MEETING NOTICE AND AGENDA

TECHNICAL ADVISORY COMMITTEE OF THE SEASIDE BASIN WATER MASTER

DATE: Wednesday, September 8, 2010
MEETING TIME: 1:30 p.m.
NOTE NEW MEETING LOCATION:
Monterey Regional Water Pollution Control Agency Offices
5 Harris Court, Building D (Ryan Ranch)
Monterey, CA 93940

If you wish to participate in the meeting from a remote location, please call in on the Watermaster Conference Line by dialing (877)810-9415. Use the Access Code of 4560043. Please note that if no telephone attendees have joined the meeting by 10 minutes after its start, the conference call will be ended.

OFFICERS
Chairperson: Diana Ingersoll, City of Seaside
1st Vice-Chairperson: Eric Sabolsice, California American Water Company
2nd Vice-Chairperson: Rob Johnson, MCWRA

MEMBERS

California American Water Company	City of Del Rey Oaks	City of Monterey
City of Sand City	City of Seaside	Coastal Subarea Landowners
Laguna Seca Property Owners	Monterey County Water Resources Agency	
Monterey Peninsula Water Management District	Public Member (John Fischer)	

SEASIDE BASIN WATER MASTER
TECHNICAL ADVISORY COMMITTEE

** * * AGENDA TRANSMITTAL FORM * * **

MEETING DATE:	September 8, 2010
AGENDA ITEM:	1.A
AGENDA TITLE:	Approve Minutes from August 11, 2010
PREPARED BY:	Robert Jaques, Technical Program Manager

SUMMARY:

Draft Minutes from this meeting were emailed to all TAC members. Proposed changes have been included in the attached version.

ATTACHMENTS:	Minutes from this meeting
RECOMMENDED ACTION:	Approve the minutes

D-R-A-F-T
MINUTES

Seaside Groundwater Basin Watermaster
Technical Advisory Committee Meeting
August 11, 2010

Attendees: **TAC Members**
City of Seaside – Scott Ottmar
California American Water – Eric Sabolsice
City of Monterey – Norm Green
Laguna Seca Property Owners – No Representative
MPWMD – Joe Oliver
Public Member – John Fischer
MCWRA – Rob Johnson
City of Del Rey Oaks – No Representative
City of Sand City – No Representative
Coastal Subarea Landowners – No Representative

Watermaster
Technical Program Manager - Robert Jaques

Consultants
HydroMetrics LLC – Derrik Williams & Georgina King (via telephone)

Others:
MPWMD – Jonathan Lear

The meeting was called to order at 1:50 p.m. while waiting for a quorum to arrive. Mr. Green and Mr. Ottmar had a prior meeting schedule conflict, and arrived at 2:00 p.m.

1. Administrative Matters:

A. Approve Minutes from June 9, 2010 Meeting

On a motion by Mr. Oliver, second by Mr. Johnson, the minutes were unanimously approved as presented. However, it was noted that when this action was taken, a quorum had not yet arrived. Once a quorum had arrived, the action was repeated and the minutes were again unanimously approved as presented.

B. Future TAC Meeting Locations

Mr. Sabolsice summarized the agenda packet materials on this item. There was unanimous agreement to hold future TAC meetings in the Board Room of the MRWPCA offices.

2. Report from HydroMetrics on Scenario 1 Groundwater Modeling

Mr. Williams discussed the Scenario 1 modeling work pertaining to the Laguna Seca Subarea Alternative Producer increasing their pumping rates 10 percent or 20 percent over their existing pumping levels. A copy of the PowerPoint slides used in his presentation is attached.

Referring to the first slide of his presentation, Mr. Williams explained that this slide provides a general idea of what flows into and out of the Laguna Seca Subarea. The lower three lines on this plot show water that is leaving the Laguna Seca Subarea, and the two upper lines represent water that is flowing in from outside the Basin and being mined from storage.

Mr. Williams noted that approximately 1,120 acre-feet per year is the cumulative pumping rate within the Laguna Seca Subarea, and the Alternative Producers pump roughly half of this amount. CAW pumps the remainder.

The bump in Laguna Seca pumping in the year 2013 is a numerical glitch, and probably is a result of the model finding that a well has gone dry in that year. Mr. Williams is still investigating this anomaly.

Currently about 300 to 400 acre-feet per year flows to the Southern Coastal Subarea from the Laguna Seca Subarea. Approximately 800 acre-feet per year flows from the Laguna Seca Subarea to the Northern Inland Subarea.

As groundwater levels drop, less water flows out of the Laguna Seca Subarea to the Northern Inland and Southern Coastal Subareas. Mr. Oliver raised a question about where most of the water flows from the Laguna Seca Subarea to the Northern Inland Subarea. Mr. Williams will comment on this in the final report on this work.

Figure 4 shows the results after five years of the wells pumping at 10 percent higher levels than currently. At the end of this five-year period the drop in groundwater levels in the Laguna Seca Subarea near the Pasadera wells is approximately 3 feet greater than it would be if this increased pumping had not occurred.

Figure 5 shows the difference in water levels after 22 years between today's pumping and pumping being increased by 10 percent. At the end of 22 years, there is an additional 5 feet of water level drop near the Pasadera wells compared to where the water levels would be at current pumping rates.

Ms. King reported that groundwater levels are currently going down in the Laguna Seca Subarea by approximately 2 feet per year,

Figure 6 shows the results after five years with a 20 percent pumping rate increase. This figure shows there would be 6 feet of additional groundwater level drop in the area of the Pasadera wells as a result of this.

Figure 7 shows the result of a 20 percent increase in pumping after 22 years. This figure indicates that approximately 10 feet of additional groundwater drawdown would occur in the area of the Pasadera wells as a result of this. Mr. Williams pointed out that the area impacted by this higher level of pumping is larger than for the lower pumping levels.

The top line in Figure 1 on page 11 of the agenda packet shows the increased (not the total) pumping. The four lower lines show where the water comes from. As groundwater levels fall, the amount being mined from storage decreases over time. This is made up by water from "Outside Basin" which would be the Toro area and other areas east of the Seaside Groundwater Basin, and reduced flows going from the Laguna Seca Subarea to the Northern Inland Subarea. Also, to a lesser extent there would be reduced flows going from the Laguna Seca Subarea to the Southern Coastal Subarea. Water does not flow from the Northern Inland Subarea to the Laguna Seca Subarea, rather, less water would flow from the Laguna Seca Subarea to the Northern Inland Subarea.

The cone of depression extends into the Northern Inland Subarea before it starts to extend into the Southern Coastal Subarea and to areas outside of the Seaside Groundwater Basin. There is very little change in the amount of flow going from the Laguna Seca Subarea to the Southern Coastal Subarea as a result of any of these increased pumping rate scenarios. Most of the change occurs in the amounts of flow going from the Laguna Seca Subarea to the Northern Inland Subarea and to areas outside the Basin.

The Toro area is the closest outside Basin area that is impacted by additional pumping. Mr. Johnson noted that it would be important to clarify the terms "Toro Area" and "Toro Basin", as these terms may have specific meanings to different parties. Mr. Williams said he would clarify this in the final report.

Mr. Sabolsice summarized by noting that the Alternative Producers felt that perhaps there would be only minimal impacts on the Basin if they increased their pumping, and if CAW maintained its current pumping rates. The modeling results show that the impact on the Southern Coastal Subarea is minimal, and that the most significant impacts are on reducing flows going to the Northern Inland Subarea and more flows coming in from outside the Basin. Most of the impact is closest to the Pasadera wells, and diminishes with distance away from that location.

Mr. Sabolsice asked Mr. Oliver if he considered the impacts of the increased pumping to be significant. Mr. Oliver responded that the model confirms the earlier belief that there would be only a minimal impact on the Southern Coastal Subarea, but the model also indicates that there would be a greater than previously expected impact on the Northern Inland Subarea and on the Toro area.

Mr. Lear pointed out that most of the increased pumping water comes from storage, with only very small percentages coming from reduced flows leaving the Laguna Seca Subarea and going into other Subareas.

Mr. Williams pointed out on Figure 1 that the term "flow from" means "reduced flow going to" with regard to the Southern Coastal Subarea and the Northern Inland Subarea. In other words, more water is flowing to the Northern Inland Subarea from the Laguna Seca Subarea than previously thought. The "flow from Outside Basin" is water coming into the Laguna Seca Subarea from outside the Basin, and this will increase if pumping rates are increased.

Mr. Sabolsice summarized by noting that areas outside the Seaside Groundwater Basin would be impacted if the Laguna Seca Subarea pumping rates were to increase.

Ms. King said that current pumping rates are causing groundwater levels in the Laguna Seca Subarea to drop about 2 feet per year, and that this is not sustainable in the long run, as some wells will eventually go dry. Mr. Lear said that this would also affect the CAW wells in this area.

Mr. Williams summarized the findings by saying that increased pumping within the Laguna Seca Subarea does impact other subareas of the Seaside Groundwater Basin, as well as areas outside the Seaside Groundwater Basin.

Mr. Jaques asked if the TAC would like the information provided from the Scenario 1 modeling to now be sent forward to the Board for its information. There was TAC consensus that it would be okay to provide this as an informational item to the Board at this point. Mr. Jaques asked if the TAC felt it would be desirable to have the issues raised at today's meeting addressed in the final report, and to have conclusions included in the final report. Mr. Sabolsice said he felt that the conclusions discussed today should be included. Mr. Oliver recommended highlighting the small percentage impacts on other Subareas, and felt that it would be good for the TAC to review the final version of the report before sending it to the Board for its information.

There was consensus to have the TAC review the final report at its September meeting. Once the TAC is satisfied with the document, then it will be sent by Mr. Jaques to the Board as an informational item, and Mr. Williams will make a presentation to the Board.

Mr. Oliver asked Mr. Williams to include a brief explanation as to why increased pumping was being evaluated (it was requested by the Board), so that a reader of the report would have a background understanding of why this Scenario was modeled, and would not infer that increased pumping was

actually being considered by the Watermaster. Rather, the evaluation was performed to see hypothetically what impacts there would be if pumping rates were to increase.

Mr. Sabolsice commented that if the Alternative Producers do not reduce pumping by the 10% ramp-down required by the Court Decision, the groundwater levels will continue to drop to unacceptable levels.

Mr. Williams confirmed that HydroMetrics could complete the work and make the Board presentation within the currently budgeted amount for this work.

3. Discuss Issues and Timing Pertaining to Scenario 2 Groundwater Modeling

Mr. Sabolsice summarized the agenda packet materials on this item. The quantity of water that will be supplied to CAW by the Regional Water Project is not clearly known at this time. This leaves several issues that need to be considered in modeling Scenario 2 still unresolved:

Issue 1: The quantity of water that CAW will continue to pump from the Seaside Basin will not be known until the amount of water that CAW will receive from the Regional Water Project has been determined.

Issue 2: Whether or not there will be excess product water from the Regional Water Project desalination plant and whether it will be feasible for CAW to use excess water to benefit the Seaside Basin, cannot be determined at this point.

Issue 3: How CAW will provide the water to repay its replenishment assessment credit cannot be determined until the quantity of water which they will receive from the Regional Water Project is determined.

Mr. Sabolsice commented that since April 2010 no new information about the freshwater-seawater blend that will supply the wells feeding the regional desalination plant has been developed. Mr. Johnson provided an update on this: he has been presenting information to MCWRA on this matter and anticipates that MCWRA's Board at its August 23rd meeting will be asked to approve some groundwater modeling work, getting well permits started, and performing well design work for a vertical well, a slant well, and a monitoring well. If the Board approves it, that work is anticipated to be completed in June 2011. Drilling of these wells could therefore potentially start as early as sometime in the summer of 2011. Mr. Sabolsice noted that this means there will be no test well data for quite some time. He wondered, however, if MCWRA's modeling results would provide any helpful information prior to the construction of these new wells.

A motion was made by Mr. Sabolsice, seconded by Mr. Johnson, to defer any further action on Scenario 2 modeling work until either (1) the PUC issues to CAW a Certificate of Public Convenience for the Regional Water Project, or (2) until data becomes available from the test wells to be installed in the North Marina area by MCWRA.

At this point in the meeting Mr. Fischer said that six members are needed to vote on any action taken by the TAC, as there are 10 TAC members. He also remarked that the minutes previously approved in the meeting had been approved when less than a quorum was present. (Note: As stated under item 1.A in these Minutes, the June 9, 2010 Minutes were reapproved when a quorum was present.)

Mr. Sabolsice pointed out that the draft Minutes are sent out for editing to a large number of persons including the full TAC membership and that edits are received and made to the Minutes by the Technical Program Manager. He also pointed out that the TAC is always willing to take direction from the Board, if they differ with any of the TAC's recommendations.

Mr. Jaques asked Mr. Sabolsice if getting the Certificate of Public Convenience approved by the PUC would provide any information that might warrant proceeding with modeling of Scenario 2. Mr. Sabolsice recommended that the TAC revisit the issue once the Certificate of Public Convenience has been approved by the PUC.

The motion made by Mr. Sabolsice and seconded by Mr. Johnson was unanimously approved.

4. Update on Sentinel Well Induction Logging

Mr. Jaques briefly summarized the agenda packet materials on this item. Mr. Lear said that he would be providing some related information on what conductivity data means under Agenda Item 5 at today's meeting.

5. Report on Evaluation of Coastal Wells for Possible Cross-Aquifer Contamination Potential

Mr. Lear presented the findings to date of MPWMD's review of well records from coastal wells within the Seaside Groundwater Basin. A copy of the PowerPoint slides he used in his presentation is attached. He said that well data has been compiled from number of sources. Some well records were of high-quality while others were of low quality.

Mr. Lear explained that cross contamination between aquifers can occur from (1) perforations in multiple aquifers, (2) poor construction, (3) cracking of the casing, or (4) abandoned or improperly destroyed wells. He said that MPWMD looked in the Northern and Southern Coastal Subareas for well records. Many more wells than just those in the Watermaster's Database were included in the data compilation. He asked if the TAC felt that the additional wells should be added to the Watermaster's Database.

Mr. Lear reported that most of the additional wells had not been field-visited. Mr. Jaques requested that Mr. Lear use different symbols and colors in the printed version of his report to improve the clarity of the graphics.

A digital elevation model was used to look for screening in multiple aquifers. Steel casing wells typically have a lifespan of approximately 30 years, and after 30 years they may be expected to crack or leak. A number of the wells with steel casings were found to be greater than 30 years of age.

Mr. Sabolsice asked if it would be possible to identify those wells posing the greatest risk to the Santa Margarita aquifer.

Mr. Lear then outlined the following possible followup work:

1. Field verify older steel cased wells, i. e. confirm the existence and location of these wells.
2. Check well logs to see if seals were correctly installed.
3. Add wells to the Watermaster Database.
4. Refine the interface between the Santa Margarita and the Purissima layers and where these strata come together. (This information could be used to update the model.)
5. Video log older deep wells to examine casing integrity.

Mr. Johnson noted that MCWRA may have records of some additional wells that were not in the other files that MPWMD had been able to research.

Mr. Lear and Mr. Oliver offered to prepare some preliminary cost estimates and scopes of work for the 5 numbered items above.

Mr. Sabolsice commented that risk factors include age, material of construction, seal construction, and aquifers penetrated. Mr. Lear said that the highest-risk wells are shown on the figure, and these are the ones that are greater than 30 years old, have steel casings, and pass through multiple aquifers.

Mr. Lear said it is not possible to do induction logging on steel-cased wells, but this could be done on PVC-cased wells. If a casing was cracked and was allowing water to flow from an upper aquifer to a lower aquifer, the video logging would show the cracking and water cascading from higher to lower aquifers through the cracks. Mr. Oliver said that video logging probably would only be recommended for a very select set of circumstances. Mr. Lear noted that video logging costs about $1,000 per well to perform.

Mr. Jaques asked if a casing is only perforated in one aquifer, but passes through more than one aquifer, and if the casing was cracked, wouldn't that allow cross contamination between aquifers. Mr. Oliver and Mr. Lear confirmed that this would be a possible way for cross contamination to occur.

Mr. Sabolsice commented that the highest risk wells seem to be those screened in multiple aquifers.

Mr. Oliver said that MPWMD could complete the current work with tiers of recommendations with regard to followup work to be done.

Mr. Sabolsice asked whether the abandoned wells were something the Health Department should be taking action on. Mr. Lear responded that they would like to know about these wells, but he did not know if they have the resources necessary to follow up on all of them.

There was consensus to have MPWMD prepare preliminary cost estimates and scopes to work for the 5 items, and for Mr. Jaques to put these on the September TAC agenda for consideration of being included in the recommended budget for 2011.

6. Offer by Pasadera to Discuss Possible Use of Storm Water Runoff from Pasadera as a Water Source for Helping to Recharge the Seaside Basin

Due to the lateness of the hour and the need to complete the other items on today's agenda, this item was deferred to the next TAC meeting.

7. Preliminary Discussion Regarding Replenishment Assessment Unit Cost for WY 2011

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

Mr. Oliver asked if anyone could recall why the Sand City Desalination Plant had not been included in the development of the Replenishment Assessment Unit Costs last year. Following brief discussion it was believed that it had not been included because that project had been completed before last year's Unit Cost was developed. It was also thought that the water produced by that project was intended to reduce pumping only in the Carmel River Basin, and therefore could not be used to reduce the amount of water pumped from the Seaside Groundwater Basin.

There was general agreement that using the three projects that were used last year should be used again this year to develop the Unit Cost for Water Year 2011.

Mr. Sabolsice will e-mail Mr. Jaques any updated information for use on the Regional Desalination Plant. Mr. Jaques will ask Mr. Johnson to provide any updated information on the Salinas River Surface Water Treatment Plant project, and Mr. Jaques will contact Mr. Israel and Mr. Heitzman get any updated information on the Regional Urban Water Augmentation Project. The updated information will be provided to the TAC for consideration of approval at its September meeting.

8. Preliminary Discussion of Monitoring and Management Program Scopes of Work and Budgets for 2011 and 2012

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

Mr. Oliver requested that item I.2.b.3 include $5,000 to retrofit the wells that are sampled on an annual basis to use the new low-flow purge approach for getting water quality samples. He explained that the wells that are sampled quarterly had been retrofitted, but that the wells that are sampled annually had not yet been retrofitted.

No other changes were suggested.

Mr. Jaques will make this revision to the proposed budget which will be presented for TAC approval at the September TAC meeting.

9. Schedule

There was no discussion on this item.

10. Other Business

There was no other business.

11. Set next meeting date

The next regular meeting was set for Wednesday, September 8, 2010 at 1:30 p.m. at the MRWPCA Board Room

The meeting adjourned at 4:47 p.m.

SEASIDE BASIN WATER MASTER
TECHNICAL ADVISORY COMMITTEE

** * * AGENDA TRANSMITTAL FORM * * **

MEETING DATE:	September 8, 2010
AGENDA ITEM:	2
AGENDA TITLE:	Approve Technical Memorandum from HydroMetrics on Scenario 1 Groundwater Modeling
PREPARED BY:	Robert Jaques, Technical Program Manager

SUMMARY: At the August 10, 2010 TAC meeting HydroMetrics made a presentation on the initial work on groundwater modeling of Scenario 1.

Based on TAC input at that meeting HydroMetrics has finalized their Technical Memorandum that describes their work, and their findings and conclusions. The revisions included:

- Adding a figure showing the water budget for the baseline simulation (no pumping increase)
- Breaking down the water budget into percentages of flow in and out of the Laguna Seca subarea
- Including conclusions
- Stating that the current pumping will continue to reduce groundwater levels (note, I changed the wording from "the pumping is not sustainable")
- Pointing out that the Laguna Seca area is not isolated

A copy of their final Technical Memorandum is attached. Any further questions or comments the TAC may have on this can be discussed at today's meeting.

I recommend that the TAC approve the final Memorandum and that it be forwarded to the Board for their information, with a presentation of the full report to the Board by HydroMetrics at the Board's September 22, 2010 Special meeting.

ATTACHMENTS:	Final Technical Memorandum from HydroMetrics discussing Scenario 1 modeling work
RECOMMENDED ACTION:	Approve this Final Report and forward it to the Board for its information

HydroMetrics WRI
519 17th Street, Suite 500
Oakland, CA 94612

TECHNICAL MEMORANDUM

To: Bob Jaques
From: Derrik Williams
Date: September 2, 2010
Subject: Results from Scenario 1 – Increased Laguna Seca Alternative Producer Pumping

HydroMetrics WRI was asked to use the calibrated Seaside Basin Groundwater Model to simulate the anticipated groundwater impacts of the Alternative Producers in the Laguna Seca subarea increasing their current pumping rates by either 10% or 20%. These simulations were referred to as the 2010 Scenario 1 simulations. Although the 10% and 20% pumping rate increases are not currently planned, the Watermaster was interested in investigating the sensitivity of groundwater flows between subareas to potential pumping changes. This memorandum summarizes the results of those simulations.

Simulations

Three simulations were run as part of Scenario 1. The first simulation was a baseline simulation that repeated the Water Year 2009 pumping throughout the entire Seaside Basin for 22 years. The second simulation held the pumping from all Standard Producers and all Alternative Producers outside the Laguna Seca subarea constant at Water Year 2009 pumping rates: pumping rates for Alternative Producers in the Laguna Seca area were increased by 10% over Water Year 2009 rates. The pumping rate for the only Standard Producer in the Laguna Seca subarea, California American Water, was held constant at the Water Year 2009 rate. The third simulation was similar to the second simulation, but pumping rates for Alternative Producers in the Laguna Seca area were increased by 20% over Water Year 2009 rates. Recharge rates were maintained at a constant rate for all three simulations; representing the average recharge for the 1987 through 2008 period.

Water Budgets

Figure 1 shows the generalized water budget for the Laguna Seca subarea during the baseline simulation. The amount of water pumped out of the Laguna Seca subarea is approximately 1,127 acre-feet per year, and is represented by the dark blue line with diamond data markers. It is worth noting that in 2017, due to falling groundwater levels some wells dry out and pumping ceases at those wells for the remainder of the simulation. The total pumping in the Laguna Seca subarea is therefore reduced from 1,127 acre feet per year to 1,106 acre-feet per year from 2017 onwards.

The other two groundwater losses are groundwater flow from the Laguna Seca subarea to the Northern Inland subarea, represented by the green line with triangular data markers; and groundwater flow to the Southern Coastal subarea, represented by the purple line with cross-shaped data markers. The sources of groundwater for the Laguna Seca subarea include: groundwater recharge from deep percolation of precipitation, represented by the orange line with diamond data markers; groundwater flowing into the Seaside Basin from outside the basin boundaries, represented by the cyan line with round data markers; and groundwater extracted

from storage, represented by the red line with square data markers. The groundwater extracted from storage is manifested by lowered groundwater levels.

Although the flows into and out of the Laguna Seca subarea vary over time due to falling groundwater levels, on average 53% of the groundwater leaving the subarea is extracted by pumping, 32% of the groundwater leaving the subarea flows into the Northern Inland subarea, and 15% of the groundwater leaving the subarea flows into the Southern Coastal subarea. Of the two groundwater sources, shown on the upper half of Figure 1, that provide water to Laguna Seca subarea, 52% of the water comes from falling water levels (storage), and 48% of the water comes from outside the Basin.

Figures 2 and 3 summarize the results from simulations 2 and 3 in Scenario 1. Figure 2 shows water budget changes caused by increasing alternative producer pumping in the Laguna Seca subarea by 10%. Figure 3 shows water budget changes after increasing pumping by Laguna Seca subarea alternative pumpers by 20%.

The top blue line with diamond data markers on each chart represents the amount of additional pumping by the Laguna Seca subarea alternative producers. Increasing the alternative producer's pumping by 10% translates into an annual pumping increase of 54.4 acre-feet. Increasing the alternative producer's pumping in the Laguna Seca subarea by 20% translates into an annual pumping increase of 108.8 acre-feet. Note that the sharp dips in pumping difference on Figures 2 and 3 are due to wells that dried out in 2017 in simulation 1, drying out earlier in the two simulations of increased pumping. Specifically, the dips on the chart are due to the following: in simulation 1, wells start drying out in 2017, in simulation 2 (10% increase) wells start drying out in 2016, and in simulation 3 (20% increase) wells start drying out in 2015. When comparing the pumping difference in Figure 2 between simulation 2 and simulation 1, and Figure 3 between simulation 3 and simulation 1, the different timing of wells drying out is evident. During the years where simulation 1 has all wells pumping and simulation 2 or 3 has dried up wells, a dip will be observed. In 2017, the line representing pumping increases again because at that time, all simulations have the same number of wells that have gone dry.

The other four lines on each graph represent the sources of water that supply the additional pumping. The amount of additional pumping equals the sum of the four sources. In early years, water for increased pumping is supplied by a lowering of groundwater levels in the Laguna Seca subarea. Lower groundwater levels are shown on the two graphs as water extracted from storage. In later years, groundwater levels do not fall as quickly, and the relative amount of groundwater supplied by storage diminishes. This is offset by a reduction in the amounts of water flowing out of the Laguna Seca subarea and into the Southern Coastal and Northern Inland subareas. While water continues to flow from the Laguna Seca subarea into these other two subareas under both the 10% and 20% pumping increase simulations, it flows at reduced rates and thus provides less recharging benefit to those subareas than would be the case if there were no increases in pumping.

The light blue lines with round data markers on Figures 2 and 3 show that the most significant source of water in later years comes from outside the Seaside Basin. This is water that is captured from the Toro area or other surrounding areas. The second most significant source of water is water from the Northern Inland subarea. The decreased amount of flow to the Northern Inland subarea is shown on Figures 2 and 3 with the green lines with triangular data markers. As described in the paragraph above, the additional pumping by the alternative producers causes a reduction in groundwater flow that previously flowed from the Laguna Seca subarea, into the Northern Inland subarea. Similarly there is also a decrease in flow to the Southern Coastal subarea, although a much smaller amount of decrease than the

decrease in flow to the Northern Inland subarea. This is shown on Figures 2 and 3 with the lavender lines and the "X" data markers.

Figure 4 shows the location of alternative producer wells in the Laguna Seca subarea, and supports the data shown on the two charts. The map shows that the alternative producer wells are located between the Northern Inland subarea and the Toro area; and are relatively distant from the Southern Coastal subarea. The cone of depression from these alternative producer wells will therefore reach into the Northern Inland subarea and Toro area well before they reach into the Southern Coastal subarea. Therefore, most of the water supplying the increased pumping is expected to come from storage, the Toro area, and a decrease in the amount of water flowing to the Northern Inland subarea. To supply the increased pumping there will also be a slight decrease in the amount of water flowing to the Southern Coastal subarea.

Figures 5 through 8 show the predicted amounts of additional groundwater drawdown that will occur after 5 and 22 years of pumping at the 10% and 20% increased rates.

Conclusions

Results from Scenario 1 lead to the following conclusions regarding pumping in the Laguna Seca subarea:

- At current pumping rates, groundwater levels in the Laguna Seca subarea will continue to decline. This is supported by the continued extraction of groundwater from storage shown in Figure 1.
- After 5 years of pumping at 10% increased rates, the groundwater levels in the vicinity of the two Pasadera wells, which is where the greatest drop in groundwater levels occurs, will be 3 feet lower than they would be without this increase in pumping. This grows to 5 feet lower after 22 years of 10% increased pumping rates.
- After 5 years of pumping at 20% increased rates, the groundwater levels in the vicinity of the two Pasadera wells will be 5 feet lower than they would be without this increase in pumping. This grows to 10 feet lower after 22 years of 20% increased pumping rates.
- Continued pumping even at current (Water Year 2009) rates is unsustainable because groundwater levels will eventually fall low enough to cause some wells to no longer be operational. This problem would be accelerated by increasing the pumping rates of the Alternative Producers within the Laguna Seca subarea.
- Increasing Alternative Producer's pumping rates by 10% or 20% reduces groundwater flow to the Southern Coastal subarea by only a minor amount because of the wells' distance from the Southern Coastal subarea. However, it considerably reduces groundwater flow into the Northern Inland subarea.
- The Laguna Seca subarea is not isolated. Although increasing pumping has only minor impacts on the Southern Coastal subarea, it has more significant impacts on groundwater flows into the Northern Inland subarea. Increasing Laguna Seca pumping also significantly impacts areas outside the Seaside Groundwater Basin, including the Toro area.

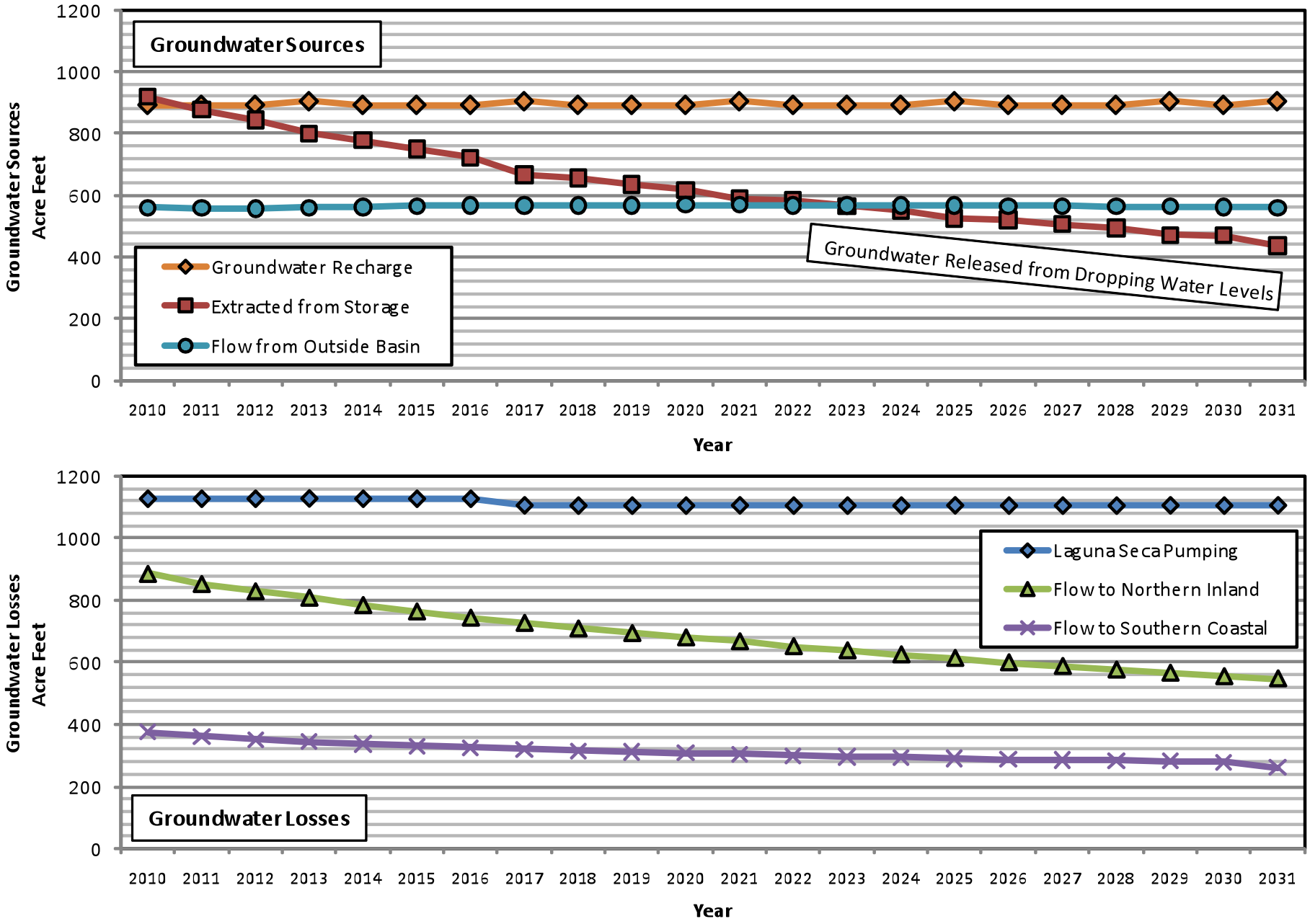
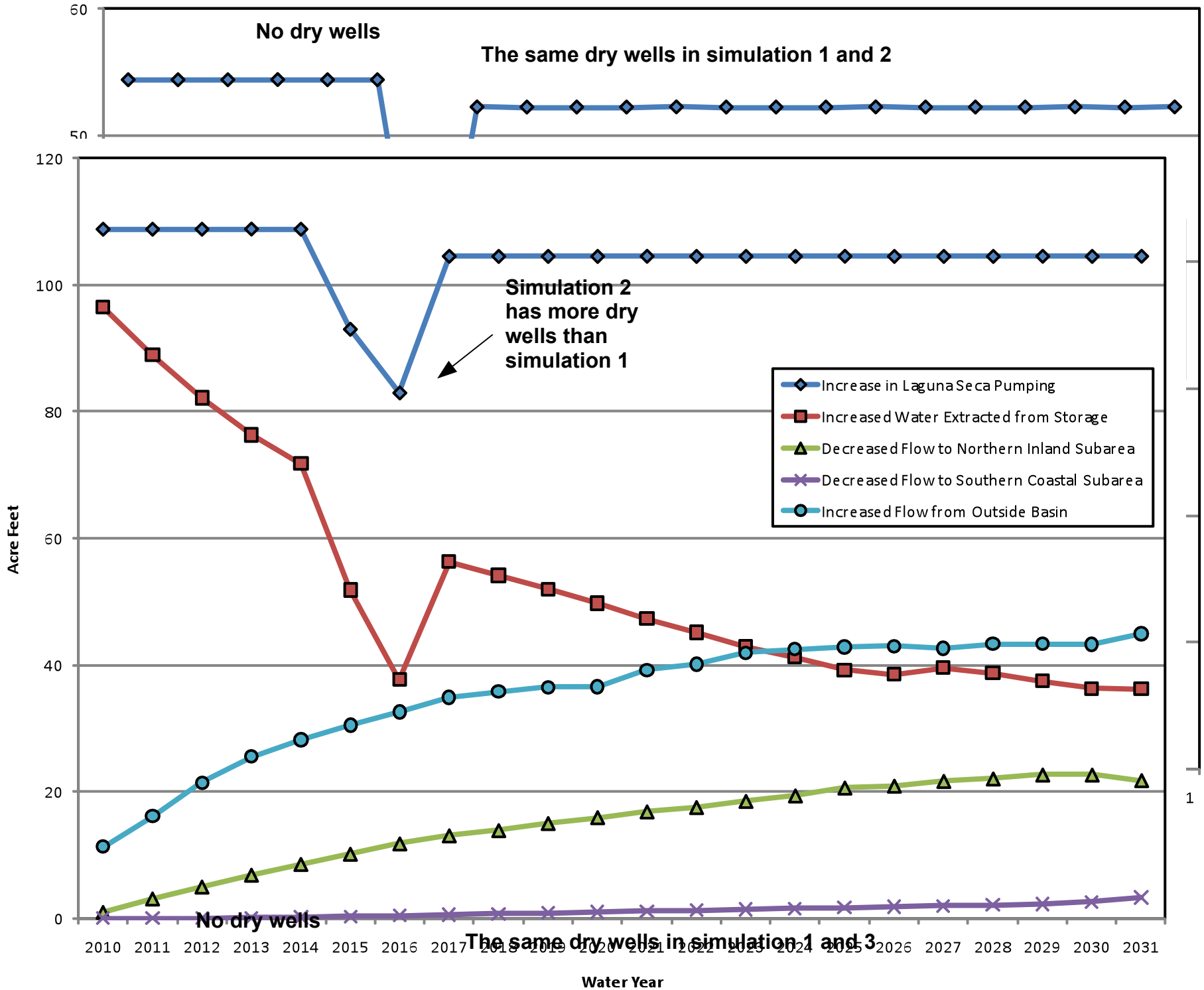


Figure 1: Generalized Laguna Seca Groundwater Budget under Existing Pumping (Simulation 1)


60
50
No dry wells
The same dry wells in simulation 1 and 2
120
100
80
60
40
20
0
Acre Feet
Simulation 2 has more dry wells than simulation 1
Increase in Laguna Seca Pumping
Increased Water Extracted from Storage
Decreased Flow to Northern Inland Subarea
Decreased Flow to Southern Coastal Subarea
Increased Flow from Outside Basin
No dry wells
The same dry wells in simulation 1 and 3
2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031
Water Year
1

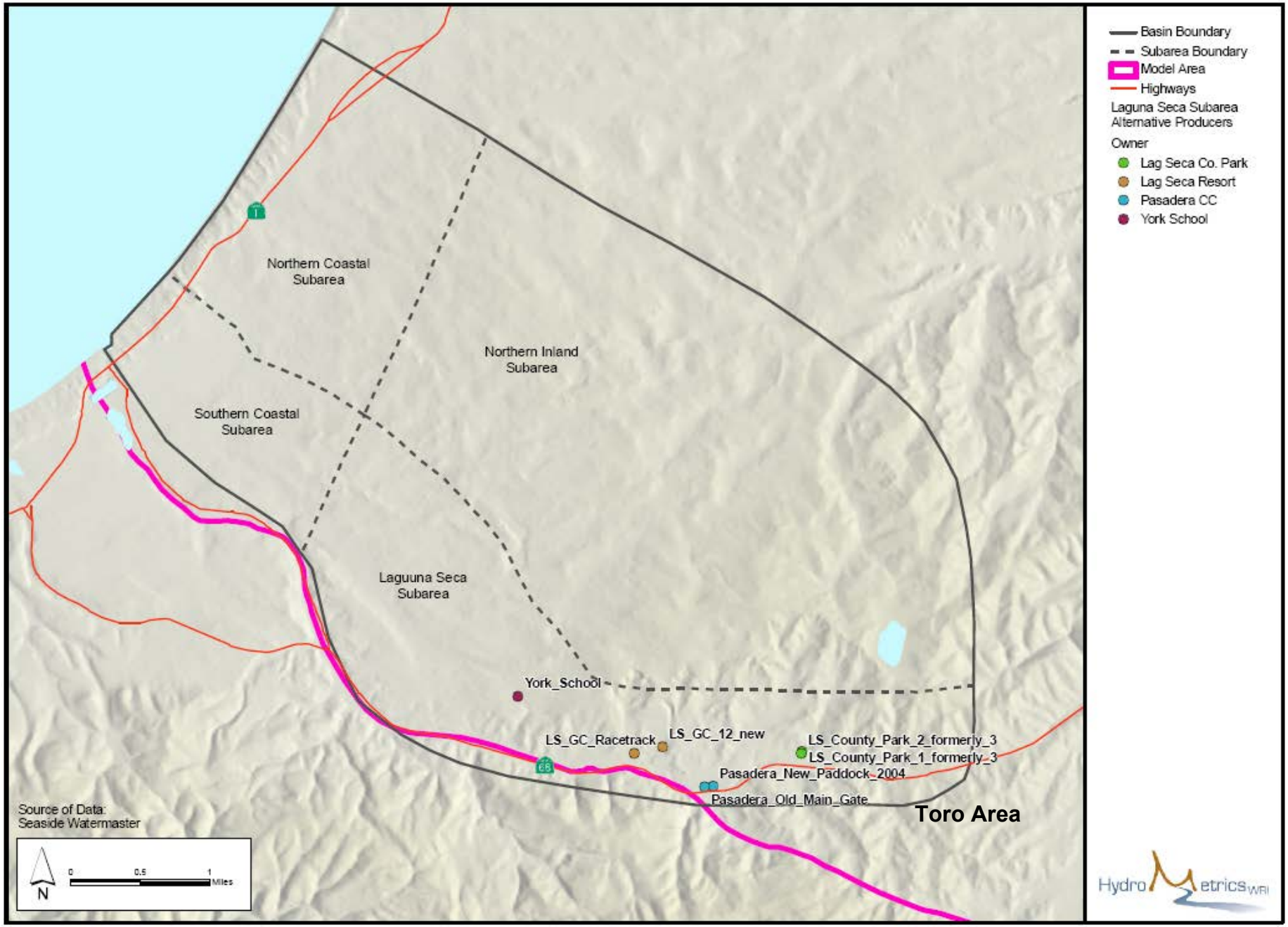


Figure 4: Location of Laguna Seca Subarea Alternative Producer Wells

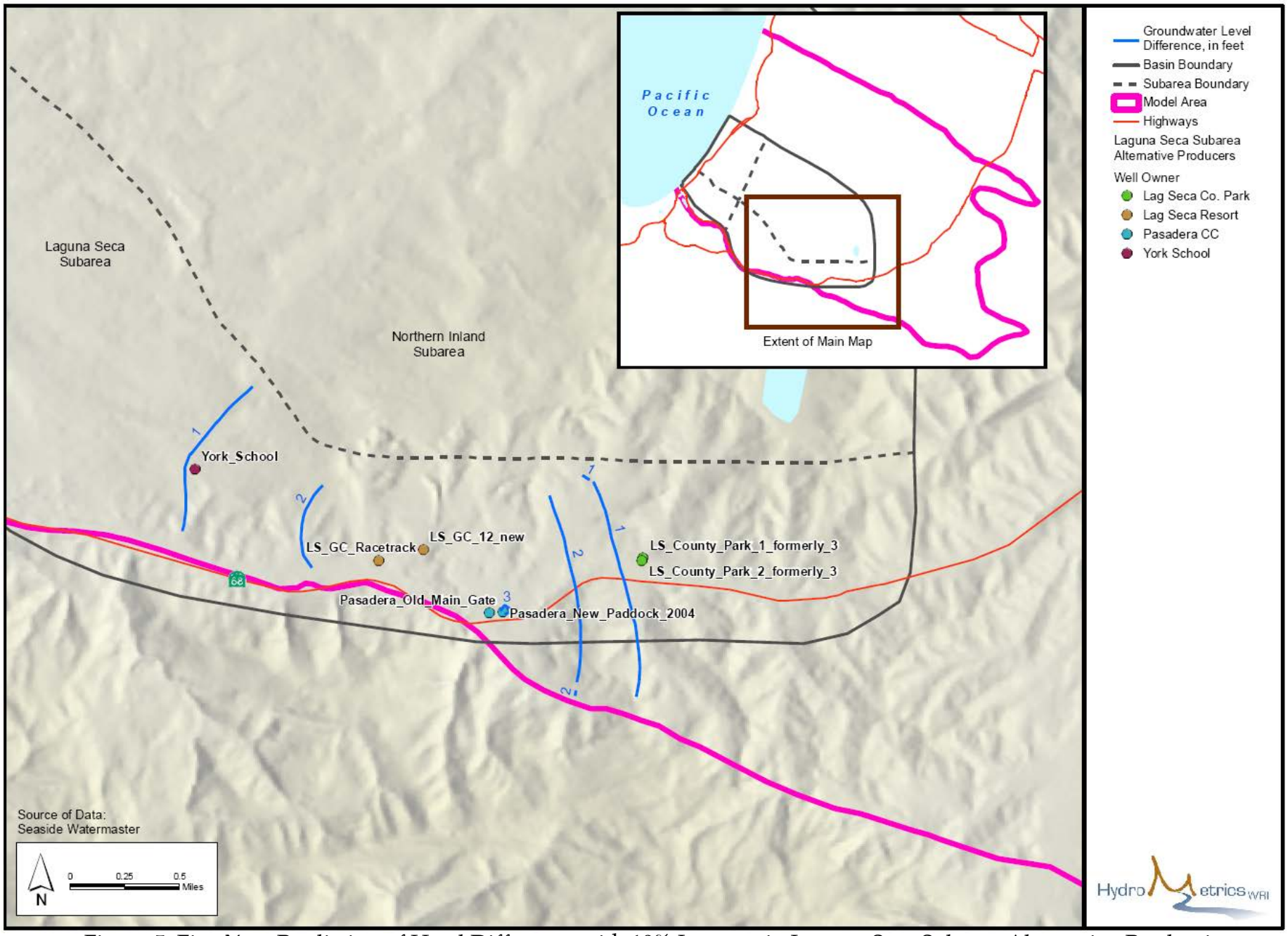


Figure 5: Five Year Prediction of Head Difference with 10% Increase in Laguna Seca Subarea Alternative Production

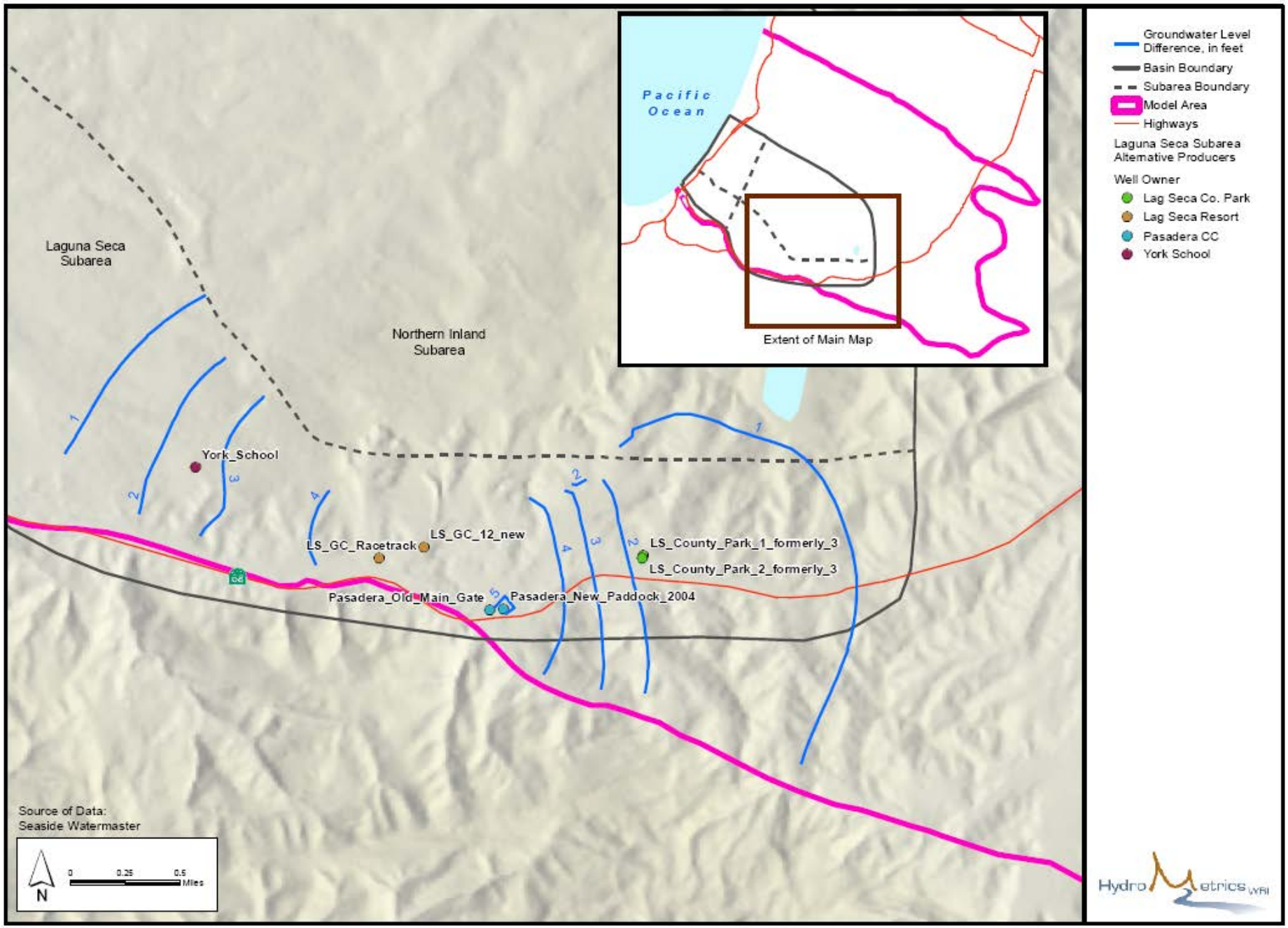


Figure 6: Twenty-two Year Prediction of Head Difference with 10% Increase in Laguna Seca Subarea Alternative Production

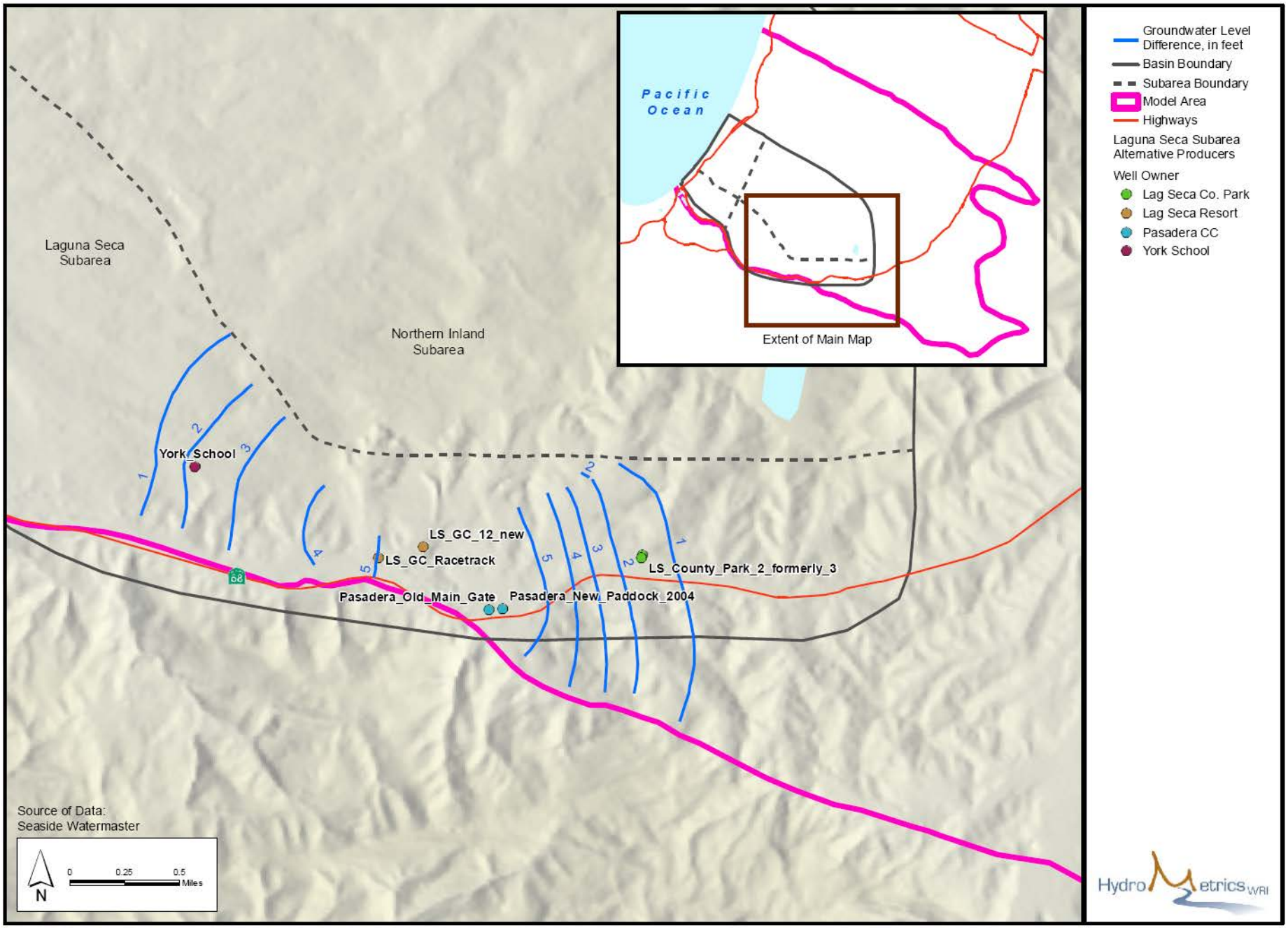


Figure 7: Five Year Prediction of Head Difference with 20% Increase in Laguna Seca Subarea Alternative Production

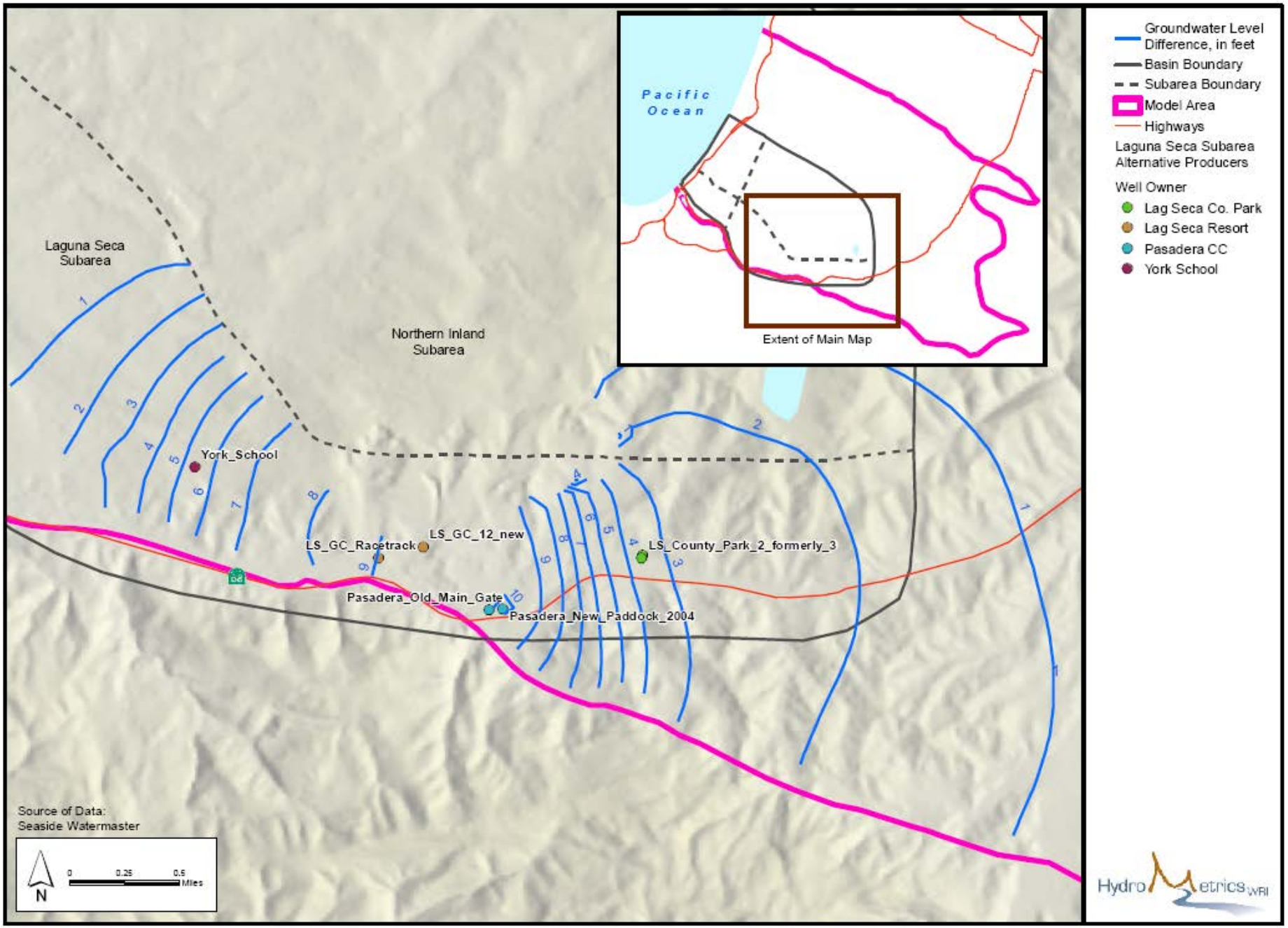


Figure 8: Twenty-two Year Prediction of Head Difference with 20% Increase in Laguna Seca Subarea Alternative Production

SEASIDE BASIN WATER MASTER
TECHNICAL ADVISORY COMMITTEE
** * * AGENDA TRANSMITTAL FORM * * **

MEETING DATE:	September 8, 2010
AGENDA ITEM:	3
AGENDA TITLE:	Report on Evaluation of Coastal Wells for Possible Cross-Aquifer Contamination Potential and Description of Possible Further Work to be Performed
PREPARED BY:	Robert Jaques, Technical Program Manager

SUMMARY:
Under its contract with the Watermaster, MPWMD has performed an evaluation of the coastal wells in the Seaside Groundwater Basin to determine if any of them appear to be at risk of allowing cross-aquifer contamination to occur. The work to date has consisted of obtaining and reviewing well construction records for all of the wells that are located near the coast and for which such records were available, and follows the work plan that was discussed with the TAC at the April 10, 2010 TAC meeting.

MPWMD staff (Jon Lear) provided a presentation on the evaluation of cross-aquifer contamination potential in the coastal areas of the basin at the August 11, 2010 TAC meeting. During subsequent discussion, there was TAC consensus to have preliminary scope descriptions and cost estimates for possible follow-up work to be considered as part of the Watermaster's FY 2011 M&MP Scope of Work and Budget. This summary provides the requested follow-up scope and cost information to be reviewed and discussed by the TAC.

As discussed during the August 11 presentation, aquifer contamination can occur through failed wells and improperly constructed wells which allow flow of groundwater between aquifer units. In the Seaside Groundwater Basin, there are four recognized aquifer units, commonly called (stratigraphically shallowest to deepest): (1) the Older Dune Sands/Aromas Sand, (2) the Paso Robles Formation, (3) the Purisima Formation, and (4) the Santa Margarita Sandstone. The Older Dune Sands/Aromas Sand overlies the Paso Robles Formation which overlies the Santa Margarita Sandstone in the southern portion of the basin, and the Purisima Formation in the northern portion of the basin. Initial results from the study indicated there are many wells that are screened in multiple aquifers and wells that penetrate through shallow aquifers and are screened in lower aquifers.

At the TAC meeting five potential tasks were described for TAC input for the TAC's consideration with regard to whether the TAC felt it would be beneficial to perform further investigations of this issue. These tasks and a brief discussion of each are listed below.

1. **Field verify selected older steel cased wells** – Wells older than 30 years that were constructed with steel casings have been identified. Under this task MPWMD would contact land owners and conduct interviews, conduct site investigations using a metal detector (if appropriate), document the condition of the well head, determine total available well depth, and collect a water level (if possible).

2. **Inspect well logs to assess proper seal placement to isolate aquifers** – Wells that penetrate multiple aquifers but are screened in one can be conduits for cross-aquifer contamination if well

seals were not placed adjacent to confining layers between the aquifer units. Under this Task

AGENDA ITEM:	3 (Cont'd)

well logs will be reviewed to determine if surface and/or transition seals are installed, and assessed as to the risk associated with those that do not contain sufficient seals.

3. **Add wells to Watermaster database** – Adding wells identified during the first phase of this investigation will provide the Watermaster with a more complete list of wells known to exist in the basin. If the current well status can be verified (e.g., inactive, destroyed, etc.) they can then be tracked by the database, with the correct current well status. Under this Task these additional wells would be added to the Watermaster's database.

4. **Investigate the Santa Margarita – Purisima interface** – Wells constructed with PVC provide the opportunity to collect resistivity information via an induction log. This is of interest because the transition between the Santa Margarita Sandstone and the Purisima Formation is not well understood. Locating PVC constructed wells in the region of the Seaside Basin where the transition between the units is thought to occur and collecting resistivity data will help to better define this boundary, and would provide additional information about current, depth-specific water quality conditions. Under this Task MPWMD would identify and field verify wells that are candidates for induction logging and prepare a list of wells to bring back to the Watermaster.

5. **Investigate video logging of selected wells suspected to be conduits for cross-contamination** – Video logs verify if the well has been compromised and is allowing groundwater flow between aquifer units. Following field verification of wells, under this Task MPWMD will provide a list of wells recommended for video logging. Criteria for selection will be age of well, condition of well head, proximity of well to potential contamination sources (e.g., coastline), and aquifer units penetrated by well.

In addition to the tasks listed above, MPWMD staff is recommending that the TAC consider the following tasks pertaining to management of the Basin, but which were not discussed at the August 11 TAC meeting:

6. **Locate and plot all environmental clean-up sites within the Seaside Basin as potential sources of cross-aquifer contamination** – Gas stations and chemical contamination sites could also be threats to groundwater quality along with seawater intrusion. Under this Task locations of clean-up sites, as available from Monterey County Health Department records, would be assembled on a map to facilitate review and assessment.

7. **Identify abandoned wells that are screened in the Santa Margarita** – The Santa Margarita Sandstone is the primary production aquifer for drinking water in the Seaside Basin and is also the target aquifer currently used for Aquifer Storage and Recovery and potential future aquifer replenishment projects. While properly-sealed wells screened solely in the Santa Margarita are not candidates for cross-aquifer contamination, such abandoned wells could provide a direct conduit for pollutants. MPWMD staff believes that to best protect the water resource system these wells should also be identified. Under this Task MPWMD would prepare a list of any such abandoned wells that are identified, and a course of action to conduct any additional work if warranted.

SEASIDE BASIN WATER MASTER
TECHNICAL ADVISORY COMMITTEE
**** * * AGENDA TRANSMITTAL FORM * * ****

Pertinent information from the above tasks would be prepared in summary tables and figures, along

AGENDA ITEM:	3 (Cont'd)

with a brief report with recommendations that could be provided to the Monterey County Health Department, Environmental Health Bureau.

Attached is a cost estimate for each of these items.

Performing any of this followup work would be beyond the scope of MPWMD's current work assignment, and would need additional budget authorization to proceed. If the TAC feels that followup work would be beneficial, I will include it in the FY 2011 Monitoring and Management Program Scope of Work, and in the FY 2011 M&MP O&M Budget.

ATTACHMENTS:	Cost Estimate for possible followup work
RECOMMENDED ACTION:	Provide input to the Technical Program Manager regarding what, if any, action the TAC would like to have taken on the findings and recommendations prepared by MPWMD

Summary of Projected Costs -- Additional Evaluation of Seaside Basin Cross-Aquifer Contamination Potential

Task	Description	Hours	Rate	Cost
1	Field verify older steel cased wells	40	85	$3,400
2	Inspect seal placement on multiple aquifer wells	12	85	$1,020
3	Add wells to Watermaster database	20	85	$1,700
4	Investigate Santa Margarita - Purisima interface	12	85	$1,020
5	Investigate video logging of selcted wells	10	85	$850
6	Locate environmental cleanup sites	8	85	$680
7	Identify abandoned wells screened in Santa Margarita	12	85	$1,020
				$9,690

SEASIDE BASIN WATER MASTER
TECHNICAL ADVISORY COMMITTEE
** * * AGENDA TRANSMITTAL FORM * * **

MEETING DATE:	September 8, 2010
AGENDA ITEM:	4
AGENDA TITLE:	Approve Replenishment Assessment Unit Cost for WY 2011
PREPARED BY:	Robert Jaques, Technical Program Manager

SUMMARY:

At the August 10, 2010 TAC meeting preliminary information on development of the Replenishment Assessment Unit Cost was presented and discussed. It was tentatively agreed to use the same three projects as were used last year as the basis for calculating the WY 2011 Replenishment Assessment Unit Cost, and to seek updated information on these three projects from their respective proponents.

I have contacted MCWRA, MRWPCA, MCWD, and CAW to seek this updated information. Here is what transpired:

- Mr. Sabolsice provided updated startup year and unit cost information for the Regional Water Supply Project.
- Mr. True of MCWD said that he would contact his manager to seek permission to contact the consulting firm they are using as the project manager for the RUWAP to see if there was updated information that should be used. Mr. Israel of MRWPCA felt that the startup date for the RUWAP would be later than previously listed, due to the slowness of progress on some of the issues that will affect the startup date. However, Mr. True felt that it might still be possible for the listed startup date to be achieved. In the event no updated information can be provided by today's TAC meeting, I recommend that we continue to use the data that was used last year based on Mr. True's comment.
- Mr. Weeks of MCWRA requested that the Salinas River Surface Water Treatment Plant not be used as one of the projects for calculating the Unit Cost, because his Board has not identified that as a future project that MCWRA will be implementing. Mr. Johnson of MCWRA confirmed this. Supervisor Calcagno, in a recent conversation with MRWPCA personnel, mentioned that this project hasn't been vetted in the Salinas Valley and may cause controversy if it is included. As of the date of preparation of this Agenda packet, I was unable to obtain any further background information on why this project should no longer be used for the Unit Cost calculation. I am hoping that Mr. Johnson will be able to provide that information orally at today's meeting. I believe the Budget and Finance Committee and the Board will want to have that information before they decide whether or not to include this project in the Unit Cost calculation, since they determined to include it in the calculations made last year.

Attached is a revised spreadsheet showing the WY 2011 Unit Cost calculated using only two projects, the Regional Water Supply Project and the RUWAP, in accordance with the information discussed above. The RUWAP startup year and unit cost data is the same as that used last year, since I had not received any updated information from MCWD as of the date of preparation of this Agenda packet.

I recommend that the TAC approve the Unit Cost of $3,635 per acre-foot for WY 2011, and that this recommendation be provided to the Budget and Finance Committee for its use in making its recommendations to the Board. This compares to a Unit Cost of $2,780 per acre-foot used for WY

AGENDA ITEM:	4 (Cont'd)

2010. The difference is the result of updated startup year and unit cost data for the Regional Water Supply Project, and not including the Salinas River Surface Water Treatment Plant project.

ATTACHMENTS:	Spreadsheet showing calculation of the WY 2011 Replenishment Assessment Unit Cost, based on only two water supply projects
RECOMMENDED ACTION:	Approve a Replenishment Assessment Unit Cost of $3,635 per acre-foot for WY 2011

WATER YEAR 2011 (October 1, 2010-September 30, 2011)

ANTICIPATED UNIT COSTS OF REPLENISHMENT WATER FOR THE SEASIDE BASIN

POTENTIAL SOURCE OF REPLACEMENT WATER	POTENTIAL DATE REPLACE-MENT WATER COULD BECOME AVAILABLE	POTENTIAL VOLUME OF WATER THAT COULD BE SUPPLIED BY THE PROJECT (AFY) [10]	LEVEL OF PROJECT DEVELOP-MENT	CONTINGENCY INCLUDED IN BASE UNIT COST [9] (%)	BASE UNIT COST ($/AF)	BASE UNIT COST YEAR	ADDITIONAL CONTINGENCY ADDED TO REFLECT LEVEL OF PROJECT DEVELOPMENT [8] (%)	UNIT COST INCLUDING ADDITIONAL CONTINGENCY ($/AF)	UNIT COST INFLATED @ 3% FROM COST BASIS YEAR TO YEAR REPLACEMENT WATER COULD BECOME AVAILABLE	VOLUME-WEIGHTED AVG %	REPLENI MENT UI COST SH
Regional Water Supply Project (Regional Desalination) [7]	2014	8,800	Project Report	25%	$3,670	2010	5%	$3,854	$4,337	74.58%	$3,234.4
Regional Urban Water Augmentation Project[4]	2012	3,000	Design	5%	$1,200	2006	10%	$1,320	$1,576	25.42%	$400.7

Total Quantity of Replacement Water (AFY) the Listed Projects Could Cumulatively be Expected to Produce Within the Next 10 Years [6] = 11,800

Volume-Weighted Replacement Water Cost Per Acre-Foot = $3,63

FOOTNOTES:

(1) Not used.

(2) Not used.

(3) Not used.

(4) Data provided by MCWD in 2009. No updated data has been provided since then.

(5) Not used.

(6) This value is the cumulative production capacity of all of the Potential Sources of Replacement Water that were evaluated, and is used only to determine the "Valued-Weighted Average." It is not the amount of water that is expected t available to the Seaside Basin.

(7) Information and parameters for the project were initially taken from the CWP DEIR and supporting project cost documents prepared for the PUC by RMC Engineers, and were updated by Cal Am staff in August 2010.

(8) The following Contingency percentages were considered reasonable for the indicated levels of project development: Conceptual Level - 50%, Project Report Level - 30%, and Design Level - 15%. The sum of the values in the colum titled "Contingency Included in Base Unit Cost" and "Additional Contingency Added to Reflect Level of Project Development" equals the Contingency appropriate for the project's level of development.

(9) This percentage of Contingency was included in the Base Unit Cost.

(10) For the Regional Water Supply Project this is the total amount of water from this source which could potentially come to the CAW distribution system. Only a portion of this amount would be committed to the Seaside Basin. For th RUWAP this is the total amount of water from this source. Only a portion of this amount would be used within the Seaside Basin.

1.

SEASIDE BASIN WATER MASTER TECHNICAL ADVISORY COMMITTEE

** * * AGENDA TRANSMITTAL FORM * * **

MEETING DATE:	September 8, 2010
AGENDA ITEM:	5
AGENDA TITLE:	Approve Monitoring and Management Program Scopes of Work and Budgets for 2011 and 2012
PREPARED BY:	Robert Jaques, Technical Program Manager

SUMMARY:

Our Schedule calls for the Monitoring and Management Program Scopes of Work and Budgets that will be used for FY 2011and 2012 to be developed during the month of August 2010, so they can be presented to the TAC for approval at the TAC's September 2010 meeting.

At the August 11, 2010 TAC meeting a preliminary draft of a proposed M&MP Scope of Work for 2011 was presented. It consisted of the M&MP Scope of work for 2010 (the current year), with my proposed edits shown to create the Preliminary Draft M&MP Scope of Work for 2011. Edits were shown in "Track Changes" format, with deletions shown in ~~**strikethrough red font**~~, and additions shown in **underlined blue font**. Also presented at that TAC meeting were the Preliminary Draft M&MP O&M and Capital Budgets for 2011 and 2012. For comparison purposes, the column at the far right hand side of the spreadsheet showed the estimated costs from the draft O&M Budget presented to the Board in October 2009.

At that TAC meeting one revision was requested to the budget for 2011 for Task I.2.b.3. Mr. Oliver requested that this Task include $5,000 to retrofit the wells that are sampled on an annual basis to use the new low-flow purge approach for getting water quality samples. He explained that the wells that are sampled quarterly had already been retrofitted, but that the wells that are sampled annually had not yet been retrofitted. No other changes were requested.

Attached are the proposed final versions of the M&MP Scope of Work for 2011 and the proposed final versions of the M&MP Operations and Capital Budgets for 2011 and 2012. The revision requested by Mr. Oliver has been made to the M&MP Scope of Work for 2011, and to the corresponding M&MP Operations Budget for 2011.

The following is a summary of the proposed changes from the 2010 Scope of Work to the 2011 Scope of Work:

- Tasks M.1.c and M.1.d: These tasks were consolidated to improve clarity, as they are both for preparation and attendance at meetings.
- Task I.2.a.1: It was assumed that we will complete making all of the identifiable/desired enhancements to the Database this year, so only regular ongoing data entry and maintaining of the Database will be needed in 2011.
- Task I.2.b.1: It was assumed that no additional monitoring wells will need to be constructed in 2011.
- Task I.2.b.3: The Scope of Work description for this task was edited to state that it includes retrofitting of some wells for use as monitoring wells became necessary. $5,000 was included in the budget for this Task in the O&M Budget for 2011in response to Mr. Oliver's request as

described above.

- Task I.2.b.4: Since we have been having our data collection program reviewed by both MPWMD and MCWRA for the past two years, and since only a few relatively minor improvements have been recommended and implemented, having these reviews was discontinued.
- Task I.3.a.2: It was assumed that we will not do any work this year to refine the Protective Water Levels, but that we may wish to do this in 2011. An amount to perform this work was included in the 2011 O&M Budget.
- Task I.3.c: It was assumed that we will not do any work this year to update the BMAP, but that we may wish to do this in 2011. An amount to perform this work was included in the 2011 O&M Budget.
- Task I.3.d: It was assumed that the TAC may feel that some followup work should be undertaken in 2011 as a result of MPWMD's evaluation of coastal wells for possible cross-aquifer contamination risk. This Task description and the budget for this task will be revised based on the discussion of Agenda Item No. 3 on today's agenda, and the TAC's direction on this issue.

The proposed changes from the 2009 version of the 2011 O&M Budget to become the new 2011 O&M Budget are shown highlighted in the attached version in Track Changes format, and are associated with the changes described above for the Tasks in the 2011 Scope of Work.

For the FY 2011Capital Budget, for we previously budgeted funds to construct an additional monitoring well, and for FY 2012 we did not budget for any capital costs. However, since a new monitoring well was completed in late 2009, it does not appear that another one needs to be budgeted for until at least 2012. Hence, no capital costs are being budgeted for FY 2011, and one new monitoring well at an estimated cost of $300,000 is being budgeted for FY 2012.

Once the TAC approves or revises these documents at today's meeting, they will be provided to the Board, through its Budget and Finance Committee, for approval at the Board's Special Meeting scheduled for September 22, 2010.

ATTACHMENTS:	1. Final M&MP Scope of Work for 2011 showing proposed changes from the original version 2. Final 2011 and 2012 M&MP O&M and Capital Budgets showing proposed changes from the original version of the 2011 O&M Budget
RECOMMENDED ACTION:	Approve or revised the proposed: (1) 2011 M&MP Scope of Work (2) 2011 M&MP O&M Budget (3) 2012 M&MP O&M Budget (4) 2011 and 2012 M&MP Capital Budgets

Final 2011 M&MP Scope of Work

(Starts on the following page)

Seaside Groundwater Basin Management and Monitoring Program
Anticipated ~~2010~~ 2011 Scope of Work

The tasks outlined below are those that are anticipated to be performed during ~~2010~~2011. Some Tasks listed below are specific to ~~2010~~2011, while others Tasks recur throughout the program, such as data collection and database entry, and Program Administration Tasks.

Within the context of this document the term "Consultant" refers either to a firm providing professional engineering or other types of technical services, or to the Monterey Peninsula Water Management District (MPWMD). The term "Contractor" refers to a firm providing construction or field services such as well drilling, induction logging, or meter calibration.

M.1 Program Administration

M. 1. a. Project Budget and Controls ($0)	Consultants will provide monthly or bimonthly invoices to the Watermaster for work performed under their contracts with the Watermaster. Consultants will perform maintenance of their internal budgets and schedules, and management of their subconsultants. The Watermaster will perform management of its Consultants.
M. 1. b. Assist with Board and TAC Agendas ($0)	Watermaster staff will prepare Board and TAC meeting agenda materials. No assistance from Consultants is expected to be necessary to accomplish this Task.
M. 1. c. & M. 1. d Preparation for and Attendance ~~of~~ at Meetings ($~~5,000~~5,150)	The Consultants' work will require internal meetings and possibly meetings with outside governmental agencies and the public. For meetings with outside agencies, other Consultants, or any other parties which are necessary for the conduct of the work of their contracts, the Consultants will set up the meetings and prepare agendas and meeting minutes to facilitate the meetings. These may include planning and review meetings with Watermaster staff. The costs for these meetings will be included in their contracts, under the specific Tasks and/or subtasks to which the meetings relate. The only meeting costs that will be incurred under Tasks M.1.c and M.1.d will be: • Those associated with attendance at TAC meetings (either in person or by teleconference connection), including providing written monthly progress reports to the Watermaster for inclusion in the agenda packets for the TAC meetings, when requested by the Watermaster to do so. These progress reports will typically include project progress that has been made, problem identification and resolution, and planned upcoming work. and • From time-to-time when Watermaster staff asks Consultants to make special presentations to the Watermaster Board and/or the TAC, and which are not included in the Consultant's contracts for other tasks. Appropriate Consultant representatives will attend TAC meetings when requested to do so by Watermaster Staff (either in person or by teleconference connection), but will not be asked to prepare agendas or meeting minutes. As necessary, Consultants may provide oral updates to their progress reports (prepared under Task M.1.d) at the TAC meetings.
~~**M. 1. d. Prepare Board/ TAC Status Updates and Reports ($0)**~~	~~Consultants will provide written monthly progress reports to the Watermaster for inclusion in the agenda packets for the TAC meetings. These progress reports will typically include project progress that has been made, problem identification and resolution, and planned upcoming work.~~

M. 1. e. Peer Review of Documents and Reports ($~~3,000~~3,100)	When requested by the Watermaster staff, Consultants may be asked to assist the TAC and the Watermaster staff with peer reviews of documents and reports prepared by various other Watermaster Consultants and/or entities.
M. 1. f. QA/QC ($0)	A Consultant (MPWMD) will provide general QA/QC support over the Seaside Basin Monitoring and Management Program.

I. 2 Comprehensive Basin Production, Water Level and Water Quality Monitoring Program

I. 2. a. Database Management

I. 2. a. 1 Conduct Ongoing Data Entry and Database Maintenance/ Enhancement ($~~37,600~~13,000)	The database will be maintained by a Consultant performing this work for the Watermaster. Either one of the other Consultants or the Watermaster staff will enter new data into the consolidated database. Such data will include water production volumes, water quality and water level data, and such other data as may be appropriate. The database programming ~~may be~~was enhanced in 2010 at the direction of the Watermaster to improve the usefulness and "user friendliness" of the database. ~~$25,000 has been included under this task for budgeting purposes in the event such work is deemed necessary.~~No further enhancements are anticipated during 2011.
I. 2. a. 2 Verify Accuracy of Production Well Meters ($0)	To ensure that water production data is accurate, the well meters of the major producers were verified for accuracy during 2009. No additional work of this type is anticipated during ~~2010~~2011.

I. 2. b. Data Collection Program

I. 2. b. 1. Site Representation and Selection. ($0)	The monitoring well network review that was started in 2008 has been completed, and sites have been identified where future monitoring well(s) could be installed, if it is deemed necessary to do so in order to fill in data gaps. No further work of this type is anticipated in ~~2010~~2011.
I. 2. b. 2. Collect Monthly Manual Water Levels. ($~~3,360~~3,450)	Each of the monitoring wells will be visited on a monthly basis. Water levels will be determined by either taking manual water levels using an electric sounder, or by dataloggers.
I. 2. b. 3. Collect Quarterly Water Quality Samples. ($~~71,480~~68,600)	Water quality data will be collected quarterly from certain of the monitoring wells. This data may come from water quality samples that are taken from these wells and submitted to a State Certified analytic laboratory for general mineral and physical suite of analyses, or the data may come from induction logging of these wells and/or other data gathering techniques. The Consultant selected to perform this work will make this judgment based on consideration of costs and other factors. This Task includes $5,000 to retrofit the wells that are sampled on an annual basis to use the new low-flow purge approach for getting water quality samples. The wells that are sampled quarterly have previously been retrofitted.
I. 2. b. 4. Update Program Schedule and Standard Operating Procedures. ($~~2,000~~0)	The TAC, with assistance from Consultants, ~~will~~ has conducted periodic reviews of the data collection program. ~~and will recommend to the Watermaster improvements as warranted.~~Only a few small improvements have been recommended in recent years, and these recommendations have been implemented. No additional work of this type is anticipated in 2011.
I. 2. b. 5. Monitor Well Construction ($0)	An additional monitoring well was installed in 2009. No further work of this type is anticipated in ~~2010~~2011.

I. 2. b.6 Reports ($~~6,680~~6,900)	The groundwater level and quality monitoring will be conducted on a monthly, quarterly, and annual basis, as described in the ~~Contractor's~~ Consultant's Scope of Work. Reports summarizing data collected and analyzed will be submitted to the Watermaster on a schedule to be established during the year. Reports will include: • Water Quality and Water Level Quarterly Reports An Annual Water Quality and Water Level Report
	I. 3 Basin Management
I. 3. a. Enhanced Seaside Basin Groundwater Model (Costs listed in subtasks below)	As a result of the data obtained during Phase 1, including constructing new coastal sentinel monitoring wells and developing a consolidated database of groundwater production, water levels, and water quality, it is was concluded that at that time it was not necessary to develop a new Model. Preliminary conclusions from work performed on preparing the Basin Management Action Plan in 2008, along with comments and questions from Technical Advisory Committee and Board members, indicated that it was desirable to update the existing Model during 2009, so that it could be used as more data becomes available.
I.3.a.1 Update the Existing Model ($0)	The existing Model, described in the report titled "Groundwater Flow and Transport Model" dated October 1, 2007, was updated in 2009 in order to develop protective water levels, and to evaluate replenishment scenarios and develop answers to Basin management questions (Tasks I.3.a.2 and I.3.a.3). This work was done by a Consultant hired by the Watermaster. No further work of this type is anticipated in ~~2010~~2011.
I. 3. a. 2 Develop Protective Water Levels ($25,000)	A series of cross-sectional models was created in order to develop protective water levels for selected production wells, as well as for the Basin as a whole. This work was done in 2009 by a Consultant hired by the Watermaster (HydroMetrics), and is discussed in Hydrometrics' "Seaside Groundwater Basin Protective Water Elevations Technical Memorandum." In 2010 further work ~~will~~ was scheduled and budgeted to be done to refine these protective water levels to find the most cost-effective approach to provide the desired degree of protection. However, not all of the information needed to perform the refinements was available in 2010, so this Task has been rescheduled to occur in 2011.
I. 3. a. 3 Evaluate Replenishment Scenarios and Develop Answers to Basin Management Questions ($25,000)	The updated Model was used to evaluate different scenarios to determine such things as the most effective methods of using supplemental water sources to replenish the Basin and/or to assess the impacts of pumping redistribution. This work was done in 2009 by a Consultant hired by the Watermaster (HydroMetrics), and is described in HydroMetrics' "Seaside Groundwater Basin Groundwater Model Report." In 2010 ~~if requested by the Watermaster,~~ HydroMetrics ~~may~~ used the updated Model to develop answers to ~~other~~ some questions associated with Basin management. In 2011 if requested by the Watermaster additional work may be performed to answer additional questions.

I. 3. b. Complete Preparation of Basin Management Action Plan ($0)	The Watermaster's Consultant completed preparation of the Basin Management Action Plan (BMAP) in February 2009. The BMAP serves as the Watermaster's long-term seawater intrusion prevention plan. The Sections that are included in the BMAP are: • Executive Summary • Section 1 – Background and Purpose • Section 2 – State of the Seaside Groundwater Basin • Section 3 – Supplemental Water Supplies • Section 4 –Groundwater Management Actions • Section 5 – Recommended Management Strategies • Section 6 – References The only work which is anticipated to be performed on the BMAP in ~~2010~~ 2011 is discussed under Task I. 3. c.
I. 3. c. Refine and/or Update the Basin Management Action Plan ($25,000)	During ~~2010~~ 2011 it may be beneficial to update the BMAP based on new data, and/or knowledge that is gained from the work described under Tasks I. 3. a. 2 and/or I. 3. a. 3. Such work might involve issues pertaining to Basin storage capacity, water storage rights, or pumping redistribution strategies. This work was originally scheduled and budgeted for 2010, but not all of the information needed to update the BMAP was available, so the updating has been rescheduled to occur in 2011. This task is included primarily for budgeting purposes in the event such work is deemed necessary.
I. 3. d. Evaluate Coastal Wells for Cross-Aquifer Contamination Potential ($5,000)	If seawater intrusion were to reach any of the coastal wells in any aquifer, and if a well was constructed without proper seals to prevent cross-aquifer communication, or if deterioration of the well had compromised these seals, it would be possible for the intrusion to flow from one aquifer to another. In 2010 a~~A~~ review of the well construction records for each of the coastal wells ~~will be~~was made to determine whether or not they were properly constructed so as to prevent such cross-aquifer contamination from occurring. As part of that review, records ~~will~~ were also ~~be~~ reviewed to determine whether there is any indication of well seal deterioration that would lead to the potential for cross-aquifer contamination. A report summarizing the findings of this review ~~will be~~was prepared, with recommendations for any field inspection or other followup work that should be done in this regard. [ADD LANGUAGE SAYING WHAT IF ANY FOLLOWUP WORK THE TAC RECOMMENDS]

I. 4 Seawater Intrusion Response Plan (formerly referred to as the Seawater Intrusion Contingency Plan)

I. 4. a. Oversight of Seawater Intrusion Detection and Tracking ($~~5,600~~5,750)	A Consultant will provide general oversight over the Seawater Intrusion detection program.
I. 4. b. Analyze and Map Water Quality from Coastal Monitoring Wells (costs included above under Task I. 4. a)	Annual chloride concentration maps will be produced incorporating the data from the coastal wells. Data from the Phase 1 coastal sentinel wells will be used to develop time series graphs.

I. 4. c. **Annual Report- Seawater Intrusion Analysis** **($~~25,000~~25,750)**	At the end of each water year, a Consultant will reanalyze all water quality data. Semi-annual chloride concentration maps will be produced for each aquifer in the basin. Time series graphs, trilinear graphs, and stiff diagram comparisons will be updated with new data. The annual EM logs will be analyzed to identify changes in seawater wedge locations. All analyses will be incorporated into an annual report that follows the format of the initial, historical data report. Potential seawater intrusion will be highlighted in the report, and if necessary, recommendations will be included. The annual report will be submitted for review by the TAC and the Board. Modifications to the report will be incorporated based on input from these bodies, as well as Watermaster staff.
I. 4. d **Complete Preparation of Seawater Intrusion Response Plan ($0)**	The Watermaster's Consultant (HydroMetrics) completed preparation of the long-tem Seawater Intrusion Response Plans (SIRP) in February 2009. The Sections that are included in the SIRP are: • Section 1 – Background and Purpose • Section 2 – Consistency with Other Documents • Section 3 – Seawater Intrusion Indicators and Triggers • Section 4 –Seawater Intrusion Contingency Actions • Section 5 - References No further work on the SIRP is anticipated in ~~2010~~2011.
I. 4. e. **Refine and/or Update the Seawater Intrusion Response Plan ($0)**	At the beginning of 2009 it was thought that it might be beneficial or necessary to perform work to refine the SIRP and/or to update it based on new data or knowledge that was gained subsequent to the preparation of the SIRP. However, this did not prove to be necessary, and no further work of this type is anticipated in ~~2010~~2011.
I. 4. f. **If Seawater Intrusion is Determined to be Occurring, Implement Contingency Response Plan ($0)**	The SIRP will be implemented if seawater intrusion, as defined in the Plan, is determined by the Watermaster to be occurring.

Final M&MP O&M Budget for 2011

Monitoring and Management Plan Operations Budget For Tasks to be Undertaken in 2011[12]									Comparative Costs from Previously Projected 2011 Budget
Task	Subtask	Sub-Subtask	Cost Description	CONSULTANTS & CONTRACTORS[9]				Total	
				MPWMD	MCWRA	Private Consultants	Contractors		
Labor									
			Technical Project Manager	$0	$0	$100,000	$0	$100,000	$100,000
M.1 Program Administration									
	M.1.a		Project Budget and Controls	$0	$0	$0	$0	$0	$0
	M.1.b		Assist with Board and TAC Agendas	$0	$0	$0	$0	$0	$0
	M.1.c & M.1.d		Preparation for and Attendance ~~of~~ at Meetings[8]	$0	$0	$5,150	$0	$5,150	$5,150
	~~M.1.d~~		~~Prepare Board/ TAC Status Updates and Reports~~	~~$0~~	~~$0~~	~~$0~~	~~$0~~	~~$0~~	$0
	M.1.e		Peer Review of Documents and Reports[8]	$0	$0	$3,100	$0	$3,100	$3,090
	M.1.f		QA/QC	$0	$0	$0	$0	$0	$0
I.1 Initial Phase 1 Monitoring Well Construction (Task Completed in Phase 1)									
I.2 Production, Water Level and Quality Monitoring									
	I. 2. a.		Database Management						
		I. 2. a. 1.	Conduct Ongoing Data Entry/ Database Maintenance/Enhancement	$9,900	$0	$3,100	$0	$13,000	$38,728
		I. 2. a. 2.	Verify Accuracy of Production Well Meters	$0	$0	$0	$0	$0	$0
	I. 2. b.		Data Collection Program						
		I. 2. b. 1.	Site Representation and Selection[7]	$0	$0	$0	$0	$0	$3,708
		I. 2. b. 2.	Collect Monthly Water Levels[6]	$3,450	$0	$0	$0	$3,450	$3,461
		I. 2. b. 3.	Collect Quarterly Water Quality Samples[1]~~[5]~~[6]	$39,800	$0	$0	$28,800	$68,600	$73,624
		I. 2. b. 4.	Update Program Schedule and Standard Operating Procedures.	$0	$0	$0	$0	$0	$2,060
		I. 2. b. 5.	Monitor Well Construction[7]	$0	$0	$0	$0	$0	$7,622
		I. 2. b. 6.	Reports	$5,850	$0	$1,050	$0	$6,900	$6,880
I.3 Basin Management									
	I. 3. a.		Enhanced Seaside Basin Groundwater Model	(Costs Shown in Subtasks Below)					
		I. 3. a. 1	Update the Existing Model	$0	$0	$0	$0	$0	$0
		I. 3. a. 2	Develop Protective Water Levels	$0	$0	$25,000	$0	$25,000	$0
		I. 3. a. 3	Evaluate Replenishment Scenarios and Develop Answers to Basin Management Questions	$0	$0	$25,000	$0	$25,000	$25,000
	I. 3. b.		Complete Preparation of Basin Management Action Plan	$0	$0	$0	$0	$0	$0
	I. 3. c.		Refine and/or Update the Basin Management Action Plan [11]	$0	$0	$25,000	$0	$25,000	$10,000
	I. 3. d		Evaluate Coastal Wells for Cross-Aquifer Contamination Potential			To be Determined		To be Determined	$0
I.4 Seawater Intrusion Contingency Plan									
	I. 4. a.		Oversight of Seawater Intrusion Detection and Tracking	$3,700	$0	$2,050	$0	$5,750	$5,768
	I. 4. b.		Analyze and Map Water Quality from Coastal Monitoring Wells	(Costs Included Under I.4.a)					
	I. 4. c.		Annual Report- Seawater Intrusion Analysis	$0	$0	$25,750	$0	$25,750	$25,750
	I. 4. d.		Complete Preparation of Seawater Intrusion Response Plan[2][8]	$0	$0	$0	$0	$0	$0
	I. 4. e.		Refine and/or Update the Seawater Intrusion Response Plan[2] [9]	$0	$0	$0	$0	$0	$0
	I. 4. f.		If Seawater Intrusion is Determined to be Occurring, Implement Contingency Response Plan[2]	(No Costs are Included for This Task, as This Task Will Likely Not be Necessary During 2011. If it Does Become Necessary, Use of Contingency Funds or a Budget Modification Will Likely be Necessary)					
TOTALS CONSULTANTS & CONTRACTORS				$62,700	$0	$215,200	$28,800		
SUBTOTAL not including Technical Program Manager =								$206,700	$210,842
Contingency (not including Technical Program Manager) @ 20%[4]=								$41,340	$42,168
Technical Program Manager								$100,000	$100,000

Footnotes:

(1) An outside contractor would be used to perform the induction logging, and potentially to also collect some water quality samples in conjunction with doing the induction logging. MPWMD is expected to perform portions of the work of this Subtask, and would likely be the party that contracts with the Contractor to perform the induction logging and sample collection work on certain of the wells.

(2) The response plan would only be implemented in the event sea water intrusion is determined to be occurring.

(3) Within the context of this document the term "Consultant" refers either to a Private Consultant providing professional engineering or other types of technical services, or to the Monterey Peninsula Water Management District (MPWMD). The term "Contractor" refers to a firm providing construction or field services such as well drilling, induction logging, or meter calibration.

(4) Due to the uncertainties of the exact scopes of some of the Tasks listed above at the time of preparation of this Budget, e.g. Tasks ~~I.2.a.1~~, I.3.a, I.3.c, and I.3.d, it is recommended that a 20% Contingency be included in the Budget.

(5) Includes ~~$10,000~~ $5,000 in potential well site retrofitting costs that may be necessary in order to make some of these wells available for use as

(6) Does not include costs for MPWMD to collect water level data or water quality samples from wells other than those that are part of the basic monitoring well network, i.e. for private well owners who have requested that the Watermaster obtain this data for them. Costs to obtain that data are to be reimbursed to the Watermaster by those well owners, so there should be no net cost to the Watermaster for that portion of the work under these Tasks.

(7) ~~An additional monitoring well may need to be constructed in 2011.~~ No additional monitoring well is expected to be constructed in 2011.

(8) For HydroMetrics to provide hydrogeologic consulting assistance to the Watermaster, beyond that associated with performing other specified Tasks, when requested to do so by the Technical Program Manager.

(9) If work under this Task is found to be necessary, it will be funded through the Contingency line item in this Budget.

(10) ~~Includes reduced funds from 2010 Budget to enhance the Watermaster's Database, if necessary, to improve its usefulness and "user friendliness," assuming most of this work has been completed in 2010.~~ Does not include funds for Database enhancement, as it is assumed that all desired enhancements had been made in 2010.

(11) If necessary to reflect knowledge gained from modeling work or other data sources. ~~Amount lower than in 2010 assuming there is less updating updating, if any, that will need to be done in 2011.~~ Provides funds for work originally budgeted for 2010, but which has been rescheduled to 2011.

(12) Includes approximately a 3% inflation factor on most 2010 Budget costs, rounded to the nearest $50, except the Technical Program Manager cost which has no inflation factor applied to it.

Final M&MP O&M Budget for 2012

Monitoring and Management Plan Operations Budget
For Tasks to be Undertaken in 2012[12]

Task	Subtask	Sub-Subtask	Cost Description	CONSULTANTS & CONTRACTORS[3]				Total
				MPWMD	MCWRA	Private Consultants	Contractors	
			Labor					
			Technical Project Manager	$0	$0	$100,000	$0	$100,000
M.1 Program Administration								
	M.1.a		Project Budget and Controls	$0	$0	$0	$0	$0
	M.1.b		Assist with Board and TAC Agendas	$0	$0	$0	$0	$0
	M.1.c & M.1.d		Preparation for and Attendance of at Meetings[8]	$0	$0	$5,305	$0	$5,305
	M.1.e		Peer Review of Documents and Reports[8]	$0	$0	$3,193	$0	$3,193
	M.1.f		QA/QC	$0	$0	$0	$0	$0
I.1 Initial Phase 1 Monitoring Well Construction (Task Completed in Phase 1)								
I.2 Production, Water Level and Quality Monitoring								
	I. 2. a.		Database Management					
		I. 2. a. 1.	Conduct Ongoing Data Entry/ Database Maintenance/Enhancement	$10,197	$0	$3,193	$0	$13,390
		I. 2. a. 2.	Verify Accuracy of Production Well Meters	$0	$0	$0	$0	$0
	I. 2. b.		Data Collection Program					
		I. 2. b. 1.	Site Representation and Selection[7]	$0	$0	$0	$0	$0
		I. 2. b. 2.	Collect Monthly Water Levels[6]	$3,554	$0	$0	$0	$3,554
		I. 2. b. 3.	Collect Quarterly Water Quality Samples[1][6]	$35,844	$0	$0	$29,664	$65,508
		I. 2. b. 4.	Update Program Schedule and Standard Operating Procedures.	$0	$0	$0	$0	$0
		I. 2. b. 5.	Monitor Well Construction[7]	$0	$0	$0	$0	$0
		I. 2. b. 6.	Reports	$6,026	$0	$1,082	$0	$7,107
I.3 Basin Management								
	I. 3. a.		Enhanced Seaside Basin Groundwater Model	(Costs Shown in Subtasks Below)				
		I. 3. a. 1	Update the Existing Model	$0	$0	$0	$0	$0
		I. 3. a. 2	Develop Protective Water Levels	$0	$0	$25,000	$0	$25,000
		I. 3. a. 3	Evaluate Replenishment Scenarios and Develop Answers to Basin Management Questions	$0	$0	$25,000	$0	$25,000
	I. 3. b.		Complete Preparation of Basin Management Action Plan	$0	$0	$0	$0	$0
	I. 3. c.		Refine and/or Update the Basin Management Action Plan [11]	$0	$0	$25,000	$0	$25,000
	I. 3. d		Evaluate Coastal Wells for Cross-Aquifer Contamination Potential	$0	$0	$0	$0	$0
I.4 Seawater Intrusion Contingency Plan								
	I. 4. a.		Oversight of Seawater Intrusion Detection and Tracking	$3,811	$0	$2,112	$0	$5,923
	I. 4. b.		Analyze and Map Water Quality from Coastal Monitoring Wells	(Costs Included Under I.4.a)				
	I. 4. c.		Annual Report- Seawater Intrusion Analysis	$0	$0	$26,523	$0	$26,523
	I. 4. d.		Complete Preparation of Seawater Intrusion Response Plan[2][8]	$0	$0	$0	$0	$0
	I. 4. e.		Refine and/or Update the Seawater Intrusion Response Plan[2] [9]	$0	$0	$0	$0	$0
	I. 4. f.		If Seawater Intrusion is Determined to be Occurring, Implement Contingency Response Plan[2]	(No Costs are Included for This Task, as This Task Will Likely Not be Necessary During 2011. If it Does Become Necessary, Use of Contingency Funds or a Budget Modification Will Likely be Necessary)				
TOTALS CONSULTANTS & CONTRACTORS				$59,431	$0	$216,406	$29,664	
							SUBTOTAL not including Technical Program Manager =	$205,501
							Contingency (not including Technical Program Manager) @ 20%[4]=	$41,100
							Technical Program Manager	$100,000
							TOTAL=	**$346,602**

Footnotes:

(1) An outside contractor would be used to perform the induction logging, and potentially to also collect some water quality samples in conjunction with doing the induction logging. MPWMD is expected to perform portions of the work of this Subtask, and would likely be the party that contracts with the Contractor to perform the induction logging and sample collection work on certain of the wells.

(2) The response plan would only be implemented in the event sea water intrusion is determined to be occurring.

(3) Within the context of this document the term "Consultant" refers either to a Private Consultant providing professional engineering or other types of technical services, or to the Monterey Peninsula Water Management District (MPWMD). The term "Contractor" refers to a firm providing construction or field services such as well drilling, induction logging, or meter calibration.

(4) Due to the uncertainties of the exact scopes of some of the Tasks listed above at the time of preparation of this Budget, e.g. Tasks I.3.a, I.3.c, and I.3.d, it is recommended that a 20% Contingency be included in the Budget.

(5) Not used.

(6) Does not include costs for MPWMD to collect water level data or water quality samples from wells other than those that are part of the basic monitoring well network, i.e. for private well owners who have requested that the Watermaster obtain this data for them. Costs to obtain that data are to be reimbursed to the Watermaster by those well owners, so there should be no net cost to the Watermaster for that portion of the work under these Tasks.

(7) No additional monitoring well is expected to be constructed in 2012.

(8) For HydroMetrics to provide hydrogeologic consulting assistance to the Watermaster, beyond that associated with performing other specified Tasks, when requested to do so by the Technical Program Manager.

(9) If work under this Task is found to be necessary, it will be funded through the Contingency line item in this Budget.

(10) Does not include funds for Database enhancement, as it is assumed that all desired enhancements had been made in 2010.

(11) If necessary to reflect knowledge gained from modeling work or other data sources.

(12) Includes a 3% inflation factor on most 2011 Budget costs, except the Technical Program Manager cost which has no inflation factor applied to it.

Final M&MP Capital Budget for 2011

Monitoring and Management Plan Capital Budget For Tasks to be Undertaken in 2011

The Capital projects and expenditures for 2011 are:

No Capital projects are anticipated to be undertaken in 2011, so this budget is $0.

Final M&MP Capital Budget for 2012

Monitoring and Management Plan Capital Budget For Tasks to be Undertaken in 2012

The Capital projects and expenditures that may be necessary in 2012 are:

1. Install one additional monitoring well at an estimated cost of $300,000 (including consultant costs and well contractor costs).

SEASIDE BASIN WATER MASTER
TECHNICAL ADVISORY COMMITTEE

** * * AGENDA TRANSMITTAL FORM * * **

MEETING DATE:	September 8, 2010
AGENDA ITEM:	6
AGENDA TITLE:	Offer by Pasadera General Manager to Discuss Possible Use of Storm Water Runoff from Pasadera as a Water Source for Helping to Recharge the Seaside Basin
PREPARED BY:	Robert Jaques, Technical Program Manager

SUMMARY:

Dean Leonard of Pasadera contacted Dewey Evans to discuss the potential for storm water runoff from Pasadera to be used to help recharge the Seaside Groundwater Basin. Mr. Evans and Mr. Jaques met with Mr. Leonard in mid-June to see the Pasadera storm water and golf course irrigation facilities. At that meeting Mr. Leonard described these facilities and explained his ideas on this concept.

I thanked Mr. Leonard for brining this concept to the attention of the Watermaster. I said that I would discuss this with the TAC and let him know if the TAC would like to have him attend a future TAC meeting to present his ideas in more detail and to respond to TAC questions.

The attached paper describes the key elements of the Pasadera facilities, as I understood them from the June meeting with Mr. Leonard, as they pertain to the concept of using storm water runoff from the Pasadera development to help recharge the Seaside Groundwater Basin. The paper also lists some issues that I believe would need to be considered, if the TAC felt that examining this concept further was desirable.

TAC input on this concept is invited, along with the TAC's thoughts about having Mr. Leonard present his ideas in more detail at a future TAC meeting.

ATTACHMENTS:	Paper describing Pasadera's water facilities and suggested issues to be considered if the TAC desires to undertake a further examination of the concept of using storm water runoff from Pasadera to help recharge the Seaside Groundwater Basin
RECOMMENDED ACTION:	Provide input to the Technical Program Manager regarding whether the TAC would like to receive a more in-depth presentation from Mr. Leonard on this concept

PAPER DESCRIBING PASADERA'S WATER FACILITIES AND SOME ISSUES TO BE CONSIDERED IF THE TAC DESIRES TO UNDERTAKE A FURTHER EXAMINATION OF THE CONCEPT OF USING STORM WATER RUNOFF FROM PASADERA TO HELP RECHARGE THE SEASIDE GROUNDWATER BASIN

The Pasadera golf course and housing development is served by three separate water facilities, which are used conjunctively to meet the water supply, irrigation, and storm water management needs of the development.

According to website information, the residences at Pasadera consist of a mix of lifestyle options including 55 luxury Golf Villas, 33 Designer Series homes, and 100 Custom Estates. At present there are reportedly a remaining 26 Custom home sites yet to be developed. The golf course is 18-holes and includes a number of water hazards as well as a 38,000 square foot clubhouse with associated amenities.

Domestic Water Supply System

Water for potable domestic uses, and to supplement golf course irrigation water provided by the Recycled Water System, is provided to the development through two wells that are located on the property. In Water Year 2009 the combined production of these two wells, the "Main Gate" and the "New Paddock" wells, was approximately 182 acre-feet. Piping and storage tanks are used to deliver this water throughout the development.

Recycled Water System

Wastewater generated within the development is combined with wastewater from a portion of the adjacent Laguna Seca development and is treated to a tertiary level by an on-site water recycling plant. The treated water is pumped to a storage reservoir at an upper elevation within the development and feeds the golf course's irrigation system. Since there is insufficient recycled water to meet all of the golf course's irrigation needs, this water source is supplemented as necessary with water from the Domestic Water Supply System. Recycled water is rarely used in the winter months, unless it is an extremely dry winter, so there should be little opportunity for recycled water to mix with storm water runoff.

Storm Water System

Storm water runoff from the development, as well as runoff that is received from some adjacent lands that are located at higher elevations (mainly in the former Fort Ord) are conveyed via pipes and open channels to a series of 7 lakes located within the golf course. These lakes serve as aesthetic elements of the golf course, water hazards for the players, and provide some flow equalization for the storm water flows.

The water levels in the lakes are controlled by weirs, the heights of which are adjusted during the year to maintain the desired water levels. Depth of water in the lakes is generally about 7 feet, and the total area occupied by the lakes is about 8 acres. Water from a pond can flow through piping and creeks to the next downstream pond. The furthest downstream pond has a pump station that is used to pump water back up to the highest lake, so there is a continuous flow in the system. In the winter this pond discharges into a creek that runs along Highway 68 and into Del Rey Oaks. Ultimately, this stormwater flows into Laguna Grande and then through Roberts Lake into Monterey Bay.

Seaside Groundwater Basin Recharge Concept

Mr. Leonard suggested that it might be possible to capture the storm water runoff from the Pasadera development and use it to help recharge the Seaside Groundwater Basin. He did not have any actual measurement of the amount of runoff that might be available for this purpose, but described the amount of storm water that comes off of the development during the rainy season as being on the order of hundreds of acre-feet. He also did not have any water quality data on the runoff water.

Mr. Leonard did not feel that there were undeveloped sites available within the Pasadera development where groundwater recharge facilities, such as a percolation pond, could be constructed. He did, however, comment that there is an area to the left of the Pasadera Main Entrance where a large ravine is located. This ravine flows to a lake located on the Laguna Seca Golf Course. He thought it might be possible to raise the water level in this ravine by raising the top elevation of the dam that controls its water level, and thus provide a potential recharge basin for storm water.

He also commented that there was an apparently abandoned well, which he believed had been constructed by Cal Am some years ago, that is either on or adjacent to the development and which he thought might possibly be adapted to serve as an injection well.

Some Issues to Consider Regarding the Feasibility and Practicality of this Concept

2. Is the quantity of stormwater runoff that could be captured for recharge purposes sufficient to warrant pursuing this concept?
3. Is the quality of the runoff water suitable for recharge purposes?
4. Would recharge be feasible using an injection well (or wells) or would percolation or some other recharge method be needed?
5. If a percolation site is needed, and if the site could not be located on Pasadera property, where could it be located?
6. What regulatory and other agency approvals would be necessary to implant a recharge project?
7. Would there be concerns about the recharge water possibly containing some recycled water that had been used to irrigate the golf course?
8. How would recharge in this location affect groundwater levels and other groundwater characteristics in the Seaside Basin, and would this recharge benefit the Basin?

If the runoff was diverted out of the creek to which it currently flows, would there be any adverse impacts, e.g. riparian vegetation, water levels and water quality in Laguna Grande and/or Roberts Lake, etc.

SEASIDE BASIN WATER MASTER
TECHNICAL ADVISORY COMMITTEE

** * * AGENDA TRANSMITTAL FORM * * **

MEETING DATE:	September 8, 2010
AGENDA ITEM:	7
AGENDA TITLE:	Schedule
PREPARED BY:	Robert Jaques, Technical Program Manager

SUMMARY:

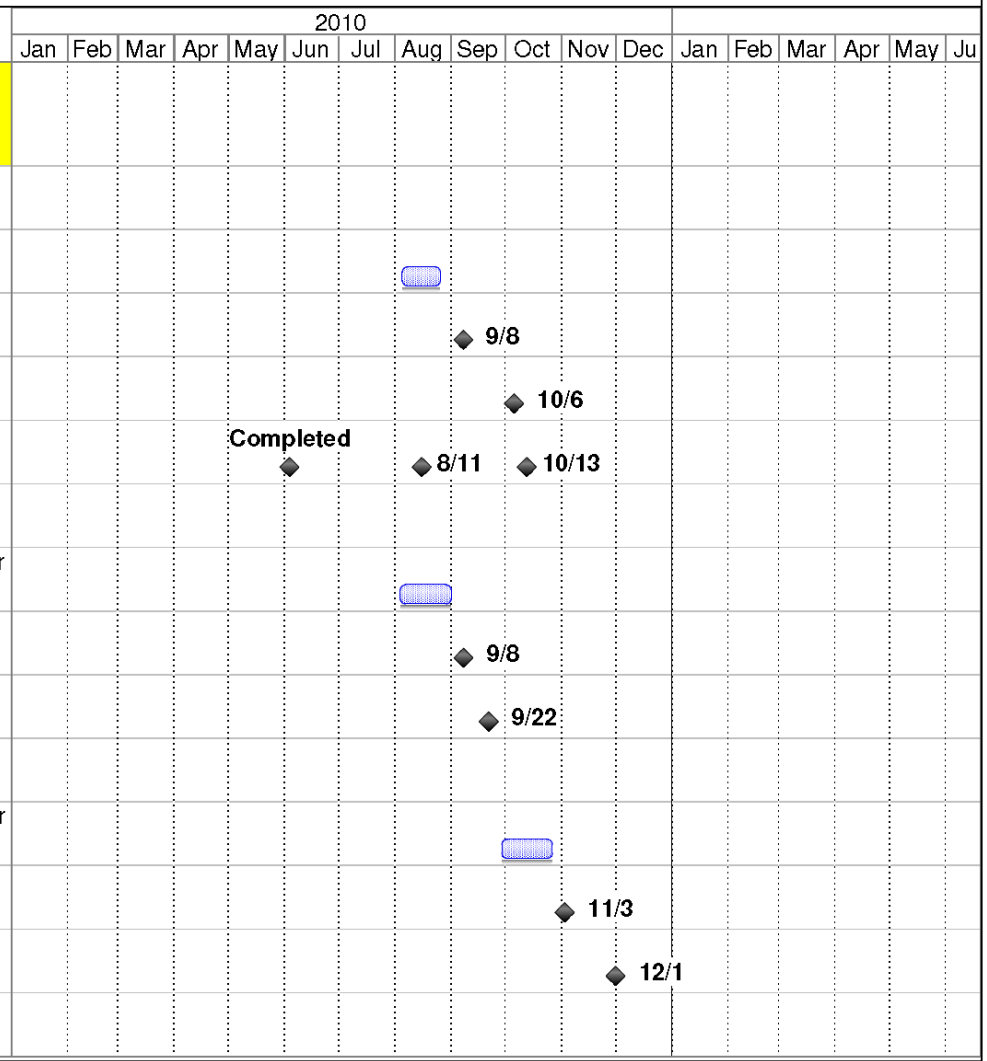
As a regular part of each monthly TAC meeting, I will provide the TAC with an updated Consultants Work Schedule of the activities being performed by the Watermaster's consultants and the public entity, MPWMD, which is performing certain portions of the work, and of the Critical Program Milestones Schedule.

Attached is the Updated Consultants Work Schedule.

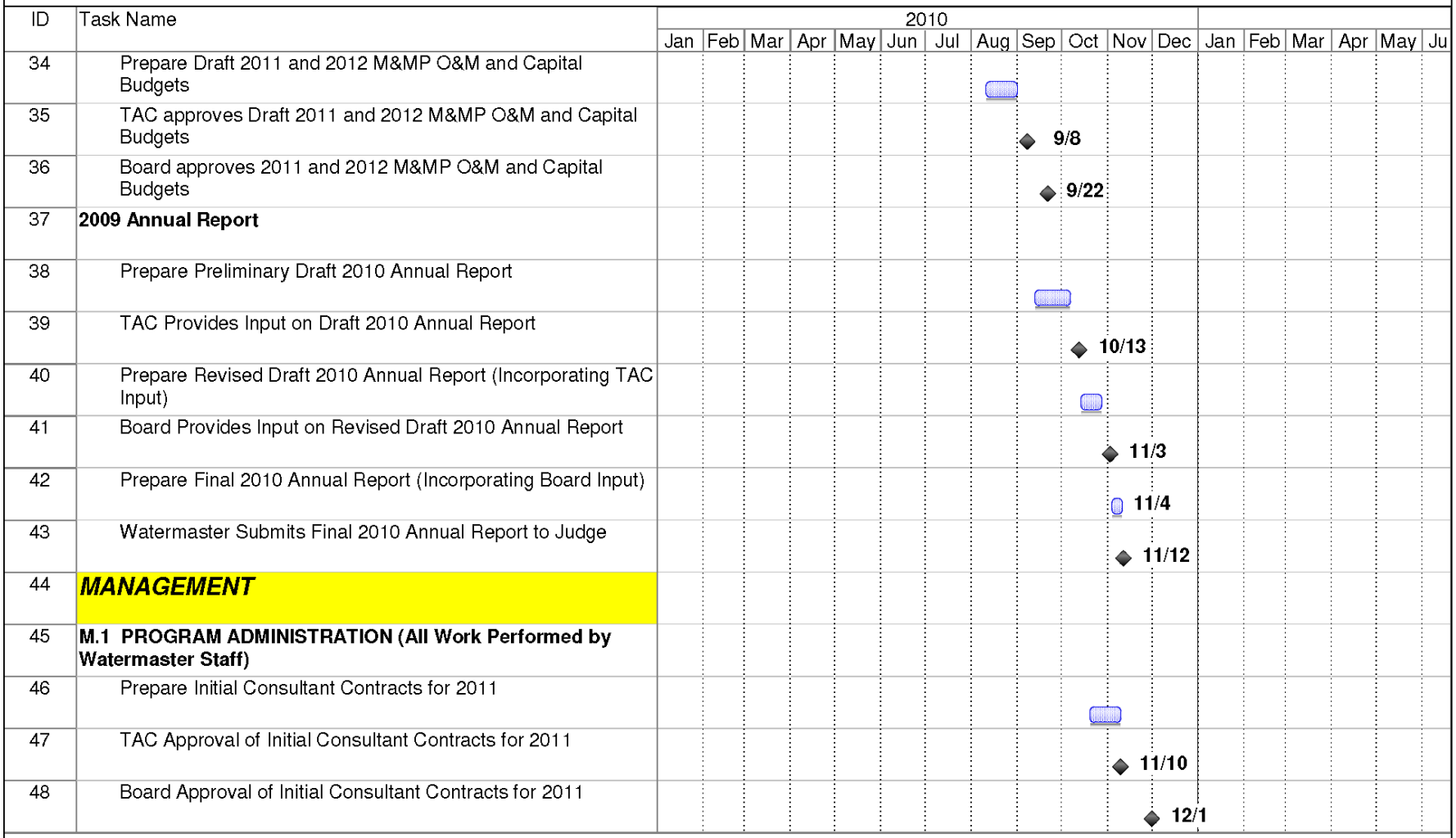
ATTACHMENTS:	Updated Schedule of Work Activities
RECOMMENDED ACTION:	Provide Input to Technical Program Manager Regarding Any Corrections or Additions to This Schedule

Seaside Basin Watermaster
Monitoring and Management Program
2010 Work Schedule

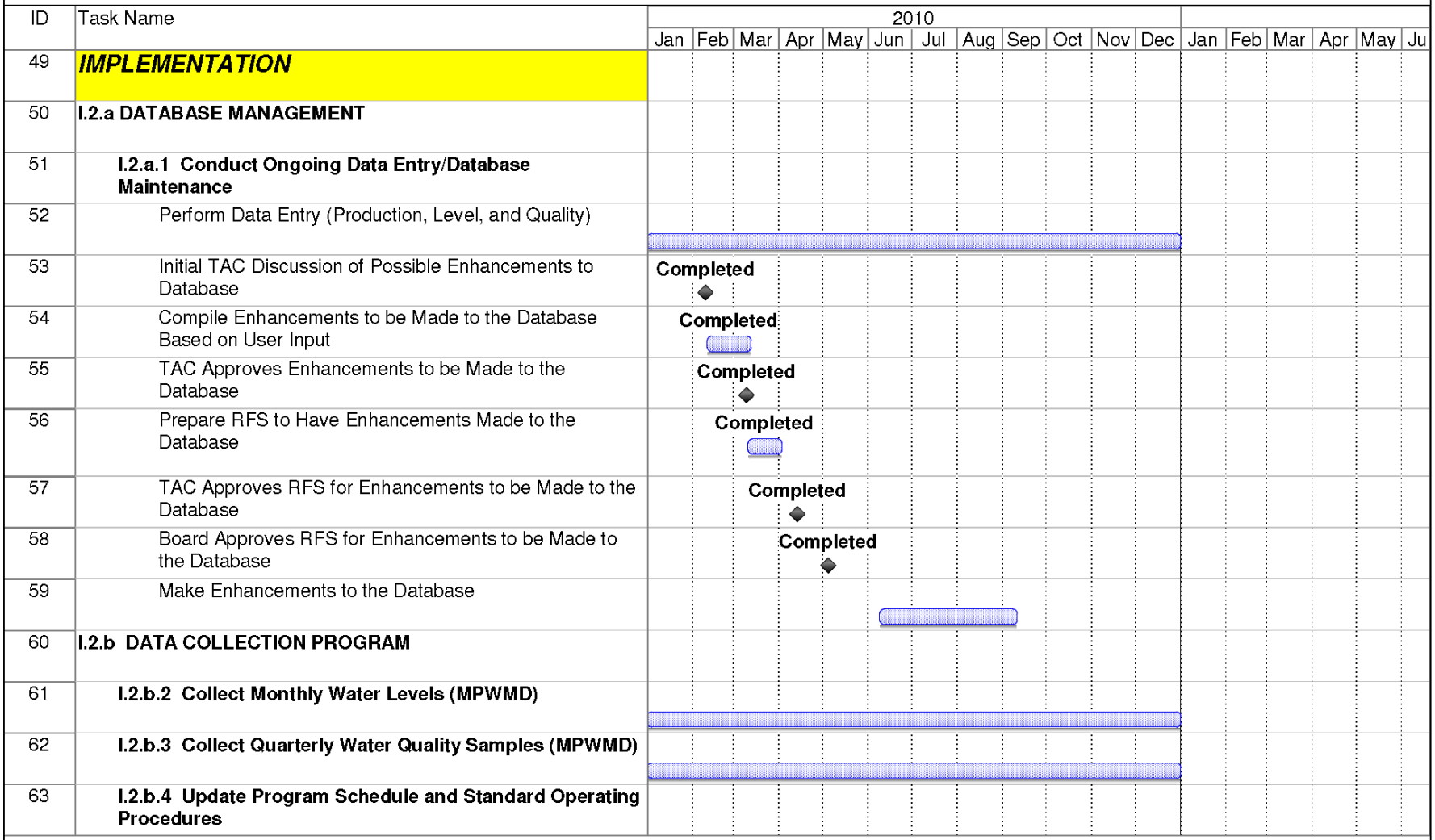
ID	Task Name
1	***CRITICAL PROJECT MILESTONES ASSOCIATED WITH TAC, BOARD, AND/OR CONSULTANT WORK***
2	**2011 Administration, Operations and Replenishment Budgets**
3	Prepare M&MP Draft Budgets (Same as Task 35)
4	TAC Approves M&MP Budgets (Same as Task 36)
5	Board Approves M&MP Budgets (Same as Task 37)
6	**Watermaster Prepares Quarterly Water Production, Water Level, and Water Quality Reports**
25	**Replenishment Assessment Unit Costs for Water Year 2011**
26	Develop Replenishment Assessment Unit Cost for 2011 Water Year
27	TAC Approves 2011 Water Year Replenishment Assessment Unit Cost
28	Board Adopts and Declares 2011 Water Year Replenishment Assessment Unit Cost
29	**Replenishment Assessments for Water Year 2010**
30	Watermaster Prepares Replenishment Assessments for Water Year 2010
31	Watermaster Board Approves Replenishment Assessments for Water Year 2010
32	Watermaster Levies Replenishment Assessment for 2010
33	**Monitoring & Management Program (M&MP) Budgets for 2011 and 2012**



Seaside Basin Watermaster
Monitoring and Management Program
2010 Work Schedule



Seaside Basin Watermaster
Monitoring and Management Program
2010 Work Schedule

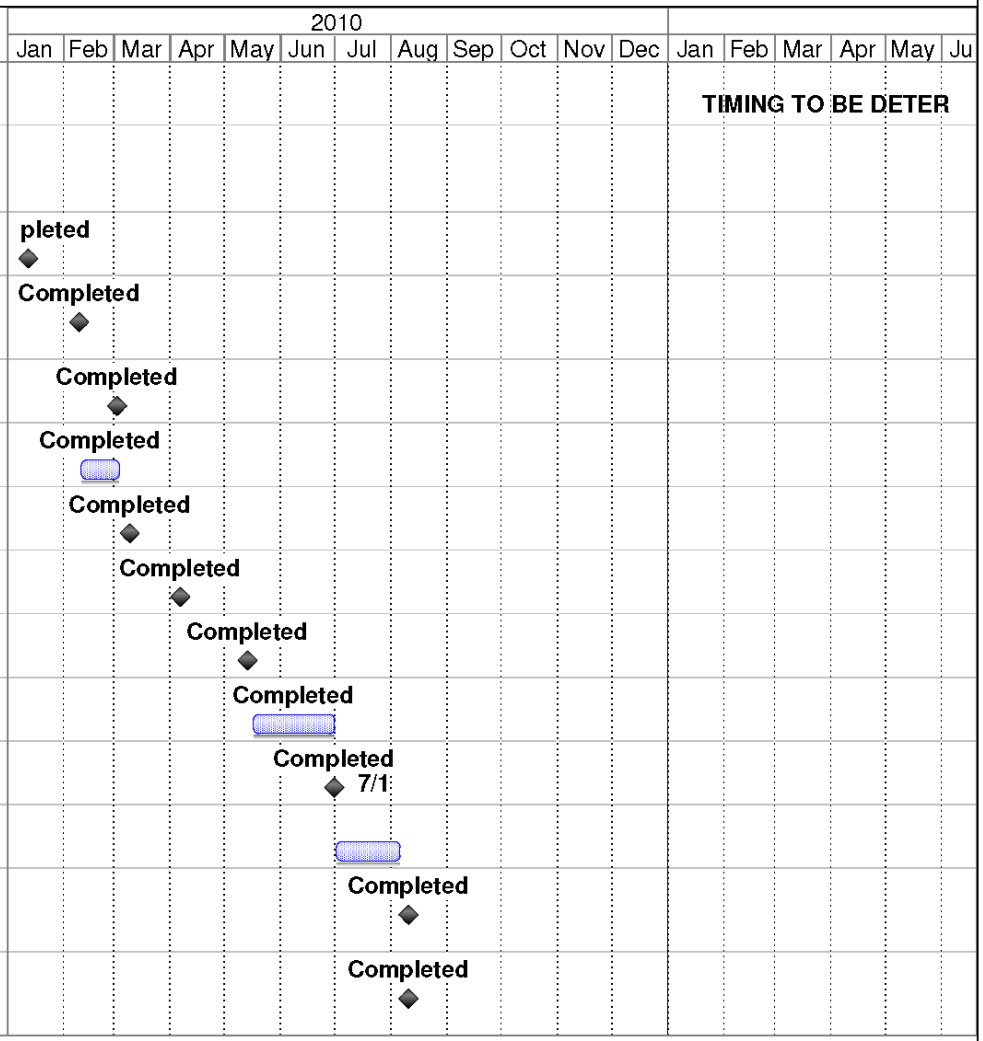


Seaside Basin Watermaster
Monitoring and Management Program
2010 Work Schedule

ID	Task Name	2010																	
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Ju
64	**MPWMD Prepares Memo with Recommendations**	Completed																	
67	**TAC Approves Recommendations**		Completed								10/13								
70	**I.2.b.6 Reports (from MPWMD)**	SEE ID 6 ABOVE																	
71	**I.3.a ENHANCED SEASIDE BASIN GROUNDWATER MODEL**																		
72	**I.3.a.2 Develop Protective Water Levels**																		
73	HydroMetrics Meets with TAC to for Preliminary Discussion of Development of Protective Water Levels	pleted																	
74	HydroMetrics Meets with TAC to for Further Discussion of Development of Protective Water Levels	Completed																	
75	Prepare Contract with HydroMetrics to Refine Protective Water Levels Developed in 2009	Completed																	
76	Board Decision to Defer Refining Protective Water Levels		Completed	3/3															
77	TAC Continues Discussion Regarding Refining Protective Water Levels													1/12					
78	Board Approves Contract with HydroMetrics to Refine Protective Water Levels (Board Deferred Performing this Work to an Unspecified Future Date. A Date of July, 2010 Has Been Shown Only as a Placeholder).													TIMING TO BE DETER					
79	HydroMetrics Refines Protective Water Levels													TIMING TO BE DETER					
80	HydroMetrics Makes Summary Report to TAC on Refinement of Protective Water Levels													TIMING TO BE DETER					

Seaside Basin Watermaster
Monitoring and Management Program
2010 Work Schedule

ID	Task Name
81	HydroMetrics Makes Summary Report to Board on Protective Water Levels
82	**I.3.a.3 Evaluate Replenishment Scenarios and Develop Answers to Basin Management Questions**
83	HydroMetrics Meets with TAC for Preliminary Discussion on Additional Scenarios to be Evaluated
84	HydroMetrics Meets with TAC to Complete Selection of Management Objectives and Additional Scenarios to be Evaluated
85	Board Approves Management Objectives and Scenarios to be Evaluated
86	Prepare Contract with HydroMetrics to Evaluate Additional Replenishment Scenarios
87	TAC Approves Contract with HydroMetrics to Evaluate Additional Replenishment Scenarios
88	Board Approves Contract with HydroMetrics to Evaluate Additional Replenishment Scenarios
89	Watermaster Issues RFS to HydroMetrics to Perform Work
90	TAC Reviews Proposed Water Production Data to be Used in Scenario 1
91	Technical Program Manager Issues Notice to Proceed to HydroMetrics for Scenario 1
92	HydroMetrics Evaluates Scenario 1 - Laguna Seca Scenario
93	HydroMetrics Makes Brief Oral Report to TAC Regarding Conclusions from Evaluation of Scenario 1
94	TAC Discusses Issues and Timing Pertaining to Scenario 2 - Regional Water Supply Project Scenario



Seaside Basin Watermaster
Monitoring and Management Program
2010 Work Schedule

ID	Task Name	2010												Jan	Feb	Mar	Apr	May	Ju
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec						
95	HydroMetrics Evaluates Scenario 2 - Regional Water Supply Project																		
96	HydroMetrics Makes Summary Report to TAC Regarding Evaluation of Scenarios 1 and 2																		
97	HydroMetrics Makes Summary Report to Board Regarding Evaluation of Scenarios 1 and 2																		
98	**I.3.b Complete Preparation of Basin Management and Action Plan (BMAP)**																		
99	**I.3.c Refine and/or Update the BMAP**																		
100	TAC Discusses Issues to be Addressed in Updating the BMAP																		
101	TAC Seeks Board Approval to Defer Updating the BMAP																		
102	TAC Continues Discussion Regarding Updating the BMAP																		
103	Prepare Contract with HydroMetrics for Updating the BMAP																		
104	TAC Approves Contract with HydroMetrics for Updating the BMAP																		
105	Board Approves Contract with HydroMetrics for Updating the BMAP																		
106	HydroMetrics Updates the BMAP																		
107	HydroMetrics Makes Presentation on Draft Updated BMAP to TAC																		
108	HydroMetrics Makes Presentation of Final Draft Updated BMAP to Board and Board Adopts Final Updated BMAP																		
109	**I.3.d Evaluate Coastal Wells for Cross-Aquifer Contamination Potential**																		

WORK COMPLETED - NO FURTHER WORK PLANNED IN 2010

Completed

Completed

1/12

TIMING TO BE DISCUS

TIMING TO BE DISCUS

TIMING TO BE DISCUS

TIMING TO BE DISCUS

TIMING TO BE DISCUS

TIMING TO BE DISCUS

TIMING TO BE DISCUS

TIMING TO BE DISCUS

TIMING TO BE DISCUS

Seaside Basin Watermaster
Monitoring and Management Program
2010 Work Schedule