

MEETING NOTICE AND AGENDA
TECHNICAL ADVISORY COMMITTEE
OF THE
SEASIDE BASIN WATER MASTER

DATE: Wednesday, August 8, 2012

MEETING TIME: 1:30 p.m.

**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 Peninsula Water Management District	Monterey County Water Resources Agency

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8. Set Next Meeting Date:	
The next regular meeting will be held on Wednesday September 12, 2012 at 1:30 p.m. at the MRWPCA Board Room	

**SEASIDE BASIN WATER MASTER
TECHNICAL ADVISORY COMMITTEE**

***** AGENDA TRANSMITTAL FORM *****

MEETING DATE:	August 8, 2012
AGENDA ITEM:	2.A
AGENDA TITLE:	Approve Minutes from May 9, 2012
PREPARED BY:	Robert Jaques, Technical Program Manager
SUMMARY:	<p>Draft Minutes from this meeting were emailed to all TAC members. Any changes requested by TAC members have been included in the attached version.</p>
ATTACHMENTS:	Minutes from this meeting
RECOMMENDED ACTION:	Approve the minutes

D-R-A-F-T
MINUTES

**Seaside Groundwater Basin Watermaster
Technical Advisory Committee Meeting
May 9, 2012**

Attendees: TAC Members

City of Seaside – Rick Riedl
California American Water – Eric Sabolsice
City of Monterey – Norm Green
Laguna Seca Property Owners – No Representative
MPWMD – Jon Lear
MCWRA – No Representative
City of Del Rey Oaks – Richard Simonitch
City of Sand City – Richard Simonitch
Coastal Subarea Landowners – No Representative

Watermaster

Technical Program Manager - Robert Jaques
Chief Executive Officer – Dewey Evans, Laura Dadiw

Consultants

HydroMetrics – Georgina King (via telephone)

Others:

MRWPCA – Bob Holden

The meeting was called to order at 1:35 p.m.

1. Public Comments

There were no public comments.

2. Administrative Matters:

A. Approve Minutes from March 14, 2012 Meeting

On a motion by Mr. Green, seconded by Mr. Simonitch, the Minutes were unanimously approved as presented

B. Sentinel Well Induction Logging Results from January 2012

Mr. Jaques summarized the agenda packet materials for this item. Ms. King said that Martin Feeney is now an employee of HydroMetrics, but also provides services directly to some of his own clients.

3. Update on Resampling of Sand City Public Works Well

Mr. Lear summarized the agenda packet materials for this item. He said he is continuing to seek historical well data and is using a 1992 MPWMD report which has some old well data in it. He pointed out that this pertains to the Aromas sands aquifer, not the Santa Margarita or the Paso Robles aquifers. The Sand City desalination wells also show higher constituent levels than other wells along the coast. Ms. King suggested taking quarterly laboratory and monthly field samples to see if there is seasonal variation. Mr. Lear said the water chemistry resembles diluted seawater, but it may be water that has been there for a long time and just now coming out of the well.

Mr. Simonitch asked why the TAC would be discussing this particular well, since it is not covered by the Adjudication Decision. Mr. Lear said it was his understanding that it is because it is listed in the Monitoring and Management Program. After brief discussion Mr. Jaques said he would research this and report back his findings at the next TAC meeting.

Ms. King said it is important to monitor this well since the Aromas sands aquifer is a source of recharge to the underlying aquifers.

Note: At the request of Mr. Evans, item 7 of the Agenda was taken up next (out of order).

4. Consider Recommendation for Modifications to the Monitoring and Management Plan Operations Budget

Mr. Jaques summarized the agenda packet materials for this item. Mr. Lear confirmed that no further work for Task I.3.d is being recommended at this time. Mr. Jaques described the three other highlighted items in the agenda packet.

Mr. Lear suggested retaining Task I.3.a.2 because it might be useful to help support the request to the Court. Ms. King said the protective water level analysis uses a different approach than the approach that will be used to perform the other modeling to support the request to the Court.

Mr. Sabolsice made a motion, seconded by Mr. Riedl, to recommend to the Board via the Budget and Finance Committee that Tasks I.3.d, I.3.a.3, and I.3.c be deferred from this year's Budget in order to free up funds to be able to carry out the modeling to support to request to the Court, and that the modeling previously recommended by the TAC to support the request be performed. The motion passed unanimously.

5. Presentation on the Salt and Nutrient Management Plan for the Seaside Groundwater Basin

Ms. King summarized the agenda packet materials for this item. As recycled water is used more and more, there is an increased potential for salt and nutrients to enter the groundwater. She reported that Mr. Lear is the project manager at MPWMD for this work.

Ms. King said that under Task 1 she was interested in learning if there were any other stakeholders which TAC members felt should be included.

For Task 2 she said that most of the basin characterization information will be obtained from previous reports completed for the Seaside Watermaster.

She said that under Task 3 fertilizers, recycled water, imported water, and injected water will be evaluated as potential sources of salt and/or nutrients entering the groundwater basin.

She said that under Task 4 historical loading data as well as projected future loadings will be evaluated.

She said that under Tasks 5 and 6 the findings of Tasks 1 through 4 will be evaluated and reported on.

Ms. King said she was just initiating work on the Plan at this time. Mr. Sabolsice asked who the lead agency for this work is, and she replied that MPWMD, which received an Integrated Regional Water Management Plan planning grant, was the lead. The RWQCB has to approve the scope of the Plan, and will monitor its progress, and MPWMD will manage the grant.

Mr. Lear reported that preparing such a Plan is required by a Senate bill, and that if a Plan is not completed and accepted by the RWQCB by a certain deadline, State funding for recycled water projects cannot be obtained. Much of the monitoring work already being done will be useful in preparing the

Plan. Buy-in by stakeholders is important. Suggested additional possible stakeholders that were raised by the TAC included:

- Monterey County Department of Environmental Health
- California State University at Monterey Bay
- California Department of Public Health
- Monterey Peninsula unified School District
- U.S. Bureau of Land Management
- City of Del Rey Oaks
- Monterey County Parks Department (for the Laguna Seca area)

Mr. Sabolsice pointed out that Pasadera is one golf course within the Basin that is currently using recycled water.

Ms. King said that she will have questions to ask of the stakeholders in future months as she gathers data to prepare the Plan.

6. Report on Investigation into Potential for Aquifer Cross-Contamination in the Coastal Wells

Mr. Lear summarized the agenda packet materials for this item with the assistance of a PowerPoint presentation (the slides from which are attached at the end of these Minutes). There was extensive review involving records for 279 Wells. Well construction material was identified, with steel being recognized as the most prone to deterioration. The screened aquifers were identified for as many as possible, based on available records. 155 Wells were in the "unknown status" category. 83 were reportedly destroyed according to the Monterey County Department of Environmental Health. 68 of these were field-verified as having been properly destroyed.

Based on the findings from this work, Mr. Lear does not recommend that any further work be done on this matter, unless seawater intrusion or some other form of contamination is detected, at which time the identified wells that are screened in more than one aquifer should be further examined.

The wells that are screened in all 3 aquifers are well inland from the coastline. Mr. Lear said that he is still completing preparation of his Report on this work, and anticipates completing it in July or August of this year. Mr. Jaques said he would provide the Report to the TAC at that time to see if there are further questions or any issues of concern to the TAC.

7. Discussion of Lake El Estero Stormwater as a Potential Water Source for MPWMD Proposed Desalination Plant on Former Monterey Wastewater Treatment Plant Site

Mr. Green stated that 10 years ago the City of Monterey staff looked into possible storm water harvesting projects. Some that were identified were to capture stormwater in an open detention pond at the Old Capitol Site, and dredging Lake El Estero to increase its storage capacity.

Mr. Green said that storm water captured and stored underground in sections of large pipe could be sent to a desalination plant for treatment. The Laguna Grande (approximately 8, 500 acres) would provide the greatest opportunity to do this. Laguna Grande could also be dredged to increase its storage capacity, and that water could then be treated as necessary to augment CAW supplies. Mr. Green went to on say that MPWMD (Joe Oliver) did a study evaluating the quantities of storm water that could conceivably be captured for reuse.

There was discussion on various topics including:

- Plans for CAW for implementing its Regional Water Supply Project
- Basin replenishment
- Each city having its own individual desalination plant.

Mr. Sabolsice said that the City of Monterey could pursue a grant for storm water reuse and/or a desalination plant to augment its water supply, if it so desired. [Note: At 3:12 p.m. Mr. Sabolsice had to depart the meeting and at this time Mr. Riedl took over as Chair.] There was no further action recommended on this topic at this time.

8. Continued Discussion in Regard to Submitting an Application for a Grant Under the Local Groundwater Assistance Grant Program

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

Mr. Riedl asked if a study with regard to improving groundwater management could be a potential project for which to apply. Mr. Lear responded that this would probably not be a good proposal, as the State is looking for projects that are more well-defined and which specifically provide benefit to a basin.

There was brief discussion on modeling and data loggers.

After this discussion there was consensus not to recommend pursuing any projects for a Local Groundwater Assistance grant application.

9. Schedule

Mr. Jaques summarized the agenda packet materials for this item. There was brief discussion of a few of the items in the Schedule.

10. Other Business

There were questions and answers from/to Mr. Riedl about the updated Watermaster database. There was also discussion about the Groundwater Replenishment Project's dilution water requirements.

11. Set Next Meeting Date

The next meeting date was set for Wednesday June 13, 2012 at 1:30 p.m. at the MRWPCA Board Room

The meeting was adjourned at 3:31 p.m.

**SEASIDE BASIN WATER MASTER
TECHNICAL ADVISORY COMMITTEE**

***** AGENDA TRANSMITTAL FORM *****

MEETING DATE:	August 8, 2012
AGENDA ITEM:	2.B
AGENDA TITLE:	Response to Question Regarding Reporting on Sand City Public Works Well
PREPARED BY:	Robert Jaques, Technical Program Manager
SUMMARY:	<p>During discussion of the results of resampling the City of Sand City's Public Works Well at the May 9, 2012 TAC meeting, Mr. Simonitch asked why the TAC would be discussing this particular well, since it is not covered by the Adjudication Decision. I reported that I would research this and report back on my findings at the next TAC meeting.</p> <p>Review of the Court Adjudication Decision found that:</p> <ol style="list-style-type: none">1. The City of Sand City is listed on page 3 of the Decision as a Defendant in the Adjudication, and that it produces groundwater from the Seaside Basin.2. Sand City's production well is listed on page 19 of the Decision as an Alternative Producer well. <p>Therefore, monitoring and reporting on this well is required by the Decision.</p>
ATTACHMENTS:	None
RECOMMENDED ACTION:	No action required – information only

**SEASIDE BASIN WATER MASTER
TECHNICAL ADVISORY COMMITTEE**

***** AGENDA TRANSMITTAL FORM *****

MEETING DATE:	August 8, 2012
AGENDA ITEM:	3
AGENDA TITLE:	Report on Investigation into Potential for Aquifer Cross-Contamination in the Coastal Wells
PREPARED BY:	Robert Jaques, Technical Program Manager
<p>SUMMARY: The Monterey Peninsula Water Management District was requested by the Watermaster to evaluate Seaside Groundwater Basin wells for contamination potential between two primary aquifers: the confined Santa Margarita aquifer and the unconfined Paso Robles aquifer. This analysis compiled well log data from multiple sources into a single database, thus facilitating the ability to identify wells that may pose a contamination risks based on screened intervals, age, construction material, and current status (i.e., abandoned). The Seaside Groundwater Basin is subdivided into four distinct subareas: Northern Coastal, Southern Coastal, Northern Inland, and Laguna Seca (Southern Inland).</p> <p>At the TAC's May 9, 2012 meeting Jon Lear of MPWMD provided a progress report on his work to investigate coastal wells for potential cross-aquifer contamination. He reported that he had extensively reviewed records for 279 Wells. Well construction material was identified, with steel being recognized as the most prone to deterioration. The screened aquifers were identified for as many as possible, based on available records. 155 Wells were in the "unknown status" category. 83 were reportedly destroyed according to the Monterey County Department of Environmental Health. 68 of these were field-verified as having been properly destroyed. He noted that the wells that are screened in all three aquifers are well inland from the coastline.</p> <p>Based on the findings from this work, Mr. Lear said he would not be recommending that any further work be done on this matter, unless seawater intrusion or some other form of contamination is detected, at which time the identified wells that are screened in more than one aquifer should be further examined.</p> <p>Although the scope of MPWMD's work assignment (RFS No. 2011-01) pertained only to analysis of wells within the Coastal subareas, efficiency in the data work-flow allowed inclusion of Inland subareas at no additional cost to the Watermaster. A Technical Memorandum was prepared summarizing the procedures employed in the analysis; well statistics including the number and type of wells in the Seaside Basin; assessment of wells regarding potential for surface and/or cross-aquifer contamination; and recommendations regarding potential additional evaluation of specified wells to further enhance this assessment. The Technical Memorandum will be emailed to TAC members for their review.</p> <p>Mr. Lear will make a presentation on this work at today's meeting.</p>	
ATTACHMENTS:	MPWMD's scope of work for this assignment
RECOMMENDED ACTION:	Approve the Technical Memorandum on the investigation of the potential for cross-aquifer contamination in Seaside Basin coastal wells

Scope of Work for Investigation of Coastal Wells for Potential Cross-Aquifer Contamination

Under Task I.3.d of MPWMD's RFS No. 2011-01 they are to perform the following initial work to further evaluate coastal wells for their potential risk of causing cross-aquifer contamination:

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 PROFESSIONAL will 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 PROFESSIONAL will review well logs 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 PROFESSIONAL will add these additional wells 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 will provide additional information about current, depth-specific water quality conditions. Under this Task PROFESSIONAL will 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. **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.

Pertinent information from the above tasks will be prepared in summary tables and figures, along with a brief report.

Task I.3.d in MPWMD's RFS No. 2012-01 states that if the work started in 2011 under RFS No. 2011-01 for this Task identifies further work which WATERMASTER wishes to perform under this Task in 2012, WATERMASTER will issue a separate RFS to PROFESSIONAL to perform that work. No work on this Task is authorized under this RFS No. 2012-01.

Monterey Peninsula
Water
Management
District

Seaside Groundwater Basin Cross- Aquifer contamination Evaluation

Progress Report
May 2012

Tasks

- Create dataset of wells,
- Identify new wells and track source of data,
- Create lithology and well construction database,
- Prepare digital elevation model of basin and wells, and
- Evaluate dataset for potential cross-aquifer contamination.

Mechanisms for cross-aquifer contamination

- Cross-screened wells (i.e., wells screened in both the Paso Robles and Santa Margarita/Purisima),
- Poorly-constructed wells (i.e., inadequate seal placement between aquifer zones),
- Cracking of well casing due to age and/or deterioration of construction materials, and
- Abandoned or improperly destroyed wells.

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**Monterey Peninsula Water
Management District**



Legend

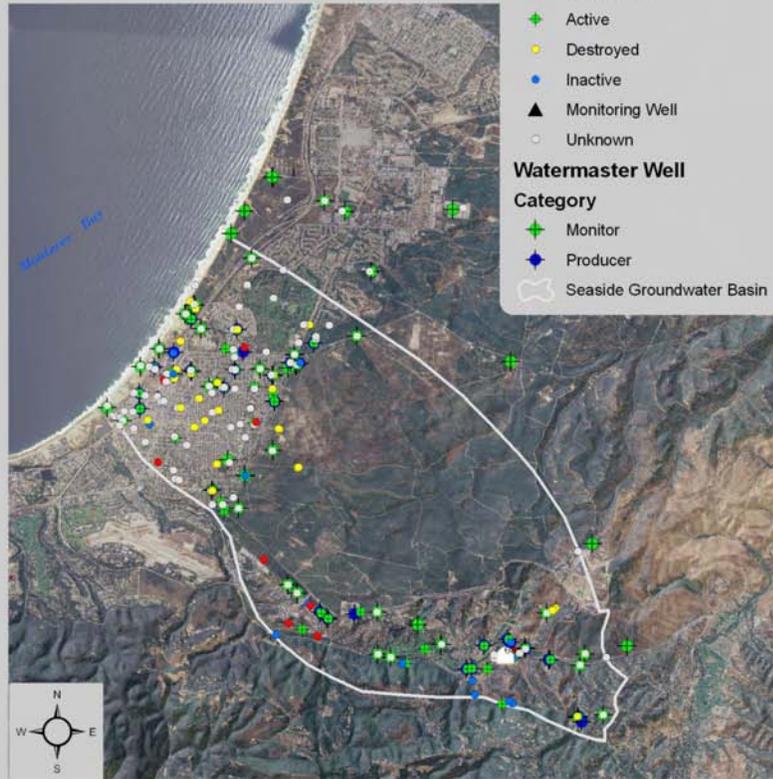
Well Investigation

- Abandoned
- ✦ Active
- Destroyed
- Inactive
- ▲ Monitoring Well
- Unknown

Watermaster Well

Category

- ✦ Monitor
- ◆ Producer
- Seaside Groundwater Basin



Monterey Peninsula
Water
Management
District

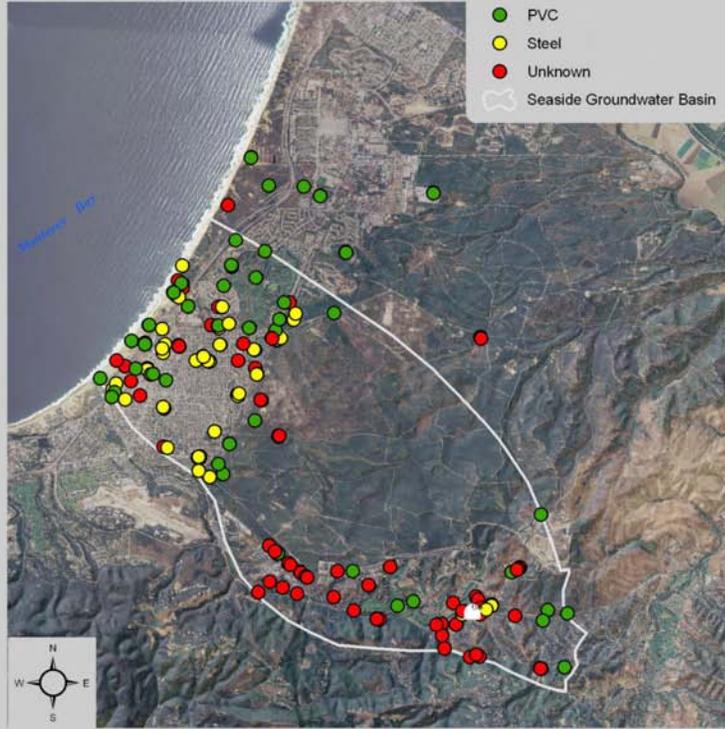
Monterey Peninsula Water
Management District



Legend

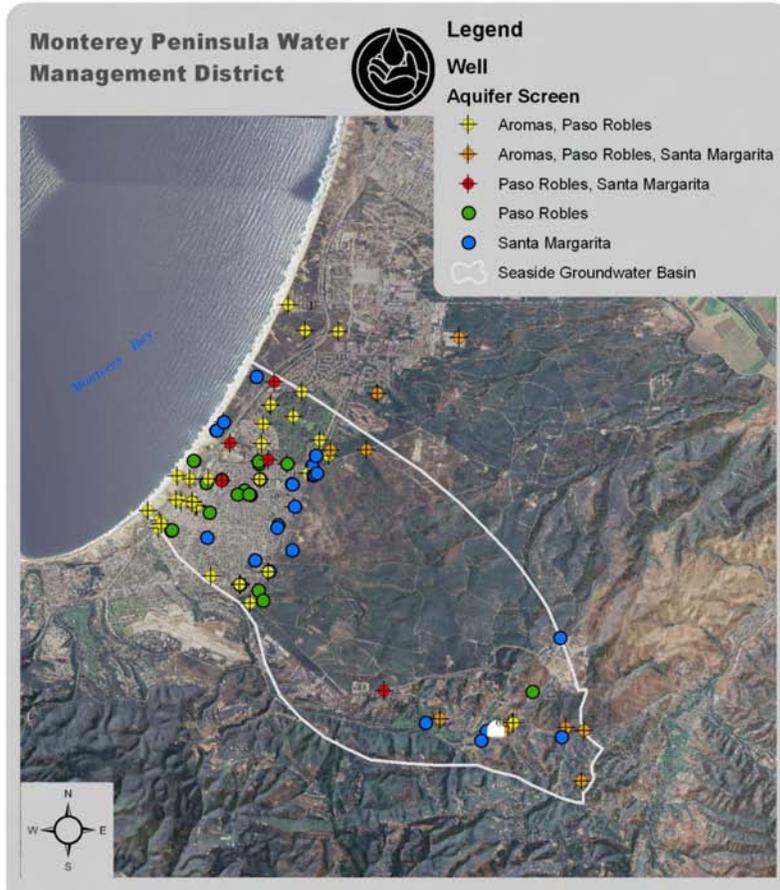
Well Investigation
CASING_MAT

- PVC
- Steel
- Unknown
- Seaside Groundwater Basin



Seaside Groundwater Basin Watermaster
Well Network. Seaside, CA

Monterey Peninsula
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Monterey Peninsula
Water
Management
District



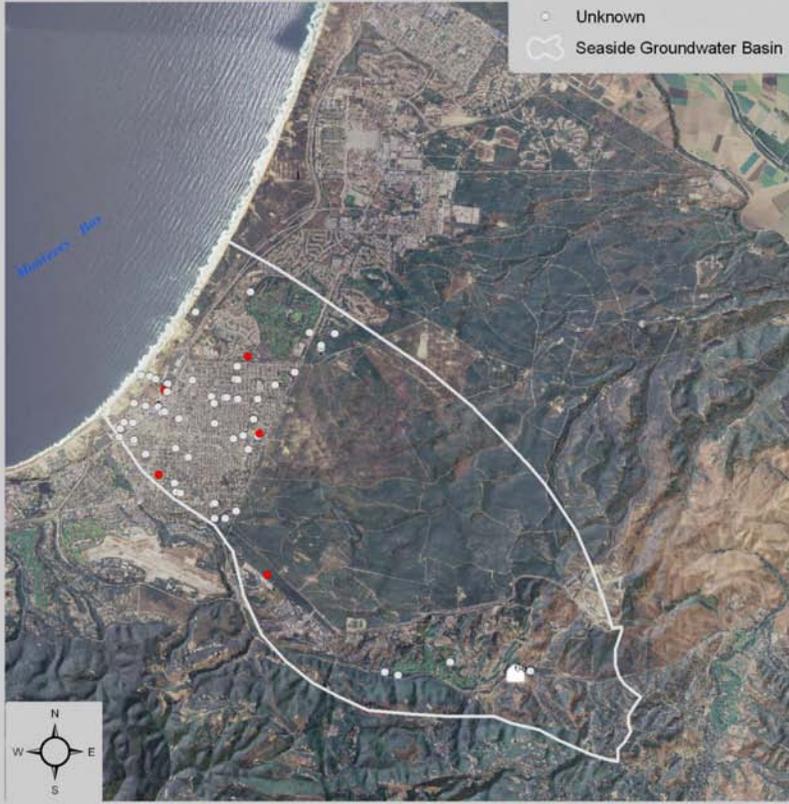
Monterey Peninsula Water
Management District



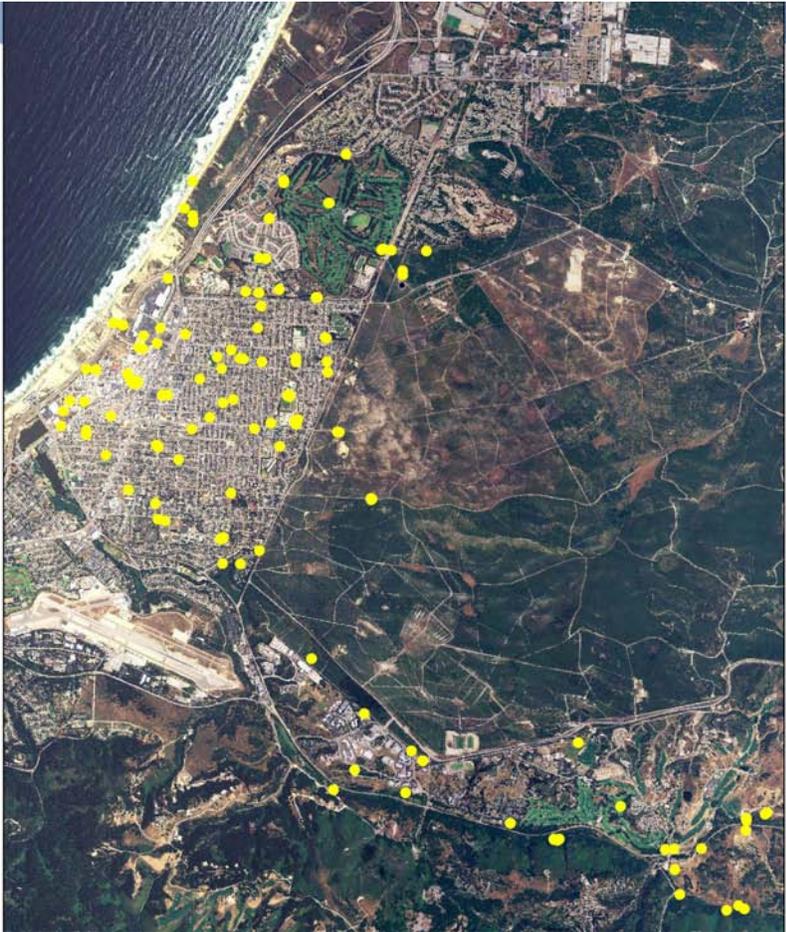
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Well Investigation

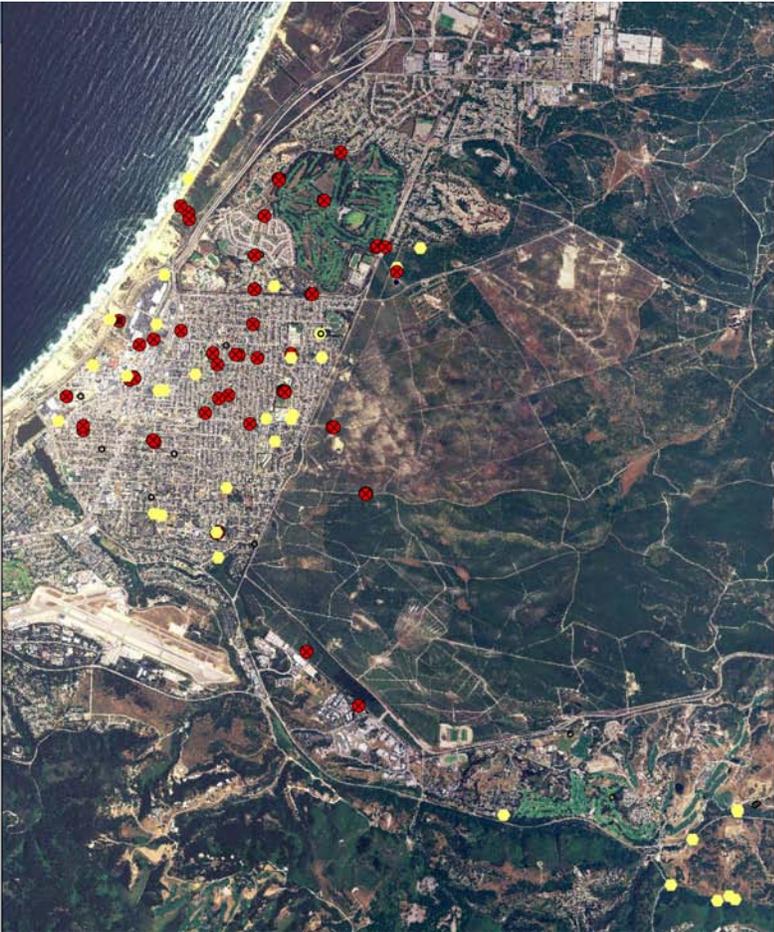
- Abandoned
- Unknown
- Seaside Groundwater Basin



Monterey Peninsula
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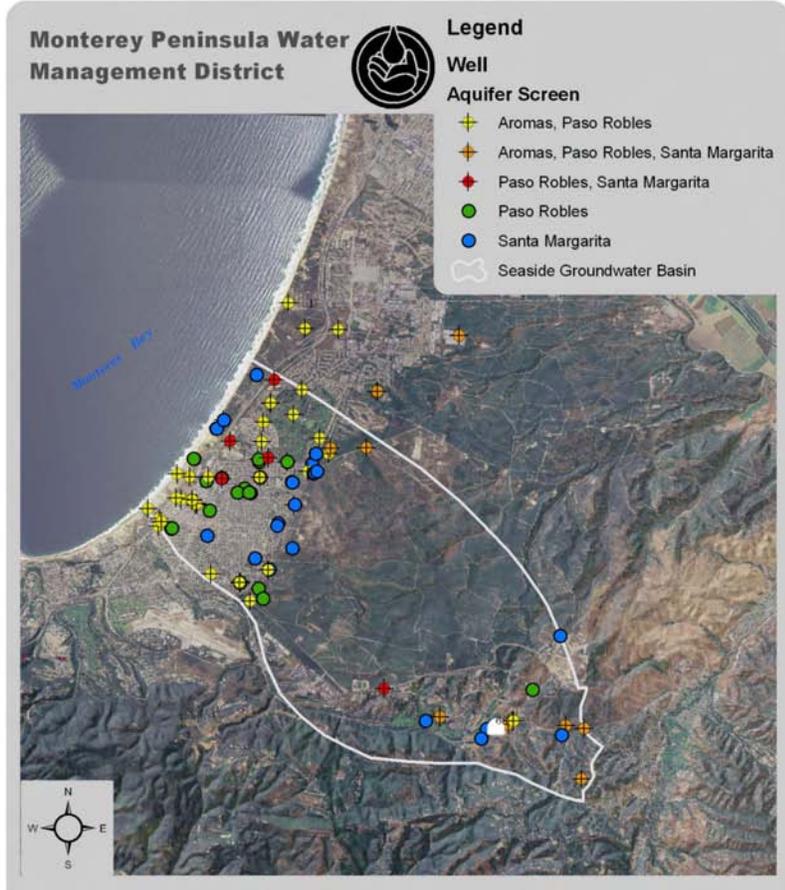
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Discussion

- Field verify older steel wells
- Verify seals installed correctly in multi completed wells and deep wells
- Add wells to Watermaster Database
- Refine stratigraphy and interface between Santa Margarita Sandstone and Purisima Formation
- Video log older deep wells

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**SEASIDE BASIN WATER MASTER
TECHNICAL ADVISORY COMMITTEE**

***** AGENDA TRANSMITTAL FORM *****

MEETING DATE:	August 8, 2012
AGENDA ITEM:	4
AGENDA TITLE:	Initial Discussion Regarding Scope of Work for Monitoring and Management Plan (M&MP) for FY 2013
PREPARED BY:	Robert Jaques
<p>The Schedule calls for the TAC to approve an FY 2013 Work Plan and Budget for the 2013 Management and Monitoring Program (M&MP) at its September 2012 meeting. This will then go on to the Board for approval at its October 2012 meeting.</p> <p>In order to obtain TAC input and direction regarding these items, I have reviewed the FY 2012 M&MP and have edited it to reflect those work items that I anticipate being performed in FY 2013. A copy of this Proposed Work Plan is attached.</p> <p>Items highlighted in yellow are those that I will evaluate and update as necessary, based on the TAC's input at today's meeting and discussions with our consultants.</p> <p>Items highlighted in red are questions for the TAC to consider in determining whether, and to what extent, certain tasks from prior years need to be continued.</p> <p>In the discussion at the last TAC meeting regarding the samples taken from the City of Sand City Public Works Well, Mr. Oliver has suggested that it would be good if the Watermaster conducted a more in-depth analysis of the water quality in this well, including: (a) additional discussion on hydrogeologic understanding, (b) historical and current water use potentially affecting water quality results, and (c) recommendations. He went on to suggest that the results of this analysis could either be presented in a Technical Memorandum, or could be covered in a special separate section of the 2012 SIAR. TAC direction on whether, and how, to incorporate this work into the FY 2013 M&MP is requested.</p>	
ATTACHMENTS:	Proposed Seaside Groundwater Basin Management and Monitoring Program - FY 2013 Work Plan
RECOMMENDED ACTION:	Approve Proposed Scope of Work or Recommend Edits to It

Seaside Groundwater Basin Management and Monitoring Program

FY 2013 Work Plan

The tasks outlined below are those that are anticipated to be performed during 2013. Some Tasks listed below are specific to 2013, 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 at Meetings
(\$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. e.
Peer Review of Documents and Reports
(\$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
(\$12,300)

The database will be maintained by a Consultant (MPWMD) performing this work for the Watermaster. MPWMD will enter new data into the consolidated database, including water production volumes, water quality and water level data, and such other data as may be appropriate. Another Consultant will periodically post database information to the Watermaster's website, so it will be accessible to the public and other interested parties. No enhancements to the database are anticipated during 2013.

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 2013.

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 2013.

I. 2. b. 2.
Collect Monthly Manual Water Levels.
(\$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.
(\$55,520)

Water quality data will be collected quarterly from certain of the monitoring wells. In 2012 water quality analyses were expanded to include barium and iodide ions, to determine the potential benefit of performing these additional analyses. These two parameters have been useful in analyzing seawater intrusion potential in other vulnerable coastal groundwater basins, and are briefly mentioned in the Watermaster's annual Seawater Intrusion Analysis Reports. These parameters were added to the annual water quality sampling list for the four Watermaster Sentinel wells (SBWM-1, SBWM-2, SBWM-3, and SBWM-4), and also for the 3 most coastal MPWMD monitoring wells (MSC, PCA, and FO-09). **A determination as to whether or not to continue monitoring these additional parameters in subsequent years will be made at the end of Water Year 2012. [WHAT IF ANYTHING HAS BEEN CONCLUDED ABOUT THIS???**

Water quality 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 \$3,500 to continue retrofitting 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, but only a portion of the wells that are sampled annually have been retrofitted. The dedicated devices sit in the water column and may periodically need to be replaced or repaired. The \$3,500 amount includes costs to perform ongoing maintenance and/or replacement of the sample pumping equipment. [ARE MORE RETROFITS NEEDED, OR IS THIS WORK NOW COMPLETE???

<p>I. 2. b. 4. Update Program Schedule and Standard Operating Procedures. (\$0)</p>	<p>All recommendations from prior reviews of the data collection program have been implemented. No additional work of this type is anticipated in 2013.</p>
<p>I. 2. b. 5. Monitor Well Construction (\$0)</p>	<p>An additional monitoring well was installed in 2009. No further work of this type is anticipated in 2013.</p>
<p>I. 2. b.6 Reports (\$6,900)</p>	<p>The groundwater level and quality monitoring will be conducted on a monthly, quarterly, and annual basis, as described in the 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:</p> <ul style="list-style-type: none"> • Water Quality and Water Level Quarterly Reports. Q1 and Q2 data will be consolidated into one report which will be provided shortly after the end of Q2. Q3 and Q4 data will be included in the Annual Report. • An Annual Water Quality and Water Level Report
<p><i>I. 3 Basin Management</i></p>	
<p>I. 3. a. Enhanced Seaside Basin Groundwater Model (Costs listed in subtasks below)</p>	<p>The Watermaster and its consultants use a Groundwater Model for basin management purposes.</p>
<p>I.3.a.1 Update the Existing Model (\$0)</p>	<p>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). No further work of this type is anticipated in 2013.</p>
<p>I. 3. a. 2 Develop Protective Water Levels (\$25,000)</p>	<p>A series of cross-sectional models was created in 2009 in order to develop protective water levels for selected production wells, as well as for the Basin as a whole. This work is discussed in Hydrometrics' "Seaside Groundwater Basin Protective Water Elevations Technical Memorandum." In subsequent years further work 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 those years, so this Task has been rescheduled to occur in 2013.</p>
<p>I. 3. a. 3 Evaluate Replenishment Scenarios and Develop Answers to Basin Management Questions (\$25,000)</p>	<p>In 2009 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 is described in HydroMetrics' "Seaside Groundwater Basin Groundwater Model Report." In 2010 HydroMetrics used the updated Model to develop answers to some questions associated with Basin management. In 2013 if requested by the Watermaster additional work may be performed to answer additional questions.</p>

**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 2013 is discussed under Task I. 3. c.

**I. 3. c.
Refine and/or Update the
Basin Management Action
Plan (\$25,000)**

During 2013 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 has been scheduled and budgeted in several of the preceding years, but not all of the information needed to update the BMAP was available at those times. Therefore, the updating has been rescheduled to occur in 2013. 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
(\$0)**

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. An evaluation of this was completed in 2012 and is described in MPWMD’s report titled “XXX” dated XXX. This report does not recommend performing any further work on this matter. The report is included in the Watermaster’s 2012 Annual Report.

***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
(\$5,750)**

A Consultant will provide general oversight over the Seawater Intrusion detection program. **[WHAT IS THE PURPOSE OF THIS TASK, WHO PERFORMS IT, AND IS IT STILL NECESSARY???**

**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
(\$25,750)**

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)	<p>The Watermaster's Consultant (HydroMetrics) completed preparation of the long-term Seawater Intrusion Response Plans (SIRP) in February 2009. The Sections that are included in the SIRP are:</p> <ul style="list-style-type: none"> 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 <p>No further work on the SIRP is anticipated in 2013.</p>
I. 4. e. Refine and/or Update the Seawater Intrusion Response Plan (\$0)	<p>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 2013.</p>
I. 4. f. If Seawater Intrusion is Determined to be Occurring, Implement Contingency Response Plan (\$0)	<p>The SIRP will be implemented if seawater intrusion, as defined in the Plan, is determined by the Watermaster to be occurring.</p>

**SEASIDE BASIN WATER MASTER
TECHNICAL ADVISORY COMMITTEE**

***** AGENDA TRANSMITTAL FORM *****

MEETING DATE:	August 8, 2012
AGENDA ITEM:	5
AGENDA TITLE:	Review Request for Watermaster's Approval of Installation of Wells to Serve Proposed New Housing Development Along Highway 68
PREPARED BY:	Robert Jaques, Technical Program Manager

In late May 2012 the Watermaster received the correspondence in Attachment 1 from a law firm representing the Wang family's proposed subdivision located in the Hidden Hills area of Monterey County. On June 7, 2012 representatives of the Watermaster and MPWMD met to review and discuss these documents. Attachment 2 contains the principle findings and conclusions from that meeting.

It appears that the wells discussed in the Wang documents are just outside of the Seaside Basin boundary as shown on the map attached to the Decision. However, subsequent to the Decision being entered more has been learned about the hydrogeologic boundaries of the Basin. As noted in Attachment 2, the southern Basin boundary in the vicinity of the Wang subdivision is not clearly defined in part because of the complexity of the Chupines fault. Further, the main well for the proposed subdivision is considered to be drawing from the Santa Margarita aquifer, even though it is slightly outside of the Basin boundary as shown on the map in the Decision.

There appear to be two choices the Watermaster could take in determining what its response to the Wang attorney's request will be:

1. Simply compare the locations of the Wang subdivision wells with the map used by the Decision to establish the Seaside Basin boundaries, and determine whether or not they are outside of the Basin boundary. If they are outside of the boundary, conclude that they are not subject to the Watermaster's jurisdiction.

or

2. Determine whether or not the main well for the Wang subdivision draws from one of the principle aquifers of the Seaside Basin (the Santa Margarita). If it does, conclude that it is hydraulically connected to the Basin, and therefore that production from that well will impact the Basin and should therefore be under the purview of the Watermaster in its Decision-assigned role of managing the Basin.

Taking the first choice would be consistent with the "letter" of the Decision which limits the authority of the Watermaster to those the lands (and wells) which are within the Decision-defined boundaries of the Basin. Based on current hydrogeologic knowledge of the Basin, taking the second choice would be consistent with the "spirit" of the Decision which mandates the Watermaster to manage the groundwater resources of the Basin.

Taking the second choice could lead to drawing a new boundary map of the Basin, based on current hydrogeologic knowledge. A new boundary might impact property owners that were not part of the

**SEASIDE BASIN WATER MASTER
TECHNICAL ADVISORY COMMITTEE**

***** AGENDA TRANSMITTAL FORM *****

AGENDA ITEM:	5 (Cont'd)
<p>original adjudication process. This could lead to further court action to enable those property owners to participate in the process of redefining the Basin boundaries. It might also result in a change in the allocations of production rights within the Basin, if more wells are determined to be drawing from the Basin.</p> <p>The TAC is requested to review these materials and provide its technical recommendations to the Board regarding the request that the Watermaster provide a letter stating it has no objections to the proposed Wang subdivision.</p>	
ATTACHMENTS:	<ol style="list-style-type: none"> 1. Correspondence from the Wang Subdivision's attorney. 2. Findings and Conclusions from the Meeting Held June 7, 2012
RECOMMENDED ACTION:	Prepare technical recommendations to the Board for their consideration in responding to the Wang family's request

Attachment 1



Pillsbury Winthrop Shaw Pittman LLP
50 Fremont Street | San Francisco, CA 94105-2228 | tel 415.983.1000 | fax 415.983.1200
MAILING ADDRESS: P. O. Box 7880 | San Francisco, CA 94120-7880

Scott A. Sommer
tel 415.983.1813
scott.sommer@pillsburylaw.com

May 16, 2012

Via Electronic Transmission and Overnight Delivery

Seaside Groundwater Basin Watermaster
2600 Garden Road, Suite 228
Monterey, CA 93940

Attn: Dewey Evans, Secretary

Re: Proposed Vesting Tentative Map Wang Subdivision (Monterey County
APN Nos. 416-141-003, 416-151-003, and 416-151-004); Hidden Hills
Lots 11, 13, and 20

Ladies and Gentlemen:

This office represents Peter C. and Grace L. Wang (the "Wangs"). The Wangs are the owners of the above-referenced property, which is the subject of a pending tentative map application before the County of Monterey.

Earlier this year I spoke with Dewey Evans concerning this project and provided some preliminary information concerning the project and the apparent lack of potential impact upon the Seaside Groundwater Basin and Laguna Seca Subbasin in particular. Since that time, the Wangs have had hydrogeologic work and analysis performed on the project by Daniel B. Stephens and Associates Inc. and David W. Abbott, Senior Hydrogeologist. I enclose a copy of Mr. Abbott's report dated May 14, 2012 (the "Report") for your review. It is the purpose of this correspondence to request that the Seaside Basin Watermaster provide us with a response as to whether it has any objections to the project and whether it believes it has any jurisdiction concerning the project.

THE PROPERTY

The property is currently configured in three 40-acre parcels, proposed for subdivision into a 29-unit project described on a draft tentative map originally prepared by WWD Corporation dated September 20, 2002, revised March 9, 2007.

California American Water Company has issued a “will serve” letter for lots 11, 13 and 20. The balance of the long-term water supply for the other 26 proposed residential parcels will be supplied from the well system based primarily upon wells 02-071 and 07-11024, with backup proposed from well 03-01132. The bulk of the property lies within the Salinas Valley Basin and the proposed aquifer from which these wells would draw is in the Salinas Valley Basin.

I have reviewed the legal description for the Seaside Groundwater Basin described in the Decision filed March 27, 2006, page 2:12-20, and Exhibit B, and Amended Decision, in *California American Water v. City of Seaside, et al.*, Monterey County Superior Court No. M66343. As generally described in the Decision, the southerly boundary of the Seaside Basin follows Highway 68 and the same is true of the Laguna Seca Subbasin. The primary land area involved in the project lies southerly of this boundary and the subject wells proposed for long-term water supply, in particular, are a significant distance to the south of Highway 68 and the Chupines fault. See, e.g., Report, page 1, and Figure 1.

Based on the description of the Seaside Basin and Laguna Seca Subbasin described in the Decision, there does not appear to be any jurisdiction over this property under the Seaside Basin Decision or the authority assigned to the Seaside Basin Watermaster.

THE PROPOSED WELL SYSTEM

As described in the Report, the primary production wells are Nos. 02-071 and 07-11024, with backup from well 03-01132. Mr. Abbott undertook an analysis of the wells, pumping data, and well-drilling logs, past and current measurements of water elevations in the wells, data from the Laguna Seca Subbasin, the relevant geologic formations including the Monterey formation and Santa Margarita sandstone, and noted significant differences in water elevation and other features, that led to the conclusion that wells 02-071, 07-11024, and 03-01132 are not located in the Laguna Seca Subbasin and that the proposed pumping from these wells to serve the project would not have an effect on the Laguna Seca Subbasin.

I would call your attention to finding C 3 of the Decision, page 10:8-18, that a production of groundwater of “less than five (5) acre feet per year is not likely to significantly contribute to a Material Injury” and that the Decision does not “govern the production of groundwater by any person or entity that produces a total quantity of groundwater that is less than five (5) acre feet per year”. As the Report concludes, there will be no effect upon the Laguna Seca Subbasin and the water balance analysis for the project is favorable, with groundwater recharge at least 200% larger than the planned pumping rate for the project of 25 acre feet per year, or 400% of the

projected *net* consumptive use of water of approximately 12.5 acre feet per year. The existing three lots and proposed water use would be within the excluded *de minimus* provisions of the Decision even assuming the project was located in the Laguna Seca Subbasin. The absence of any measurable impact or location in or near the Laguna Seca Subbasin, the *de minimus* production levels of the Decision support the conclusion that there cannot be potential impacts that would be within the jurisdiction of the Seaside Basin Watermaster.

REQUESTED ACTION

The purpose of this correspondence is to provide information to the Seaside Basin Watermaster. Our office and Daniel B. Stephens and Associates are available to provide further information upon request.

We hereby request that the Seaside Basin Watermaster provide us with a letter stating that it has no objection to the proposed Wang tentative map subdivision project as described in the Report and/or that the proposed project is not within the jurisdiction of the Seaside Basin Watermaster. Such a response should avoid further delay in the pending applications before the County of Monterey in which it is possible that comment from the Seaside Basin Watermaster may be solicited by the County.

Thank you for your attention to the foregoing, and we look forward to receiving your response.

Very truly yours,



Scott A. Sommer

Enclosure: Daniel B. Stephens and Associates Inc.
memorandum dated May 14, 2012



MEMORANDUM

May 14, 2012

To: Mr. Scott A. Sommer, Esq.
Pillsbury Winthrop Shaw Pittman LLP
50 Fremont Street
San Francisco, CA 94105-2228

From: David W. Abbott, PG, CHg
Senior Hydrogeologist

Re: Review of existing hydrogeologic information in the vicinity of the Wang proposed Subdivision (PLN #010422) in the Hidden Hills area of Monterey County, CA

Introduction

The Peter C. and Grace L. Wang proposed Subdivision (PLN #010422) located in the Hidden Hills area of Monterey County plans to subdivide and construct 29 houses with an estimated water use of about 25 acre feet per year (AFY) or 15.5 gallons per minute (gpm) which will be offset from the Subdivision groundwater recharge with a net use of 12.5 AFY (7.75 gpm). The area of the proposed Subdivision is about 120 acres. The primary source of water will be from Well 02-071 which is located within the Subdivision, while a secondary or back-up source (Well 07-11024) is located 30 feet from the primary well; both wells have been installed and tested for quantity and water quality. In addition, Wells 03-01132 and 02-072 are located on the property and could also serve as back-up water supplies. Wells 03-01132 and 02-072 are located about 800 and 3,400 feet west of Well 02-071, respectively. The property and wells are located between 1,700 and 3,200 feet south of Canyon Del Rey or the central portion of the Laguna Seca Subarea. The Chupines Fault delineates the southern edge of the Laguna Seca Subarea (Yates et al., 2005). Most of the proposed Subdivision is south of the Chupines Fault. Hence, the proposed Subdivision is not located in the Laguna Seca Subarea. Figure 1 shows the location of the wells, Chupines Fault, Canyon Del Rey, and the proposed Subdivision boundaries.

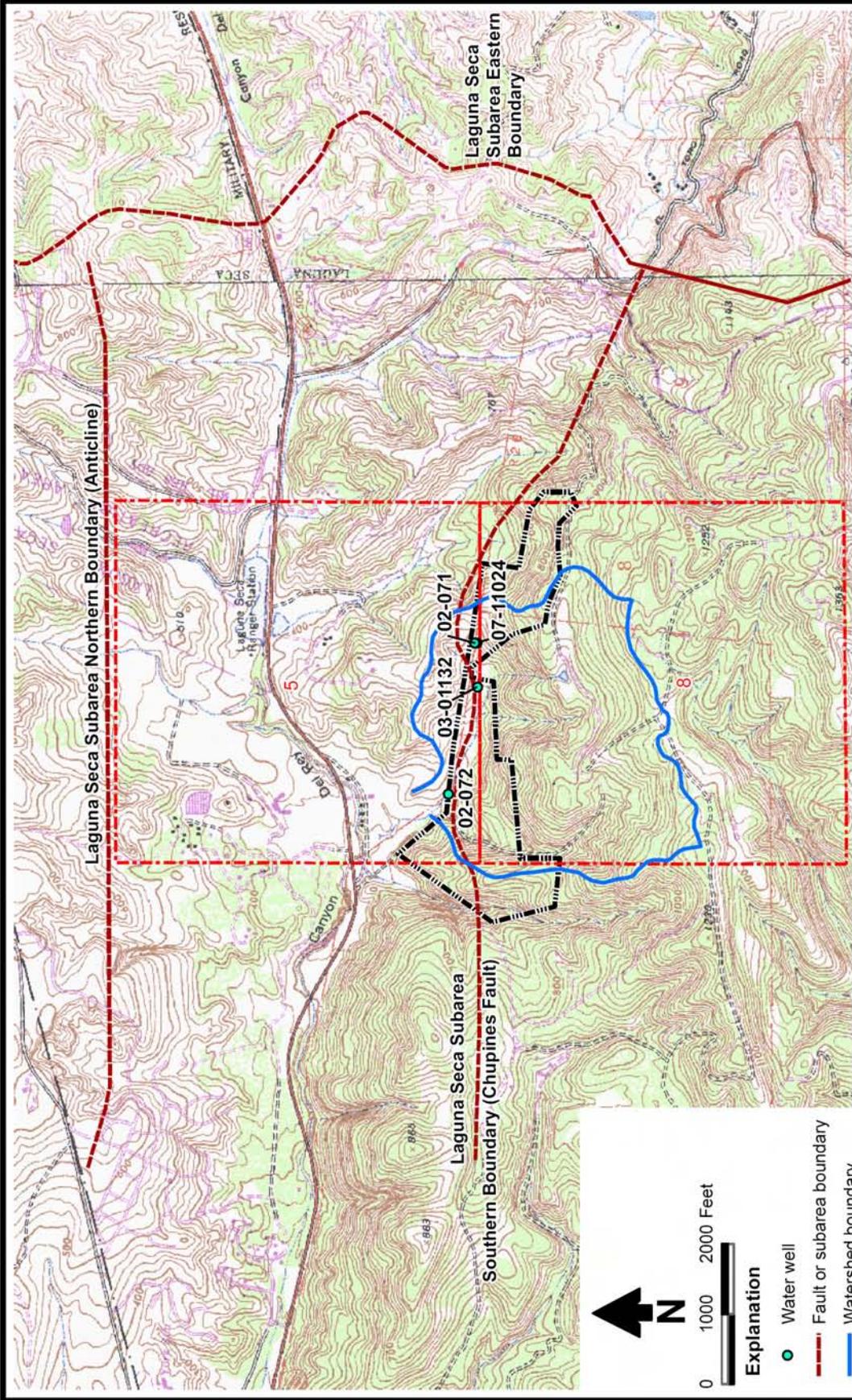
The purpose this memorandum is to summarize the hydrogeologic information that has been collected recently from various sources and review of that data. Information collected for this study is from the following:

- Previous proposals and published reports (included in reference list).
- Access to the Seaside Groundwater Basin Watermaster website which allowed download and review of key documents, water levels, and water quality data of the Laguna Seca Subarea.
- Contact with two drilling contractors (Maggiore Brothers Drilling, Inc. and Salinas Pump Company) to request copies of permits, well installation and construction details, California Department of Water Resources (CDWR) Well Completion Reports, geophysical logs, water levels, pumping tests, and water quality records.

Daniel B. Stephens & Associates, Inc.

490 Grand Avenue, Suite 110 510.444.1353
Oakland, CA 94610-5058

S:\PROJECTS\WR12.0041_WANG_PROPOSED_SUBDIVISION\GIS\MXD\FIG01_LOCATION_MAP.MXD



0 1000 2000 Feet

Explanation

- Water well
- Fault or subarea boundary
- Watershed boundary
- Section boundary
- Approximate property boundary for proposed project

Source: PES Environmental, Inc., Plate 1, January 2009
Basemap sources: Seaside and Spreckles USGS 7.5 minute quadrangle maps, Monterey County, California



Daniel B. Stephens & Associates, Inc.
 05/14/2012
 JN WR12.0041

WANG PROPOSED SUBDIVISION
Location Map of Peter and Grace Wang
Proposed Subdivision (PLN #010422)

Figure 1

One site visit was conducted by me on February 28, 2012 to become familiar with the property and well locations. In addition, on March 22, 2012, Carmel Lahaina Utility Services, Inc. from Carmel, CA visited the site and collected the following data for the four wells located on the property: global positioning satellite (GPS) coordinates, ground surface elevations, water levels, water meter readings, and casing diameters.

The focus of this investigation was to assess the potential impact on the Laguna Seca Subarea, which is downstream of this project, from one or more wells (Wells 02-071; 02-072; 03-01132; and 07-11024) located in the Subdivision. Water level data and a preliminary watershed budget analysis were used to estimate the impact of the planned pumping (25 AFY) and net consumptive use (12.5 AFY) at the Subdivision on the Laguna Seca Subarea.

The property straddles the southern part of Section 5 and northern portion of Section 8, Township 16 South, Range 2 East of the Mount Diablo base and meridian and is situated on north-facing slopes that overlook the Laguna Seca Subarea. Access to the property is from Highway 68. Ground surface elevations on the property range from 400 feet mean sea level (ft msl) near Well 02-072 to 900 ft msl. Canyon Del Rey is located along the base of these north-facing slopes and drains the catchment of the Laguna Seca Subarea. Canyon Del Rey discharges to the Pacific Ocean which is 6 miles to the northwest. Clark, et al. (1974) prepared a preliminary geologic map of the Monterey and Seaside quadrangles. However, the geologic terminology from Muir (1982) has been retained for this discussion.

Summary of Hydrogeology

The surface and subsurface geology of the Laguna Seca Subarea and the area between Canyon Del Rey and the proposed Subdivision includes Tertiary and younger consolidated to un-consolidated marine and continental formations. The Monterey Formation (shale and dolomite) is the oldest unit, underlying most of the Subdivision, and is locally known as a low-yield aquifer with poor to good water quality that can supply sufficient water (less than 30 gpm) for small water systems. The Monterey Formation underlies the Seaside Groundwater Basin and the Laguna Seca Subarea but is not used as a source of water because (1) well yields are typically small; (2) it occurs at deep depths; and (3) the water quality is generally poor. Overlying the Monterey Formation are the consolidated to friable marine-deposited Santa Margarita Sandstone (SS) and the early Quaternary continental-deposited Paso Robles Formation. Both of the units are tapped by water supply wells in the Seaside Groundwater Basin and can yield acceptable water quality and economical quantities. A relatively thin layer of recent alluvium has been deposited along the Canyon Del Rey flood plain that also can supply good quality water to wells.

The geologic formations south of the Chupines Fault have been uplifted relative to the Laguna Seca Subarea (Muir, 1982) resulting in the Monterey Formation being encountered at shallower depths and nearly complete erosion of the Paso Robles Formation. The uplifting has also disrupted the continuity and layering of the Santa Margarita SS in this area so that it is not continuous with the Santa Margarita SS beneath the Laguna Seca Subarea.

The onsite wells range in total depth from 755 to 800 feet from ground surface elevations ranging from 370 to 485 ft msl; the total depths range from -273 to -430 ft msl. Geophysical logging was conducted on each well to characterize the geologic formations that were encountered during drilling. All borings penetrated the Monterey Formation and the Santa Margarita SS; only Wells 02-072 and 03-01132 encountered the Paso Robles Formation which was unsaturated at these locations. Wells 02-071 and 07-11024 are screened opposite the Santa Margarita SS. Wells 02-072 and 03-01132 tap the Monterey Formation.

These proposed Subdivision water supply wells are located next to, near, or within the Chupines Fault zone which serves to delineate the southern boundary of the Laguna Seca Subarea (Yates et al., 2005; Clark Geological, 2009). Previously, it has been assumed that if any well was located north of the Chupines Fault then it was connected directly and hydraulically to the Laguna Seca Subarea; if the well was located south of the Chupines Fault then it was not connected to the Laguna Seca Subarea. The specific locations of the Subdivision wells does not clearly delineate the relative position with the fault because of their close proximity to the Chupines Fault zone, the complex geology (Clark Geological, 2009), and local structural disruption of the geologic units.

Summary and Analysis of Pumping Tests

Four long-term (greater than 64 hours) pumping tests have been conducted on three of the wells on the property. Two pumping tests were conducted on Well 02-071, one on Well 03-01132, and one on Well 07-11024 while using Well 02-071 as an observation well. The pumping tests were conducted by the drilling contractor. Well yields for the tests range from 35 (Well 02-071) to 140 gpm (Well 07-11024). Drawdowns in the pumping wells range from 65 to 361 feet. The specific capacities (SC) ranged from 0.25 to 1.20 gpm per foot of drawdown after 24-hours of pumping. The SC normalizes hydraulic information to a common reference and is the pumping rate in gpm divided by the drawdown in feet (drawdown should be selected at a consistent elapsed time of pumping - i.e., 24 hours).

The transmissivity (ease at which groundwater flows through the formation) ranged from 1,080 to 6,600 gallons per day per foot (gpd/ft). The estimated well efficiency ranges between 27 and 39 percent and are corroborated with rapid water level recovery responses after the pumping stopped; well efficiencies of about 70 to 80 percent are achievable with properly designed and fully developed wells. The specific yield was estimated to be 0.015 (1.5 percent) from the pumping test conducted on Well 07-11024 in August 2007 from water levels that were measured in the observation well (Well 02-071). The pumping test was conducted at 140 gpm. The observation well was 30 feet from the pumping well. The drawdown in the pumping well was about 120 feet and the drawdown in the observation well was 15 feet. Based on the modified non-equilibrium equation (Cooper-Jacob method), these parameters suggest that the direct impact from pumping the Subdivision wells is limited to a radius of between 260 to 630 feet after pumping 72 hours.

The hydraulic conductivity (permeability coefficient) is the rate of flow in gallons per day through a cross section of one square foot under a unit hydraulic gradient, at the prevailing temperature (AGI, 1984) and is the transmissivity divided by the saturated thickness of the aquifer. The hydraulic conductivity estimated

from the pumping tests ranges between 2 and 28 gallons per day per square foot (gpd/ft²) or 0.30 to 4.26 feet per day (ft/d). This range is consistent with values provided by Freeze and Cherry (1978) for low-permeable silts and sandstone.

Conservative long-term well yields can be estimated by multiplying the SC times the recommended drawdown of 50 feet in consolidated rock aquifers. The recommended long-term well yields are: 15 gpm for Well 03-01132 tapping the Monterey Formation, and 30 (Well 02-071) and 60 gpm (Well 07-11024) tapping the Santa Margarita SS. Pumping tests have not been conducted on Well 02-072. No barrier boundaries were observed during any of the pumping tests. Barrier boundaries can deepen pumping water levels, restrict the aquifer dimensions resulting in groundwater mining, and limit long-term reliable water supplies.

Water Levels

Water level measurements were collected from the four wells on March 22, 2012 by Carmel Lahaina Utility Services Inc. The table below summarizes the water level information.

Well	March 22, 2012			WL Elev. (date)
	GS Elev	DTW	WL Elev	
02-071	482	399	83	104 (Sept-2002)
07-11024	485	401	85	87 (Aug-2007)
03-01132	429	322	107	115 (Jul-2003)
02-072	370	117	253	not available

GS Elev - ground surface elevation in ft msl.

DTW - depth to water below ground surface in feet.

WL Elev - water level elevation in ft msl.

The right-most column lists the non-pumping water level elevations collected during the pumping tests and their respective dates. Wells 02-071, 07-11024, and 03-01132 have similar water elevations ranging from 83 to 107 ft msl, while Well 02-072 is over 150 feet higher in elevation. Water level declines for these wells average about 1 foot per year for the period 2002 to 2012.

Water level data for 4 wells were downloaded and analyzed from the Seaside Groundwater Basin Watermaster website. The 4 wells are Watermaster Well numbers 142 (LS 1 Subdivision); 144 (Laguna Seca Old 12); 209 (Bishop 1 [west]); and 210 (Bishop 2 [east]). Current (2011) and typical non-pumping water level elevations in the Laguna Seca Subarea range from 140 to 177 ft msl. Water level elevations in Laguna Seca have dropped from about 180 ft msl in 2003 to about 150 ft msl in 2011. The average water level decline for the Laguna Seca Subarea is about 4 feet per year. Note that Well 210 is a pumping well in which water levels reach lower elevations of less than about 125 ft msl during pumping. Regional water table maps suggest that water levels near the edges of the Subarea are between 200 and 220 ft msl (Yates et al., 2005) with localized water level declines in pumping depressions of less than 160 ft msl in the central portion of the Laguna Seca Subarea north of Canyon Del Rey that correspond to Wells 142, 144, 209, and 210.

Combined, these data suggest that only Well 02-072, located north of the Chupines Fault, could be connected to the Laguna Seca Subarea because the water level elevation is higher in the western part of the Subdivision than the Laguna Seca Subarea elevations implying that groundwater would flow from Well 02-072 to the Laguna Seca Subarea. In contrast to the flow direction observed for 02-072 (south to north), Wells 02-071, 07-11024, and 03-01132 (appearing to be located south of the Chupines Fault) indicate a groundwater flow direction from north to south or from the Laguna Seca Subarea to the proposed Subdivision. This reversal in direction (north to south) contradicts the expected groundwater flow direction (south to north) from recharge areas (upland hills) to discharge areas (valleys).

Initial and Preliminary Watershed Water Balance

All groundwater in the Laguna Seca Subarea and adjacent upland areas is derived from infiltration and percolation of rainfall on their respective upstream watersheds. It is assumed that the surface watershed divides coincide with the groundwater divides. If conveyed, additional sources of water could be from imported water either from areas outside of the Laguna Seca Subarea (i.e., State Water Project water) or intra-basin transfers (i.e., conveyance of water from the Laguna Seca Subarea to existing subdivisions uphill from the proposed Subdivision). The catchment area upstream from Well 02-072 and the Chupines Fault is about 640 acres and includes an existing subdivision uphill from the Wang proposed Subdivision (PLN #010422). The average rainfall is about 17-inches per year (isohyetal maps are located on the Seaside Basin Watermaster website; Rantz, 1969; and Saah, 1989). This amounts to an average total inflow of water from rainfall to the watershed of about 910 AFY (640 acres \times 17 inches \div 12 inches per foot). Preliminary groundwater recharge can be estimated using a simplified version of the mass balance for the catchment area or watershed (Heath and Trainer, 1968):

$$\text{Inflow} = \text{Outflow} \pm \text{Change in Storage (consistent units of AFY)}$$

The main Inflow component for this watershed is rainfall (R). The main Outflow components include evapotranspiration (ET), surface water outflow SW_{out} , and groundwater outflow (GW_{out}) which may include pumping wells. Change in Storage is assumed to be zero. The mass balance equation can be rewritten as the following:

$$R = ET + SW_{\text{out}} + GW_{\text{out}} \text{ (consistent units in AFY)}$$

Evapotranspiration or ET is that portion of precipitation returning to the air through evaporation and transpiration from plants, soils, and surface water (Poehls and Smith, 2009) and is usually a large percentage of the average annual rainfall. The site is situated in the coastal valley and plains Zone 3 of California and has a high reference ET (ET_0) of about 46 inches per year (CDWR, 1999). The ET_0 is the amount of evaporation-transpiration of a well-watered actively growing closely clipped grass that is completely shading the soil as a reference crop (CDWR, 2012). Since for this location the annual ET_0 is much larger than the annual precipitation, the ET_0 is adjusted to represent the actual ET (AET) because of temporal and seasonal changes in rainfall, geology, geographic position of the site (north-facing slopes),

topography, soil moisture storage changes, and different native and landscaped vegetation covers (Dunne and Leopold, 1978). If there is ample precipitation then AET is equal to PET. For this analysis AET was assumed to be about 85 percent of the rainfall or about 770 AFY.

There are no stream gauging stations on this small unnamed watershed that is a tributary to Canyon Del Rey. Surface water runoff that contributes to Laguna Seca Subarea has been assigned about 10 percent of the rainfall or about 90 AFY; data provided by Anderson-Nichols/West (1985) suggests a range from 10 to 19 percent of the average annual rainfall. The remaining 5 percent is assigned to groundwater recharge or about 50 AFY. The estimated 50 AFY of groundwater recharge is about 200 percent larger than the planned pumping rate of 25 AFY. In addition, the Subdivision is planning onsite waste disposal systems which would reduce the net consumptive use of water to about 12.5 AFY.

Groundwater captured (15.5 gpm or 25 AFY) by a planned small water supply system that includes Wells 02-071 and 07-11024 will be derived from a combination of natural watershed recharge (about 50 AFY) and return flows from onsite septic systems (about 12.5 AFY). The net water usage will be equivalent to pumping rates of about 7.75 gpm (12.5 AFY). The Laguna Seca Subarea will not be significantly impacted from groundwater pumped beneath the planned Subdivision.

Conclusions

The proposed Subdivision and Wells 02-071, 07-11024, and 03-01132 do not appear to be directly and hydraulically connected to the Laguna Seca Subarea based on the following:

1. Significant groundwater level elevation differences occur between the planned Subdivision (Wells 02-071, 07-11024, and 03-01132) and the Laguna Seca Subarea wells (Watermaster Well numbers 142, 144, 209, 210, and regional groundwater contour maps). Water levels on the proposed Subdivision are between 83 and 107 ft msl while water levels in the Laguna Seca Subarea exceed 150 ft msl. This suggests that groundwater flows southward from Laguna Seca Subarea to the proposed Subdivision. This direction of groundwater flow would not be expected for watershed and foot hill recharge areas that are tributary to Canyon Del Rey and the Laguna Seca Subarea. Groundwater flow would be expected to flow from south to north. The Chupines Fault is responsible for these differences in water levels. Wells 02-071, 07-11024, and 03-01132 are located south of the Chupines Fault and are not located in the Laguna Seca Subarea. In addition, Well 02-072 has a significantly higher water level elevation (253 ft msl) than Laguna Seca Subarea wells which suggests that groundwater flows from Well 02-072 to the Laguna Seca Subarea in that area. Well 02-072 is presumed to be located north of the Chupines Fault and related hydraulically to the Laguna Seca Subarea.

2. All water occurring on the proposed Subdivision is derived from rainfall. The average rainfall is about 17-inches per year. Preliminary estimates suggest that at least 50 AFY is recharged to the underlying aquifer system. The proposed Subdivision plans to have a net water usage of about 12.5 AFY.

3. The transmissivity (between 1,080 and 6,600 gpd/ft) estimated from pumping tests are relatively small. The specific yield was estimated to be about 1.5 percent from a literature review and measurements made in an observation well during the pumping test on Well 07-11024. This suggests that the direct impact from pumping the Subdivision wells is limited to a radius of between 260 to 630 feet after pumping 72 hours.

Closing

If you have any questions, please don't hesitate to call me at 510.444 .1353.

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Attachment 2

Principle Findings and Conclusions from the Meeting Held on June 7, 2012 Regarding the Wang Subdivision Request

1. The Seaside Groundwater Basin boundary map contained in the Decision is from the CH2MHill Report dated November 2004.
2. Another map prepared in 2005 with slightly different south and north Basin boundaries is found in the Yates/Feeney/Rosenberg Report dated April 2005. (Known as “The Yates Report”)
3. The Yates Report map contains the Basin boundaries used by Hydrometrics in Basin modeling scenarios. HydroMetrics may or may not have used the Yates report northern boundary, since that was found to have changed as a result of the Feeney monitoring well boring logs.
4. Water production from CAW’s Hidden Hills well is accounted for in the Watermaster’s Production Reports. It falls outside the CH2MHill 2002 mapped boundaries but is inside the Yates Report 2005 mapped boundaries. It is outside of the boundary established in the Decision.
5. The Chupines Fault is not a vertical plane as it might appear on the surface, but is a complex zone with local disruption of geologic units beneath.
6. Wells south of the Chupines Fault produce limited amounts or have gone dry.
7. The main well of the Wang proposed subdivision draws from the Santa Margarita aquifer.
8. MCWRA recommended in the past that a pump test be performed on the Wang main well to determine what effect, if any, there is on the Seaside Basin. Apparently no such test has been performed. Such a test would be intended to indicate whether the well is drawing from the same aquifer as other wells in the Seaside Basin.
9. The review by the Wang’s independent Senior Hydrologist of existing hydrogeologic information in the vicinity of the Wang proposed subdivision states *“These proposed Subdivision water supply wells are next to, near, or within the Chupines Fault zone which serves to delineate the southern boundary of the Laguna Seca Subarea.”*
10. In the Decision, the Seaside Groundwater Basin is described in Section I.A as follows: *“The boundaries of the Basin are depicted in Exhibit B of this Decision. Generally, the Seaside Basin is bounded by the Pacific Ocean on the west, the Salinas Valley on the north, the Toro Park area on the east, and Highways 68 and 218 on the south. The Seaside Basin consists of subareas, including the Coastal subarea and the Laguna Seca subarea in which geologic features form partial hydrogeologic barriers between the subareas.*
11. Section III.O.1.b. of the Decision states: *“Any non-party who is Producing or proposes to Produce Groundwater from the Seaside Basin in an amount equal to or greater than five (5) acre feet per year, may seek to become a Party to this Decision through (1) a stipulation for intervention entered into with the Watermaster or (2) any Party or the Watermaster filing a complaint against the non-party requesting that the non-party be joined in and bound by this Decision.”*

**SEASIDE BASIN WATER MASTER
TECHNICAL ADVISORY COMMITTEE**

***** AGENDA TRANSMITTAL FORM *****

MEETING DATE:	August 8, 2012
AGENDA ITEM:	6
AGENDA TITLE:	Schedule
PREPARED BY:	Robert Jaques, Technical Program Manager
SUMMARY:	<p>As a regular part of each monthly TAC meeting, I will provide the TAC with an updated Schedule of the activities being performed by the Watermaster, its consultants, and the public entity, MPWMD, which is performing certain portions of the work.</p> <p>Attached is the most recent update of the Work Schedule for FY 2012.</p>
ATTACHMENTS:	Schedule of Work Activities for FY 2012
RECOMMENDED ACTION:	Provide Input to Technical Program Manager Regarding Any Corrections or Additions to this Schedule

Seaside Basin Watermaster Monitoring and Management Program 2012 Work Schedule

ID	Task Name	2012												201									
		Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
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 19)																						
4	TAC Approves M&MP Budgets (Same as Task 20)																						
5	Board Approves M&MP Budgets (Same as Task 21)																						
6	Watermaster Prepares Quarterly Water Production, Water Level, and Water Quality Reports																						
7	Watermaster Prepares Combined Quarterly Water Production, Water Level, and Water Quality Reports for 1st & 2nd Quarters (Same as Task 41)																						
8	Watermaster Prepares Quarterly Water Production, Water Level, and Water Quality Reports for 3rd and 4th Quarters (Same as Task 42)																						
9	Watermaster Prepares Annual Water Production, Water Level, and Water Quality Report for 2012 (Same as Task 43)																						
10	Replenishment Assessment Unit Costs for Water Year 2012																						
11	B&F Committee Develops Replenishment Assessment Unit Cost for 2013 Water Year																						
12	If Requested, TAC Provides Assistance to B&F Committee in Development of 2013 Water Year Replenishment Assessment Unit Cost																						
13	Board Adopts and Declares 2013 Water Year Replenishment Assessment Unit Cost																						
14	Replenishment Assessments for Water Year 2012																						
15	Watermaster Prepares Replenishment Assessments for Water Year 2012																						
16	Watermaster Board Approves Replenishment Assessments for Water Year 2012 (At November Meeting)																						
17	Watermaster Levies Replenishment Assessment for 2012																						

Seaside Basin Watermaster Monitoring and Management Program 2012 Work Schedule

ID	Task Name	2012												2013									
		Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
18	Monitoring & Management Program (M&MP) Budgets for 2012 and 2013																						
19	Preliminary Discussion of Potential Scope of Work for 2013 M&MP												◆ 8/8										
20	Prepare Draft 2013 and 2014 M&MP O&M and Capital Budgets												■										
21	TAC approves Draft 2013 and 2014 M&MP O&M and Capital Budgets																						
22	Board approves 2013 and 2014 M&MP O&M and Capital Budgets																						
23	2012 Annual Report (Note: Schedule Reflects Court Approval of Later Submittal Date for Annual Report)																						
24	Prepare Preliminary Draft 2012 Annual Report																						
25	TAC Provides Input on Draft 2012 Annual Report																						
26	Prepare Revised Draft 2012 Annual Report (Incorporating TAC Input)																						
27	Board Provides Input on Revised Draft 2012 Annual Report (At November Board Meeting)																						
28	Prepare Final 2012 Annual Report (Incorporating Board Input)																						
29	Watermaster Submits Final 2012 Annual Report to Judge																						
30	MANAGEMENT																						
31	M.1 PROGRAM ADMINISTRATION (All Work Performed by Watermaster Staff)																						
32	Prepare Initial Consultant Contracts for 2012																						
33	TAC Approval of Initial Consultant Contracts for 2012																						
34	Board Approval of Initial Consultant Contracts for 2012 (At November Board Meeting)																						
35	IMPLEMENTATION																						
36	I.2.a DATABASE MANAGEMENT																						

ASSUME NOV. BOARD MEETING SET FOR ONE WEEK AFTER NOV. TAC ME

Seaside Basin Watermaster Monitoring and Management Program 2012 Work Schedule

ID	Task Name	2012												2011									
		Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
37	I.2.a.1 Conduct Ongoing Data Entry/Database Maintenance																						
38	I.2.b DATA COLLECTION PROGRAM																						
39	I.2.b.2 Collect Monthly Water Levels (MPWMD)																						
40	I.2.b.3 Collect Quarterly Water Quality Samples (MPWMD)																						
41	I.2.b.6 Reports (from MPWMD)																						
42	Watermaster Prepares Combined Quarterly Water Production, Water Level, and Water Quality Reports for 1st & 2nd Quarters																						
43	Watermaster Prepares Quarterly Water Production, Water Level, and Water Quality Reports for 3rd and 4th Quarters																						
44	Watermaster Prepares Annual Water Production, Water Level, and Water Quality Report for 2012																						
45	I.3.a ENHANCED SEASIDE BASIN GROUNDWATER MODEL																						
46	I.3.a.2 Develop Protective Water Levels																						
47	I.3.a.3 Evaluate Replenishment Scenarios and Develop Answers to Basin Management Questions																						
48	I.3.c Refine and/or Update the BMAP																						
49	I.3.d Evaluate Coastal Wells for Cross-Aquifer Contamination Potential																						
50	TAC Receives Initial Report from MPWMD on its Evaluations																						
51	MPWMD Makes Final Report to TAC on Well Evaluations																						
52	TAC Approves Scope of Work for MPWMD to Perform Further Evaluations of these Wells in 2012																						
53	Board Approves Well Evaluation Work to be Done in 2012																						
54	MPWMD Performs Further Evaluations of these Wells																						

Seaside Basin Watermaster Monitoring and Management Program 2012 Work Schedule

ID	Task Name	2012												2011									
		Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
55	Presentation of Well Evaluations to Board													◆ 9/5									
56	I.4.a HydroMetrics & MPWMD Provide Oversight of Seawater Intrusion Detection and Tracking																						
57	I.4.b HydroMetrics Analyzes and Maps Water Quality from Coastal Monitoring Wells																						
58	I.4.c Annual Seawater Intrusion Analysis Report (SIAR)																						
59	HydroMetrics Provides Draft SIAR to Watermaster																						
60	TAC Approves Annual Seawater Intrusion Analysis Report (SIAR)																						
61	Board Approves Annual Seawater Intrusion Analysis Report (SIAR)																						
62	I.4.d Complete Preparation of Seawater Intrusion Response Plan (SIRP)																						
63	I.4.e Refine and/or Update the SIRP																						

**SEASIDE BASIN WATER MASTER
TECHNICAL ADVISORY COMMITTEE**

***** AGENDA TRANSMITTAL FORM *****

MEETING DATE:	August 8, 2012
AGENDA ITEM:	7
AGENDA TITLE:	Other Business
PREPARED BY:	Robert Jaques, Technical Program Manager
SUMMARY:	<p>The "Other Business" agenda item is intended to provide an opportunity for TAC members or others present at the meeting to discuss items not on the agenda that may be of interest to the TAC.</p>
ATTACHMENTS:	None
RECOMMENDED ACTION:	None required – information only