SEASIDE GROUNDWATER BASIN WATERMASTER
REGULAR BOARD MEETING
WEDNESDAY, AUGUST 7, 2013 - 2:00 P.M.
MEETING LOCATION
MONTEREY REGIONAL WATER POLLUTION CONTROL AGENCY
BOARD ROOM, 5 HARRIS COURT, BUILDING “D”
“RYAN RANCH”
MONTEREY, CALIFORNIA

WATERMASTER BOARD:
Coastal Subarea Landowner – Director Paul Bruno, Chair
City of Seaside – Mayor Ralph Rubio Vice Chair
City of Sand City – Mayor David Pendergrass
California American Water – Director Eric Sabolsice
Monterey Peninsula Water Management District – Director Bob Brower
Laguna Seca Subarea Landowner – Director Bob Costa
City of Monterey – Mayor Chuck Della Sala
City of Del Rey Oaks – Mayor Jerry Edelen
Monterey County/Monterey County Water Resources Agency – Supervisor Dave Potter, District 5

I. CALL TO ORDER

II. ROLL CALL

III. MINUTES
The minutes of the Regular Board meeting of May 1, 2013 are attached to this agenda. The Board is requested to consider approving the minutes.

IV. REVIEW OF AGENDA
If there are any items that arose after the 72-hour posting deadline, a vote may be taken to add the item to the agenda pursuant to the requirements of Government Code Section 54954.2(b). (A 2/3-majority vote is required).

V. PUBLIC COMMUNICATIONS
Oral communications is on each meeting agenda in order to provide members of the public an opportunity to address the Watermaster on matters within its jurisdiction. Matters not appearing on the agenda will not receive action at this meeting but may be referred to the Watermaster Administrator or may be set for a future meeting. Presentations will be limited to three minutes or as otherwise established by the Watermaster. In order that the speaker may be identified in the minutes of the meeting, it is helpful if speakers would use the microphone and state their names. Oral communications are now open.

VI. CONSENT CALENDAR

A. Consider Approval of Summary for Payments made during the months of May, June and July, 2013 totaling $9,925.20.
B. Consider Approving Fiscal Year Financial Reports through July 31, 2013

VII. ORAL PRESENTATION

None Schedule
VIII. OLD BUSINESS

A. COMMITTEE REPORTS

1. TECHNICAL ADVISORY COMMITTEE (TAC)

   a). Report by Staff, followed by Discussion and possible Decisions by the Board on Evaluation of Potential Sources of Water That Could be Used to Replenish the Seaside Basin and Help to Achieve Protective Water Levels

   b). Presentation by HydroMetrics, followed by Discussion and Possible Decisions by the Board on Results of Groundwater Modeling of Coastal Well Injections in the Seaside Basin

IX. NEW BUSINESS

   None Scheduled

X. INFORMATIONAL REPORTS (No Action Required)

   A. Timeline Schedule of Milestone Dates (Critical date monitoring)
   B. Technical Advisory Committee (TAC) minutes from May 8th and June 19, 2013 meetings

XI. DIRECTOR’S REPORTS

XII. EXECUTIVE OFFICER COMMENTS

XIII. NEXT REGULAR MEETING DATE: September 4, 2013 (MRWPCA-BOARD ROOM) 2:00 P.M.

XIV. ADJOURNMENT

This agenda was forwarded via e-mail to the City Clerks of Seaside, Monterey, Sand City and Del Rey Oaks; the Clerk of the Monterey Board of Supervisors, the Clerk to the Monterey Peninsula Water Management District; the Clerk at the Monterey County Water Resources Agency, Monterey Regional Water Pollution Control Agency and the California American Water Company for posting on August 2, 2013 per the Ralph M. Brown Act, Government Code Section 54954.2(a).
ITEM NO. III.

MINUTES
I. CALL TO ORDER
Chair Bruno called the meeting to order at 2:00 p.m.

II. ROLL CALL
Coastal Subarea Landowner – Director Paul Bruno, Chair
California American Water (“CAW”) – Director Eric Sabolsice
City of Seaside – Mayor Ralph Rubio
City of Del Rey Oaks – Mayor Jerry Edelen
Laguna Seca Subarea Landowner – Director Bob Costa arrived after roll call
City of Sand City – Mayor Dave Pendergrass
Monterey Peninsula Water Management District (“MPWMD”) – Director Judi Lehman, Alternate

Absent: City of Monterey – Mayor Charles “Chuck” Della Sala
Monterey County/Monterey County Water Resources Agency (“MCWRA”) – Supervisor David Potter

III. APPROVAL OF MINUTES
Moved by Mayor Pendergrass, seconded by Mayor Edelen, and carried, to approve the minutes of the April 3, 2013 Watermaster regular meeting. Director Lehman abstained having not attended the meeting.

IV. REVIEW OF AGENDA
There were no requested changes to the agenda.

V. PUBLIC PARTICIPATION/ORAL COMMUNICATIONS
There were no public communications.

VI. CONSENT CALENDAR
A. Consider approval of Summary for Payments made during April 2013 totaling $9,532.50.
B. Consider approving fiscal year financial reports through April 30, 2013.

Moved by Mayor Rubio, seconded by Director Sabolsice, and unanimously carried, to approve the consent calendar as presented.

Director Bruno requested staff review the Monitoring and Management – Operations Fund financial report in this packet: The amount encumbered exceeds the amount budgeted.

VII. ORAL PRESENTATION: None scheduled.

VIII. OLD BUSINESS
A. COMMITTEE REPORTS
1. TECHNICAL ADVISORY COMMITTEE (TAC) AND BUDGET AND FINANCE COMMITTEE
The board received and reviewed the memorandum from CEO Evans and Technical Project Manager Jaques regarding funding of HydroMetrics Water Resources Inc.,
RFS No. 2013-03 to perform modeling of replenishment injection at sites near the coast.

Moved by Mayor Rubio, seconded by Mayor Edelen, and unanimously carried to approve RFS No. 2013-03 to be funded from the approved FY 2013 budget account contingency in the Monitoring and Management Operations Fund for HydroMetrics Water Resources Inc. to perform modeling of replenishment injection at sites near the coast, in an amount not to exceed $9,990.

X. NEW BUSINESS

A. The board received and reviewed the memorandum from staff regarding California American Water request for credit against Replenishment Assessment. At 2:16 p.m. Mayor Rubio assumed chairmanship after Director Bruno recused himself due to his company having performed services in conjunction with the Coastal Water Project. Director Bruno stated he would retain the right to participate in credit requests in the future involving his company’s services if he so desired since he was recusing himself not due to a conflict in the matter, but to avoid any semblance of partiality or bias.

Moved by Mayor Pendergrass, seconded by Mayor Edelen, and unanimously carried to approve the California American Water request to allow a credit for actual expenditures incurred in calendar year 2010 for pursuing the Coastal Water Project amounting to $5,111,413 to be used to offset the Watermaster Year 2011/2012 Overproduction Replenishment Assessment.

At 2:17 p.m. Director Bruno resumed chairmanship.

XI. INFORMATIONAL REPORTS (No Action Required)

A. Timeline Schedule of Milestone Dates (Critical date monitoring)
B. Technical Advisory Committee (TAC) minutes from April 10, 2013.

XI. DIRECTORS’ REPORTS

There were no comments from the board.

XII. EXECUTIVE OFFICER COMMENTS

Watermaster has not received any documents from the court in response to its filing of the 2012 Annual Report to Court by December 15, 2012; CEO Evans will continue to attempt to contact the court to confirm that a minute order will not be issued. The next Watermaster board meeting is scheduled for June 5, 2013 however at this point there are no agenda items pending. The next TAC meeting will be Wednesday, May 8, 2013 at 1:30 p.m. in the MRWPCA conference room. The June TAC meeting has been rescheduled to Wednesday, June 19, 2013.

XIII. NEXT MEETING DATE – It was agreed that the next meeting would be a Regular Meeting held on Wednesday, June 5, 2013, at the Monterey Regional Water Pollution Control Agency (MRWPCA) Board meeting room at 5 Harris Court, Building "D" on Ryan Ranch in Monterey at 2:00 p.m.

XIV. There being no further business, Chair Bruno adjourned the meeting 2:20 p.m.
ITEM NO. VI.

CONSENT CALENDAR
TO: Board of Directors  
FROM: Dewey D Evans, CEO  
DATE: August 7, 2013  
SUBJECT: Summary of Payments Authorized to be paid during the months of May, June and July, 2013

PURPOSE: To advise the Board of payments authorized to be paid during the months of May, June and July, 2013 totaling $34,448.95

RECOMMENDATIONS: Consider approving the payment of bills submitted and authorized to be paid during the months of May, June and July, 2013.

COMMENTS and FISCAL IMPACT:

MAY, 2013

DDEvans Consulting (Professional Services Agreement—CEO)—April 22, 2013 through May 22, 2013 worked on Watermaster business a total of 47.5 hours at $100.00 per hour or $4,750.00 Responded to telephone inquiries, e-mail, and other correspondence as needed regarding the Seaside Basin. Received and reviewed water production and water level reports. Worked on May 1, 2013 Board meeting agenda packet. Sent out May 1st Board meeting packet to Board and others as appropriate. Attended May 1, 2013 Board meeting and conducted follow-up actions as needed. Sent requested material to Russ McGlothlin; Sent out public posting notice of May 1st Board meeting. Received and reviewed TAC agenda packet from Bob Jaques; met with Bob Jaques and Laura Dadiw on ways to replenish the Basin.

Robert “Bob” Jaques (Technical Program Manager)— worked on Watermaster business a total of 52.5 hours at $100.00 per hour or $5,250.00 Responded to email, telephone inquiries and other correspondence on a variety of Watermaster issues. Worked on TAC meeting agenda items; worked on TAC, emails and telecons issues. Prepare for and attended TAC meeting on May 8, 2013, took care of follow-up items from TAC meeting as needed. Processed and delivered HydroMetrics invoices to WM offices. Worked on June 19th TAC meeting agenda items; Met with D Evans and L. Dadiw on financial aspects of obtaining replenishment water for Basin.

HydroMetrics Water Resources Inc.—One Invoice was received for $952.50 covering the month of March, 2013 for general consulting work and preparing for and attending the April 3rd Board meeting.

Total for month of May, 2013 $10,952.50
**JUNE, 2013**

**DDEvans Consulting** (Professional Services Agreement—CEO) May 23, 2013 through June 25, 2013 worked on Watermaster business a total of 45.5 hours at $100.00 per hour or $4,550.00. Responded to telephone inquiries, email and other correspondence as needed regarding the Seaside Basin. Received and reviewed water production and water level reports. Sent out Board meeting cancellation notice for June 5th regular board meeting. Had discussions with Bob J. and Laura D. regarding funding of replenishment water for the Basin; received and reviewed TAC meeting agenda from Bob J. Received and reviewed GWRP report from MRWPCA; Received and reviewed financial reports from City of Seaside; sent required water reports to Director Bruno for his well. Worked on regular July 3, 2013 Board meeting agenda; Sent out notice looking for Board meeting agenda items; paid bills and transport same to City of Seaside.

**Robert “Bob” Jaques** (Technical Program Manager)—worked on Watermaster business a total of 16.25 hours at $100.00 per hour or $1,625.00. Responded to email, telephone inquiries and other correspondence on a variety of Watermaster issues. Worked on TAC meeting agenda after finishing; emailed the TAC agenda and posting notice to appropriate individuals and public agencies; received and reviewed MRWPCA’s GWRP NOP document; Reviewed HydroMetrics Tech Memo on modeling; Prepared for and attended Watermaster TAC meeting on June 19th and attended post-TAC meeting with MRWPCA staff and consultants on modeling results; Prepare and email Tech Memo questions and suggested edits to HydroMetrics; Prepare draft NOP comment letter and email out to TAC for review; Begin work on 8/14/2013 TAC meeting agenda.

**HydroMetrics Water Resources, Inc.**—Two invoices were received totaling $6,996.25 covering the month of May, 2013. The first invoice for $485.00 was to cover the time spent on the telephone participating in the May 8, 2013 TAC meeting and time spent reviewing invoices and discussing safe yield with Bob J. and Derrik Williams. The second invoice for $6,511.25 was to cover the 47.75 hours of time spent working on the Coastal Injection Modeling report.

**Paxton Imaging**—(Watermaster Web Site Coordinator)—Monthly Hosting Unix Server for the months of May and June, 2013—$400.00

Total for the Month of June, 2013 $13,571.25

**JULY, 2013**

**DDEvans Consulting** (Professional Services Agreement—CEO)—June 26, 2013 through July 25, 2013 worked on Watermaster business a total of 40.0 hours at $100.00 per hour or $4,000.00. Responded to telephone inquiries, email, and other correspondence as needed regarding the Seaside Basin. Received and reviewed water production and water level reports. Sent out July 3, 2013 Board meeting cancellation notice to public agencies for posting and to notify the Board and the public. Sent out notice to producers about the need for reports on water quality by July 31, 2013. Sent out request for Board agenda items for August 7, 2013 meeting.

**Robert “Bob” Jaques** (Technical Program Manager)—June 28, 2013 through July 27, 2013 worked on Watermaster business a total of 24.5 hours at $100.00 per hour or $2,450.00. Responded to email, telephone inquiries and other correspondence on a variety of Watermaster issues. Sent our emails on TAC issues; revisions to MRWPCA NOP comment letter. Worked on preparing TAC meeting minutes of June 19, 2013; emailed TAC meeting minutes out to TAC members; Worked on Board meeting agenda items for August 7th. Sent out emails requesting information to prepare Replenishment Assessment Unit Cost document for August 14th TAC agenda; telecom with HydroMetrics regarding modeling issues. Worked on TAC related August 14 meeting agenda items.
HydroMetrics Water Resources, Inc. – One invoice was received for $3,475.20 covering the cost of preparing and presenting the results of the coastal modeling results to the TAC at the June 19th meeting. Also, included with this invoice was time spent preparing the model report, input files, conduct model runs and analyze results and related discussions of results.

Total for the Month of July, 2013 $9,925.20

Total for May 1, 2013 through July 31, 2013 $34,448.95
### Seaside Groundwater Basin Watermaster

**Budget vs. Actual Administrative Fund**

Fiscal Year (January 1 - December 31, 2013)

Balance through July 31, 2013

<table>
<thead>
<tr>
<th>Available Balances &amp; Assessments</th>
<th>2013 Adopted Budget</th>
<th>Contract Amount</th>
<th>Year to Date Revenue / Expenses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dedicated Reserve</td>
<td>15,000.00</td>
<td>15,000.00</td>
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</tr>
<tr>
<td>FY (Rollover)</td>
<td>-</td>
<td>-</td>
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</tr>
<tr>
<td>Admin Assessments</td>
<td>70,000.00</td>
<td>70,000.00</td>
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</tr>
<tr>
<td><strong>Available</strong></td>
<td><strong>85,000.00</strong></td>
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<table>
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<tr>
<th>Expenses</th>
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<tbody>
<tr>
<td>Contract Staff</td>
<td>60,000.00</td>
<td>60,000.00</td>
<td>21,200.00</td>
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<tr>
<td>Legal Advisor</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<tr>
<td><strong>Total Expenses</strong></td>
<td><strong>60,000.00</strong></td>
<td><strong>60,000.00</strong></td>
<td><strong>21,200.00</strong></td>
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<tr>
<td><strong>Total Available</strong></td>
<td>25,000.00</td>
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</tr>
<tr>
<td>Dedicated Reserve</td>
<td>25,000.00</td>
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<tr>
<td><strong>Net Available</strong></td>
<td>-</td>
<td></td>
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</tr>
</tbody>
</table>
## Seaside Groundwater Basin Watermaster

### Budget vs. Actual Monitoring & Management - Operations Fund

**Fiscal Year (January 1 - December 31, 2013)**  
**Balance through July 31, 2013**

<table>
<thead>
<tr>
<th>Available Balances &amp; Assessments</th>
<th>2013 Adopted Budget</th>
<th>Contract Encumbrance</th>
<th>Year to Date Revenue/Expenses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monitoring &amp; Management - Ops Fund</td>
<td>$ -</td>
<td>$ -</td>
<td>$ -</td>
</tr>
<tr>
<td>Water data collection services paid by producers</td>
<td>583,900.00</td>
<td>-</td>
<td>560,383.18</td>
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<tr>
<td>FY 2011 Rollover</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Transfer in from Capital Fund</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total Available</strong></td>
<td><strong>$ 583,900.00</strong></td>
<td><strong>$ -</strong></td>
<td><strong>$ 560,383.18</strong></td>
</tr>
</tbody>
</table>

### Appropriations & Expenses

#### GENERAL

<table>
<thead>
<tr>
<th>Description</th>
<th>2013 Adopted Budget</th>
<th>Contract Encumbrance</th>
<th>Year to Date Revenue/Expenses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technical Project Manager</td>
<td>$ 60,000.00</td>
<td>$ 60,000.00</td>
<td>$ 19,850.00</td>
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<tr>
<td>Contingency @ 20% (not including TPM)</td>
<td>39,844.00</td>
<td>$ 9,990.00</td>
<td>-</td>
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<tr>
<td><strong>Total General</strong></td>
<td><strong>$ 99,844.00</strong></td>
<td><strong>$ 69,990.00</strong></td>
<td><strong>$ 19,850.00</strong></td>
</tr>
</tbody>
</table>

#### CONSULTANTS (Hydrometrics; Web Site Database)

<table>
<thead>
<tr>
<th>Description</th>
<th>2013 Adopted Budget</th>
<th>Contract Encumbrance</th>
<th>Year to Date Revenue/Expenses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program Administration</td>
<td>$ 8,600.00</td>
<td>$ 62,100.00</td>
<td>$ 9,624.47</td>
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<tr>
<td>Production/Lvl/Qty Monitoring</td>
<td>3,900.00</td>
<td>-</td>
<td>-</td>
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<tr>
<td>Basin Management Action Plan</td>
<td>75,000.00</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Seawater Intrusion Analysis Report</td>
<td>27,750.00</td>
<td>22,655.00</td>
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<tr>
<td><strong>Total Consultants</strong></td>
<td><strong>$ 115,250.00</strong></td>
<td><strong>$ 84,755.00</strong></td>
<td><strong>$ 9,624.47</strong></td>
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#### MPWMD

<table>
<thead>
<tr>
<th>Description</th>
<th>2013 Adopted Budget</th>
<th>Contract Encumbrance</th>
<th>Year to Date Revenue/Expenses</th>
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<tbody>
<tr>
<td>Production/Lvl/Qty Monitoring</td>
<td>$ 69,086.00</td>
<td>69,086.00</td>
<td>-</td>
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<tr>
<td>Basin Management</td>
<td>4,700.00</td>
<td>4,700.00</td>
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<tr>
<td>Seawater Intrusion</td>
<td>10,184.00</td>
<td>10,184.00</td>
<td>-</td>
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<tr>
<td>Direct Costs</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<tr>
<td><strong>Total MPWMD</strong></td>
<td><strong>$ 83,970.00</strong></td>
<td><strong>$ 83,970.00</strong></td>
<td><strong>$ -</strong></td>
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</tbody>
</table>

**Reserve**  
**Transfer Out to Capital Fund**  

**Total Appropriations & Expenses** | **$ 299,064.00** | **$ 238,715.00** | **$ 29,474.47** |

**Total Available** | **$ 284,836.00** |

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Footnote 1: The $5,154 contract with MPWMD for data collection services consists of pass through expenditures paid by producers and is not budgeted. To date $2,762 has been collected from producers, and no invoicing from MPWMD has been received for services rendered in 2013.
## Replenishment Fund

**Water Year 2013 (October 1 - September 30) / Fiscal Year 2013 (January 1 - December 31)**

**Balance through July 31, 2013**

### Replenishment Fund

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<td><strong>Assessments:</strong></td>
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<tr>
<td>WY 05/06</td>
<td>$1,132</td>
<td>$1,132</td>
<td>$16,538</td>
<td>$3,040</td>
<td>$2,780</td>
<td>$2,780</td>
<td>$2,780</td>
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<tr>
<td>WY 06/07</td>
<td>$1,132</td>
<td>$1,132</td>
<td>$16,538</td>
<td>$3,040</td>
<td>$2,780</td>
<td>$2,780</td>
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<tr>
<td>WY 07/08</td>
<td>$1,132</td>
<td>$1,132</td>
<td>$16,538</td>
<td>$3,040</td>
<td>$2,780</td>
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<tr>
<td>WY 08/09</td>
<td>$1,132</td>
<td>$1,132</td>
<td>$16,538</td>
<td>$3,040</td>
<td>$2,780</td>
<td>$2,780</td>
<td>$2,780</td>
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<tr>
<td>WY 09/10</td>
<td>$1,132</td>
<td>$1,132</td>
<td>$16,538</td>
<td>$3,040</td>
<td>$2,780</td>
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<tr>
<td>WY 10/11</td>
<td>$1,132</td>
<td>$1,132</td>
<td>$16,538</td>
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<td>$2,780</td>
<td>$2,780</td>
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<tr>
<td>WY 11/12</td>
<td>$1,132</td>
<td>$1,132</td>
<td>$16,538</td>
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<td>$2,780</td>
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<tr>
<td>Total</td>
<td>$1,132</td>
<td>$1,132</td>
<td>$16,538</td>
<td>$3,040</td>
<td>$2,780</td>
<td>$2,780</td>
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</table>

**California American Water Balance Forward**

- $1,641,004
- 4,206,475
- (2,900,435)
- (2,868,910)
- (2,868,910)
- (2,868,910)
- (2,868,910)

**Total**

- (8,919,379)

**Exceeding Natural Safe Yield Considering Alternative Producers**

- 2,106,652
- 2,106,652
- 3,773,464
- 3,773,464
- 3,773,464
- 3,773,464
- 3,773,464

**Total**

- (25,941,456)

**Operating Yield Overproduction Replenishment**

- (80,938)
- (34,045)
- 
- 
- 
- 
- 

**Total**

- (734,836)

**CAW Credit Against Assessment**

- (465,648)
- (12,305,924)
- (3,741,714)
- (5,095,213)
- (5,425,799)
- (5,111,413)
- (32,145,711)

**Total**

- (32,145,711)

**City of Seaside Unpaid Balance**

- (230,671)
- (413,454)
- (1,106,116)
- (1,737,569)
- (988,414)
- (13,109)

**Total**

- (5,469,418)

**City of Seaside - Golf Courses**

- (263,410)
- (139,402)

**Total**

- (402,812)

**Total City of Seaside**

- (219,687)
- (174,079)
- (665,950)
- (604,702)
- (314,721)
- (141,335)
- (163,509)
- (2,283,984)
- (150,000)
- (2,433,984)

**City of Seaside Late Payment 5%**

- 10,984
- 8,704
- 26,712
- 26,750
- 15,737

**Total**

- (3,051,467)

**In-lieu Credit Against Assessment**

- (230,671)
- (413,454)
- (1,106,116)
- (1,737,569)
- (988,414)
- (13,109)

**Total**

- (1,728,596)

**Total Replenishment Fund Balance**

- (1,871,675)
- (4,619,929)
- (1,794,316)
- (1,131,116)
- (2,862,551)
- (6,102,019)
- (9,597,976)
- (9,597,976)
- (7,198,015)
- (7,198,015)

**Replenishment Fund Balance Forward**

- (1,871,675)
- (4,619,929)
- (1,794,316)
- (1,131,116)
- (2,862,551)
- (6,102,019)
- (9,597,976)
- (9,597,976)
- (7,198,015)

**Total Replenishment Assessments**

- 2,337,323
- 2,748,254
- 5,891,676
- 4,404,917
- 4,443,391
- 3,328,189
- 2,444,452

**Total**

- 29,199,163

**Total Replenishment Paid and/or Credited**

- (465,648)
- (12,305,924)
- (3,741,714)
- (6,147,826)
- (5,688,057)

**Total**

- (35,197,178)

**Grand Total Replenishment Fund Balance**

- (1,871,675)
- (4,619,929)
- (1,794,316)
- (1,131,116)
- (2,862,551)
- (6,102,019)
- (9,597,976)
- (9,597,976)
- (5,998,015)

**2010 = 319.55 AF golf course in-lieu replenishment and 68.8 AF 4-party agmt in-lieu replenishment**

**2011 = 411.1 AF golf course in-lieu replenishment**

**2012 = 298.2 AF golf course in-lieu replenishment**
ITEM NO. VIII.

OLD BUSINESS
ITEM VIII. A.

COMMITTEE REPORTS
ITEM NO. IX.A.1.

TECHNICAL ADVISORY COMMITTEE (TAC)
TO:  Board of Directors

FROM:  Robert S. Jaques, Technical Program Manager
REVIEWED AND APPROVED BY: Dewey D Evans, CEO

DATE:  August 7, 2013

SUBJECT: Potential Sources of Water That Could be Used to Replenish the Seaside Basin and Help to Achieve Protective Water Levels

RECOMMENDATION:
Provide support to each of the eight projects listed below in whatever manner(s) the Board deems feasible and appropriate.

BACKGROUND:
At its April 3 meeting the Board approved the following TAC Recommendations:
1. Identify and prioritize other potential sources of water that could be acquired and injected to replenish the Basin and help to achieve protective water level elevations.
2. Determine if injection sites closer to the coast could (1) more rapidly reach protective levels and/or (2) reach protective levels using less outside-Basin water, than injecting at the existing ASR sites.
3. Report back to the Board on the findings of these 2 items and identify potential further work to be done.

This Agenda Item provides information regarding Recommendation No. 1. Under a separate item on today’s Agenda HydroMetrics will report on the results of the modeling work performed regarding Recommendation No. 2.

DISCUSSION:
The attached Discussion Paper provides details on a number of projects that were investigated to determine if they had the potential to serve as a source of water that could be injected into the Basin to help achieve protective water levels. This water would be used to supplement the 25-years-at-700 AFY of in-lieu replenishment that Cal Am is planning to provide.

The principle conclusions and recommendations in the attached Discussion Paper are to encourage the Board to support each of the projects listed below in whatever manner(s) the Board deems feasible and appropriate, for the reasons as stated:
1. **Seaside Basin ASR Expansion.** Injecting and leaving in the Seaside Basin any amounts of ASR water above the 1,300 AFY that Cal Am is counting on to meet demands under its Monterey Peninsula Water Supply Project would benefit the Basin.
2. **MRWPCA/MPWMD Groundwater Replenishment Project (GWRP).** If MRWPCA could produce more recycled water than the 3,500 AFY that will be needed for the Monterey
Peninsula Water Supply Project, this project could provide a source of water that could be injected and left in the Basin.

3. **Regional Urban Water Augmentation Project (RUWAP)**. Although this project would not provide water that could be used to replenish the Seaside Basin by direct injection, it would benefit the Basin through in-lieu replenishment.

4. **City of Seaside Groundwater (not from the Seaside Basin)**. This project is not developed sufficiently to determine how much water it might be able to provide, whether the necessary permits and approvals could be obtained, and whether it is economically feasible. However, if these hurdles are met this project could provide a source of water that could be injected and left in the Basin.

5. **City of Pacific Grove Local Water Projects (includes a stormwater component)**. Depending on how these project(s) are ultimately configured, they have some potential to directly or indirectly provide a source of water to replenish the Seaside Basin by injection. The potential benefit to the Seaside Basin of these projects will not be known until further decisions are made by the CPUC and Cal Am, the sizing of the Regional desalination plant has been determined, and the feasibility and methods of funding the Local Water Project components have been ascertained by the City.

6. **Water Conservation**. There was consensus that further water conservation beyond that which has already been achieved has a low potential to produce a meaningful quantity of water for replenishment. However, any water savings would have the potential to indirectly provide a source of water to replenish the Seaside Basin by injection, by reducing the amount of water Cal Am would need from the Regional desalination plant to meet its demands.

7. **City Diversions of Stormwater to MRWPCA to Increase GWRP Quantities**. If MRWPCA is successful in increasing the quantity of water that its GWRP can supply by accepting diversions of flows from its member entities, this would increase the GWRP’s potential to provide a source of water that could be injected and left in the Basin.

8. **Possible Initially Unused Capacity of Cal Am’s Regional Desalination Plant**. If it is found that there is unused capacity in the Regional desalination plant in its early years of operation that unused capacity could provide a source of water that could be injected and left in the Basin.

The TAC discussed these projects and provided its input on the attached Discussion Paper and in developing this set of recommendations to the Board.

**FISCAL IMPACTS:**
This will depend on the Board’s decisions with regard to which projects it wishes to support, and the form of that support, i.e. letters of support, financial assistance, etc.

**ATTACHMENTS:**
Discussion Paper on Potential Water Sources to Help Achieve Protective Water Levels
DISCUSSION PAPER

POTENTIAL SOURCES OF WATER THAT COULD BE ACQUIRED AND INJECTED TO REPLENISH THE SEASIDE BASIN AND HELP TO ACHIEVE PROTECTIVE WATER LEVELS

BACKGROUND

Modeling work recently performed by HydroMetrics to assess the impacts of Cal Am’s Board-approved in-lieu replenishment program found that:

1. Cal-Am’s replenishment repayment program of 700 AFY for 25 years increases groundwater elevations in the shallow and deep aquifer coastal wells compared to the Baseline (i.e. no replenishment water), but in almost all locations falls well short of achieving protective elevations in these wells.

2. When combined with Cal-Am’s replenishment program, protective elevations can be achieved at all of the coastal wells by injecting an additional 1,000 acre-feet per year of water into the existing ASR wells, with this additional water being left in the Basin and not pumped back out under the normal Aquifer Storage and Recovery cycle. This approach requires less outside Basin water to achieve protective elevations than having Standard and Alternative Producers reduce their pumping rates in order to achieve in-lieu replenishment.

During discussion of these findings it was learned that injection of water closer to the coast would likely achieve protective water levels more rapidly, and might do so with less water, than injection of water at the existing ASR sites. Consequently, HydroMetrics was contracted to perform additional modeling to determine the potential benefit of injecting water closer to the coast.

Regardless of where injection occurs, it will be necessary to obtain water from a source other than the Seaside Basin itself in order to supply the injection water. This Discussion Paper identifies and discusses a number of water supply projects to determine which of them appear to have a viable potential to provide water for injection.

WATER SUPPLY PROJECTS INVESTIGATED

The following sources were consulted to identify water supply projects that might be able to provide water for injection:
1. RBF Consulting report to the Watermaster dated 2007.
3. Watermaster Memos pertaining to projects used in developing the Replenishment Assessment Unit Costs
4. MPWMD (Joe Oliver, Jon Lear, Larry Hampson, and Dave Stoldt)
5. MCWRA (Rob Johnson and Howard Franklin)
6. MRWPCA (Keith Israel and Bob Holden)
7. MCWD (Brian True)
8. City of Seaside (Rick Riedl)
9. City of Monterey (Norm Green and Tom Reeves)
10. City of Pacific Grove (Sarah Hardgrave)

The projects that were identified were:
1. Seaside Basin ASR Expansion
2. City of Sand City Desalination Plant
3. MPWMD Sand City Desalination Plant
4. MRWPCA/MPWMD Groundwater Replenishment Project (GWRP)
5. Regional Urban Water Augmentation Project (RUWAP)
6. Salinas River Surface Water Treatment Plant
7. City of Seaside Groundwater (not from the Seaside Basin)
8. City of Pacific Grove Local Water Projects (includes a stormwater component)
9. Water Conservation
10. City Diversions of Stormwater to MRWPCA to Increase GWRP Quantities
11. Possible Initial Excess Capacity of Cal Am’s Regional Desalination Plant

A short description and discussion of each of these projects is provided below.

1. Seaside Basin ASR Expansion

ASR entails diverting excess winter flows from the Carmel River Basin during high flow periods using existing Cal Am wells in the lower stretches of the river. Diverted water is treated to potable drinking water standards and pumped through the Cal Am distribution system to the Seaside Basin, where the water is injected for later recovery during dry periods. MPWMD has operated a full-scale ASR test well (Santa Margarita Test Injection Well No. 1) since 2002, and a second injection/extraction well was completed in 2008. Maximum extraction capacity of the current ASR facilities is approximately 1,500 AFY.

Expansion of the ASR project would provide for a greater diversion of water from the Carmel River during high flows for transport and injection into the Seaside Basin, and could increase the maximum extraction to approximately 2,400 AFY. The facilities to accomplish this are included in the scope of Cal Am’s Monterey Peninsula Water Supply Project, and include:
- Increased capacity in Cal Am’s Carmel River Basin well capacity in order to deliver water for injection in the Seaside Basin
- Increasing the capacity of Cal Am’s conveyance pipeline from the Carmel River Basin in order to be able to deliver the peak instantaneous flow of injection water to the Seaside Basin
• Making some other improvements in Cal Am’s distribution system in order to remedy limitations in getting water to the ASR sites while simultaneously meeting Cal Am’s system demands

This project is being pursued jointly by MPWMD and Cal Am. Up until the time that Cal Am reduces its Carmel River diversions in accordance with the SWRCB’s Cease and Desist Order No. 95-10, all of the water production of this project has to be used by Cal Am to reduce the amount of water it takes from the Carmel River Basin. Therefore, up until that point in time, which will correspond to the time that Cal Am’s Monterey Peninsula Water Supply Project becomes fully operational, this project will not be able to serve as a potential source of supplemental replenishment water for the Seaside Basin. However, once the Cease and Desist Order has been satisfied, in the wet years in which ASR injection water quantities greater than 1,300 AFY are available, it may be permissible to inject and leave in the Seaside Basin at least some portion of any amount over 1,300 AFY, without having to pump it out to reduce Cal Am’s Carmel River Basin diversions. **This would be a potential additional source of replenishment water for injection.**

2. City of Sand City Desalination Plant
The City of Sand City has constructed and is operating, under a contract with Cal Am, a 300 AFY desalination plant. The source water for the desalination plant is shallow brackish water from the Southern Coastal Subarea. The City of Sand City was granted rights to pumping this brackish water in the Court Decision that created the Watermaster. Water produced by this plant will be supplied to the CAW system on an interim basis until Sand City customers use the water for their own purposes. The water is not dedicated to offsetting the extraction deficit of SWRCB Order No. 95-10 pertaining to Cal Am’s diversions from the Carmel River Basin.

All of the water that is not needed for new connections within Sand City will be used by Cal Am to reduce the amount of water it takes from the Carmel River Basin. Therefore, **this would not be a potential additional source of replenishment water for injection.**

3. MPWMD Sand City Desalination Plant
A desalination plant was proposed by MPWMD in 1995 in response to SWRCB Order No. 95-10. The plant would collect seawater through wells located in Sand City. The proposal was not implemented at the time. A bond measure sponsored by MPWMD to provide funding for this project was defeated, and the project was therefore dropped. It would likely only be reconsidered if the Cal Am Monterey Peninsula Water Supply Project could not be implemented. **This would not be a potential additional source of replenishment water for injection.**

4. MRWPCA/MPWMD Groundwater Replenishment Project (GWRP)
Cal Am’s Monterey Peninsula Water Supply Project contains two plant size alternatives, one which has a 9,000 AFY seawater desalination plant, and a second one which has a 5,500 AFY desalination plant and a Groundwater Replenishment Project (GWRP) delivering 3,500 AFY of water for replenishment of the Seaside Basin.
With regard to the GWRP component of the second alternative, although there is not yet a formal water purchase agreement in place, institutional agreements are being pursued between MRWPCA, MPWMD, and Cal Am such that:

- MPWMD would enter into a Storage and Recovery Agreement with the Watermaster.
- MPWMD would buy recycled water from MRWPCA when that water is injected into the Seaside Basin. The purchase price for the recycled water would cover O&M, Capital Recovery, and Administrative expenses of MRWPCA and MPWMD.
- 6 months after injection occurs (in order to comply with State Department of Public Health requirements pertaining to groundwater replenishment) Cal-Am would purchase potable water from MPWMD and either withdraw it from the ground or leave it for withdrawal later.

This approach is very similar to the manner in which MPWMD financed the reclamation project at Carmel Area Wastewater District.

At the TAC’s May 2013 meeting MRWPCA reported that the GWRP is planning on providing 3,500 acre feet per year for replacement water to Cal Am (as discussed above), but that the GWRP might be capable of also providing approximately 1,000 acre feet per year for replenishment of the Seaside Basin. It was also reported that this is currently being studied by MRWPCA and would be discussed in the CEQA EIR that MRWPCA is preparing for the GWRP. However, the management of MRWPCA and MPWMD subsequently determined not to include the potential to provide additional water from the GWRP in this EIR. In conjunction with potentially being able to provide additional water, MRWPCA reported it was looking for sources of water to augment its decreasing influent flows of wastewater. Potential augmentation flows it is examining include stormwater flows from its member entities (discussed below under Project No. 10), and the City of Salinas’ industrial wastewater flows currently being treated at that city’s industrial wastewater treatment plant.

This additional 1,000 AFY is not currently included in the scope of Cal Am's Monterey Peninsula Water Supply Project, but would be a potential additional source of replenishment water for injection.

5. Regional Urban Water Augmentation Project (RUWAP)

The RUWAP project consists of construction by MCWD of a recycled water distribution system to provide up to 1,727 acre-feet per year (AFY) of recycled water from MRWPCA’s existing Salinas Valley Reclamation Plant (SVRP) to urban users within the Ord Community (former Fort Ord) and the Monterey Peninsula. Approximately 300 AFY would be made available to the Monterey Peninsula with the remainder being supplied for redevelopment of Fort Ord. Additional facilities to store recycled water during winter would be needed to meet instantaneous summer-time demands and to increase the project yield to an envisioned 3,000 AFY. The MCWD recycled water system would service existing and new water users within the Fort Ord community and the City of Marina. Existing users’ irrigation systems would be disconnected from the potable water system and would tie directly into the new recycled water system.

With the exception of a winter storage reservoir, the project design is essentially complete, and much of the right-of-way for the pipelines has been acquired. Some sections of pipeline have
already been installed as components of roadway projects constructed under the Fort Ord Reuse Plan.

The potential demand for recycled water from this project is approximately 550-700 AFY within the City of Seaside, CSUMB, and the City of Marina. The bulk of this (450 to 500 AFY) is the irrigation demand of the two City of Seaside golf courses.

Development fees from Fort Ord redevelopment projects are needed to help fund the project’s capital costs. The project is on hold at this time due to slow progress on redevelopment of the former Fort Ord. In the meantime MCWD and MRWPCA are seeking additional participants to increase the demand for recycled water to make the project economically feasible. It appears that the project is at least 3 to 5 years away from implementation.

The only direct benefit to the Seaside Basin from this project would be the reduction of pumping by the Seaside Golf Courses’ two wells that draw from the Seaside Basin. All of the other markets for the recycled water are currently served by water from the Salinas River Basin. Thus, if this project were to be implemented, it would have the potential of providing in-lieu replenishment of the Seaside Basin only by reducing pumping for the Seaside Golf Courses, and would not be a potential additional source of replenishment water for injection.

6. Salinas River Surface Water Treatment Plant
The Salinas River Surface Water Treatment Plant was previously included as part of Cal Am’s now-abandoned Monterey Regional Water Supply Program, and would have worked conjunctively with the Regional desalination plant using surface water diverted from the Salinas River to provide potable water. Even when the project was still being considered as part of the Monterey Regional Water Supply Program, the MCWRA Board had not identified it as a future project that MCWRA would be implementing because the cost data and a proposed schedule for implementing the project had not been closely examined to determine their reasonableness. Also, the project had not been vetted in the Salinas Valley and there was concern that it could cause controversy if it were to be included. The project is either on hold or has been dropped, and therefore would not be a potential additional source of replenishment water for injection.

7. City of Seaside Groundwater (not from the Seaside Basin)
The City of Seaside is pursuing a drainage study to see if Laguna Grande could be dredged to serve as a reservoir for storing storm water and ground water runoff for use in irrigating landscaping near the lake and the Seaside City Hall, or to serve as a source of water that could be treated and provided to Cal Am for potable use within Cal Am’s distribution system.

The City has also looked at the potential to use water from its irrigation well located near the lake as a source of water that could be treated and provided to Cal Am for potable use within Cal Am’s distribution system. Due to the existence of a fault in the strata, this well reportedly does not draw from the Seaside Basin. However, the City is no longer considering this because a hydrogeologist informed them that the well would likely not provide enough reliable water production to make the project worth pursuing.
If water from Laguna Grande could be treated for use by Cal Am to help serve its potable water demands, it could enable Cal Am to produce less water from its desalination plant to meet potable water demands, thus potentially freeing up some capacity in that plant for use in supplying replenishment water. Thus, this project could indirectly create a potential additional source of replenishment water for injection.

8. City of Pacific Grove Local Water Projects (includes a stormwater component)

One requirement of the SWRCB’s October 20, 2009 Cease and Desist Order (CDO) to Cal Am is described in Section 16.7 - Small Projects. This Section states in part “Other small projects that could provide a temporary supply of water may also be available. The addition of temporary small water supply projects would reduce Cal-Am’s need to illegally divert water from the river. We conclude that Cal-Am should be required to develop small projects to provide a temporary supply of water for its customers and to reduce the illegal diversions from the river.”

This is formally required of Cal Am under Condition No. 5 of the CDO which states in part “Cal-Am shall implement one or more small projects that, when taken together, total not less than 500 AFY to reduce unlawful diversions from the river” and “To the maximum practicable extent, small projects shall be operated to reduce illegal diversions from the river during the months when surface flow in the river begins to go dry and through the months when surface flow in the river disappears below river mile 6.5.”

The City of Pacific Grove has proposed a “Local Water Project” to the CPUC for consideration and inclusion in the environmental documentation being prepared for Cal Am’s Monterey Peninsula Water Supply Project. One purpose of this Local Water Project is to replace certain irrigation demands in Pacific Grove with non-potable sources to help Cal Am meet its obligations to find a replacement to its use of water from the Carmel River. The proposed Local Water Project reportedly would have the potential to reduce potable water demand within the City by up to 125 AFY. This water would be produced by diverting portions of the City’s sanitary sewer flows to either a satellite reclamation plant that the City would construct at its former wastewater treatment plant site at Point Pinos, and/or by diverting portions of its sanitary sewer flows to the Carmel Area Wastewater District’s reclamation plant, with an equivalent volume of reclaimed water being returned to the City. In each instance the reclaimed water would be used by the City to supply some of its landscape irrigation demands, including its municipal golf course and its cemetery.

The Local Water Project also includes a component to acquire and use the David Avenue Reservoir (currently owned by Cal Am and used as a corporation yard for its maintenance equipment and personnel) to capture and treat stormwater for reuse. Under this component, dry and wet weather flows that originate in the City of Pacific Grove, and some of the New Monterey portion of the City of Monterey, and which discharge to the Pacific Grove ASBS, would be collected and distributed to the Cal-Am Reservoir for equalization and treatment. This water could subsequently be used for irrigation and/or aquifer injection in the Seaside Basin. This stormwater capture and treatment component is being separately evaluated by the cities of Pacific Grove and Monterey, along with other alternatives intended as a means of helping these cities comply with ASBS discharge requirements, under the Integrated Regional Water Management Program (IRWMP) that is overseen by the MPWMD.
When asked if the City of Pacific Grove would be seeking any water credits to use for
development as a result of reducing its demand on the Cal Am system from any of these projects,
the City replied that until Cal Am’s CDO requirements are met, the project(s) would simply be
intended to reduce potable water demand on the Cal-Am system. However, after the CDO
requirements were met and replacement supplies were in place, the City said it would likely seek
a new allocation from MPWMD for the offset of potable water use. Presumably any increase in
the City’s current allocation would be used by the City to serve new developments. In that case
there would be no long-term reduction in Cal Am’s water supply demand.

If these projects are included by the CPUC to help reduce Cal Am’s use of water from the Carmel
River Basin and result in a commensurate reduction in the sizing of the Regional desalination
plant, then they would not free up any capacity in that plant and would not create a potential
additional source of replenishment water for injection. However, if these projects were
constructed and did not reduce the anticipated increased size of the Regional desalination plant,
then they could free up capacity in that plant and could indirectly create a potential additional
source of replenishment water for injection. Also, if the stormwater component of these
projects were to treat and deliver water directly to the Seaside Basin, it would provide a
potential additional source of replenishment water for injection.

The sanitary sewer flow diversion projects to provide recycled water for use in Pacific Grove
would reduce the amount of water available for reclamation by the GWRP (described above
under Project No. 4), and in that sense would be competing with that project.

The potential benefit to the Seaside Basin of Pacific Grove’s Local Water Project will not be
known until further decisions are made by the CPUC and Cal Am, the sizing of the Regional
desalination plant has been determined, and the feasibility and methods of funding the Local
Water Project components have been ascertained by the City.

9. Water Conservation
Cal Am, MPWMD, and the City of Seaside (for its municipal water system) are implementing
conservation programs to reduce overall demand and the need for potable water. MPWMD
evaluated the findings of reports by other agencies regarding eight different water conservation
retrofits/installations for commercial, industrial, and institutional services, and a Water
Conservation Alternatives Evaluation was prepared to quantify the average benefit-to-cost ratio
for the retrofits, in order to identify which retrofits could best be incorporated into a
comprehensive Conservation Program. The evaluation was used to prioritize and identify retrofit
programs that would offer maximum cost savings. MPWMD has already achieved its 20%-by-
2020 water conservation goal, and further reductions in demand as a result of conservation
measures will likely be less significant. The water that is saved reduces the demand on the
potable water system, and if successful could enable Cal Am to produce less water from its
desalination plant to meet potable water demands. This would potentially free up some capacity
in that plant for use in supplying replenishment water. Thus, conservation could indirectly
create a potential additional source of replenishment water for injection.

10. City Diversions of Stormwater to MRWPCA to Increase GWRP Quantities
MRWPCA: As part of a feasibility study to identify source waters for the GWRP,
MRWPCA will be examining how much stormwater might be available from its member entities
that could be diverted to the sanitary sewer system to augment influent flows to MRWPCA’s Regional treatment facilities. MRWPCA has made initial contacts with several cities, and those cities expressed interest in this concept. MRWPCA intends to pursue those discussions with them. If the quantities of stormwater are large enough, MRWPCA will then decide if the diverted stormwater could be made available for the GWRP at a reasonable cost.

At this point MRWPCA is in the early stages of work on the concept of stormwater diversions, and it will probably be late summer of 2013 before they can determine whether or not it is practically and economically feasible. It was reported by MRWPCA in early May that this topic would be included in their CEQA EIR Notice of Preparation document for the GWRP, which was released in late May 2013. However, it appears that MRWPCA made a subsequent decision not to include this in the NOP, and therefore not to include it in the EIR.

Monterey: Some months ago Norm Green had mentioned the possibility of using some of the City’s Lake El Estero water as a source of supplemental water. However, the City now believes that this is a pretty remote possibility other than for winter flows. They report that during the dry season, there just isn't much water flowing into the lake. With regard to storm water, an ASBS alternatives analysis they are doing is looking at ways in which the David Avenue reservoir could be used to store peak storm water flows (this is also discussed above under the City of Pacific Grove’s Project No. 8). One option that is being considered is to meter the stored storm water into the sanitary sewer system at a treatable and transportable rate. This could help increase the amount of water available from MRWPCA’s GWRP.

Seaside and Pacific Grove: Possibly in conjunction with some infrastructure work they hope to get grant funding to do on their storm drainage systems under the IRWMP, these cities reported that they are interested in talking with MRWPCA about being able to discharge storm water (in a controlled manner) into the sanitary sewer system, similar to what Monterey is considering, in order to increase flows to MRWPCA’s recycling plant.

If, by accepting diversions of stormwater flows from its member entities, MRWPCA is successful in increasing the quantity of water that its GWRP can supply, this would create a potential additional source of replenishment water for injection.

11. Possible Initial Excess Capacity of Cal Am’s Regional Desalination Plant

The information in this section is taken largely from materials prepared by MPWMD for its Special Board meeting held on February 12, 2013, and from documents prepared by Cal Am.

Cal Am has indicated that it will seek (or may already have done so) approval by the CPUC to increase the size of the Regional desalination plant under the Monterey Peninsula Water Supply Project in order to: (1) provide replenishment water to the Seaside Basin, (2) provide service for the build-out of the Pebble Beach Company’s projects, (3) provide water to support the anticipated “bounce back” in local tourism that will result from the improving economy, and (4) to serve legal lots of record that are not currently being served. The anticipated requested increase in desalination plant size is summarized in the table below:
<table>
<thead>
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<th>Demand</th>
<th>AFY</th>
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<tr>
<td>Seaside Basin Replenishment</td>
<td>700</td>
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<tr>
<td>PBC Projects Build-out</td>
<td>325</td>
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<tr>
<td>Tourism “bounce back”</td>
<td>500</td>
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<tr>
<td>Lots of Record</td>
<td>1,180</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>2,705</strong></td>
</tr>
</tbody>
</table>

The report to MPWMD’s Board for its February 12, 2013 meeting commented that MPWMD staff felt some of the demands listed in the table above were overly conservative, at least in the early years, as follows:

1. In the sizing of the desalination plant Cal Am had used a 5-year average to establish its current demand. The 5-year average Cal Am used was 13,291 AFY. MPWMD pointed out that Cal Am’s current actual demand is only approximately 12,500 AFY.
2. As MPWMD understands it, the water demand cited in the EIR for build-out of PBC’s Projects is only 135 AFY, rather than the 325 AFY used by Cal Am.
3. MPWMD’s analysis of commercial water demands in the early-to-mid 2000s, compared to current commercial water demands (during the current economic downturn period) indicates current demand is only about 200 to 400 AFY below pre-economic downturn demand, rather than the 500 AFY used by Cal Am in its plant-sizing analysis.
4. The lots of record demand of 1,180 AFY was reportedly taken from a 2001 MPWMD analysis, but MPWMD does not recommend continued use of this value. MPWMD indicated it planned to examine more recent reports to try to provide an updated figure.

For the reasons stated above, there may be excess capacity available in the Regional desalination plant in its early years of operation. If so, that excess capacity could provide a potential additional source of replenishment water for injection.

**CONCLUSIONS AND RECOMMENDATIONS**

Of the projects discussed above several appear to offer the potential to provide a source of replenishment water for injection. However, only a few of these appear to be sufficiently developed to warrant being pursued at this point. The TAC’s recommendations in this regard are discussed below.

1. **Seaside Basin ASR Expansion.** The ASR project has already been partially constructed and has been operational for a number of years. The expansion facilities are included in the scope of Cal Am’s Monterey Peninsula Water Supply Project. The quantities of water that might be available from this project to be injected and left in the Seaside Basin are not known, and would be subject to hydrologic conditions each year. Nevertheless, any amount above the 1,300 AFY of ASR water that Cal Am is counting on to meet demands under its Monterey Peninsula Water Supply Project would benefit the Seaside Basin.
2. **MRWPCA/MPWMD Groundwater Replenishment Project (GWRP).** This project is already included in Cal Am’s Monterey Peninsula Water Supply Project, assuming that it can successfully obtain all of the necessary permits and approvals within the timeframe needed by Cal Am to make a final determination on the size of the Regional desalination
plant. If the GWRP successfully achieves these objectives, the same facilities that will be constructed to deliver the 3,500 AFY of GWRP water that Cal Am will be counting on to meet demands will have the potential, if MRWPCA can increase its influent wastewater flows so that it has more water to recycle, to deliver water that could be injected and left in the Seaside Basin.

3. **Regional Urban Water Augmentation Project (RUWAP).** Although this project would not provide water that could be used to replenish the Seaside Basin by direct injection, it would benefit the Basin through in-lieu replenishment.

4. **City of Seaside Groundwater (not from the Seaside Basin).** This project appears to have the potential to indirectly provide a source of water to replenish the Seaside Basin by injection, by reducing the amount of water Cal Am would need from the Regional desalination plant to meet its demands. However, at this point it is not developed sufficiently to determine how much water it might be able to provide, whether the necessary permits and approvals could be obtained, and whether it is economically feasible.

5. **City of Pacific Grove Local Water Projects (includes a stormwater component).** Depending on how these project(s) are ultimately configured, they may have the potential to directly or indirectly provide a source of water to replenish the Seaside Basin by injection. The potential benefit to the Seaside Basin of these projects will not be known until further decisions are made by the CPUC and Cal Am, the sizing of the Regional desalination plant has been determined, and the feasibility and methods of funding the Local Water Project components have been ascertained by the City.

6. **Water Conservation.** Because much water conservation has already been achieved, it is expected that any further water savings would likely be small. However, any such savings have the potential to indirectly provide a source of water to replenish the Seaside Basin by injection, by reducing the amount of water Cal Am would need from the Regional desalination plant to meet its demands.

7. **City Diversions of Stormwater to MRWPCA to Increase GWRP Quantities.** If MRWPCA is successful in increasing the quantity of water that its GWRP can supply by accepting diversions of flows from its member entities, this would create a supplemental source of water to replenish the Seaside Basin by direct injection.

8. **Initial Unused Capacity of Cal Am’s Regional Desalination Plant.** If in fact it is found that there is unused capacity in the Regional desalination plant in its early years of operation, that unused capacity could provide a potential additional source of replenishment water for injection. Presumably the only costs to produce this water would be the O&M costs, as the treatment and transmission facilities would have already been constructed and capitalized under the Monterey Peninsula Water Supply Project.
TO: Board of Directors

FROM: Robert S. Jaques, Technical Program Manager

REVIEWED AND APPROVED BY: Dewey D Evans, CEO

DATE: August 7, 2013

SUBJECT: Groundwater Modeling Results of Coastal Injection in the Seaside Basin

RECOMMENDATION:
Determine whether or not to perform any additional work at this time pertaining to injection of water to raise Basin groundwater levels.

BACKGROUND:
At its April 3 meeting the Board approved the following TAC Recommendations:

1. Identify and prioritize other potential sources of water that could be acquired and injected to replenish the Basin and help to achieve protective water level elevations.
2. Determine if injection sites closer to the coast could (1) more rapidly reach protective levels and/or (2) reach protective levels using less outside-Basin water, than injecting at the existing ASR sites.
3. Report back to the Board on the findings of these 2 items and identify potential further work to be done.

This Agenda Item provides information regarding Recommendation No. 2.

DISCUSSION:
HydroMetrics has completed the modeling work to respond to Recommendation No. 2 above.

A copy of their Draft Technical Memorandum was provided to TAC members for their review and was discussed at the TAC’s June 19, 2013 meeting. TAC input is reflected in the Final version of the Technical Memorandum which is attached to this Agenda transmittal.

The principle conclusions resulting from this modeling work are:

1. Two injection locations near the coast were modeled and it was found that either site would be equally suitable as a coastal injection location. Thus, the specific location near the coast does not appear to be a critical issue.

2. Average groundwater elevations in the coastal monitoring wells are similar regardless of whether coastal injection occurs seasonally (December through May) or year around (each month
of the year). Thus, either year around or seasonal injection would produce similar results in terms of raising groundwater levels.

3. Coastal groundwater levels reach protective elevations faster in response to coastal injection than in response to injection at existing inland ASR sites. Depending on the well, protective groundwater elevation monitoring wells in the deep Santa Margarita aquifer reach protective elevations one to ten years sooner in response to coastal injection compared to their response to inland injection. The shallow protective groundwater elevation monitoring wells reach protective elevations at similar times with both coastal and inland injection.

4. Approximately 850 AFY of coastal injection would be needed to achieve results similar to injecting 1,000 AFY at the inland location over a 25 year injection period (until 2041). After protective groundwater elevations have been reached by injecting 1,000 AFY at the coast, 900 AFY for 7.5 years, and then 850 AFY is required to maintain groundwater levels above protective elevations.

5. Protective elevations can be achieved within five years if 1,900 AFY is injected at the coastal location. After protective groundwater elevations have been reached by injecting 1,900 AFY at the coast for five years, injection rates can be ramped down to 850 AFY by year 2029 to maintain protective elevations. No evaluation was made as to how much water would need to be injected at the inland location in order to achieve protective elevations within five years.

6. After protective groundwater elevations have been reached, it will be necessary to continue injecting water beyond 2041 to maintain groundwater levels above protective elevations. This quantity will very slowly decrease as natural recharge replenishes the Basin. No evaluation was made of how much continued injection would be required after year 2041.

7. While coastal injection appears to have some small benefits compared to inland injection, there would be substantial additional land acquisition and infrastructure costs to install coastal injection wells compared to using the inland injection wells which are already included in Cal Am’s Monterey Peninsula Water Supply Project.

8. While the injection of large amounts of water can relatively rapidly achieve protective elevations, the cost to purchase this water would likely be substantial.

**FISCAL IMPACTS:**
This will depend on the Board’s decisions with regard to whether or not it wishes to pursue an injection project.

**ATTACHMENTS:**
HydroMetrics Technical Memorandum Describing Groundwater Modeling Results of Coastal Injection in the Seaside Basin
TECHNICAL MEMORANDUM

To: Seaside Groundwater Basin Board of Directors
From: Georgina King and Derrik Williams
Date: July 19, 2013
Subject: Groundwater Modeling Results of Coastal Injection in the Seaside Basin

1.0 BACKGROUND AND MODELING OBJECTIVES

Recent modeling work in the Seaside Basin has focused on recharging the basin at inland injection locations to increase groundwater levels above protective elevations. The Seaside Groundwater Basin Board of Directors requested that injection at coastal locations be assessed to determine if there is an advantage over inland injection. Seven model scenarios were developed and run to evaluate injection locations and injection rates required to achieve protective groundwater elevations within specified time frames.

The seven simulations are intended to provide bounding estimates and general guidance regarding the impacts from coastal injection and inland injection. The simulations are not intended to represent any particular project. Results of these simulations could inform initial project discussions, but should not be used to support final project descriptions.

2.0 MODEL SCENARIOS

To determine whether coastal injection could achieve protective groundwater elevations more quickly than inland locations, and whether less imported water could be used to reach protective elevations, seven new model scenarios were developed.

The seven coastal injection model scenarios were compared with an inland injection scenario, referred to as Scenario 0. Scenario 0 is a previously modeled scenario that is described in the April 4, 2013 Technical Memorandum: Groundwater
Modeling Results of Replenishment Repayment in the Seaside Basin (HydroMetrics WRI, 2013). This scenario represented inland injection using existing ASR wells.

Each of the seven model scenarios simulated injection at one of two potential coastal injection sites (Figure 1). The Seaside-Highlands Storm Water Pond site, is immediately north of Seaside High School and monitoring well PCA-E. This location was selected because it is adjacent to the pumping depression in the deep aquifer and access to this site is possible (Figure 1). The MRWPCA South location was presented by Bob Holden at the May 2013 Technical Advisory Committee meeting. The southernmost of the MRWPCA sites was selected as a potential injection site because it is closer to the deep aquifer pumping depression (Figure 1). The injection well for this location was placed at the southernmost portion of the site outlined on Figure 1. The two injection locations are approximately 2,000 feet apart.

Only one injection well was modeled in each scenario because the injection required could be achieved by one well, or at the most, two wells within the same model cell. The in-well flow dynamics were not modeled in these scenarios, and water pressures in the injection wells were not a point of concern for this exercise. The number of wells and injection rates must be further analyzed for any managed aquifer recharge project.

The baseline simulation used to compare the results from coastal and inland injection was the 25 year California American Water (Cal-Am) replenishment scenario that was modeled previously (HydroMetrics WRI, 2013). In the baseline simulation, Cal-Am pumps only 774 acre-feet per year (AFY) of its assumed natural safe yield of 1,474 AFY beginning in January 2017. The 700 acre-feet (AF) of natural safe yield not being pumped over the 25 year period is Cal-Am’s replenishment repayment. Consistent with the previous modeling of Cal-Am’s replenishment repayment plant, the reduced pumping is distributed among Cal-Am wells relative to the amount each well pumps as a percentage of monthly pumping.

This baseline simulation was selected because it includes important operational changes that are planned to be implemented. For the scenarios, coastal injection was added to this baseline simulation. December 2016 was the starting date for the model to simulate injection. The start of replenishment repayment is January 2017, but the start date of injection is December 2016 because December is the starting month of each year’s injection cycle. December 2016 was chosen to begin
additional injection because it is the injection cycle start date that is closest to January, 2017.

Water was injected into the lowest model layer (layer 5) which represents the Santa Margarita aquifer. A summary of the model scenarios are provided in Table 1. Modeling results would generally be the same if the injection and other operational changes mentioned above were delayed; with the dates shown on the time scales in the figures and cited in the tables commensurately delayed. Some small differences would be expected from a delayed project based on the timing of simulated wet years and dry years.

Table 1: Summary of Model Scenarios

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Description</th>
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<tbody>
<tr>
<td>0</td>
<td>Inject 1,000 AFY for 25 years into existing ASR wells at inland location along General Jim Moore Blvd, from December through May (previously modeled as Scenario 3 in the April 4, 2013 Tech Memo, HydroMetrics WRI, 2013)</td>
</tr>
<tr>
<td>1</td>
<td>Inject 1,000 AFY for 25 years at the Seaside-Highlands Storm Water Pond location from December through May</td>
</tr>
<tr>
<td>2</td>
<td>Inject 1,000 AFY at the Seaside-Highlands Storm Water Pond location year round</td>
</tr>
<tr>
<td>3</td>
<td>Inject 1,000 AFY for 25 years at the southern-most MRWPCA coastal location from December through May</td>
</tr>
<tr>
<td>4</td>
<td>Iteratively simulate various injection rates at the Seaside-Highlands Storm Water Pond location until protective elevations in all six protective groundwater elevation monitoring wells are achieved within 25 years (by 2041). Injection occurs between December and May.</td>
</tr>
<tr>
<td>5</td>
<td>Iteratively simulate various injection rates at the Seaside-Highlands Storm Water Pond location until protective elevations in three deep protective groundwater elevation monitoring wells are achieved within five years (December, 2021). Injection occurs between December and May</td>
</tr>
<tr>
<td>6</td>
<td>After protective elevations are reached in Scenario 1, iteratively estimate the injection rate required to sustain groundwater levels in the three deep protective groundwater elevation monitoring wells above protective elevations</td>
</tr>
<tr>
<td>7</td>
<td>After protective elevations are reached in Scenario 5, iteratively estimate the injection rate required to sustain groundwater levels in the three deep protective groundwater elevation monitoring wells above protective elevations</td>
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</table>

AFY = acre-feet per year
3.0 MODEL RESULTS

Model results are analyzed through simulated well hydrographs, groundwater contour maps, and estimated outflows to the ocean. Hydrographs for each of the six protective groundwater elevation monitoring wells are provided on Figure 2 through Figure 4. The six protective groundwater elevation monitoring wells are the six wells in the annual Seawater Intrusion Analysis Reports that are analyzed for evidence of seawater intrusion. Each hydrograph includes the predicted groundwater elevations for each model scenario and the baseline simulation. These hydrographs are compared to the protective groundwater elevation established for each well. A discussion of the results for the model scenarios is presented in the sections below.
Figure 1: Modeled Injection Locations

HydroMetrics Water Resources Inc. • 519 17th Street, Suite 500 • Oakland, CA 94612
(510) 903-0458 • (510) 903-0468 (fax)
Scenarios 2 and 3 are not included on this chart because their results are very similar to Scenario 1. Scenarios 5 and 7 are identical until Year 2022; thereafter Scenario 7 elevations continue to increase.

**Figure 2: Predicted Groundwater Elevations and Protective Elevations for the MSC Wells**
Figure 3: Predicted Groundwater Elevations and Protective Elevations for the PCA West Wells

Scenarios 2 and 3 are not included on this chart because their results are very similar to Scenario 1. Scenarios 5 and 7 are identical until Year 2022; thereafter Scenario 7 elevations continue to increase.
Figure 4: Predicted Groundwater Elevations and Protective Elevations for Sentinel Well 3 (SBWM-3) and CDM MW-4 Wells
3.1 SCENARIO 0: INLAND INJECTION OF 1,000 AFY

This model scenario was developed previously (HydroMetrics WRI, 2013). Injecting 1,000 AFY into existing ASR wells achieved protective elevations in all six protective groundwater elevation monitoring wells by 2041. Predicted groundwater contours in the deep Santa Margarita aquifer for Scenario 0 at the end of the last simulated water year (September 2041) are shown on Figure 5. September 2041 is not the end of the predictive model period, but has been selected as show groundwater elevations as it is the month where there is the biggest difference in groundwater elevations between Scenarios 0 and 1 due to it being the end of the dry, high production summer period.

3.2 SCENARIOS 1, 2, AND 3: COASTAL INJECTION OF 1,000 AFY

The results of Scenarios 1 through 3 are very similar, therefore their results are grouped together. The difference between the scenarios was in the injection location and injection schedule. Scenario 1 injects 1,000 AFY into one injection well at the Seaside-Highlands Storm Water Pond site from December through May each year, starting in December 2016. Scenario 2 is the same as Scenario 1, except it injects 1,000 AFY at a constant rate throughout the year rather than seasonally. Scenario 3 injects 1,000 AFY into one injection well at the MRPWCA South site from December through May each year, starting in December 2016.

Moving averages were calculated for the simulated groundwater elevations to remove seasonal trends and focus on long-term trends. A moving average is a way of smoothing data that are seasonally variable, such as the fluctuations seen in the protective groundwater elevation monitoring wells. Moving averages are calculated by selecting each data point individually, and replacing the selected data point with an average of all the data points surrounding the selected point. For our analysis, the moving average for each month was calculated by taking the groundwater level from that month, and averaging it with the all the groundwater levels from the six previous months and the next six months.

Moving average groundwater elevations at the protective groundwater elevation monitoring wells for all three scenarios were almost identical. This indicates that shifting the injection location northeast approximately 2,000 feet does not change the model results. Either site would be suitable for coastal injection. Likewise, the annual schedule of injection does not change average groundwater elevations.
Table 2, located at the back of this memorandum, shows the time it takes groundwater levels in each of the protective groundwater elevation monitoring wells to reach protective elevations, for each scenario. The three scenarios resulted in the three deep coastal monitoring wells – MSC Deep, PCA-West Deep, and Sentinel 3 wells – reaching protective groundwater elevations at the latest by April 2029, which depending on the well is between one to ten years faster than injecting at the existing inland ASR wells in Scenario 0 (Table 2). Although Scenario 0 only reaches protective elevations in 2041, groundwater elevations in the MSC Deep well are only approximately one foot below protective elevation when Scenarios 1, 2, and 3 reach protective elevations in April 2029.

The MSC Shallow well takes longer to reach protective elevations than the deep wells, although it achieves its protective elevation one year quicker than inland injection (Table 2).

Because in the modeled scenarios all injection was into the deeper Santa Margarita aquifer where the majority of the basin’s pumping occurs. It takes additional time for the injected water to flow upward from the Santa Margarita aquifer into the overlying Paso Robles aquifer to allow the MSC Shallow well to reach protective elevations. Injection into the deep Santa Margarita aquifer is desirable as this is the main producing aquifer in the basin.

Predicted groundwater contours in the deep Santa Margarita aquifer for Scenario 1 at the end of the last simulated water year (September 2041) are shown on Figure 6. The difference between groundwater elevations for Scenario 1 (coastal injection) and Scenario 0 (inland injection) are shown on Figure 7. Model results from September 2041 were chosen rather than the end of the simulation (December 2041) because this is the month with the greatest groundwater elevation difference between Scenario 0 and Scenario 1. As expected, the coastal areas have higher groundwater elevations for Scenario 1 (coastal injection) than Scenario 0 (inland injection). Coastal injection results in an approximate 2.5 to 6.0 foot increase in groundwater levels along the coast compared to inland injection at the end of the last simulated water year (September 2041).

Groundwater outflow to the ocean and inflow from the ocean for Scenario 0 (inland injection) and Scenario 1 (coastal injection) is very similar (less than 18 AFY difference), as shown on Figure 8. This implies that coastal injection of 1,000 AFY does not lose much more water to the ocean than inland injection.
values plotted on the bar chart of Figure 8 are the difference between Scenario 1 and Scenario 0’s annual net flows. Net flows are outflow less inflows. Although not apparent on this annual chart, but shown on the upper line chart, some months do have onshore flows but overall the annual flows are outflows to the ocean. For example in 2017, the annual net flow is an outflow of 8.2 AF (see bar chart) but on the upper line chart the months between June and December 2017 have onshore flows.
Figure 5: Scenario 0 Groundwater Elevation Contours, September 2041
Figure 6: Scenario 1 Groundwater Elevation Contours, September 2041
Figure 7: Scenario 1 and 0 Groundwater Elevation Difference, September 2041
Figure 8: Outflow/Inflow Difference between Inland and Coastal Injection
3.3 SCENARIO 4: COASTAL INJECTION TO ACHIEVE PROTECTIVE ELEVATIONS BY 2041

Scenario 4 consisted of iteratively reducing the injection rates at the Seaside-Highland Storm Water Pond site until protective groundwater elevations were achieved in all six protective groundwater elevation monitoring wells at the end of 2041. This simulation was conducted to demonstrate how much less water needs to be injected at the coast to achieve the same results as the inland injection simulation (Scenario 0). It was found that 850 AFY needs to be injected from December through May, starting in December 2016, to reach protective elevations in all six monitoring wells at the end of 2041. This is 150 AFY less than what is required at the inland location over the same period of time.

As subsequent scenarios show, 850 AFY would need to be injected at the coast to maintain groundwater levels above protective elevations. It is possible that continuing to inject 850 AFY after 2041 would result in groundwater levels remaining above protective elevations.

3.4 SCENARIO 5: COASTAL INJECTION TO ACHIEVE PROTECTIVE ELEVATIONS WITHIN FIVE YEARS

Scenario 5 consisted of iteratively increasing injection rates at the Seaside-Highland Storm Water Pond location until protective groundwater elevations were achieved in the three deep protective groundwater elevation monitoring wells after five years of injection. It was found that 1,900 AFY needs to be injected from December through May, starting in December 2016, to reach protective elevations within five years. This is 900 AFY more than what is required to achieve protective elevations over a 25-year period at the same location (Scenario 1).

This scenario focused on the deep wells/aquifer because they are the most likely to be impacted by seawater intrusion as the pumping depression is most pronounced in this aquifer. Of the three shallow wells, the MSC Shallow well is the last to achieve protective elevations, which it does in December 2026 (Table 2).
3.5 SCENARIO 6: COASTAL INJECTION OF 1,000 AFY UNTIL DEEP PROTECTIVE ELEVATIONS ARE ACHIEVED AND THEN REDUCED INJECTION

To assess the amount of injection required to maintain protective groundwater elevations in the deep aquifer, a model run was developed that used Scenario 1’s 1,000 AFY injection assumptions up until the point when all three deep protective groundwater elevation monitoring well groundwater levels reached protective elevations. This would occur in April 2029 (Table 2). From May 2029 injection was iteratively reduced so that moving average groundwater levels always remained just above protective elevations for the remainder of the simulation. It was found that 900 AFY was required through November 2036, and thereafter 850 AFY was required to maintain protective water levels at the coast through the end of the simulation (2041).

This scenario focused on the deep wells/aquifer because they are the most likely to be impacted by seawater intrusion as the pumping depression is most pronounced in this aquifer. Of the three shallow wells, the MSC shallow well is the last to achieve protective elevations, which under this scenario is in August 2041 (Table 2).

3.6 SCENARIO 7: COASTAL INJECTION OF 1,900 AFY UNTIL DEEP PROTECTIVE ELEVATIONS ARE ACHIEVED IN FIVE YEARS AND THEN REDUCED INJECTION

To assess the amount of injection water that would be required to maintain protective groundwater elevations in the deep aquifer after protective groundwater elevations had been achieved in five years by injecting 1,900 AFY (Scenario 5), injection was iteratively reduced so that groundwater levels remained just above protective elevations for the remainder of the simulation. It was found that continued injection of 1,900 AFY in 2022, and then ramp downs to 1,565 AF for year 2023, 1,232 AF for year 2024, 900 AFY for years 2025 through 2028, and 850 AFY thereafter was required to keep moving average groundwater levels above protective elevations through to the end of the simulation (2041).

The volume injected in Scenario 7, from December 2016 through December 2041, is 5,050 AF more than Scenario 6. This equates to a 202 AFY difference over the 25 year injection period. Table 3 summarizes the injection volumes and amount
of net outflow to the ocean (outflow – inflow) for all scenarios over the 25 year injection period.

### Table 3: Scenario Injection Volume and Ocean Outflow Summary

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Years to Reach Protective Elevations</th>
<th>Injected Volume through 2041 (acre-feet)</th>
<th>Net Outflow to Ocean (acre-feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scenario 0: Inland Injection ASR Wells, 1,000AFY, Dec-May</td>
<td>25</td>
<td>25,000</td>
<td>9,310</td>
</tr>
<tr>
<td>Scenario 1: Seaside-Highlands Coastal Injection, 1,000AFY, Dec-May</td>
<td>12</td>
<td>25,000</td>
<td>9,720</td>
</tr>
<tr>
<td>Scenario 2: MRWPCA South Coastal Injection, 1,000AFY, Dec-May</td>
<td>12</td>
<td>25,000</td>
<td>9,730</td>
</tr>
<tr>
<td>Scenario 3: Seaside-Highlands Coastal Injection, 1,000AFY, Year round</td>
<td>12</td>
<td>25,000</td>
<td>9,780</td>
</tr>
<tr>
<td>Scenario 4: Seaside-Highlands Coastal Injection, 850AFY, Dec-May</td>
<td>25</td>
<td>21,250</td>
<td>9,140</td>
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<tr>
<td>Scenario 5: Seaside-Highlands Coastal Injection, 1,900AFY, Dec-May</td>
<td>5</td>
<td>47,500</td>
<td>13,830</td>
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<tr>
<td>Scenario 6: Seaside-Highlands Coastal Injection, 1,000, AFY Ramping Down to 850AFY, Dec-May</td>
<td>12</td>
<td>23,600</td>
<td>9,550</td>
</tr>
<tr>
<td>Scenario 7: Seaside-Highlands Coastal Injection, 1,900AFY, Dec-May for Five Years, Ramping Down to 850 AFY, Dec-May</td>
<td>5</td>
<td>28,850</td>
<td>10,990</td>
</tr>
</tbody>
</table>

### 4.0 CONCLUSIONS

1. Injecting water at either the Seaside-Highlands Storm Water Pond location or the MRWPCA South location have similar responses, which suggests that either site would be equally suitable as a coastal injection location.

2. Average groundwater elevations in the protective groundwater elevation monitoring wells are similar regardless of whether coastal injection occurs seasonally (December through May) or year round (each month of the year).

3. Coastal groundwater levels reach protective elevations faster in response to coastal injection than in response to injection at existing inland ASR sites. Depending on the well, protective groundwater elevation monitoring wells in the deep Santa Margarita aquifer reach protective elevations one to ten years.
sooner in response to coastal injection compared to their response to inland injection. The shallow protective groundwater elevation monitoring wells reach protective elevations at similar times with both coastal and inland injection. The table summarizing protective elevation achievement is on page 11.

4. Approximately 850 AFY of coastal injection is needed to achieve results similar to injecting 1,000 AFY at the inland location over the 25 year injection period.

5. Protective elevations can be achieved within five years if 1,900 AFY is injected at the coastal location.

6. After protective groundwater elevations have been reached by injecting 1,000 AFY at the coast, 900 AFY for 7.5 years, and then 850 AFY is required to maintain groundwater levels above protective elevations.

7. After protective groundwater elevations have been reached after injecting 1,900 AFY at the coast for five years; injection rates can be ramped down to 850 AFY by year 2029 to maintain protective elevations.

5.0 REFERENCES

### Table 2: Summary of Protective Groundwater Elevation Achievement

<table>
<thead>
<tr>
<th>Scenario</th>
<th>MSC Deep</th>
<th>MSC Shallow</th>
<th>PCA-West Deep</th>
<th>PCA-West Shallow</th>
<th>Sentinel-3</th>
<th>CDM MW-4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline: 25 Year Replenishment Repayment</td>
<td>Not attained</td>
<td>Not attained</td>
<td>Not attained</td>
<td>Jan 2009</td>
<td>Not attained</td>
<td>May 2015</td>
</tr>
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<td>Scenario 0: Inland Injection ASR Wells, 1,000AFY, Dec-May for 25 years</td>
<td>Jul 2039</td>
<td>Aug 2041</td>
<td>Nov 2032</td>
<td>Jan 2009</td>
<td>Mar 2022</td>
<td>May 2015</td>
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<td>Scenarios 1 and 2: Coastal Injection, 1,000AFY, Dec-May</td>
<td>Apr 2029</td>
<td>Dec 2040</td>
<td>Nov 2027</td>
<td>Jan 2009</td>
<td>Jun 2021</td>
<td>May 2015</td>
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<td>Scenario 3: Coastal Injection, 1,000AFY, Year round for 25 years</td>
<td></td>
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<tr>
<td>Scenario 4: Coastal Injection, 850AFY, Dec-May for 25 years</td>
<td>Sep 2039</td>
<td>Sep 2041</td>
<td>Sep 2031</td>
<td>Jan 2009</td>
<td>Feb 2022</td>
<td>May 2015</td>
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<tr>
<td>Scenario 6: Coastal Injection, 1,000, AFY ramping down to 850 AFY, Dec-May</td>
<td>Apr 2029</td>
<td>Aug 2041</td>
<td>Nov 2027</td>
<td>Jan 2009</td>
<td>Jun 2021</td>
<td>May 2015</td>
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ITEM X.

INFORMATIONAL REPORTS

(NO ACTION REQUIRED)
SEASIDE GROUNDWATER BASIN WATERMASTER CRITICAL MILESTONE DATES

### Item X.A.

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<td>8/7/2013</td>
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### Alternative Producers may change to Standard Production by March 27, 2009 (see amendment at right) by filing a declaration with the Court and with the other parties.

Comming with the fourth Water Year and Triennially thereafter, the Operating Yield for both Subareas will be decreased by 10% until the Operating Yield is equivalent to the Natural Safe Yield unless by recharge or reclaimed water use results in a decrease in production of Native Water as required by the decision.

### After the close of each Water Year, the Watermaster will determine and levy a Replenishment Assessment against all Producers that incurred Operating Yield Over Production during the Water Year, with payment due from Producer 40 days after the mailing of a statement for the assessment by Watermaster.

### California American Water to submit annually to Watermaster any augmentation to water supply for possible credit toward Replenishment Asses

### Water level monitoring - monthly data collected from all members for inclusion in the consolidated database.

### Water quality monitoring - yearly data collection from all members for inclusion in consolidated database.

### Summary report of water resources data to all members/parties Reported the 15th each quarter month:

### Annual Report to Court

### Administrative MILESTONES

### Calendar Years

### Fiscal Year tentative budget distribution to all parties Operating Yield of 5,600 decreased 10%; Declaration of Replenishment Water Available

### Administrative Assessments

### Operations Assessments

### Capital Assessments

### Replenishment Assessments

### Annual Report to Court

### Answers to Judge’s Questions re: Annual Report

### Declaration of Replenishment Water Availability

### MONTHLY MILESTONES

### Fiscal Year 2006-12


### 1/1/13 - 12/31/13 Revised July 31, 2013

### SUMMARY PROJECT SCHEDULE

### Cross-Aquifer Contamination Potential (MPWMD)

### Focused Investigation at Sand City Public Works Well (MPWMD)

### Enhanced Groundwater Model & Replenishment Scenarios (MPWMD)

### Seawater Intrusion Detection & Tracking/ Analysis & SIAR (MPWMD)

### Revised July 31, 2013

### 1/1/13 - 12/31/13

### Summary report of water resources data to all members/parties Reported the 15th each quarter month:

### Annual Report to Court

### Administrative MILESTONES

### Calendar Years

### Fiscal Year tentative budget distribution to all parties Operating Yield of 5,600 decreased 10%; Declaration of Replenishment Water Available

### Administrative Assessments

### Operations Assessments

### Capital Assessments

### Replenishment Assessments

### Annual Report to Court

### Answers to Judge’s Questions re: Annual Report

### Declaration of Replenishment Water Availability

### MONTHLY MILESTONES

### Fiscal Year 2006-12


### 1/1/13 - 12/31/13 Revised July 31, 2013

### SUMMARY PROJECT SCHEDULE

### Cross-Aquifer Contamination Potential (MPWMD)

### Focused Investigation at Sand City Public Works Well (MPWMD)

### Enhanced Groundwater Model & Replenishment Scenarios (MPWMD)

### Seawater Intrusion Detection & Tracking/ Analysis & SIAR (MPWMD)

### Revised July 31, 2013

### 1/1/13 - 12/31/13
The meeting was called to order at 1:35 p.m.

1. **Public Comments**
   There were no public comments.

2. **Administrative Matters:**
   A. **Approve Minutes from April 10, 2013 Meeting**
      Mr. Riedl pointed out that there was a duplication of paragraphs under Item No. 9 in the Minutes, and there was agreement to delete the 2nd of the two duplicative paragraphs. With this revision made, on a motion by Mr. Costa, seconded by Mr. Riedl, the minutes were unanimously approved.

3. **Continued Discussion of Water Supply to the Laguna Seca Subarea**
   Mr. Jaques provided a detailed summary of this agenda item.

   Mr. Sabolsice reported that he had reviewed with Tim Miller (Cal Am's legal counsel) the Discussion Paper which was prepared by Mr. Jaques and included in last month's TAC meeting agenda packet. He reported that the "Portability" provision in the Decision, which states that water
pumped from the Coastal Subarea cannot be delivered to customers in the Laguna Seca subarea or any other subareas. He went on to say that the Natural Safe Yield of the Laguna Seca subarea is less than the production amounts allocated to the Alternative Producers there. He reported, therefore, that Cal Am interprets this as meaning that it will need to interconnect its Laguna Seca distribution systems with the Monterey Peninsula Water Supply Project desalination plant in order to serve their customers in the Laguna Seca subarea, because Cal Am anticipates that in the long term there will be no Natural Safe Yield allocation available for Cal Am to pump from the Laguna Seca subarea. He said this should be considered in any modeling that is done in the future, and noted that current pumping rates are not sustainable.

With this information having been provided by Mr. Sabolsice, Mr. Williams asked if there was now any reason to perform modeling to develop a new Natural Safe Yield for the Laguna Seca subarea.

Mr. Jaques asked Mr. Sabolsice if Mr. Miller had written up the basis for his conclusion regarding the "portability" provision, and Mr. Sabolsice said he would check. However, it was noted that this may be irrelevant, because if water levels continue to fall in the Laguna Seca subarea, pumping there would need to be reduced and Cal Am would be the first producer there that would be required to reduce its pumping.

Mr. Jaques reported that he did not have confidence in what the actual Natural Safe Yield of the Laguna Seca subarea was. He went on to say that it could be well less than the 608 acre-feet per year included in the Decision, and pointed out that in the Basin Management Action Plan a figure of 540 acre-feet per year is cited.

Mr. Sabolsice said that Cal Am will be performing an evaluation of the Laguna Seca subarea as part of a preliminary engineering study being done to include the interconnection facilities in the Monterey Peninsula Water Supply Project. Mr. Riedl asked if the study would cover all three of the Technical Program Manager's recommendations in today's agenda packet. Mr. Sabolsice said that the study would evaluate water levels in the Laguna Seca subarea, specifically focused on Cal Am's wells, in order to justify to the PUC including the interconnection facilities as part of the Project.

Mr. Riedl asked how a cost benefit analysis could be done if there are not multiple alternatives to compare. Mr. Sabolsice responded that Cal Am's engineers will do what modeling they need to do to support including the interties in the Monterey Peninsula Water Supply Project. In response to a question Mr. Sabolsice said that this engineering study will probably be completed by the end of 2013. He also reported that Cal Am will be using a different hydrologist than HydroMetrics to perform this work.

Mr. Franklin asked if Cal Am's work will be independent of the TAC's/Watermaster's actions, and Mr. Sabolsice responded that it would be. Mr. Franklin then went on to say that the TAC could therefore choose to delay taking any action pending results from Cal Am's engineering study. Mr. Sabolsice said that he felt that the Watermaster could benefit from this approach.

Mr. Franklin asked if the TAC could get information on the scope of Cal Am's proposed engineering study next month. He said he would be uncomfortable doing nothing without knowing more about the scope of that work. Mr. Sabolsice said he would try to have Mr. Miller and Cal Am's engineer available to describe and discuss these issues at the next TAC meeting, if not in person, then by telephone. Mr. Franklin asked if the interties that Cal Am may be proposing
could potentially connect to systems outside of the Seaside Basin, such as the Toro Basin. Mr. Sabolsice said he did not envision going outside of the Seaside Basin.

Mr. Franklin and Mr. Riedl recommended that the TAC provide its direction on this matter in the form of a motion. On a motion by Mr. Riedl, seconded by Mr. Franklin, the TAC unanimously approved taking no action at this time but instead waiting for the information to be provided by Cal Am's engineering study, as described above, before deciding whether or not to take any further action.

4. Progress Report from MRWPCA on the Groundwater Replenishment Project

Mr. Holden summarized the agenda packet materials for this item. He said that MRWPCA will now be looking at both coastal and inland injection sites as well as multiple water sources for the Advanced Water Treatment facilities. He reported that the inland site would consist of 4 deep injection wells and 4 vadose zone wells, and the coastal site would consist of 3 deep injection wells and 4 vadose zone wells. He noted that there a lot of issues associated with the coastal injection site.

The inland deep injection wells will be about 900 feet deep, and will have about 300 feet of well screen. The vadose zone wells will be about 200 feet deep, and will be about 200 feet above the ground water level.

The coastal vadose zone wells will be about 60 feet deep and will be about 80 feet above the ground water level.

The Groundwater Replenishment Project (GWRP) is planning on providing about 3,500 acre feet per year for replacement water to Cal Am. Two other potential quantities, 1,000 acre feet per year for replenishment of the Seaside Basin and 110 acre feet per year for replacement water for the Seaside Municipal Water System, are not currently included in the scope of Cal Am's Monterey Peninsula Water Supply Project.

Mr. Green asked if growers in the Salinas Valley have been contesting the use of some of the other potential water sources Mr. Holden had described. Mr. Holden responded yes, but that these concerns will be discussed in the CEQA EIR document that is being prepared. Mr. Holden said that the City of Salinas will exceed its discharge capacities to the Salinas River for some of these facilities, so he anticipated they would likely be in favor of providing their industrial wastewater, and potentially storm water flows, for use in augmenting the quantities of water available for the Advanced Water Treatment facilities.

Mr. Sabolsice asked Mr. Holden if providing water for Seaside Basin replenishment and providing replacement water for the City of Seaside’s Municipal Water System would be included in the EIR, and Mr. Holden replied that these would be included.

Mr. Green asked about the estimated cost of the water. Mr. Holden responded that this is very dependent on the size of the project, and that MRWPCA is estimating a cost in the range of $2,000 to $2,600 per acre foot, and is using a value of $2,500 per acre foot in their analyses.

Mr. Jaques asked Mr. Holden what the storm water sources might be. Mr. Holden responded that Pacific Grove, Monterey and Salinas have all expressed interest in providing storm water to MRWPCA for inclusion in the project. He said he would also be contacting Seaside in this same regard. Mr. Jaques asked for confirmation that there would be no cost to the Watermaster from
having HydroMetrics perform work on this project as well as to use the model that HydroMetrics had prepared for the Watermaster. Mr. Holden confirmed that this was correct.

Mr. Riedl asked Mr. Holden if there would be any additional replenishment water available for the Seaside Basin. Mr. Holden responded that this is the 1,000 acre feet per year figure he had mentioned.

Mr. Riedl and Mr. Green asked where the money would come from to pay for the GWRP. Mr. Holden said that MRWPCA would need a water purchase agreement before they could go out for financing of the project.

Mr. Green asked Mr. Sabolsice if Cal Am's Monterey Peninsula Water Supply Project has two quantities of groundwater replenishment project water in it, and if this therefore resulted in two potential desalination plant sizes. Mr. Sabolsice responded that Cal Am would leave 700 acre feet per year in the Seaside Basin for 25 years to repay its overpumping, so it would only pump 774 acre feet per year from the Coastal subarea for the first 25 years. He said that entities wishing to purchase additional water from Cal Am should initiate those discussions now, while the desalination plant size is still being defined.

Mr. True reported that MCWD's water costs are about $1,950 per acre foot.

Mr. Jaques asked Mr. Holden if the RUWAP pipeline would have to be built in order to deliver water from the Advanced Water Treatment facility. Mr. Holden responded that the GWRP costs include building a separate pipeline and pump station, and not using the RUWAP pipeline.

5. Schedule
Mr. Jaques summarized the agenda packet materials for this item. Mr. Lear reported that without water quality information from Cal Am's now-abandoned wells, he did not feel it would be possible to answer the question of why water quality in the Sand City Public Works well differs from water quality in other wells in the Basin. He said the Sand City desalination plant could be affecting water quality in this area, but without the prior water quality data from now-abandoned wells, this could not be determined.

6. Other Business
There was no other business

7. Set Next Meeting Date:
The next regular meeting will be held on Wednesday June 19, 2013 at 1:30 p.m. at the MRWPCA Board Room. Note that June 19 is one week later than the normal meeting date of the second Wednesday of the month.

The meeting adjourned at 2:54 p.m.
The meeting was called to order at 1:37 p.m.

0. Public Comments
There were no public comments.

1. Administrative Matters:
   A. Approve Minutes from May 8, 2012 Meeting
On a motion by Mr. Oliver, seconded by Mr. Riedl, the Minutes were unanimously approved as presented.

2. Continued Discussion of Water Supply to the Laguna Seca Subarea
(Note: This Item was taken up after Item 4 was discussed, so Mr. Miller could be present for this Item)
Mr. Jaques summarized the agenda packet materials for this item.
Mr. Sabolsice reported that Cal Am's plans to serve its Laguna Seca customers once the Laguna Seca subarea has no remaining Natural Safe Yield for Cal Am to pump (since 100 percent of the Natural Safe Yield from the Laguna Seca subarea is assigned to Alternate Producers there). The Monterey Peninsula Water Supply Project has the Laguna Seca demands included in it, based on this anticipation. About 300 acre feet per year of Cal Am demand currently exists in the Laguna Seca subarea.

Mr. Miller and Mr. Sabolsice explained Cal Am's long-term plans to serve its Laguna Seca customers. The plan is to discontinue pumping from Laguna Seca to serve these customers and to serve them from other parts of Cal Am's system. They will be connected to Cal Am's main system.

Mr. Miller briefly described the history of development of the Adjudication Decision as it pertains to the Laguna Seca subarea, replenishment assessments, and how Natural Safe Yield is allocated among the producers. He described several sections of the Decision (Sections III.m.3.a through c) which pertain to exporting water from subareas of the Basin and anti-portability issues.

Mr. Miller went on to say that Cal may wish to seek court approval to use its Laguna Seca systems in an emergency to provide backup to the interconnection to its main system, under certain conditions.

Mr. Sabolsice said it would make sense to look at the Laguna Seca subarea with modeling to see if any conditions are now better understood that could result in a change to the Laguna Seca subarea Natural Safe Yield amount. He went on to say that Cal Am would like to see what groundwater impacts there will be if Cal Am discontinues all of its pumping from its Laguna Seca subarea wells. Mr. Williams recommended looking back at prior monitoring work to see what we now know in conjunction with developing a potential scope of work for this. Mr. Riedl also suggested looking at revising the Natural Safe Yield for the Laguna Seca subarea in conjunction with this other modeling work.

Mr. Jaques concurred and will discuss a potential scope of work with HydroMetrics to perform this work. The matter will be brought back to the TAC for further discussion at a future TAC meeting.

3. Potential Sources of Water That Could be Used to Replenish the Seaside Basin and Help to Achieve Protective Water Levels

Mr. Jaques summarized the agenda packet materials for this item.

Mr. Riedl asked if the Groundwater Replenishment Project could provide more water in the future. Mr. Jaques and Mr. Holden responded that MRWPCA was seeking additional flows to help expand the potential production quantities from the Groundwater Replenishment Project.

It was noted that the Regional Urban Water Augmentation Project (RUWAP) has a desalination component. Mr. Jaques responded that the desalination component of that project was intended for delivery to potable demands, not non-potable demands.

Mr. Riedl asked for a change in wording on page 19 of the agenda packet as follows: in the third paragraph under section 5, change the first words of the first sentence from "The current market for recycled water..." to "The potential demand for recycled water..."
Mr. True reported that no areas outside of the former Fort Ord are included for service by the RUWAP.

Mr. Sabolsice asked Mr. Riedl where the well in Project No. 4 on page 14 of the agenda is located. Mr. Riedl said that the well is in the vicinity of Laguna Grande but is apparently not connected to the seaside groundwater basin, although it may affect the Sand City desalination plant's water source. Mr. Oliver noted that the well is on the other side of a fault so it is not hydraulically connected to the Seaside Groundwater Basin.

Mr. Sabolsice felt that the Pacific Grove Local Water Project is gaining traction and that it should continue to be monitored.

Mr. Sabolsice requested that with regard to the language under item No. 8 on page 15 of the agenda packet the term "excess capacity" be revised to read "initially unused capacity".

Mr. Sabolsice briefly discussed water conservation, and questioned whether it would provide replenishment water for the Basin. Mr. Jaques responded that reduced demand on the desalination plant should make available capacity in that plant that could potentially be used to produce water for replenishment. There was consensus to indicate that water conservation has a low potential to produce a meaningful quantity of water for replenishment.

There was consensus to provide a report similar to this to the Board, with the revisions as noted above. Mr. Jaques will email a draft version of the Board agenda transmittal to the TAC for pre-review before sending it to Mr. Evans for inclusion in the August Board agenda packet.

4. HydroMetrics Presentation on Modeling of Coastal Injection Sites

Mr. Jaques introduced this item. Mr. Williams then proceeded, with the use of PowerPoint slides (a copy of which is attached), to describe the scope, findings and conclusions of the modeling work.

Mr. Williams stressed that the modeling work was not simulating any specific project; rather it was providing guidance and general direction. Raising groundwater elevations to protective water levels results in some amount of total-Basin freshwater flowing into the ocean, between 400 and 500 acre feet per year.

In response to a question from Mr. Riedl, Mr. Williams explained that the scenarios looked what a 25-year time period ending in 2041, the same as the Cal Am 700 AFY replenishment plan.

All the injection was done with a single injection well; there is no need to have multiple injection wells.

Coastal injection water levels are about four feet higher than inland injection wells, and coastal injection achieves protective water levels about twelve years earlier. However the twelve years is based on a very small difference between the scenarios, and this could be within the accuracy of the modeling.

Seasonal variation is caused by pumping demands (less production pumping in winter than summer). Either coastal or inland injection achieves a large percentage of what is needed to reach protective water levels, about 90 percent. Continued injection will be required for many years beyond 2041 to maintain protective water levels due to outflows to the ocean and the slowness of
water level recovery that occurs through natural replenishment, because natural replenishment water takes a long time to percolate into the aquifer and bring Basin water levels to a stable condition.

Mr. Sabolsice noted that coastal injection has minimal benefit compared to inland injection in terms of the actual increase in groundwater levels, only a couple of feet. Mr. Williams confirmed this, but said it more rapidly raises water levels and requires less water for injection.

When Cal Am's 25 year 700 AFY replenishment program ends, additional injection water would be required to replace this 700 acre feet per year to maintain protective water levels. There are cost trade-offs between the scenarios including infrastructure costs to be able to inject water TAC the coast and the cost of purchasing the necessary quantities of water for injection.

Mr. Sabolsice asked Mr. Williams if injection into the Santa Margarita aquifer would result in less outflow to the ocean then injection into the Paso Robles aquifer. Mr. Williams said that these are essentially the same for the Basin as a whole.

Ms. Stannin asked Mr. Williams if there was a potential for creation of artesian conditions as result of the injection that had been modeled. Mr. Williams responded no.

Mr. Williams said that Natural Safe Yield was calculated on the Basin as a whole without consideration of individual aquifers.

Mr. Riedl asked that language be added to Conclusions six and seven in the Tech Memo stating that 700 acre feet per year of Cal Am replenishment water is included as part of these conclusions.

TAC members suggested several other wording revisions in the Technical Memorandum and the PowerPoint slides.

Mr. Sabolsice asked Mr. Williams what the next step would be. Mr. Williams responded that as projects that could provide injection water are developed, the Watermaster should determine the feasibility of acquiring water for injection from those projects.

There was discussion of various issues pertaining to future decisions and possible actions by the Watermaster.

5. Discussion of Geophysical Imaging of Saltwater Intrusion
Mr. Jaques summarized the agenda packet materials for this item, and introduced Mr. Pidlisecky who made the presentation on this item.

Mr. Pidlisecky works for the Stanford Center for Groundwater Evaluation and Management, which focuses on integrating new technology into groundwater management. Their website lists approximately 12 partnerships with which they have been involved. Using a PowerPoint presentation (copy attached) he described the research he is involved with, which uses electrical resistivity tomography (ERT), a technology that was developed in contamination mitigation and the oil and gas industry.

He reported that borehole based monitoring does not provide early warning against seawater intrusion, because once the intrusion is detected it has already arrived at the monitoring well location.
Pore fluid chemistry is used. Metal probes (electrodes) about one foot long are driven into the ground and current is applied and voltage is measured at numerous locations. This process can cover about three kilometers a day in the field. It uses similar algorithms as medical tomography procedures. Work done locally in 2011 and 2012, if done by a commercial company, would cost about $60,000. It

Their current work only images down to about 150 meters in depth. A longer than 1 kilometer array would allow a greater imaging depth.

Seawater intrusion can come not just from the ocean, but also from other aquifers that are seawater intruded.

This technology is done on the ground, but electromagnetic imaging from the air is another technology that is being evaluated.

The technology would not be very useful for detecting the location of the seawater-freshwater interface in Monterey Bay, but there are ways of using the land-based sensors to get some of that information.

Seismic surveying is also helpful in order to accurately learn the subsurface structures.

Mr. Sabolsice felt that this technology might be helpful in siting Cal Am's desalination plant intake wells. In response to a question from Mr. Sabolsice, Mr. Pidlisecky reported that there are a few commercial firms that can do this type of work.

6. **Schedule**
Mr. Jaques reported that there will be no July TAC meeting, and that the next TAC meeting will be in August.

7. **Other Business**
There was no other business.

8. **Set Next Meeting Date**
The next TAC meeting will be on August 14, 2013.

The meeting adjourned at 4:34 p.m.
Results of Coastal Injection Modeling

Project Purposes
A. Compare benefits of injecting water near the coast to injecting water at existing ASR wells
B. Criteria:
   A. Time to reach protective elevations
   B. Injection rates
   C. Total quantity of injected water
   D. Outflow to ocean

Project Purposes
These results provide only guidance and general direction
Results do not simulate any project

Protective Groundwater Elevations
Achieving protective elevations eliminates the threat of seawater intrusion

Previous Modeling
- Inject at existing ASR sites
- Inject approximately 1,000 AFY
- Leave water in the basin
- Protective elevations are achieved by 2041

Inland and Coastal Injection Sites
Assumptions

- Implement Cal-Am’s 25-year replenishment repayment schedule
- All other producers subject to triennial pumping reductions
- Repeat historical rainfall

Modeling Scenarios Encompass Reasonable Operations

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Injection Rate</th>
<th>Injection Location</th>
<th>Reduce Injection in Late Time?</th>
<th>Injection Season</th>
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<tr>
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<td>1,000 AFY</td>
<td>Existing Inland ASR</td>
<td>No</td>
<td>Dec - May</td>
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<tr>
<td>1</td>
<td>1,000 AFY</td>
<td>Seaside - Highlands</td>
<td>No</td>
<td>Dec - May</td>
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<tr>
<td>2</td>
<td>1,000 AFY</td>
<td>Seaside - Highlands</td>
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<td>All Year</td>
</tr>
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<td>3</td>
<td>1,000 AFY</td>
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<td>Dec - May</td>
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<td>4</td>
<td>1,000 AFY</td>
<td>Seaside - Highlands</td>
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<td>1,000 AFY</td>
<td>Seaside - Highlands</td>
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<td>1,000 AFY</td>
<td>Seaside - Highlands</td>
<td>Yes</td>
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Modeling Results

Inland vs. Coastal Injection

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Injection Rate</th>
<th>Injection Location</th>
<th>Reduce Injection in Late Time?</th>
<th>Injection Season</th>
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<tbody>
<tr>
<td>0</td>
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</tr>
<tr>
<td>1</td>
<td>1,000 AFY</td>
<td>Seaside - Highlands</td>
<td>No</td>
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<td>2</td>
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</tr>
<tr>
<td>3</td>
<td>1,000 AFY</td>
<td>MWPCA South</td>
<td>No</td>
<td>Dec - May</td>
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</tbody>
</table>

Inland vs. Coastal Injection

Groundwater Level Difference in Santa Margarita Aquifer (Coastal Injection WL – Inland Injection WL)
**Modeling Results**
How much injection is needed to reach protective elevations in 25 years and 5 years?

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Injection Rate</th>
<th>Injection Location</th>
<th>Reduce Injection in Late Time?</th>
<th>Injection Season</th>
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</thead>
<tbody>
<tr>
<td>4</td>
<td>Reach protective elevations in 2041</td>
<td>Seaside - Highlands</td>
<td>No</td>
<td>Dec – May</td>
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<tr>
<td>5</td>
<td>Reach protective elevations in 5 years</td>
<td>Seaside - Highlands</td>
<td>No</td>
<td>Dec – May</td>
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</table>

**Maintaining Protective Groundwater Elevations**
How much to reduce injection once protective elevations have been reached?

<table>
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<tr>
<th>Scenario</th>
<th>Injection Rate</th>
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<th>Reduce Injection in Late Time?</th>
<th>Injection Season</th>
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<tr>
<td>6</td>
<td>1,000 AFY</td>
<td>Seaside - Highlands</td>
<td>Yes</td>
<td>Dec – May</td>
</tr>
<tr>
<td>7</td>
<td>Reach protective elevations in 5 years</td>
<td>Seaside - Highlands</td>
<td>Yes</td>
<td>Dec – May</td>
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</table>

**Scenario Comparison**

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Years to Reach Protective Elevations</th>
<th>Injected Volume through 2041 (acre-feet)</th>
<th>Outflow to Ocean (acre-feet)</th>
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<tr>
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<td>15</td>
<td>25,000</td>
<td>9,300</td>
</tr>
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<td>1: S-H, 1,000 AFY, Dec-May</td>
<td>12</td>
<td>25,000</td>
<td>9,700</td>
</tr>
<tr>
<td>2: S-H, 5,000 AFY, all year</td>
<td>12</td>
<td>25,000</td>
<td>9,700</td>
</tr>
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<td>3: MRWPCA, 1,000 AFY, Dec-May</td>
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<td>25,000</td>
<td>9,700</td>
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<td>4: S-H, 850 AFY, Dec-May</td>
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<td>22,350</td>
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<td>47,000</td>
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<td>7: S-H, 3,500 to 850 AFY, Dec-May</td>
<td>5</td>
<td>28,850</td>
<td>10,590</td>
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</table>

**Conclusions**
1. Seaside Highland or MRWPCA South site equally suitable as coastal injection location.
2. Average groundwater elevations similar if injected seasonally or year round.
3. Coastal injection reaches protective elevations 12 years faster than inland injection at existing ASR wells.
4. Offshore flow ranges from 100 to 900 AFY.
Conclusions continued

5. 150 AFY less water is needed for coastal injection to achieve protective elevations by the end of 2041 compared to injecting in existing ASR wells.

6. Protective elevations can be reached in 5 years if 1,900 AFY are injected at the coast.

7. 850 AFY is required to maintain groundwater levels above protective elevations once they have been reached by:
   - Injecting 5,000 AFY for 12 years, and ramping down
   - Injecting 4,500 AFY for 5 years, and ramping down

Questions?
## Seaside Groundwater Basin Watermaster

**Reported Quarterly and Annual Water Production From the Seaside Groundwater Basin**

*For All Producers Included in the Seaside Basin Adjudication – Water Year 2013*

*(All Values in Acre-Feet [AF])*

### Coastal Subarea Totals

<table>
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<tr>
<th>Type</th>
<th>Oct-Dec 11</th>
<th>Jan-Feb 12</th>
<th>Mar-Apr 12</th>
<th>Apr-May 12</th>
<th>May-Jun 12</th>
<th>Jun-Jul 12</th>
<th>Jul-Aug 12</th>
<th>Aug-Sep 12</th>
<th>Sep-Oct 12</th>
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<tbody>
<tr>
<td>CAW - Coastal Subarea</td>
<td>910.62</td>
<td>89.48</td>
<td>332.38</td>
<td>0.00</td>
<td>544.37</td>
<td>791.20</td>
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<tr>
<td>City of Seaside (Municipal)</td>
<td>122.50</td>
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<td>332.38</td>
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<tr>
<td>Granite Rock Company</td>
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<td>IRA Development No. 27</td>
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<td>0.00</td>
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</tr>
<tr>
<td>Mission Memorial (Alderwoods)</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
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<tr>
<td>Monterey-Santana (Security National Guaranty)</td>
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</tr>
<tr>
<td>Pasadera Country Club</td>
<td>0.62</td>
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<td>0.00</td>
<td>0.00</td>
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</tr>
<tr>
<td>Coastal Subarea Totals</td>
<td>971.68</td>
<td>258.81</td>
<td>1,051.59</td>
<td>0.00</td>
<td>2,282.08</td>
<td>3,688.79</td>
<td>0.00</td>
<td>4,164.55</td>
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</tbody>
</table>

### Laguna Seca Subarea

<table>
<thead>
<tr>
<th>Type</th>
<th>Oct-Dec 11</th>
<th>Jan-Feb 12</th>
<th>Mar-Apr 12</th>
<th>Apr-May 12</th>
<th>May-Jun 12</th>
<th>Jun-Jul 12</th>
<th>Jul-Aug 12</th>
<th>Aug-Sep 12</th>
<th>Sep-Oct 12</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAW - Laguna Seca Subarea</td>
<td>33.64</td>
<td>23.64</td>
<td>19.04</td>
<td>76.38</td>
<td>19.21</td>
<td>19.83</td>
<td>24.49</td>
<td>43.55</td>
<td>32.22</td>
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<tr>
<td>Ryan Ranch (City)</td>
<td>16.43</td>
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<td>0.00</td>
<td>0.00</td>
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<td>0.00</td>
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<td>41.46</td>
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<td>Hidden Hills (City)</td>
<td>12.67</td>
<td>10.75</td>
<td>9.26</td>
<td>33.08</td>
<td>8.70</td>
<td>8.70</td>
<td>10.80</td>
<td>28.20</td>
<td>12.93</td>
</tr>
<tr>
<td>Bishop (City)</td>
<td>13.68</td>
<td>9.04</td>
<td>6.22</td>
<td>28.93</td>
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<td>7.70</td>
<td>9.70</td>
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<td>Mission Memorial (Alderwoods)</td>
<td>2.12</td>
<td>0.47</td>
<td>0.12</td>
<td>2.71</td>
<td>0.48</td>
<td>1.29</td>
<td>1.34</td>
<td>3.11</td>
<td>9.00</td>
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<tr>
<td>Laguna Seca Subarea Totals</td>
<td>122.50</td>
<td>89.48</td>
<td>332.38</td>
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<td>544.37</td>
<td>791.20</td>
<td>0.00</td>
<td>791.20</td>
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</tbody>
</table>

### Total Production by WM Producers

<table>
<thead>
<tr>
<th>Type</th>
<th>Jan-Mar 12</th>
<th>Apr-May 12</th>
<th>May-Jun 12</th>
<th>Jun-Jul 12</th>
<th>Jul-Aug 12</th>
<th>Aug-Sep 12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Production from APA Producers</td>
<td>305.3</td>
<td>0.00</td>
<td>29.40</td>
<td>154.04</td>
<td>0.00</td>
<td>154.04</td>
</tr>
<tr>
<td>Total Production from SPA Producers</td>
<td>167.02</td>
<td>0.00</td>
<td>29.40</td>
<td>154.04</td>
<td>0.00</td>
<td>154.04</td>
</tr>
</tbody>
</table>

### Notes

1. The Water Year (WY) begins October 1 and ends September 30 of the following calendar year. For example, WY 2013 begins on October 1, 2012, and ends on September 30, 2013.
2. "Type" refers to water right as described in Seaside Basin Adjudication decision as amended, signed February 9, 2007 (Monterey County Superior Court Case No. M66345).
3. Values shown in the table are based on reports to the Watermaster as received by MPWMD by July 15, 2013.
4. All values are rounded to the nearest tenth of an acre-foot. Where required, reported data were converted to acre-feet utilizing the relationships: 325,851 gallons = 43,560 cubic feet = 1 acre-foot.
5. Any minor discrepancies in totals are attributable to rounding.
7. It should be noted that CAW/MPWMD ASR "Injection" and "Recovery" amounts are not expected to "balance" within each Water Year. This is due to the injection-recovery "sales" that are part of SWRCB water rights permits and/or separate agreements with state and federal resources agencies that are associated with the water rights permits.
8. CAW now takes physical meter readings as of 1/1/13 per Eric Sabolsice instead of SCADA readings.

### City of Seaside Golf Courses In-Lieu (MCWD source water)

<table>
<thead>
<tr>
<th>Type</th>
<th>Oct-Dec 11</th>
<th>Jan-Feb 12</th>
<th>Mar-Apr 12</th>
<th>Apr-May 12</th>
<th>May-Jun 12</th>
<th>Jun-Jul 12</th>
<th>Jul-Aug 12</th>
<th>Aug-Sep 12</th>
<th>Sep-Oct 12</th>
</tr>
</thead>
<tbody>
<tr>
<td>MCWD delivery</td>
<td>7.45</td>
<td>3.42</td>
<td>1.93</td>
<td>12.88</td>
<td>0.76</td>
<td>0.02</td>
<td>12.10</td>
<td>12.88</td>
<td>49.69</td>
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<tr>
<td>CAV / MPWMD - ASR (Carmel River Basin source water)</td>
<td>1,894.19</td>
<td>348.29</td>
<td>1,383.97</td>
<td>0.00</td>
<td>2,826.45</td>
<td>4,479.99</td>
<td>0.00</td>
<td>4,855.75</td>
<td>0.00</td>
</tr>
</tbody>
</table>

**Annual Production from APA Producers**: 271.70

**Annual Production from SPA Producers**: 252.12

### Notes

1. The Water Year (WY) begins October 1 and ends September 30 of the following calendar year. For example, WY 2013 begins on October 1, 2012, and ends on September 30, 2013.
2. "Type" refers to water right as described in Seaside Basin Adjudication decision as amended, signed February 9, 2007 (Monterey County Superior Court Case No. M66345).
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8. CAW now takes physical meter readings as of 1/1/13 per Eric Sabolsice instead of SCADA readings.
ITEM NO. XI.

DIRECTOR’S REPORTS
ITEM NO. XII.

EXECUTIVE OFFICER

COMMENTS