



BRIGHTWATER PROJECT OVERSIGHT REPORT FOR QUARTER ENDING SEPT. 30, 2011

CURRENT RISK RATING ▼ Although nearing completion, attention will focus on cost containment and schedule management on remaining work, managing redesign and construction to correct identified defects, and revising the forecast of total project cost and final schedule.



PROJECT STATUS ● = No Current Concerns ▼ = Attention Needed ◆ = Corrective Action Needed

● **Scope**

There were no scope changes this quarter.

▼ **Schedule**

Milestone	Baseline Schedule	Current Forecast	Comment
Treatment Plant substantial completion	Jan. 2011	Aug. 2011 (actual)	8-month delay due to weather and conveyance system issues.
Accept wastewater for treatment	Mar. 2011	Sept. 2011 (actual)	6-month delay due to work to prepare for start up without conveyance system.
Conveyance System commissioning start	Jan. 2011	Sept. 2012	23-month delay due to Central Tunnel mining delay.
Influent Pump Station (IPS) retrofit construction start	n/a	2013	Unanticipated work needed to correct hydraulic surge issue.
Remaining ancillary and unanticipated new contract work	New or various dates	Some work will continue into 2013	Several small contracts including: odor control at Ballinger and North Kenmore (NK) portals, wetland restoration at NK, east tunnel defect repair, and IPS conversion for full commissioning.

▼ **Budget¹**: Cost estimates exceed the adopted baseline and are unchanged from the 2011 Trend Report.

Project	Adopted 2004 Baseline		WTD 2011 Cost Update ²	OMC 2011 Estimate ²	LTD Expenses	LTD %
	3% Inflation	5% Inflation			Thru Sept 2011	Expended
Conveyance	1,020.6	1,105.5	964.1	966.5	957.6	99%
Treatment Plant	639.6	684.4	885.1	886.1	862.8	97%
Total	\$1,660.2	\$1,789.9	\$1,849.2	\$1,852.6	\$1,820.5	98%

¹ All costs are shown in \$ millions. ² Estimates do not include disputed costs related to Central Tunnel delay.

▼ **Current Issues:** These items could impact schedule and/or cost outcomes:

- The outcome of disputed Central Tunnel delay costs.
- Repair of 180 feet of a 66-inch diameter influent pipe on the treatment plant site.
- Redesign and construction at the influent pump station to correct hydraulic surge at high flow conditions.
- Repair of defects in the east tunnel piping.

For detailed information, see the following report.

King County Auditor's Office – Cheryle Broom, County Auditor

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Capital Projects Oversight Program – Tina Rogers, Manager

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CPO oversight reports are available on the Auditor's web site (www.kingcounty.gov/operations/auditor/reports) under the year of publication. Copies of reports can also be requested by mail at 516 Third Avenue, Rm. W-1033, Seattle, WA 98104, or by phone at 206-296-1655.

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INTRODUCTION

Attached is the thirteenth quarterly *Brightwater Project Construction Phase Oversight Monitoring Consultant Report* prepared by the Oversight Monitoring Consultant (OMC), SAIC. This is prepared and issued under the council-mandated Capital Projects Oversight (CPO) Program in the King County Auditor's Office. This transmittal to the Metropolitan King County Council (Council) Government Accountability and Oversight Committee is to provide timely information on the status of the scope, schedule, budget, and risk for the Brightwater project.

We show the risk level for the Brightwater project as yellow, indicating that attention will focus on cost containment and schedule management for the remaining work, managing redesign and construction work to correct identified construction defects, and revising the forecast of total project cost and final schedule.

This report and the attached OMC report cover the third quarter of 2011, ending September 30. Where more current information is available, it has been included.

PROJECT STATUS UPDATE WITH RECOMMENDATIONS

Scope

The scope of the final project has not changed; WTD has implemented the startup of the treatment plant prior to the completion of the conveyance system, according to a revised project plan, to mitigate risks and costs associated with having the plant sit idle for a period of time before full testing and commissioning. The implementation activities are based on decisions made in mid-2010 consistent with the commissioning alternatives report developed in response to Council proviso and published in March 2010. One option identified in the report was to decommission the treatment plant some months after start up and place it on standby until completion of the conveyance system. Given the current schedule projections, WTD recently decided to implement another option identified in the report and continuously operate the plant until full commissioning occurs using the completed conveyance system. Additionally, work to convert the Influent Pump Station for full commissioning will be done under a new, separate contract.

Schedule

Newly identified work and evaluation of the critical path schedule indicate that minor construction work will continue into 2013. As the final contracts are awarded and contractor schedules become available, WTD will be able to prepare a final overall program schedule. Although most of the Brightwater Program construction proceeded nearly on schedule, delays on the Central Tunnel portion of the conveyance system have caused a significant delay in the completion date for the project. Treatment plant startup occurred on September 6, 2011, six months later than originally scheduled. The projected date for commissioning of the conveyance system is unchanged from the previous quarterly report and is projected to occur on September 26, 2012, twelve months later than originally scheduled.

Budget

Attachment A summarizes the appropriations and expenditures on the project through November 2011. Total expenditures on the project at the end of November were within 1% of the most recent cost update, as published in the 2011 Trend Report. The Trend Report estimate was based on information available as of January 2011 and did not include disputed costs associated with the Central Tunnel delay. Our oversight activities during the next quarter will include discussions with WTD on their 2012 Trend Report to ensure that it provides a comprehensive forecast of project costs at completion to inform the Council's legislative oversight and upcoming policy decisions.

The OMC continues to review publicly available project records and compile known disputed costs related to the delays in mining of the Central Tunnel. In the attached report, the OMC estimates known disputed county costs to have increased approximately one percent to \$134.6 million. The \$95.4 million counterclaim from VPFK, the Central Tunnel contractor, is based on denied claims and is unchanged from the previous report. These disputed costs are not included in the WTD cost update or the current OMC estimate of total project costs. The disputed costs will change over time as information becomes available; the full extent of and ultimate responsibility for these disputed costs may not be known for several years. Trial on these disputed costs is currently scheduled to begin on September 4, 2012.

One major component of the known disputed costs is the work done by contractor JDC to complete mining of the BT-3 portion of the Central Tunnel. The contract for this work is structured as a cost reimbursable plus fixed fee to a target price, an alternative contracting method where there is less cost certainty than a typical fixed cost contract. The JDC contract has been subject to additional scrutiny by the executive and legislative branches. WTD contracted for financial auditing of the contractor billings and makes the audit reports available for OMC and CPO review. Council required monthly reports from WTD regarding this contract. The OMC reviews this information, as directed by Council, and reports that cost categories, for the most part, are falling below the estimates used to develop the target price and costs are running approximately 13% lower than projected for the original scope of work in the original baseline schedule. Change orders have increased the scope of work and the original target price of \$68.9 million by \$25.7 million. This increase includes \$2.9 million in earned incentive payments. The contract also allows for potential additional incentive payments of \$1.8 million.

Current Issues

The OMC report discusses the remaining risks on the Brightwater project. Of greatest impact to the total project cost will be the outcome of the disputed costs related to the Central Tunnel delay.

Ongoing items of concern reported last quarter that could potentially impact project cost and schedule include:

- Repair needed on 180 feet of a 66-inch diameter force main pipe located on the treatment plant site. This pipe segment showed unacceptable deformation and must be repaired before the treatment plant can be used at full capacity. Repair of the pipe involves excavation up to 50 feet deep, under areas previously graded and landscaped. The excavation work is ongoing and plans for the repair of the pipe are being developed.
- Demand has been made on the design engineer for the influent pump station to develop alternatives for correcting unacceptable hydraulic surges in the wastewater pumping system. Work to implement the selected alternative fix is likely to occur in mid 2013 and is needed prior to using the treatment plant at full wet-weather capacity.

New issues covered in the attached report include:

- Defects in piping between the IPS and treatment plant within the East Tunnel need repair. The cost of these repairs is being submitted to the East Tunnel contractor under the warranty provisions of the contract.
- Cracking has occurred on replacement fan impellers on the odor control system at the treatment plant. The odor control system can operate using the existing impellers while resolution of the problem and installation of a second set of replacement impellers occurs. The fabrication and installation are being performed at no cost to the county by the supplier.

ACKNOWLEDGEMENTS

We appreciate the collaborative efforts of WTD, Department of Natural Resources and Parks, King County Executive Office, Prosecuting Attorney Office, and Office of Performance, Strategy and Budget in providing for effective oversight of the Brightwater Treatment System consistent with Council intent. Oversight is being conducted, and this report was prepared by a team from the King County Auditor's Office, including Tina Rogers, Susan Baugh, and Cheryle Broom. The attached report was prepared by SAIC who is under contract with the Auditor's Office to provide oversight monitoring consulting services.

No formal presentation of this quarterly report is planned. Should you have questions or comments on the report, please contact Tina Rogers, Capital Projects Oversight Manager, or Cheryle Broom, County Auditor.

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ATTACHMENTS

Attachment A - Brightwater Budget Summary through November 2011

Brightwater Project Construction Phase Oversight Monitoring Consultant Report –Quarterly Report for Quarter Ending September 30, 2011, SAIC

ATTACHMENT A

BRIGHTWATER BUDGET SUMMARY THROUGH NOVEMBER 2011

Includes Expenditures per IBIS Accounting System for
project numbers 423457, 423484, and 423575

Brightwater Appropriation/Expenditure History

Year	Appropriation	Expenditures			Cumulative Balance
		Conveyance System	Treatment Plant	Total	
1998	\$195,842	\$122,611	\$73,231	\$195,842	-
1999	1,521,938	996,094	525,844	1,521,938	-
2000	3,672,816	1,657,382	2,015,434	3,672,816	-
2001	8,422,017	2,739,756	5,440,754	8,180,510	\$241,507
2002	38,266,455	1,762,691	9,674,916	11,437,608	27,070,354
2003	80,834,249	15,928,950	46,818,655	62,747,605	45,156,998
2004	178,569,564	40,922,914	33,118,446	74,041,360	149,685,202
2005	432,633,315	36,971,596	63,257,313	100,228,909	482,089,608
2006	298,704,845	74,651,114	94,683,302	169,334,416	611,460,037
2007	528,410,201	153,321,358	62,339,610	215,660,969	924,209,269
2008	117,988,737	204,232,705	165,534,653	369,767,358	672,430,648
2009	70,669,725	158,880,957	201,690,664	360,571,621	382,528,752
2010	28,044,005	181,520,062	139,085,374	320,605,437	89,967,321
2011*	143,216,836	95,940,754	46,865,731	142,806,485	90,377,671
2012	40,408,226	-	-	-	130,785,897
Life-To-Date	\$1,971,558,771	\$969,648,945	\$871,123,929	\$1,840,772,874	\$130,785,897
2013-2017 CIP	1,137,864				
Appropriations to date plus CIP	\$1,972,696,635				

*2011 YTD is through November

Brightwater Project Construction Phase

Oversight Monitoring Consultant Report Quarterly Report for Quarter Ending September 30, 2011

King County
Brightwater Project Oversight Services
Contract No. P43024

January 2012



In association with:



Hatch Mott
MacDonald

Brightwater Project Construction Phase

Oversight Monitoring Consultant Report Quarterly Report for Quarter Ending September 30, 2011

King County
Brightwater Project Oversight Services
Contract No. P43024

January 2012



In association with:



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Brightwater Project Construction Phase Oversight Monitoring Consultant Report

Quarterly Report for Quarter Ending September 30, 2011

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Executive Summary

This Executive Summary presents highlights of the Oversight Monitoring Consultant's (OMC's) quarterly briefing on the Brightwater Project. This report covers the quarter ending September 30, 2011, and is supplemented by more recent information where available.

Key Findings

Cost

The OMC estimate of the lifetime cost of the Brightwater Program is shown in Table ES-1, unchanged from the OMC's previous Quarterly Report and the OMC April 2011 Trend Report Review¹. The 2011 OMC cost estimate does not include Known Disputed Costs that are related to the delay in the performance of the Central Tunnel contract. Trend report and OMC estimates are updated annually in the second quarter of the year.

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

Project Component	WTD Baseline Budget	WTD 2011 Trend Report ²	OMC 2011 Estimate
	3% Infl. - 5% Infl		
Conveyance	\$1,020.6 - \$1,105.5	\$964.1	\$966.5
Treatment Plant	\$639.6 - \$684.4	\$885.1	\$886.1
Subtotal	\$1,660.2 - \$1,789.9	\$1,849.2	\$1,852.6

This OMC 2011 Estimate is the lifetime cost of the Brightwater Program, and excludes Known Disputed Costs.

Consistent with previous reports, Known Disputed Costs are characterized as King County Claims or VPFK Counterclaims. OMC has updated its estimate of King County Claims from \$132.9 million in its previous Quarterly Report to \$134.6 million in this Quarterly Report. This increase is from previously unknown costs associated with the connection between the BT-3C and BT-3 tunnels. Additionally, the disputed portion of JDC Change Order 8 (CO 8) associated with completion of the west tunnel is not yet known, but could increase disputed costs by as much as \$7.5 million. The counterclaim by VPFK is unchanged at \$95.4 million.

Construction overall is 95 percent complete, with the East Tunnel contract, West Tunnel contract, and three of the four Ancillary Facilities contracts completed.

¹ Oversight Monitoring Consultant Report – Review of Brightwater Cost Update, Current Conditions and Trends, January 2011. Published July 19, 2011.

² Brightwater Cost Update. Current Conditions and Trends, January 2011. Published April 19, 2011.

Schedule

Key aspects of the schedule are:

- Conveyance system mining was completed in August 2011.
- Wastewater treatment (interim commissioning) began in September 2011.
- Full commissioning (discharge of wastewater through the marine outfall into Puget Sound) is scheduled to begin in September 2012. This date has not changed since the previous quarterly report³.

There is some construction work that will continue into 2013, after the initiation of full commissioning. The most significant of these is discussed later in this report.

Risk

The overall risk profile of the project continues to diminish as the construction nears completion. Cost risk on undisputed portions of the project is diminishing, and resolution of the disputed costs continues to be the largest outstanding component of cost risk.

A continuing emerging risk item is the need to address hydraulic surge (water hammer) issues at the Influent Pump Station. Demand has been made upon the project design engineers to identify the causes for the unacceptable surges in the wastewater pumping systems and provide design alternatives to correct the problem. WTD is currently evaluating alternatives to correct this defect, and construction to address surge issues is expected to occur in 2013. WTD anticipates having a draft evaluation of alternatives in February 2012.

³ Oversight Monitoring Consultant Report, Quarterly Report for Quarter Ending June 30, 2011. Published October 26, 2011.

Oversight Monitoring Consultant Report

Introduction

This report is a briefing on the Brightwater Project provided by the Brightwater Oversight Monitoring Consultant (OMC), working as part of the King County Auditor's Office Capital Project Oversight program. This report is based on the most current information available through the Wastewater Treatment Division's September 2011 Monthly Project Report, supplemented by more current information when available, including: construction cost information through October 31, 2011; and certain other cost, schedule, and construction progress data through October 2011 that was obtained from meetings with WTD staff.

Project Progress

The tables below illustrate construction activity for the various major construction contracts. They are not intended to be an exhaustive list of construction activity, but instead are intended to illustrate the many types of construction activities that are ongoing.

Several key milestones have been reached since the end of the second quarter:

- All conveyance system tunneling was completed on August 16, 2011.
- Wastewater treatment (interim commissioning) was initiated on September 6, 2011.

Conveyance Construction

Contract Status

Table 1 summarizes the status of the conveyance construction contracts.

Table 1: Conveyance Construction Contract Status

Contractor	Contract Name	Status (1)
KST	East Tunnel	Complete as of July 2010. Closeout is in progress.
JCT	West Tunnel	Work Complete. Change Order coordination ongoing.
VPFK	Central Tunnel	Contractor's Forecast Substantial Completion: September 2012.
JDC	BT-3 Completion	Contractor's Forecast Substantial Completion of BT-3 work: March 5, 2012. Change Order 8 executed September 9, 2011. Full Commissioning anticipated: September 2012. Substantial Completion of West Tunnel work anticipated: May 2013.
Kiewit Pacific	Influent Pump Station	Contractor's Forecast Substantial Completion: December 2011. (2)

(1) Status per WTD's September 2011 Schedule Report, except "Substantial Completion of West Tunnel work" schedule provided separately by WTD. Excludes contracts that have been closed out.

(2) Substantial Completion includes testing to the extent possible prior to the resolution of the hydraulic surge issue.

Contracts that have been closed out include:

- Marine Outfall (Triton Marine)
- Ancillary Facilities: Hollywood (McClure & Sons)
- Ancillary Facilities: North Creek (James W. Fowler)

Additional detail of construction activities for active projects are included in the tables below.

Central Tunnel (VPFK Contract)

A partial list of Central Tunnel construction activities since July 1, 2011 are shown in Table 2.

Table 2: Summary of Central Tunnel Activities Since July 1, 2011

Month	Partial List of Construction Activity	Construction Percent Complete (1)
July	BT-2 segment bolt capping completed. BT-3 TBM dismantling ongoing.	92% of the contract amount has been invoiced.
August	BT-2 work complete, accepted by WTD. BT-3 rail and utilities removal ongoing.	93% of the contract amount has been invoiced.
September	BT-3 rail and utilities removal ongoing. Invert cleaning completed.	93% of the contract amount has been invoiced.
October	BT-3 pipe-laying commenced, ongoing.	94% of the contract amount has been invoiced.

(1) As measured by '% Paid to Date' per WTD's monthly Construction Reports. This calculation includes the \$20 million in Conditional Change Orders, which have been invoiced and paid, but for which the County seeks reimbursement. These are considered Known Disputed Costs and are discussed at greater length in OMC's 2011 Trend Report Review and later in this report.

BT-3C (JDC Contract)

A partial list of BT-3C construction activities since July 1, 2011 are shown in Table 3.

Table 3: Summary of BT-3C Activities Since July 1, 2011

Month	Partial List of Construction Activity	Construction Percent Complete (1)
July	99% of mining completed. Mined to within 100 feet of BT-3 TBM.	87% of the then-current contract amount has been invoiced.
August	Mining completed. CO8 negotiations completed. Began dismantling TBM. Ground freeze demob.	88% of the then-current contract amount has been invoiced.
September	CO8 executed. TBM dismantling ongoing. Began compaction grouting at ground freeze.	81% of the contract amount has been invoiced. Percentage decreased because the contract amount was increased to include CO8.
October	Completed TBM dismantling. Continued compaction grouting at ground freeze. Connection prepped for shotcreting.	87% of the contract amount has been invoiced.

(1) As measured by '% Paid to Date' per WTD's monthly Construction Reports.

Change Order 8 (CO 8) was executed on September 9, 2011. A portion of CO 8 covers the connection between BT-3C and BT-3.⁴ The majority of the CO 8 scope is the West Tunnel completion work (deleted from JCT's West Tunnel Contract by Change Order 15). This work is referred to in previous reports as West Tunnel Completion, and in this report as CO 8. Table 4 summarizes the Milestones and proposed schedule for CO 8 construction activities, as reported by WTD.

Table 4: Summary of CO 8 Schedule

Milestone	Date	Task Description
No Contract Milestone	1/27/12	JDC Submit/Procure/Subcontract Preparation
No Contract Milestone	3/5/12	Commence CO 8 Work
Milestone 4	6/18/12	Complete Ballinger Way Portal and Vacate Portal Site
Milestone 5	9/13/12	Complete JDC Work for Full Commissioning
Substantial Completion	5/29/13	Site Restoration, Work Complete

Influent Pump Station (Kiewit Contract)

A partial list of Influent Pump Station construction activities since July 1, 2011 are shown in Table 5.

⁴ JDC's work on the connection between BT-3C and BT-3 is addressed in two separate change orders. CO 4 is the majority of the connection work, including ground freezing. A small portion (less than five percent) of CO 8 is the "shotcrete" in-situ tunnel lining.

Table 5: Influent Pump Station Activities Since July 1, 2011

Month	Partial List of Construction Activity	Construction Percent Complete (1)
July	Component & System Testing ongoing.	89% of the contract amount has been invoiced.
August	Component & System Testing ongoing.	90% of the contract amount has been invoiced.
September	Began interim commissioning. Component & System Testing ongoing.	91% of the contract amount has been invoiced.
October	Interim commissioning ongoing. Component & System Testing ongoing.	93% of the contract amount has been invoiced.

(1) As measured by '% Paid to Date' per WTD's monthly Construction Reports.

Treatment Plant Construction

Liquids (Hoffman Contract)

A partial list of liquids construction activities since July 1, 2011 is shown in Table 6.

Table 6: Liquids Contract Activities Since July 1, 2011

Month	Partial List of Construction Activity	Construction Percent Complete (1)
July	Operational tests ongoing. Misc. punchlist activities.	95%
August	Substantial Completion achieved. Final earthwork almost complete.	96%
September	Began wastewater commissioning. Began excavation of 66" pipe. Misc. punchlist activities.	96%
October	Wastewater commissioning ongoing. Excavation of 66" pipe ongoing. Misc. punchlist activities.	97%

(1) As measured by '% Paid to Date' per WTD's monthly Construction Reports.

WTD anticipates that Final Acceptance will occur on March 31, 2012.

Solids (Kiewit Contract)

A partial list of Solids/Odor Control construction activities since July 1, 2011 is shown in Table 7.

Table 7: Solids/Odor Control Contract Activities Since July 1, 2011

Month	Partial List of Construction Activity	Construction Percent Complete (1)
July	System and Operational Testing completed. Punchlist activities ongoing.	98%
August	Substantial Completion achieved. Misc. punchlist activities.	98%
September	Misc. punchlist activities.	99%
October	Misc. punchlist activities.	99%

(1) As measured by '% Paid to Date' per WTD's monthly Construction Reports.

WTD anticipates that Final Acceptance will occur on February 28, 2012.

Analysis and Findings

Cost

OMC Estimate

OMC's estimated costs at project completion have not changed since OMC published its 2011 Trend Report Review on July 14, 2011. Revisions are done annually and published in the second quarter. Table 8 summarizes the costs at project completion as estimated by WTD's 2011 Trend Report and OMC's 2011 Trend Report Review.

Table 8: Estimated Costs at Project Completion (nominal \$million)

Project Component	WTD Baseline Budget	WTD 2011 Trend Report	OMC 2011 Estimate
	3% Infl. - 5% Infl		
Conveyance	\$1,020.6 - \$1,105.5	\$964.1	\$966.5
Treatment Plant	\$639.6 - \$684.4	\$885.1	\$886.1
Subtotal	\$1,660.2 - \$1,789.9	\$1,849.2	\$1,852.6

This OMC 2011 Estimate is the lifetime cost of the Brightwater Program, and excludes Known Disputed Costs.

Known Disputed Costs

Table 9 summarizes Known Disputed Costs related to delay in the performance of the Central Tunnel contract as reported by OMC in the 2011 Trend Report Review, and adjusted for changes since the April 2011 publication of WTD's Trend Report.

Table 9: Summary of Known Disputed Costs, \$M

Disputed Cost (1)	OMC Q2 Qtly Report	Adjustments since OMC Q2 Qtly Report		Total
		Amount	Note	
King County Seeks Reimbursement for the Following Costs				
Construction Cost - Paid by WTD	\$88.2	\$5.8	(2)	\$94.0
Construction Cost - Contractual Obligation to Pay in Future	\$18.6	(\$4.1)	(3)	\$14.5
Non-Construction Costs	\$26.1	\$0.0	(4)	\$26.1
King County Claims - Total	\$132.9			\$134.6
King County Denies Obligation to Pay the Following Costs				
VPFK Counterclaim - Total	\$95.4	\$0.0		\$95.4

Notes:

- (1) The OMC adjusted amount was developed from publicly available data.
- (2) Increased to reflect BT-3C construction progress, incentives, and associated sales tax from 7/31/11 to 10/31/11.
- (3) Reduced to reflect BT-3C construction progress. This is included in the \$5.8 million above. May include some minimal amount of undisputed costs from JDC CO 8 work for west tunnel completion. OMC believes this is minimal because the majority of CO 8 work will be done in 2012.
- (4) Includes costs already incurred by WTD and costs projected to be incurred.

OMC's estimate of King County Claims is based on publicly available information and has increased by \$1.7 million since July 2011. This increase is mostly from invoiced costs associated with the connection (primarily ground freezing), which was not part of the originally contracted scope. The Known Disputed Costs compiled by OMC will continue to change over time as information becomes available. The above summary does not include the following:

- Remaining JDC incentives that have not yet been earned. JDC has the potential to earn up to another \$1.83 million in incentives. The actual amount will depend on the date future milestones are met.
- Portions of CO 8 work considered to be disputed. The amount is yet to be determined.
- Other future change orders or contracts that would be considered Known Disputed Costs.

The Known Disputed Costs (in Table 9) and the lifetime cost estimate (in Table 8) are not additive. Because they are by definition "disputed", the final set of costs, final amount, and determination of responsibility has not been established.

GC/CM Contract Considerations

As of November 28, 2011, the remaining buyout savings were approximately \$4.2 million. This is \$0.8 million less than the previous Quarterly Report. The main use of buyout savings was modifications and re-design of Alpha Mound earthwork at the wastewater treatment plant. At the end of the project, unused buyout savings will be returned to the County via a deductive change order.

Use of the Maximum Allowable Construction Cost (MACC) Contingency has remained fairly steady for the past two years, averaging approximately \$330,000 per month. As of October 31, 2011, there is \$437,350 of MACC Contingency remaining, including pending changes. At the end of the project, any unused MACC Contingency is returned to the County via a deductive change order.

BT-3C Contract Update

OMC has conducted monthly reviews of the BT-3C documentation that WTD provides to the Auditor's Office in accordance with the reporting requirements of the Executive's Declaration of Emergency waiver.

Original Scope of Work

For the scope of work included in the baseline schedule, actual costs are lower than the baseline costs. This remains true even after adding the cost of incentives earned by JDC. Invoiced reimbursable costs are approximately 13% lower than projected as of October 31, 2011 in the baseline cost-loaded schedule.

Within the reimbursable expenses, Subcontractor and Material expenses have trended higher than projected in the cost-loaded baseline schedule, but labor expenses have been lower.

Ground Freezing

Ground freezing costs at the connection between the two tunnel boring machines were not included in the JDC's original scope of work. Ground freezing work was added to JDC's contract by CO4, with an executed value of approximately \$3.9 million. As of October 31, 2011, the invoiced reimbursable cost of the ground freezing was \$7.1 million. The Central Tunnel contractor also has incurred costs associated with ground freezing and other work at the TBM connection point. These costs are tracked under WTD's Field Directive 39 to VPFK, and as of 10/31/11, VPFK has submitted cost proposals of approximately \$4.5 million for this work.

JDC Contract Incentives

Table 10 shows the incentives associated with the JDC contract, including incentives associated with additional scope added via change orders. To date JDC has earned \$2.95 million in incentives. Remaining incentives of \$1.83 million which could be earned include the incentive for the BT-3C Target Completion Date (March 5, 2012), CO 8 Completion (September 13, 2012), Substantial Completion (March 29, 2013), and the Contractor and Employee Safety Incentives.

Table 10: Incentive Status

Incentives Earned to Date	Original Scope	Revised w/ CO4 (Ground Freeze)	Modified w/ CO8 (West Tunnel & In situ Lining)	Status
Milestone 1 (Start of Mining)	✓			\$500,000 Paid.
Milestone 2 (Mine to Connection)	✓			\$2,000,000 Paid.
Milestone 3 (Start Phase 1 Ground Freeze)		✓		\$400,000 Paid.
BT-3C Target Completion	✓			Not Yet Earned. \$500,000 plus \$15,000/day early.
Milestone 5 (CO 8)			✓	Not Yet Earned. \$50,000 plus \$25,000/day early.
Substantial Completion			✓	Not Yet Earned. \$50,000 plus \$10,000/day early.
Contractor Safety Incentives	✓			Not Yet Earned. Capped at \$240,000.
Employee Safety Incentives	✓			\$60,637 Paid to Date. Capped at \$114,133.
Incentive Cap	\$3,700,000	\$4,000,000	\$4,790,000	\$2.96M Earned Through 10/31/11

WTD has hired MRW Advisory, LLC (MRW) to audit JDC's pay requests. MRW issues reports on a periodic basis; its August 4, 2011 report was its fifth, and most recent.

Change Order Status

The most recent claim and change order data is from WTD's October 31, 2011, construction reports, and is as follows:

- Overall project construction is 95% complete as of October 31, 2011, excluding non-Brightwater Program costs, and excluding contracts which have not yet been bid.
- Conveyance construction is approximately 93 percent complete, measured as percent of contract value earned by construction contractors, less non-Brightwater Program costs and excluding contracts which have not yet been bid. The sum of executed Conveyance change orders is approximately 16.2 percent of the original construction contract value.
- Treatment Plant construction progress is approximately 97 percent complete, and the sum of executed Treatment Plant change orders is approximately 3.9 percent of the original construction contract value.

Table 11 summarizes, for each of the major construction contracts, construction progress described by payments to contractors, the amount of executed change orders, and change orders as a percent of amount paid to the contractor.

Table 11:
Construction Progress and Change Order Summary by Contract as of October 31, 2011

Major Construction Contract	Amount Paid to Contractor \$M, (1,2)	Percent Construction Complete (1,2)	Executed Change Orders (2)		Original Contingency % (3)
			\$M	% of Paid	
Marine Outfall	\$29.8	100%	\$2.2	7%	10.0%
West Tunnel (JCT)	\$105.1	98%	\$15.4	15%	12.5%
BT-3C (4)	\$71.0	75%	\$25.7	36%	n/a
Central Tunnel (5)	\$211.4	94%	\$32.9	16%	15.0%
East Tunnel	\$138.1	100%	\$7.3	5%	10.0%
IPS	\$99.3	93%	\$15.2	15%	15.0%
Liquids Stream	\$296.2	97%	\$10.9	4%	
Solids Stream	\$172.0	99%	\$7.4	4%	10.0%

(1) Measured by Milestone-Based Payments to Contractors. Amount paid divided by sum of original contract value plus executed change orders. Central Tunnel paid to date includes amounts paid under Conditional Change Orders 13, 15 and 18, and the ultimate payment responsibility has yet to be determined.

(2) As of October 31, 2011. Deductive change orders to remove scope are not included when calculating the amount of change orders as a percent of amount paid. Instead, they are included in the Percent Construction Complete, where the percent complete is based on the original contract value, plus executed change orders related to construction work performed, less deductive change orders that change the scope of the project. This is particularly true for the West Tunnel contract, where JCT's bid cost for the Final Work was removed from the JCT contract.

(3) Comparing executed change orders with WTD's original construction contingency is difficult for the treatment plant. First, the treatment plant contingency was developed prior to the treatment plant being split into separate liquids and solids contracts. Second, the executed liquids change orders do not include use of the \$10M MACC contingency, but the total construction contingency does include the MACC contingency.

(4) Includes \$2.9 million in incentive payments. Includes costs associated with CO 8.

(5) Includes Central Tunnel \$20M conditional change orders.

Table 11 shows that executed change orders, as a percent of the amount paid to contractors, are below the percentages initially estimated by WTD in previous contingency projections. The four contracts with the highest percentage of change orders are West Tunnel, BT-3C, Central Tunnel, and IPS. The following explains the sources of the higher percentages.

- West Tunnel, where a \$4.8 million change order was executed to cover certain activities related BT-3 completion prior to execution of the BT-3C contract. This change order is considered a Known Disputed Cost.
- BT-3C, where the majority of executed change orders are scope additions, rather than changes on the original scope of work.
- Central Tunnel, where executed change orders include \$20 million associated with conditional change orders, that are Known Disputed Costs.
- IPS, where the majority of the change orders are either Known Disputed Costs, or related to impacts from the East Tunnel construction.

Non-Construction Cost Review

OMC has reviewed WTD's ramp down of non-construction costs as the project nears completion. Table 12 presents engineering, planning and management, and staff labor as reported by WTD, showing cumulative 2011 expenditures with comparisons to 2010 actual expenditures and WTD's projection for 2011 in its 2011 Trend Report. The data in Table 12 includes some Known Disputed Costs. As of WTD's 2011

Trend Report, it was expected that overall expenditures would decrease approximately 15% relative to 2010. Based on year-to-date costs through October 2011, if costs in last two months of the year are incurred at the same rate as the first three quarters, it is expected that Conveyance Engineering, Planning and Management will be higher than projected in WTD's 2011 Trend Report, while Treatment Plant Engineering, Planning and Management will be slightly lower. Staff Labor has exceeded the projection in WTD's 2011 Trend Report, and, if costs are incurred at the same rate, will be similar to the costs incurred in 2010.

Table 12: Engineering, Planning & Management, and Staff Labor Costs

	2010 Actual	2011 Trend Report	2011 YTD Through October	YTD as % of Trend Report Projection
Conveyance - Eng, Planning & Mgmt	\$17,477,817	\$16,526,540	14,133,612	85.5%
Treatment Plant - Eng, Planning & Mgmt	\$9,314,393	\$6,734,312	5,352,780	79.5%
Staff Labor	\$6,155,517	\$4,650,034	5,224,095	112.3%
Total	\$32,947,727	\$27,910,887	\$24,710,487	88.5%

Contingency

WTD reported a \$33.9 million conveyance contingency in the 2011 Trend Report. OMC estimates that as of October 31, 2011, approximately \$35.7 million remains. This number is higher because it corrects for approximately \$5.9 million of Known Disputed Costs which were deducted in error from contingency in the Trend Report. This OMC analysis revises the contingency by subtracting the value of executed, non-disputed change orders.

Of WTD's \$10.6 million treatment plant contingency remaining as of December 31, 2010 (which includes the MACC contingency), as shown in the 2011 Trend Report, approximately \$1.2 million remains as of October 31, 2011. The majority of the contingency use between July 31, 2011 and October 31, 2011 has been on the Liquids (Hoffman) contract.

OMC has not changed the conclusion it expressed in its 2011 Trend Report Review, which is that WTD's remaining contingency will likely be sufficient to cover cost risks in non-disputed portions of the Brightwater project.

Schedule

The projected commissioning schedule is shown in Table 13. It shows the schedule as of the March 2010 Commissioning Alternatives Report, the previous OMC Quarterly Report, and the end of this quarter.

The date to begin Full Commissioning is now estimated to be seven months later than the preliminary schedule used in the March 2010 report "*Commissioning Alternatives Brightwater Treatment Plant*". One option identified in the report was to decommission the Plant and place it on standby until completion of the Conveyance System. In the fourth quarter of 2011, WTD decided to implement another option identified in the report and continuously operate the Brightwater Treatment Plant through 2012.

The critical path for Full Commissioning remains the BT-4 Lining / Piping, followed by the Sampling Facility & Tie-In at Point Wells. There is a secondary critical path, the BT-3 Lining and North Kenmore Portal work, which is scheduled to be completed two weeks before the primary critical path is completed. This schedule has not changed significantly from the previous OMC Quarterly Report.

Table 13: Projected Commissioning Schedule

	3/30/10 Commissioning Alternatives Report As of 9/30/11	
Start Interim Commissioning	8/15/2011	9/6/2011 (actual)
BT-2 Lining		8/17/2011 (actual)
BT-3 Lining		2/24/2011
N. Kenmore Portal		8/31/2012
BT-3C Mining		8/16/2011 (actual)
BT-4 Lining/Piping		8/3/2012
Sampling Facility and Tie-In		9/13/2012
		} ← Critical Path to Full Commissioning
Start Full Commissioning	2/15/2012	9/13/2012

Contracts Remaining to Bid

Odor control facilities at the Ballinger Way and North Kenmore Portals. The engineer's 60% estimate for this work is \$2.34 million and the contract is currently out for bid. Construction is scheduled for March 2012 through October 2013. This contract has been planned for some time and has been previously reported in previous OMC reports and in WTD's Trend Reports.

IPS Conversion and Full Commissioning. This is an unanticipated contract that includes the conversion of the IPS from operating under Interim Commissioning (treatment plant discharge to sewer collection system) to Full Commissioning. There is no estimate of the magnitude of this contract at this time. This contract is expected to be bid in early 2012 with construction occurring in 2012, and will be done as a separate contract from the current IPS construction contract.

Addressing hydraulic surge issues at the IPS. This is an unanticipated contract. There is no estimate of the magnitude of this contract at this time. The construction work is expected to occur in 2013. This issue is covered in more detail in the Risk section of this report.

Wetlands Restoration at the North Kenmore Portal. The contract is scheduled to be advertised in late 2012 to accommodate long lead time plantings, with construction to begin in mid-2013.

Effluent Sampling Station and Point Wells Site Restoration. This work was originally part of the West Tunnel contract, but was removed from the West Tunnel contract by deductive change order in JCT CO 15. It is included in the BT-3C contract via Change Order 8. Construction of these specific facilities is expected to occur from March 2012 to May 2013.

Diffuser Cap Removal. This is associated with the Marine Outfall. This contract has been planned for some time and will be completed prior to full commissioning.

Risk and Issues

WTD issues weekly Risk Logs that classify identified risks based on their impact and probability. The following list summarizes open risk items with a rating of ‘High’⁵ probability for occurrence, according to the Risk Logs as of December 5, 2011.

High Probability Conveyance Risk Items: None identified

High Probability Treatment Plant (TP) Risk Items:

- Unacceptable hydraulic surge (water hammer) pressure in the force mains result in pipe damage. An alternatives report is being prepared to develop alternatives and describe the preferred alternative. WTD’s risk register indicates that a 30 percent design is scheduled for February 2012 and, as noted above, additional construction would occur in 2013.
- Leaks are detected in force mains or effluent piping between the IPS and Plant. WTD is addressing this by developing a repair plan and a scope of work for a possible follow-on contract.
- Inspection of the 66-inch force main section as part of the treatment plant yard piping indicates unacceptable deformation requiring excavation and repair. Excavation is ongoing and WTD anticipates this work will be complete in March 2012.

An additional ongoing risk item is impeller breakage on the Wastewater Treatment Plant odor control fan system during testing. Replacement impellers for the odor control fans are in fabrication and undergoing testing at the factory. Installation has begun as the impellers are delivered to the site and will continue through February 2012. Since this defect was identified the impeller fans have been replaced twice due to cracking. This issue is not expected to have a schedule impact, and is assessed in WTD’s Risk Register as having medium probability and medium impact.

⁵ High probability is defined as having a greater than 75% chance of occurrence.