above projections in the *2008 Trend Report*. Developments in this third Quarter of 2008 have not provided reason to change these opinions.

## SCHEDULE

WTD's most recent schedule report (dated September 30, 2008) reports the estimated hydraulic completion date for the project as February 25, 2011, and that the Project will start accepting wastewater for treatment as May 26, 2011. This represents an 81-day delay in the overall critical path as of September 30, 2008 – three days longer than the amount of delay reported in our previous quarterly report. The overall critical path runs through the Central Tunnel, specifically Brightwater Tunnel 3 (BT-3) which is the westerly of the two tunnels being completed under the Central Tunnel contract. From tunneling at BT-3, the overall critical path runs through pipe installation at BT-3, North Kenmore Portal piping and site restoration, hydraulic testing, and start-up. Tunneling

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<sup>2</sup> For the Brightwater project, WTD maintains both construction contingencies and project contingencies. The construction contingencies are applied to each construction contract and cover the typical risks associated with construction, such as changed subsurface contingencies. In our opinion, WTD's construction contingencies for Conveyance (\$68.6 million) and the Treatment Plant (\$33.1 million) are generally appropriate. However, we believe the project contingencies, which cover additional risks such as those associated with coordination of multiple construction contracts, are low.



data from September 30 through November 29, 2008 shows continued schedule slippage, indicating that a current project completion estimate would likely show a delay greater than 81 days.

WTD has engaged the Central Tunnel contractor in several partnering sessions to address schedule concerns. WTD is also currently preparing a more detailed contingency and risk analysis associated with Central Tunnel, and OMC will monitor Central Tunnel progress on an ongoing basis.

A secondary critical path delay is through the East Tunnel (BT-1) mining, through construction of the Influent Pump Station (IPS), to testing and startup. Delays on this secondary critical path have been reduced substantially since our previous quarterly report because of good progress on the East Tunnel. East Tunnel mining was completed on November 14, 2008, and the East Tunnel contractor expects to meet its adjusted contractual milestone date of January 14, 2009 (established by change order executed during the fourth quarter) to turn the IPS site over to the IPS Contractor.

An additional secondary critical path delay is through the Central Tunnel, specifically the eastbound BT-2. This secondary critical path is through BT-2 mining, through Influent Structure construction at the Influent Pump Station site, through testing, and startup. This delay is less than that through BT-3.

In addition to completion of East Tunnel mining, there have been several other positive developments since our previous quarterly report. Construction of the Marine Outfall is now complete ahead of the permit work window, with site clean up, beach restoration, and substantial completion expected in December 2008. West Tunnel mining is also underway and is proceeding smoothly to date. Treatment Plant construction remains on schedule.

## **RISKS**

Looking forward, major risk issues include: unforeseen conditions during tunneling; delay risk associated with BT-2 and BT-3 mining; coordination at the IPS site between the East Tunnel, Central Tunnel, and IPS Contractors; coordination and integration of work under two different prime contractors at the Treatment Plant; and delays in Treatment Plant startup caused by Conveyance delays. WTD's ongoing work on startup planning should help manage and mitigate some of the risk of schedule divergence between the Treatment Plant and Conveyance.

## **PROGRESS ON PREVIOUS OMC RECOMMENDATIONS**

OMC made three recommendations in its previous quarterly report. One was related to schedule and the implications of a substantial Central Tunnel delay, one was related to diesel pricing risk sharing, and the third was related to contingency budgeting in WTD's upcoming 2009 Trend Report. OMC has yet to receive an evaluation of the implications

of a substantial Central Tunnel delay. A briefing has been scheduled for December 30, 2008.

## **NEW OMC RECOMMENDATION**

OMC offers one new recommendation. This new recommendation is a restatement and consolidation of several different recommendations made throughout the past year regarding schedule.

1. WTD should continue to update and refine its mitigation plans and strategies to manage the impacts of potential delays. Per existing confidentiality protocols, this information should be shared with the OMC as early as possible and promptly thereafter whenever updated.

# Brightwater Quarterly Report

## BACKGROUND

This report is a briefing on the Brightwater Project provided by the Project's Oversight Monitoring Consultant (OMC). Overall, this quarterly report relies on information provided through WTD's *September 2008 Monthly Report, Conveyance Construction, and Treatment Plant Construction Reports*. However, where available, we have used more recently available information to prepare this report. Specifically, this includes October 2008 Conveyance and Treatment Plant Construction Reports, additional tunneling data through November 29, 2008, a project tour that occurred on December 5, 2008, and information gathered through additional phone conversations and meetings with WTD.

The OMC's previous quarterly report was dated September 16, 2008, and covered the period through June 30, 2008. Since our previous quarterly report, work has progressed on both Conveyance and the Treatment Plant as described below.

## Conveyance

- Work on the Marine Outfall contract is nearing completion. Work below the high-tide line has been completed and substantial completion of the project is expected in December 2008.
- Mining for the West Tunnel (BT-4) has been initiated and one of the anticipated early challenges (mining under the Burlington Northern Santa Fe railroad tracks) has been successfully completed. Tunnel progress to date has been ahead of plan. Although this tunnel is behind its baseline schedule due to previous delays in delivering the tunnel-boring machine (TBM), the West Tunnel is not on the critical path.
- The Central Tunnel mining is proceeding with two TBMs: one eastbound (BT-2) and one westbound (BT-3). Based on tunneling progress data provided by WTD through November 29, 2008, both BT-2 and BT-3 are behind plan. WTD reports that problems in the slurry separation plant, TBM performance, and ground conditions have contributed to these delays.
- Tunneling by the East Tunnel contractor was completed on November 14, 2008. Currently, the East Tunnel contractor is demobilizing from the IPS site and is soon to begin installing the East Tunnel piping. With the exception of an initial 40-foot length of piping, the East Tunnel piping will be installed from a conveyance portal (Portal 46) located at the treatment plant site.
- Kiewit Pacific Company, the IPS contractor, is completing off-site work, including submittal administration, preparing and receiving input to Requests For Information, programming and start-up activities associated with the North Creek Pump Station, and initiating work on the electronic O&M Manual. Per contract, the IPS site (except for the Influent Structure) is expected to be available to the IPS contractor no later than January 14, 2009.

## Treatment Plant

- Hoffman (liquids GC/CM contract) continues to perform concrete placement work on the head-works, grit removal system, primary treatment, and foundations for the aeration tanks and membranes. Work on pipe encasements and concrete coatings is beginning. Also ductwork and cable tray installation has begun in the primary gallery area.
- Work by Kiewit Pacific (solids contract) continues including concrete work on the digesters, solids storage tank, and energy gallery, energy building walls, and foundations for the truck load out area. Pipe installation in the solids building has also begun.

## ANALYSIS AND FINDINGS

### Cost

OMC Continues to Believe Project Costs Will be Higher than Projected by WTD  
Table 1 summarizes OMC's most recent projection of project costs.

**Table 1. Estimated Project Costs (nominal \$million)**

	WTD 2004 Baseline 3% Infl. 5% Infl.	WTD 2007 Trend	WTD 2008 Trend	OMC Estimate Based on Review of 2007 Trend	OMC Estimate Based on Review of 2008 Trend
Conveyance	\$1,021 - \$1,106	\$928	\$927	\$946 - \$952	\$942 - \$944
Treatment Plant	\$640 - \$684	\$840	\$875	\$882 - \$911	\$901 - \$905
Total	\$1,660 - \$1,790	\$1,767	\$1,802	\$1,827 - \$1,862	\$1,843 - \$1,849

This projection was completed in our Quarterly Report for the quarter ending March 30, 2008. In that report, we provided an opinion that WTD's *Brightwater Cost Update, Current Conditions and Trends, January 2008 (2008 Trend Report)* likely underestimated costs by about \$41 to \$47 million.<sup>3</sup> Based on ongoing developments since our previous quarterly report, we continue to believe that overall project costs are more likely to be in the range of \$1.843 to \$1.849 billion.

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<sup>3</sup> This in part reflected our concern that WTD had reduced project contingencies from the levels in its 2007 *Trend Report* (i.e., for Conveyance the project contingency was reduced from \$18.2 to \$6.2 million and for the Treatment Plant the project contingency was reduced from \$4 million to \$2 million. Further, in our review of the 2007 Trend Report we also provided an opinion that we believed the \$4 million contingency for the Treatment Plant was low.) In addition, we stated our concern that some of WTD's cost projections (i.e. for Treatment Plant buyout savings and end of job "soft costs") were based on optimistic assumptions.

## Treatment Plant Buyout Savings Have Not Changed Substantially Since the Previous Quarterly Report

WTD's GC/CM contract with Hoffman<sup>4</sup> for the Treatment Plant liquids stream includes provisions for returning much of the buyout savings to WTD. Buyout Savings represent the cumulative difference between the negotiated Maximum Allowable Construction Cost (MACC) and the actual bids awarded to subcontractors. Thus, the amount of buyout savings can fluctuate up and down depending on the outcome of each subcontract bidding process. In addition, Buyout Savings can be used to cover certain items set forth in the GC/CM contract (described in our previous quarterly report.)

As of December 31, 2007 cumulative Buyout Savings totaled \$28.0 million. The 2008 Trend Report estimated that 100 percent of these savings would be realized as a cost savings to the Project. OMC's previous quarterly report contained Buyout Savings balance of \$25.4 million as of September 3, 2008. The current value, as of November 20, 2008, is approximately \$25.1 million. 2008 changes in buyout savings were the result of awarded subcontracts with costs exceeding MACC estimates and allowable uses of Buyout Savings as specified in the GC/CM contract. Most of these events were in the early part of 2008 and changes since the previous quarterly report have not been substantial.

The GC/CM contract provides that the majority of the Buyout Savings will be returned to the County via a deductive change order. This is expected to occur in the first half of 2009, based on procedures specified in the GC/CM contract.

### Change Order Status

The most recent claim and change order data is from WTD's October 31, 2008 construction reports. As of that date, the value of claims and change orders on the Brightwater Project is reported as follows:

- Conveyance construction progress is approximately 53 percent, measured as percent of contract value earned by construction contractors, while executed Conveyance change orders are approximately 17 percent of WTD's conveyance construction contingency. Including pending (costs negotiated but not executed) and estimates of potential (costs not yet negotiated) change orders could increase this to a maximum of about 31 percent.
- Treatment Plant construction progress is approximately 31 percent, measured as percent of contract value earned by construction contractors, while executed Treatment Plant change orders are approximately 6 percent of WTD's construction contingency. Including pending and estimates of potential change orders could increase this up to a maximum of about 13 percent.

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<sup>4</sup> The GC/CM contract currently includes negotiated costs for the North Mitigation Area, Site Preparation, and Liquids work.

Change orders to date represent relatively low percentages of the construction contingencies. It is important to note that a significant amount of the tunneling remains to be completed, and thus WTD's claims exposure cannot yet be fully known. In general, for the overall Project progress to date, change order activity to date (measured as percent of construction contingency used) continues to support our opinion WTD's construction contingencies are generally reasonable.

OMC will continue to monitor change order activities for all contracts. A potentially emerging issue is the comparatively high change order activity for the Influent Pump Station (IPS) although the IPS contractor has not yet initiated construction activities at the site. WTD issued an early Notice to Proceed to Kiewit on this contract to provide more than a full year before site access so they could review the design and thereby accelerate and accommodate changes during preconstruction.

## Schedule

### East Tunnel Mining is Complete

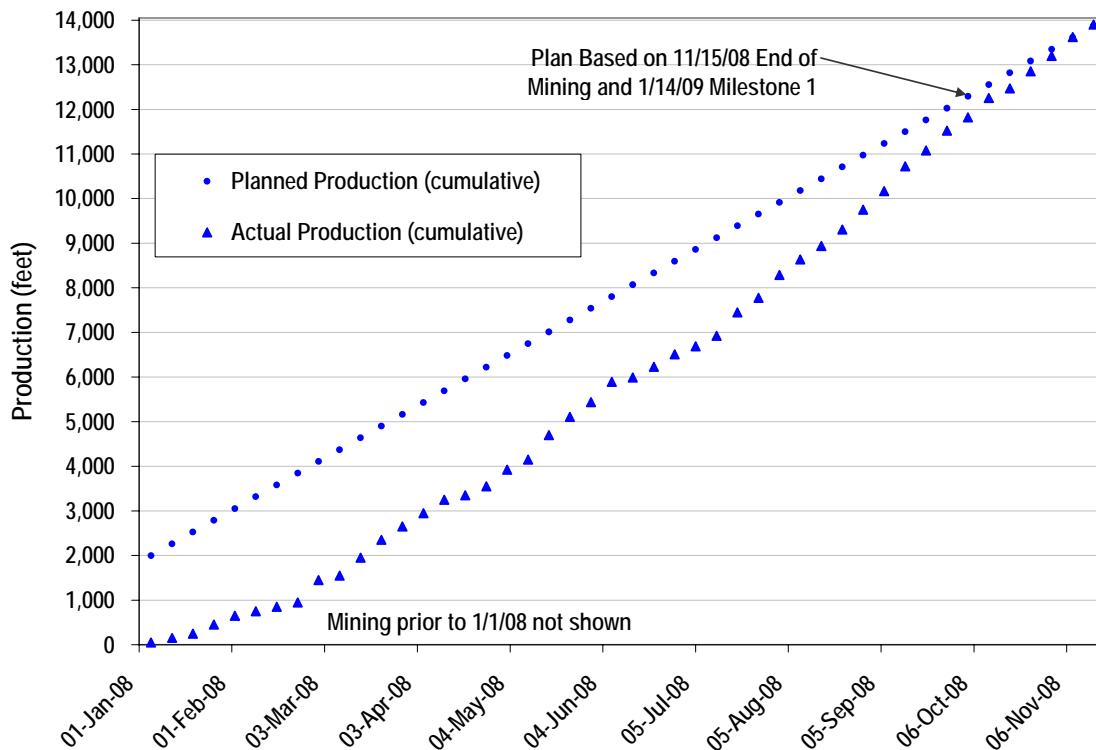
Mining of the 13,876 foot long East Tunnel was completed November 14, 2008. A key East Tunnel contract milestone is Milestone 1, which is the date the East Tunnel contractor releases the majority of the IPS site to the IPS contractor. As a result of a recent Change Order between WTD and the East Tunnel Contractor, the Milestone 1 date is January 14, 2009. This leaves approximately 60 days from the end of tunneling to complete its remaining activities at the IPS site. As of September 30, 2008, the East Tunnel contractor has projected reaching Milestone 1 on January 5, 2009, and it appears that progress during October has accelerated the contractor's estimated Milestone 1 date to late December 2008.

Figure 1 shows East Tunnel mining data, comparing actual production with planned production. The shape of the actual production data is illustrative of a trend seen during many tunneling projects – that given no substantial changes in soil conditions, mining production increases in the second half of the project. This is commonly attributed in part to the tunneling contractor optimizing operation of the tunnel boring machine. For the East Tunnel, it was also because of additional measures undertaken by the East Tunnel contractor:

- Addition of a full-time maintenance shift
- Working Saturdays
- Transfer of crews from other projects that the East Tunnel contractor was completing.

WTD reports that the improved tunneling progress in East Tunnel mining underscores the importance of maintaining good working relationships with the contractor and the importance of the commitment from contractor's top management to prioritizing this project.

**Figure 1**  
**East Tunnel Actual Mining Production Compared with Plan**



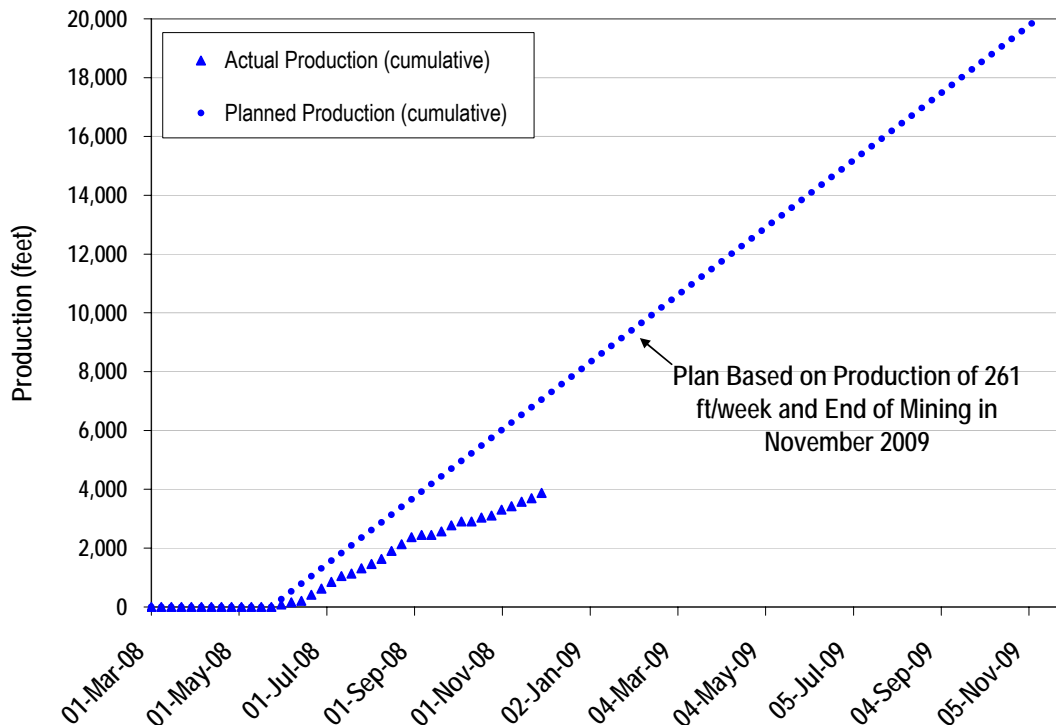
Completion of the East Tunnel remains a secondary critical path (through IPS construction, testing, and startup). As of September 30, 2008, WTD reports a 58-day delay associated with this secondary critical path. This projected 58-day delay is 20 days less than the 78-day delay reported in the previous quarterly report.

#### Delay Risk for the Central Tunnel Continues to Increase and the Central Tunnel is Now the Critical Path

Delays at the Central Tunnel have increased since our previous quarterly report. As of WTD's most recent reported schedule report (September 2008), both tunnel boring machines (BT-2 and BT-3) were behind plan. The overall project critical path is through completion of BT-3 mining, BT-3 piping installation, North Kenmore Portal piping and site restoration, clean water testing, and startup. As of September 30, 2008, the estimated critical path delay through BT-3 is 81 days.

Available tunneling data between October 1 and November 29, 2008 shows continued tunneling production behind plan. The 21,100-foot long BT-3 tunneling was approximately 20 percent complete as of November 29, and mining rates have averaged 131 feet per week from August 15 through November 29. The production during November improved to an average of 141 feet per week. The planned production rate is 261 feet per week for the planned 22-month tunneling period. Figure 2 shows BT-3 tunneling progress graphically.

**Figure 2**  
**BT-3 Actual Mining Production Compared with Plan**



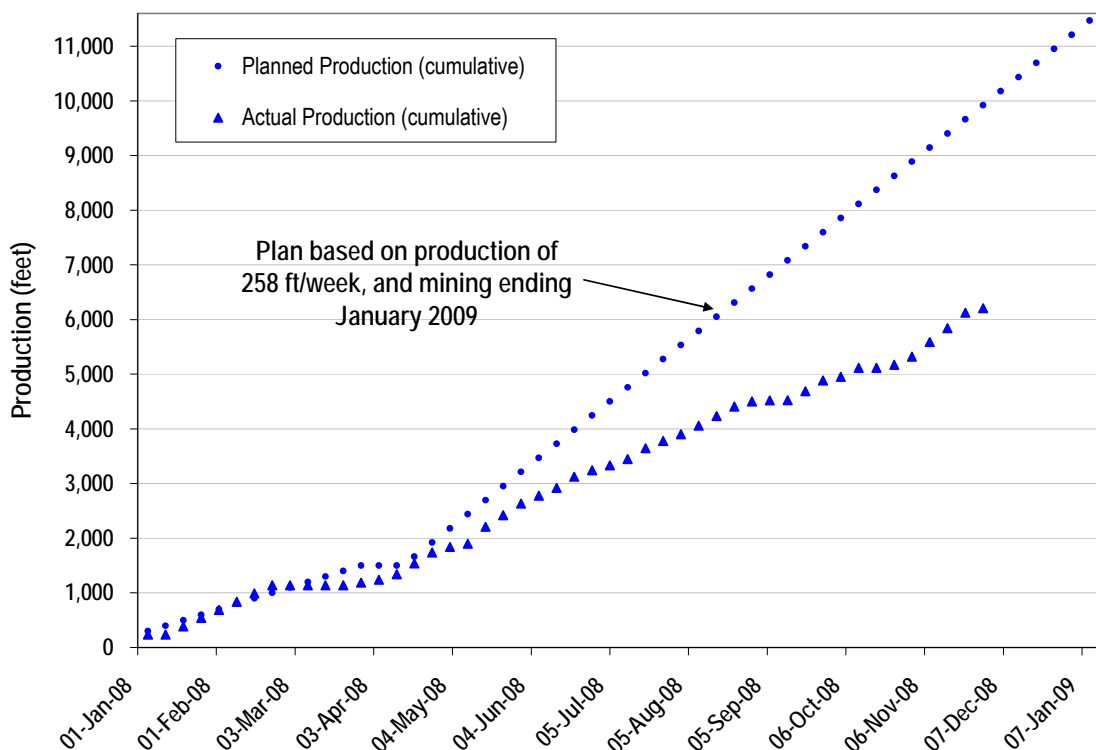
It is reasonable to assume that future mining rates may be higher than those achieved on the project to date, provided soil conditions are similar or better than encountered to date. Potential reasons include:

- WTD has directed the Central Tunnel Contractor to work Saturdays. WTD has not yet reported the potential financial implications of this change.
- It is possible, and frequently occurs, for tunneling rates to improve over the course of the job
- Mining materials from BT-2 and BT-3 are both processed at the same slurry plant; thus after BT-2 mining is complete, the amount of mining materials processed at the slurry plant will decrease.

BT-2 mining is also behind schedule and is an additional secondary critical path item. This secondary critical path runs through BT-2 mining, through the Influent Structure construction by the IPS contractor, through clean water testing and startup. Figure 3 shows BT-2 production graphically, comparing mining to date with the planned mining schedule showing mining ending in January 2009.



**Figure 3**  
**BT-2 Actual Mining Production Compared with Plan**



As of November 29, 2008, the 11,165-foot long BT-2 mining was approximately 54 percent complete. From August 15, through November 29, 2008, mining production has averaged approximately 132 feet per week, compared with a planned production rate of 258 feet per week. Progress improved to an average of 222 feet per week during November.

A key BT-2 project milestone occurs at the interface between the IPS contractor and the Central Tunnel contractor at the Influent Structure (IS). The IPS contractor will not have access to the IS (a portion of the IPS site) until May 31, 2009 per the conditions of the existing IPS contract (as amended to allow access to the remainder of the IPS site on January 14, 2009). The ability of the IPS contractor to access the IS depends on completion of BT-2 and demobilization of the BT-2 tunnel boring machine.

The IPS contractor's baseline schedule includes its IS work as a critical path task. Therefore, a delay in completing BT-2 could result in an overall project delay. This risk may be mitigated if the IPS contractor's work at the IS can be completed in fewer days than indicated in the IPS contractor's baseline schedule.

To meet a May 31, 2009 deadline for vacating the IS site and a 60-day period between completion of mining and vacating the site, BT-2 mining would have to be complete by

March 30, 2009. Given actual progress through November 29, 2008, remaining mining would have to average over 310 feet per week to complete mining by March 30, 2009.<sup>5</sup>

As described below, we continue to recommend that WTD develop a mitigation plan in anticipation of a substantial Central Tunnel delay.

## OVERALL MANAGEMENT ISSUES

### Risk Management

Throughout the project, WTD has used risk registers for the Treatment Plant and Conveyance as one tool to identify, address, and manage risks. The risk registers identify risks, categorize and classify them, and identify potential risk mitigation actions.

During planning and design, risk categories were relatively generic. (For example, “tunneling delay due to change in ground conditions.”) As construction has proceeded, the specific risks that are likely to be encountered have become more defined. (For example, specific reasons and amounts of delay have been assessed for certain tunnel contracts.) Thus, during construction, while the risk registers generally capture major project risks in broad terms, they do not necessarily detail the particular risks being encountered.

Outside the summary-level risk register format, WTD has completed separate more detailed analysis and contingency planning to address specific risks outside of the more summary-level risk register format. Examples of these analyses include:

- Treatment Plant Solids/Odor Control Contract (completed in 2007)
- Potential East Tunnel delay (completed in 2008)
- EECC contracting alternatives (completed in 2008)
- Potential conveyance delays affecting hydraulic testing of the conveyance and treatment plant (ongoing; begun in 2008)

There is no standardized format for these analyses because the subjects are different. Often, these risk evaluations lead to strategy direction regarding contract and change order negotiations with the various construction contractors. For these reasons, the results are generally considered confidential by WTD and they are not included in WTD’s standardized reporting documents.

In addition, WTD and consultant construction management staff discuss likely risks on a regular basis both internally (staff meetings) and with the construction contractors

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<sup>5</sup> Figure 3 compares mining progress to the planned schedule (showing mining ending in January 2009). Comparison with a March 30, 2009 date is more illustrative given current contractual implications.

(progress meetings) in order to identify steps that can be taken to avoid or mitigate such risks.

We continue to be of the opinion that WTD should update these risk registers on a regular basis. The risk register for the Treatment Plant was updated in August 2008, and the risk register for Conveyance was updated in September 2008. WTD reports risk registers are updated approximately quarterly. In our previous quarterly report, we made recommendations regarding potential Central Tunnel delays and further risk analysis to inform WTD's development of its 2009 Trend Report (refer to "Follow-up on Previous OMC Recommendations", below).

OMC believes it is appropriate for WTD to continue conducting additional risk analyses to address emerging issues outside the risk register format. Based on our review of available risk analyses, we believe that these analyses should generally be more comprehensive than those made available to the OMC to date.

A further observation is that, to the extent allowable per confidentiality protocols, this information should be shared with the OMC and County staff participating in the oversight function.

## System Startup Planning

WTD continues with the development of detailed plans for start-up, testing and commissioning of the entire integrated Brightwater Project. Planning includes protocols for integrating operations staff, training, start-up and commissioning procedures as well as specific plans for running clean water and wastewater through the facilities to test various systems.

Activities during the past quarter have focused on developing the Emerson instrumentation and control system. Graphics screens for the instrumentation and control system have been completed, and sent to Emerson for animation. In the first quarter of 2009, WTD staff will conduct on-site testing of the control panel screens at the Emerson's office site.

Key issues being addressed by startup planning are unchanged from last quarter and include the following:

- **A detailed evaluation of clean water testing by the IPS team:** This evaluation is examining the extent to which the IPS and Treatment Plant can be tested independently and how much the original scheduled time for testing might be compressed.
- **A plan for startup and operations of the odor control systems.** This includes an assessment of startups at other facilities to identify specific risk elements and "lessons learned". WTD's intent is to provide a "life cycle plan" that addresses all aspects of this system's operation including monitoring and response.

- **Startup Risk Assessment, including Mothballing and Reactivating the Treatment Plant.** WTD's overall plan calls for a formal risk assessment in the first quarter of 2010. This assessment would consider the likelihood of a significant divergence between Conveyance and the Treatment Plant. The results of this assessment potentially would trigger development of a detailed mothballing and reactivation plan for the Treatment Plant.

These items can have significant benefits in terms of the overall project risk management. The next startup planning milestone date is near the end of March 2009, when WTD will complete preliminary startup planning activities. In our opinion, WTD continues to make excellent progress in working on start-up issues and risks.

### EECC and Landscape Contracting for the Treatment Plant

WTD is proposing to incorporate work for construction of the Environmental Education and Community Center (EECC) and Treatment Plant landscaping into the GC/CM contract with Hoffman. The negotiation of the MACC for this work is expected to be complete in December 2008. Subcontractor bidding for these items would occur in the first quarter of 2009.

## FOLLOW-UP ON PREVIOUS OMC RECOMMENDATIONS

Our previous quarterly reports have included recommendations to help WTD better manage cost and schedule risks on the Brightwater Project. The following discussions report on the status of recommendations from our last quarterly report and on any ongoing issues from previous reports.

- **WTD should continue updating and refining mitigation plans and strategies to manage the East Tunnel delay and, potentially, other Conveyance project delays.** East Tunnel mining is complete. This recommendation is being restated and consolidated below under "New Recommendations".
- **WTD should continue to develop the Master Integrated Schedule, keep it up to date, and evaluate it on an ongoing basis.** All Contractor baseline schedules have been accepted as was reported last quarter; however, the OMC is continuing to monitor the Master Integrated Schedule on an ongoing basis.
- **Ensure coordination of the GC/CM and Solids package contractors at the Treatment Plant site by closely reviewing schedules and mandating communication protocols between WTD and those contractors.** Weekly coordination meetings are being held between the GC/CM and Solids contractors. These meetings now also include the East Tunnel contractor as the East Tunnel contractor shares part of the Treatment Plant site to install pipe in BT-1. WTD continues to report that contractors are working cooperatively to resolve any potential schedule and site access conflicts.

- **WTD should continue to update and refine its mitigation plans and strategies to manage the East Tunnel delay while focusing more effort on the implications of a substantial Central Tunnel delay.** OMC has not received this information for the Central Tunnel, and a briefing has been scheduled for December 30, 2008.
- **WTD should provide updates regarding amendments related to diesel pricing risk sharing for OMC review and monitoring.** OMC continues to monitor. Recent drops in diesel prices have reduced, if not eliminated, the cost risk to WTD.
- **In its upcoming 2009 Trend Report, we recommend that WTD pay particular attention to budgeting contingencies in light of: 1) actual 2008 costs for consultants and staff; 2) ability to actually ramp down staffing and consultant efforts at the end of job; 3) the potential for delay of individual contracts and the overall project; 4) actual status of buyout savings; and 5) other major potential risks such as the potential for the Treatment Plant to be ready for clean-water testing and ultimately for treating wastewater before Conveyance is completed. To the extent possible, major specific risks should be quantified in terms of costs and probabilities of occurrence and evaluated to inform the proposed project contingencies. This work should be completed early enough to allow for a review from the OMC and to inform the cost projections in the WTD's upcoming 2009 Trend Report.** OMC and WTD have agreed to meet before January 15, 2009 to discuss the framework and timing for such an analysis, and the schedule for preparation of the upcoming Trend Report.

## **FINDINGS AND NEW RECOMMENDATION**

Based on the evaluations included in this quarterly report, the OMC make the following new recommendation:

1. WTD should continue to update and refine its mitigation plans and strategies to manage the impacts of potential delays. Per existing confidentiality protocols, this information should be shared with the OMC as early as possible and promptly thereafter whenever updated.