

- **Board of Directors**  
**Engineering and Capital Programs Committee**

January 9, 2007 Board Meeting

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**9-1**

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**Subject**

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Status report for the Inland Feeder Program for activities through November 2006

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**Description**

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**Work Completed to Date**

The Inland Feeder Program consists of 44 miles of pipelines and tunnels that will enable Metropolitan to convey up to 1,000 cubic feet per second of State Water Project (SWP) supplies from Devil Canyon Afterbay to Diamond Valley Lake (DVL). To date, eight of nine construction contracts totaling \$542 million have been completed. These completed contracts represent 36.3 miles or 82 percent of the Inland Feeder's length. Remaining program work includes completion of the Arrowhead East and West Tunnels, which are presently under construction by a joint venture of Shea/Kenny.

The completed portion of the Inland Feeder has been in service since 2003 via an interconnection that was constructed between the Inland Feeder and San Bernardino Valley Municipal Water District's Foothill Pipeline. This connection allows Metropolitan to convey SWP supplies from the East Branch of the California Aqueduct to the Inland Feeder for delivery to DVL. Over 450,000 acre-feet of SWP water have been delivered to DVL to date through this connection.

**Arrowhead Tunnels**

Arrowhead East Tunnel – In November, the tunnel boring machine (TBM) was stuck for three weeks. The contractor broke the machine free on December 1 and made good progress despite ground conditions which deteriorated due to highly weathered and altered rock consistent with passing near a fault zone. The screw auger for the TBM was replaced in early December within five working days by the contractor. In November, the TBM advanced a total of 280 feet, while another 60 feet were mined in the first week in December. The total length of tunnel mined to date is 16,330 feet (73% of the tunnel's length).

Arrowhead West Tunnel – Favorable ground conditions allowed the contractor to perform consistent mining during the month. In November, the TBM advanced a total of 575 feet, while another 170 feet were mined in the first week in December. The total length of tunnel mined to date is 8,185 feet (41% of the tunnel's length).

**Program Management**

Metropolitan staff completed development of the contractor's incentive program and is implementing a protocol to thoroughly review billing statements from the contractor. Staff from Metropolitan and the contractor continue to work closely to develop innovative grouting methodologies to improve performance in poor ground conditions. The contractor is now purchasing equipment to enable high-pressure grouting in poor ground conditions.

**Budget and Schedule**

Following board authorization of the settlement agreement and contract amendment in August, staff conducted a complete review of the program budget to estimate the total projected cost to complete the Inland Feeder Program. Based on the revised September 2010 completion date of the Arrowhead Tunnels as presented to the Board in August (see [Attachment 1](#) for the Projected Cost/Expenditures), the updated total projected cost for the Inland Feeder is estimated to be \$1.129 billion. Total expenditures through November 2006 are \$901.9 million. The board-approved budget for the entire program remains at \$1.186 billion. [Attachment 2](#) shows the actual

mining progress and cash flow on both tunnels compared to the planned progress and expenditures set forth in the August 2006 contract amendment.

Methods to implement the contractor’s incentive/risk program were discussed with the Board at the November 2006 Engineering and Operations committee meeting. The incentive plan is part of the contract amendment approved by the Board in August 2006. The incentive payment to the contractor for the month of November 2006 is shown in [Attachment 1](#).

Upon completion of construction, environmental mitigation measures will continue along the Arrowhead Tunnels alignment for up to two years in accordance with the Environmental Impact Report.

**Policy**

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Submitted per request of the Board

**Fiscal Impact**

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Refer to [Attachment 1](#).

 _____ Roy L. Wolfe Manager, Corporate Resources	12/15/2006 Date
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 _____ Jeffrey Kightlinger General Manager	12/19/2006 Date
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**Attachment 1 – Inland Feeder Program Projected Cost/Expenditures and Incentive Plan Payments**

**Attachment 2 – Arrowhead Tunnels Actual vs. Planned Mining Progress and Actual vs. Planned Cash Flow**

<b>Inland Feeder Program Projected Cost/Expenditures (\$ in Millions)</b>				
	Projected Cost To Complete (Updated Nov. 2006)	Expenditures This Month (Nov. 2006)	Expenditures To Date (Nov. 2006)	% Complete Based on Expenditures (Nov. 2006)
<u>Active Construction</u>				
Arrowhead Tunnels Const. Contract	\$ 397.0	\$ 14.5	\$ 196.6	50%
Construction Inspection and Support	\$ 55.0	\$ 1.0	\$ 32.8	60%
<b>Subtotal, Active Construction</b>	<b>\$ 452.0</b>	<b>\$ 15.5</b>	<b>\$ 229.4</b>	<b>51%</b>
<u>Other Components</u>				
Completed Projects	\$ 576.7	\$ 0.2	\$ 575.2	100%
Others (R/W, Env., Prog. Mgmt.)	\$ 101.2	\$ 0.3	\$ 97.3	96%
<b>Subtotal, Other Components</b>	<b>\$ 677.9</b>	<b>\$ 0.5</b>	<b>\$ 672.5</b>	<b>99%</b>
Expended To Date		\$ 16.0	\$ 901.9	76%
Subtotal, All Projects	\$ 1,129.9	← Projected Cost to Complete		
Remaining Budget	\$ 56.5			
Board-Authorized Budget	\$ 1,186.4	← Total Project Budget		
Length of Tunnels Mined Through 12/7/06				
Arrowhead East	16,330 ft	of 22,458 ft	(73%)	
Arrowhead West	8,185 ft	of 19,884 ft	(41%)	
Total	24,515 ft	of 42,342 ft	(58%)	

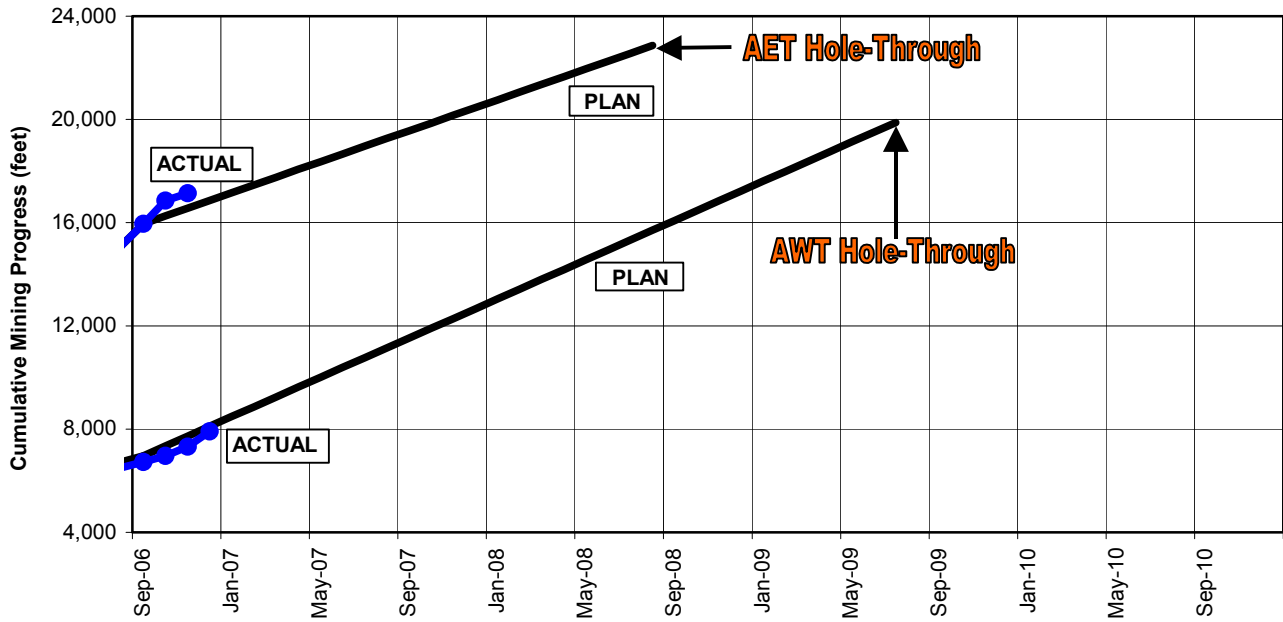
NOTE: Contractor invoices paid through November 2006 = \$193.6M  
 Overall completion = 36.3 of 44.2 miles (82%)

<b>Inland Feeder Program – Arrowhead Tunnels Incentive Plan Payments</b>				
	East/West Tunnels Cumulative Feet Mined	East Tunnel	West Tunnel	Total
May 2006 - Oct. 2006 (Previously Reported)	5,250	\$ 751,600	\$ 473,093	\$ 1,224,693
November 2006	1,040	\$ 28,600	\$ 137,400	\$ 166,000
<b>TOTALS</b>	<b>6,290</b>	<b>\$ 780,200</b>	<b>\$ 610,493</b>	<b>\$ 1,390,693 (2)</b>

(1): For Arrowhead West Tunnel, incentive program evaluation commenced in June 2006.

(2): Percent of maximum possible combined incentive: 71% (71% Arrowhead East Tunnel, 68% Arrowhead West Tunnel)

### Arrowhead Tunnels Actual vs. Planned Mining Progress



### Arrowhead Tunnels Actual vs. Planned Cash Flow

