# MEETING NOTICE AND AGENDA

## *TECHNICAL ADVISORY COMMITTEE OF THE SEASIDE BASIN WATER MASTER*

**DATE: Wednesday, May 14, 2014**
**MEETING TIME: 1:30 p.m.**
**NOTE CHANGE IN MEETING LOCATION:**
**Monterey Peninsula Water Management District Offices**
**5 Harris Court, Building G (Ryan Ranch)**
**Monterey, CA 93940**
**(This is located right next door to the normal meeting location at the MRWMPCA offices)**

***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: Roger Hulbert, California American Water Company**
**Vice-Chairperson: Joe Oliver, MPWMD**

**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**

## *SEASIDE BASIN WATER MASTER TECHNICAL ADVISORY COMMITTEE*

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

| | |
|---|---|
| **MEETING DATE:** | May 14, 2014 |
| **AGENDA ITEM:** | 2.A |
| **AGENDA TITLE:** | Approve Minutes from the April 9, 2014 Meeting |
| **PREPARED BY:** | Robert Jaques, Technical Program Manager |

**SUMMARY:**
Draft Minutes from this meeting were emailed to all TAC members. Any changes requested by TAC members 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**
**April 9, 2014**

**Attendees: TAC Members**

City of Seaside – No Representative
California American Water – Roger Hulbert
City of Monterey – Norm Green
Laguna Seca Property Owners – No Representative
MPWMD – Joe Oliver
MCWRA – Howard Franklin
City of Del Rey Oaks – Ron Langford (via telephone)
City of Sand City – Leon Gomez (via telephone)
Coastal Subarea Landowners – No Representative

**Watermaster**
Technical Program Manager - Robert Jaques

**Consultants**
HydroMetrics – Georgina King (via telephone)

**Others**
MPWMD - Jon Lear
MCWD – Brian True
Public – David Lifland

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The meeting was called to order at 1:34 p.m., once a quorum was present.

1. **Public Comments**
   Mr. David Lifland, a Monterey citizen, spoke expressing his concerns about the intended use of the Seaside Groundwater Basin for storage of water for potable purposes, and the fact that there is leakage from the Basin into the ocean. He asked if there was a method to take out less water than is put into the aquifer for storage. He would like to ensure that the Seaside Groundwater Basin is not shut-down. Mr. Oliver said that responses to these issues could be provided, but would perhaps best be done as an agendized item at the next TAC meeting. Mr. Lifland said that would be fine with him. Mr. Jaques will add Mr. Lifland to the email distribution list for the Watermaster TAC meetings, and will also ask Mr. Lifland via email to provide his specific questions in writing so they can be included for discussion at the May 14th TAC meeting.

2. **Administrative Matters:**

**A. Approve Minutes from the March 12, 2014 Meeting**
On a motion by Mr. Franklin, seconded by Mr. Oliver, the minutes were unanimously approved as presented.

**B. Update on California Water Plan**
Mr. Jaques summarized the agenda packet materials for this item. There was no other discussion on this topic.

**3. Continued Discussion of New Survey Information on the Wang Subdivision Wells**

Mr. Jaques summarized the agenda packet materials for this item. Mr. Franklin reported that MPWMD and MCWRA look at the proposed project's water impacts in different ways. He explained that MCWRA looks for Monterey County General Plan policy compliance with regard to water supply issues. MCWRA found there would be a sustainable water supply for the project.

Mr. Oliver said that the MPWMD was still in the process of completing its review of the January 9, 2014 updated report prepared by Daniel B. Stephens and Associates, Inc. He said there were questions with regard to the Chupines fault location and whether it is an effective groundwater barrier.

Mr. Jaques asked if Mr. Oliver felt MPWMD's comments would be available for discussion at the May TAC meeting and Mr. Oliver said that he felt that they would. Mr. Hulbert suggested including information on the January 9, 2014 updated report for TAC review. There was consensus to continue discussion of this topic at the May TAC meeting.

**4. Report on the Board's April 2, 2014 Discussion of HydroMetrics Modeling of Laguna Seca Subarea**

Mr. Jaques summarized the agenda packet materials for the item. He asked for TAC input on the two recommendations contained in the Agenda item. There was some discussion about how a new Basin boundary could be hydrogeologically determined. Mr. Oliver commented that the area to the southeast of the Laguna Seca Subarea is also called the "El Toro" basin. Mr. Franklin said it may be necessary to include the entire "Toro Planning Area" in the analysis. There was consensus to continue discussion of this matter a future TAC meeting.

**5. Seaside Basin Salt and Nutrient Management Plan**

Agenda item No. 5 was taken out of sequence prior to Agenda item No. 3 at the request of HydroMetrics. Mr. Jaques introduced the topic and then Mr. Oliver provided background information on the Salt and Nutrient Management Plan and its objectives. He noted that the Plan dovetails with the Integrated Regional Water Management Plan through which State funding is provided. The Plan is being funded through a Proposition 84 Grant. Mr. Oliver commented that the Watermaster TAC is an ideal forum for feedback on the Salt and Nutrient Management Plan.

With Mr. Oliver operating the equipment to display the PowerPoint presentation, Ms. King of HydroMetrics made a presentation on the Plan. A copy of these PowerPoint slides is attached.

Ms. King said that the Draft Plan had not yet been posted for public review. She summarized the elements of the Plan, and then went through each of the elements individually. She noted that chloride is not contoured in the mapping in the Plan due to limited available data. She noted that no data is available in approximately one-half of the Basin's aerial extent. TDS is highest in the Southern Coastal Subarea and the Laguna Seca Subarea. Fertilizers, septic tanks, and sewer line leakage are the main sources of non-naturally occurring constituents. The data indicates that there is a trend toward a net decrease in salts in the Basin. This is due in part to so much water being exported out of the Basin, and the importation of ASR water. Nitrates are increasing slightly, but they are at very low concentrations. These come mostly from septic systems, sewer line leaks, and fertilizers. Assimilative capacity is defined as the ability of the Basin to take in more constituents without degrading water quality above State Water Quality Standards. The Regional Water Quality Control Board did not establish Water Quality Objectives for this Basin, and instead uses Drinking Water Standards. Water quality in both the shallow and deep Laguna Seca Subarea aquifers is very high in TDS. The Basin cannot assimilate more TDS, but it can assimilate more chloride and more nitrates. The Pasadera wastewater treatment plant has difficulty meeting its Waste Discharge Requirements because the source water there is already so high in TDS. Due to high hardness, water softeners are often used. Self-regeneration softeners contribute TDS to wastewater flows and/or groundwater recharge.

Additional monitoring that is recommended by the Plan includes adding monitoring wells FO-4 and FO-6 in the Laguna Seca Subarea for water quality monitoring at least annually. No new monitoring wells are being recommended. Implementation measures recommended by the Plan pertain to TDS, chloride, and nitrate reduction methods. The results indicate that there is good water quality in the Seaside Groundwater Basin compared to many other basins in the State.

Mr. Oliver said that the high TDS in the Laguna Seca Subarea is probably influenced by the historical upwelling of salty water from lower lying aquifers.

Mr. Oliver suggested that the Plan be posted to the Watermaster and MPWMD websites, and then an email could be sent out publicizing that it is available for public review at those locations.

Mr. Hulbert asked Mr. Oliver if an opportunity for public comments had been provided. Mr. Oliver responded that he was hopeful that the Plan could be discussed at a Watermaster Board meeting to accomplish this. Mr. Hulbert mentioned that the water softener issue may be a sensitive one to some users. Mr. Jaques suggested agendizing this item again for TAC discussion after the Draft Plan has been posted and thus made available for public review. There was some discussion with regard to State funding for implementation actions recommended by the Plan.

Mr. True said that MCWD will likely apply for a State water supply grant for one or more projects to reduce potable water demand. He recommended having a 60 day public review period for the Draft Plan. There was discussion on this issue. Ms. King noted that she was not aware of any specific public review period for these types of plans.

Mr. Hulbert asked if implementation measures with regard to TDS pertained to shallow native groundwater. Ms. King responded yes, for surface applications of water, but for injected water they would pertain to the deeper aquifers.

Mr. Jaques recommended putting this matter on the June TAC agenda for further discussion, and in the meantime posting the Draft Plan on the Watermaster and the MPWMD websites. Following that, the matter would go to the Board for its consideration at its July 2014 meeting. There was TAC consensus to follow this approach.

6. **Schedule**
   Mr. Jaques summarized the agenda packet materials for the item, and there was no other discussion on it.

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

8. **The next regular meeting was set for Wednesday May 14, 2014 at 1:30 p.m. at the MRWPCA Board Room.**

The meeting adjourned at 2:52 p.m.

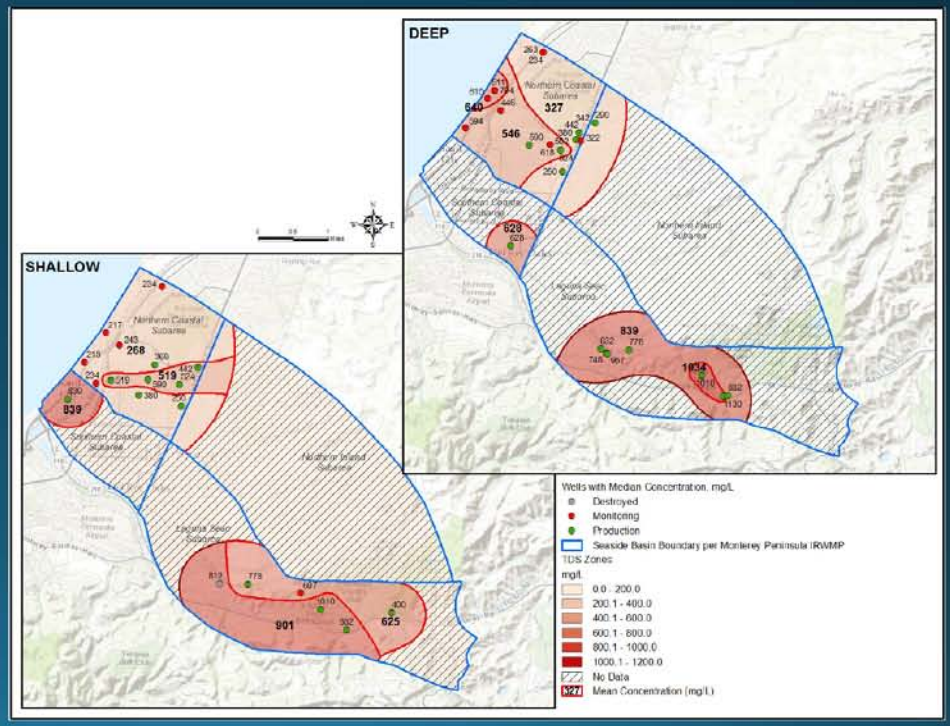

Seaside Basin
Salt & Nutrient
Management Plan

# SNMP Elements

- Basin characterization
- Salt and nutrient sources
- Existing groundwater monitoring programs
- Existing databases
- Salt & nutrient evaluation
  - Water Balance
  - Salt & Nutrient Balance
  - Assimilative Capacity
- Salt & nutrient management strategies
- Salt & nutrient monitoring program
- Implementation measures

# Existing Water Quality

| Constituent | | TDS mg/L | Chloride mg/L | Nitrate –N mg/L |
|---|---|---|---|---|
| Northern Coastal Subarea | Shallow | 302 | 72 | 0.83 |
| | Deep | 437 | 102 | 0.30 |
| | All | 362 | 85 | 0.59 |
| Southern Coastal Subarea | Shallow | 839 | 260 | 6.9 |
| | Deep | 628 | 199 | 0.05 |
| | All | 702 | 221 | 2.4 |
| Northern Inland Subarea | Shallow | 344 | 63 | 0.43 |
| | Deep | 327 | 61 | 0.53 |
| | All | 336 | 62 | 0.48 |
| Laguna Seca Subarea | Shallow | 781 | 237 | 0.85 |
| | Deep | 855 | 241 | 0.48 |
| | All | 824 | 239 | 0.63 |



# Salt and Nutrient Sources

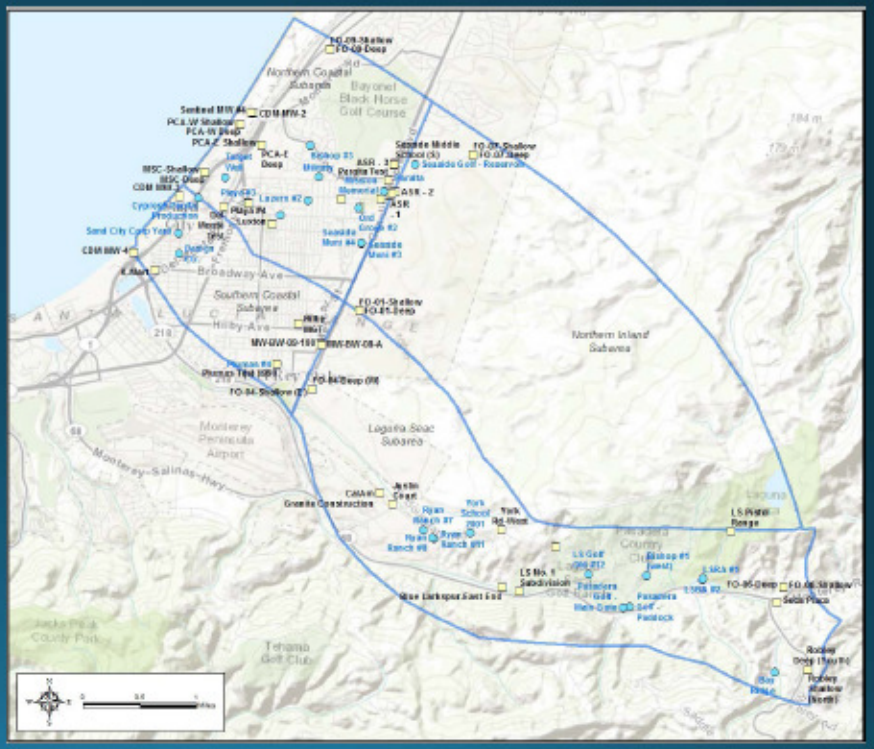
| Potential Salt and/or Nutrient Source | How Introduced to the Basin |
|---|---|
| Rainfall | Infiltration and percolation in permeable areas |
| Atmospheric deposition | Deposition, infiltration and percolation |
| Mineral dissolution | Dissolution of Monterey shale formation |
| Storm water | Infiltration and percolation |
| Landscape fertilizer | Fertilization, infiltration and percolation |
| Golf course fertilizer | Nicklaus Club-Monterey (formerly Pasadera Country Club) |
| | Bayonet and Black Horse Golf Courses |
| | Laguna Seca Golf Ranch |
| Carmel River system water | Injection into Santa Margarita aquifer |
| | Landscape and sports field irrigation |
| Salinas Valley groundwater | Return flow of irrigation water from Bayonet/Black Horse Golf Courses |
| | Landscape and sports field irrigation |
| City of Sand City desalination plant | Brine disposal into coastal groundwater |
| Irrigation with recycled water from Pasadera Wastewater/Recycling Facility | Return flow of irrigation water from Nicklaus Club-Monterey |
| Seaside Basin groundwater | Return flow of water from landscape, golf course, and sports field irrigation |
| Septic tanks | Leaching and percolation |
| System losses (water and sewer) | Percolation |

# Future Projects

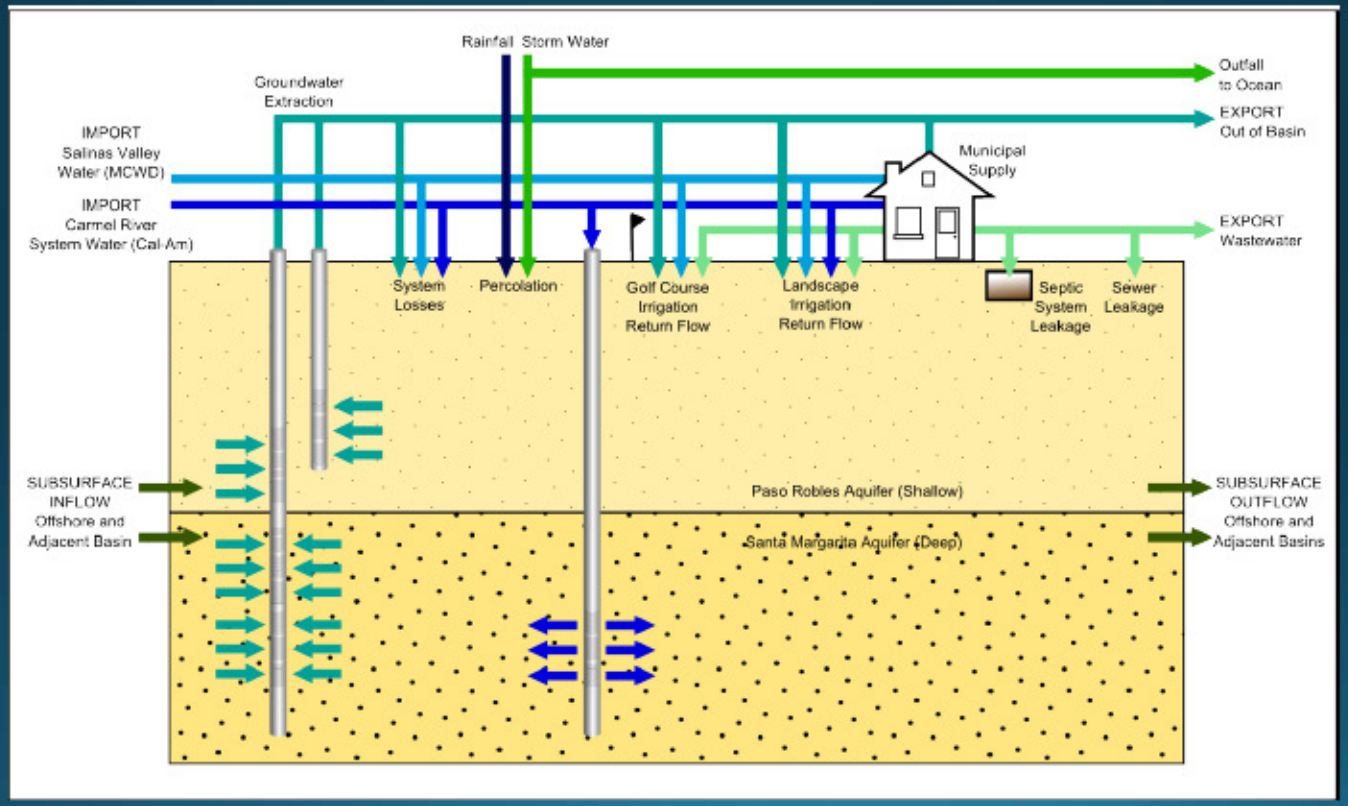
| Proposed Project | Potential Source of Salt and Nutrients |
|---|---|
| Regional Urban Water Augmentation Project (RUWAP) | Irrigation of Bayonet/Black Horse Golf Courses with recycled water |
| Groundwater Replenishment Project by the Monterey Regional Water Pollution Control Agency | Recharge recycled water by injection into both the shallow and deep aquifers |
| MPWMD/Cal-Am Aquifer Storage Project Phase II | Injection of Carmel River water into the deep aquifer |

# Existing Monitoring and Database

- Watermaster monitoring of production, groundwater levels, and quality
- MPWMD monitoring for ASR of production/injection, groundwater levels, and quality
- CADPH reporting of water quality
- Watermaster/MPWMD database

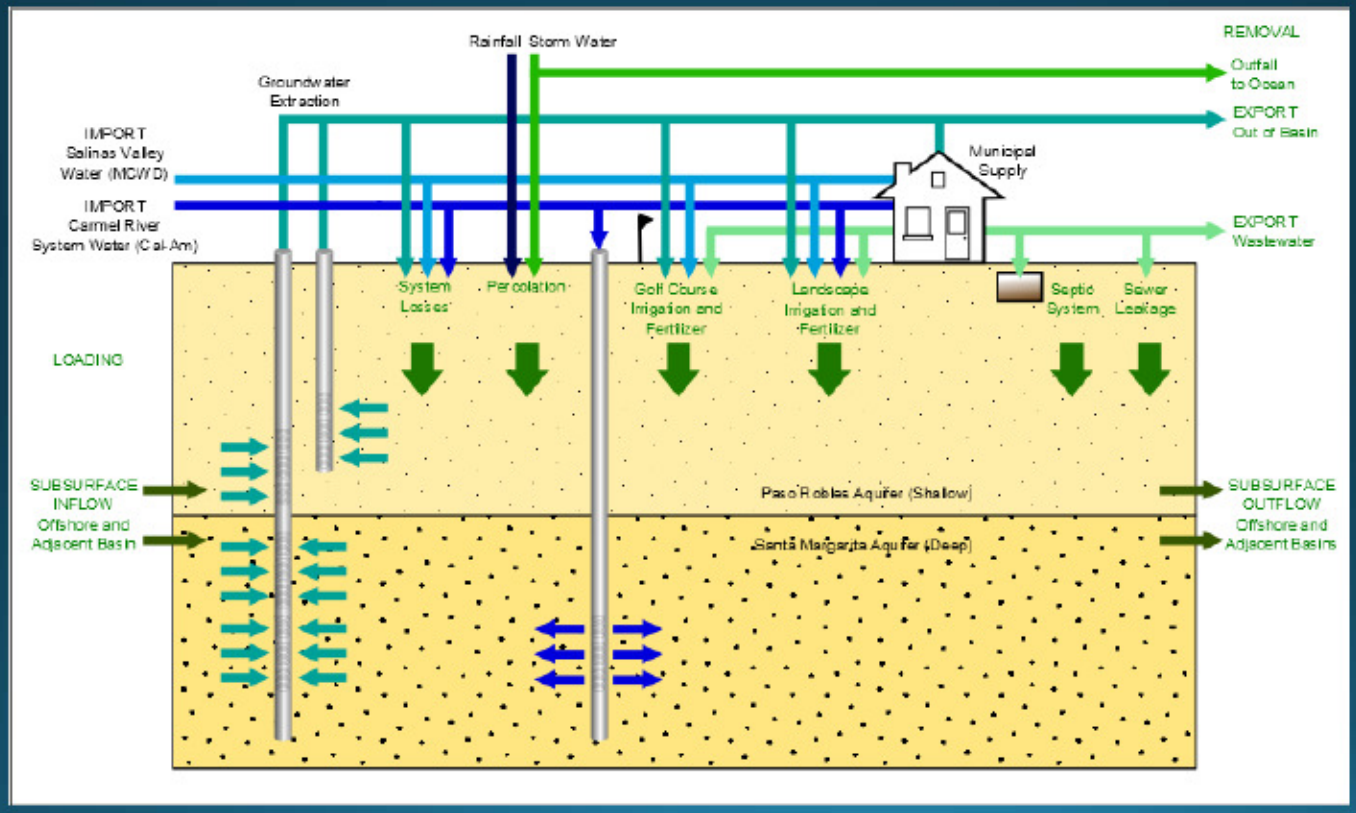


# Salt & Nutrient Evaluation – Water Balance



| Water Balance Component | Northern Coastal | Northern Inland | Southern Coastal | Laguna Seca | Basin Total |
|---|---|---|---|---|---|
| Inflows (AFY) | | | | | |
| Precipitation | 78 | 1,450 | 30 | 700 | 2,258 |
| Groundwater Underflow | | | | | |
| From Onshore | 2,850 | 0 | 450 | 180 | 180* |
| From Offshore | 100 | 0 | 0 | 0 | 100 |
| ASR Wells (Injection) | 625 | 0 | 0 | 0 | 625 |
| Water Distribution System Losses | 411 | 0 | 21 | 46 | 478 |
| Sewer Distribution System Losses | 77 | 0 | 9 | 19 | 105 |
| Septic Systems | 0 | 0 | 5 | 22 | 27 |
| Irrigation Infiltration | | | | | |
| Golf Courses | 85 | 0 | 0 | 88 | 173 |
| Landscaping | 461 | 0 | 52 | 114 | 627 |
| Recycled Water Irrigation | 0 | 0 | 0 | 9 | 9 |
| Storm Water | 68 | 0 | 37 | 0 | 105 |
| Total Inflow | 4,754 | 1,450 | 604 | 1,177 | 7,985 |
| Outflows (AFY) | | | | | |
| Groundwater Pumping | 4,278 | 0 | 227 | 869 | 5,374 |
| Groundwater Underflow | | | | | |
| To Onshore | 0 | 2,060 | 790 | 450 | 0* |
| To Offshore | 70 | 0 | 30 | 0 | 100 |
| Total Outflow | 4,348 | 2,060 | 1,047 | 1,319 | 8,774 |
| Storage Change (Inflow - Outflow) | **406** | **-610** | **-443** | **-142** | **-789** |

# Salt & Nutrient Balance



| Salt Balance Component | Northern Coastal | Northern Inland | Southern Coastal | Laguna Seca | Basin Total |
|---|---|---|---|---|---|
| Inflows (lb/yr) | | | | | |
| Precipitation | 593 | 11,041 | 230 | 5,328 | 17,191 |
| Groundwater Underflow | | | | | |
| From Onshore | 3,388,324 | 0 | 1,008,928 | 193,836 | 292,260* |
| From Offshore | 98,423 | 0 | 0 | 0 | 98,423 |
| ASR Wells (Injection) | 538,343 | 0 | 0 | 0 | 538,343 |
| Water Distribution System Losses | 408,175 | 0 | 38,184 | 89,934 | 536,293 |
| Sewer Distribution System Losses | 218,731 | 0 | 24,527 | 53,988 | 297,246 |
| Septic Systems | 0 | 0 | 13,694 | 62,423 | 76,116 |
| Irrigation Infiltration | | | | | |
| Golf Courses | 435,570 | 0 | 0 | 0 | 435,570 |
| Landscaping | 462,509 | 0 | 94,538 | 222,666 | 779,713 |
| Recycled Water Irrigation | 0 | 0 | 0 | 29,218 | 29,218 |
| Storm Water | 20,034 | 0 | 52,670 | 0 | 72,704 |
| Total Inflow | 5,570,702 | 11,041 | 1,232,772 | 657,392 | 7,471,907 |
| Outflows (lb/yr) | | | | | |
| Groundwater Pumping | 4,210,062 | 0 | 433,187 | 1,948,353 | 6,591,602 |
| Groundwater Underflow | | | | | |
| To Onshore | 0 | 1,880,759 | 1,507,566 | 1,008,928 | 0* |
| To Offshore | 68,896 | 0 | 57,249 | 0 | 126,146 |
| Total Outflow | 4,278,959 | 1,880,759 | 1,998,001 | 2,957,281 | 11,115,000 |
| Storage Change (Inflow - Outflow) | **1,291,743** | **-1,869,718** | **-765,230** | **-2,299,889** | **-3,643,094** |

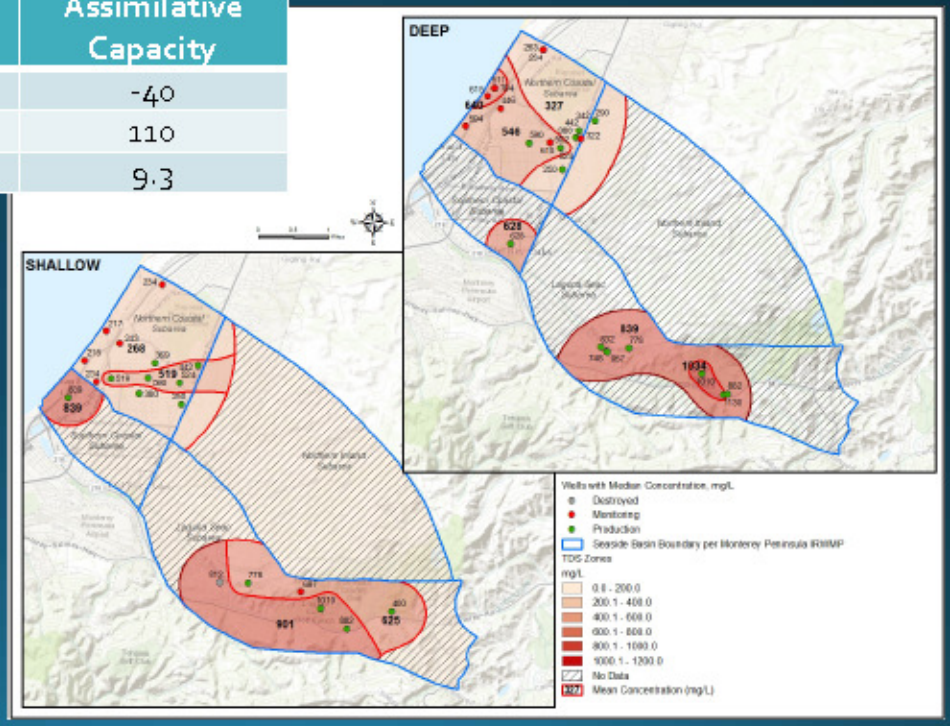
| Nitrate Balance Component | Northern Coastal | Northern Inland | Southern Coastal | Laguna Seca | Basin Total |
|---|---|---|---|---|---|
| Inflows (lb/yr) | | | | | |
| Precipitation | 11 | 197 | 4 | 95 | 307 |
| Groundwater Underflow | | | | | |
| From Onshore | 7,927 | 0 | 776 | 783 | 950* |
| From Offshore | 162 | 0 | 0 | 0 | 162 |
| ASR Wells (Injection) | 170 | 0 | 0 | 0 | 170 |
| Water Distribution System Losses | 781 | 0 | 128 | 65 | 975 |
| Sewer Distribution System Losses | 514 | 0 | 14,554 | 603 | 15,672 |
| Septic Systems | 0 | 0 | 700 | 3,193 | 3,893 |
| Irrigation Infiltration | | | | | |
| Golf Courses | 1,748 | 0 | 0 | 0 | 1,748 |
| Landscaping | 1,033 | 0 | 318 | 162 | 1,513 |
| Fertilizer Application | | | | | |
| Golf Courses | 2,421 | 0 | 0 | 1,771 | 4,192 |
| Sports Fields | 587 | 0 | 103 | 280 | 970 |
| Commercial and Residential Landscaping | 2,492 | 445 | 2,136 | 1,780 | 6,853 |
| Recycled Water Irrigation | 0 | 0 | 0 | 54 | 54 |
| Storm Water | 5 | 0 | 49 | 0 | 53 |
| Total Inflow | 17,850 | 445 | 18,769 | 8,787 | 45,851 |
| Outflows (lb/yr) | | | | | |
| Groundwater Pumping | 6,919 | 0 | 1,507 | 1,499 | 9,924 |
| Groundwater Underflow | | | | | |
| To Onshore | 0 | 2,683 | 5,243 | 776 | 0* |
| To Offshore | 113 | 0 | 199 | 0 | 312 |
| Total Outflow | 7,032 | 2,683 | 6,949 | 2,275 | 18,939 |
| **Storage Change (Inflow - Outflow)** | **10,818** | **-2,238** | **11,820** | **6,512** | **26,912** |

# Assimilative Capacity

| Constituent | Existing Water Quality | Water Quality Objective | Assimilative Capacity |
|---|---|---|---|
| TDS, mg/L | 540 | 500 | -40 |
| Chloride, mg/L | 140 | 250 | 110 |
| Nitrate-N, mg/L | 0.7 | 10 | 9.3 |

Revision of Water Quality Objectives (WQO) needed

Current WQO are drinking water standards



# Salt & Nutrient Management Strategies

| Management Measure | Description | Effect |
|---|---|---|
| Source control of nutrients from residential fertilizer | Outreach on effective use of fertilizers. | Reduces the load of nitrogen that is transported by runoff to surface waters and by infiltration to groundwater. |
| Source control of salts and nutrients from septic systems | Prohibit installation of new septic tanks. Require tie-in of a septic tank to the sewer if located within 200 feet of a sewer line.<br>or<br>Consideration of a septic system conversion program to reduce the number of septic systems in the basin. | Reduces the volume of septic system leachate that percolates into shallow groundwater. |
| Source control of salts in wastewater and recycled water quality from Pasadera WTF | Outreach, removal and incentive program aimed at reducing the number of self-regenerating water softeners. | Fewer self-regenerating water softeners (or other treatment devices that produce a high mineral waste) will reduce the salt load in residential wastewater. |
| Storm water recharge | Storm water is infiltrated onsite where it is generated or conveyed to a nearby recharge facility. | Provides dilution of groundwater through recharge of surface water (flood and storm flows) to potentially lower salt and nutrient concentrations. |
| Irrigation with recycled water | Urban irrigation of schools, parks, golf courses and other locations. Recycled water permit establishes concentration limits for irrigation water that should be lower than native groundwater concentrations. | Limits the concentrations of salts and nutrients in irrigation water. |

# Salt & Nutrient Monitoring Program

- Use current Watermaster locations
- FO-4 and FO-6 in Laguna Seca subarea should be added for water quality monitoring
- Same constituents that are already tested
- Sample frequency at least annually

# Implementation Measures

- **TDS**
  - Any imported or recycled water should have lower TDS than native groundwater
- **Chloride**
  - Water softener ordinance or ban in Laguna Seca subarea
- **Nitrate**
  - Public outreach on fertilizer use and overwatering
  - Convert existing septic systems, and prohibit septic systems for new development

**BMP, public outreach and land management practices**

## *SEASIDE BASIN WATER MASTER*
## *TECHNICAL ADVISORY COMMITTEE*

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

| | |
|---|---|
| **MEETING DATE:** | May 14, 2014 |
| **AGENDA ITEM:** | 2.B |
| **AGENDA TITLE:** | Discussion of Issues Raised by Mr. Lifland at the April 9, 2014 Meeting |
| **PREPARED BY:** | Robert Jaques, Technical Program Manager |

**SUMMARY:**

At the TAC's April 9, 2014 meeting Mr. David Lifland attended as a member of the public. Under the "Public Comments" section of the agenda for that meeting, Mr. Lifland raised several issues of concern which the TAC agreed to agendize for discussion at today's meeting.

Mr. Lifland subsequently provided me a written description of the questions/concerns that he would like the TAC to discuss. In order to enable MPWMD and MRWPCA to help prepare responses to those items this topic will be scheduled for discussion at the TAC's June 2014 meeting.

| | |
|---|---|
| **ATTACHMENTS:** | None |
| **RECOMMENDED ACTION:** | None required |

## *SEASIDE BASIN WATER MASTER TECHNICAL ADVISORY COMMITTEE*

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

| | |
|---|---|
| **MEETING DATE:** | May 14, 2014 |
| **AGENDA ITEM:** | 2.C |
| **AGENDA TITLE:** | Progress/Status Reports on Cal Am's Monterey Peninsula Water Supply Project and MRWPCA/MPWMD's Groundwater Replenishment Projects |
| **PREPARED BY:** | Robert Jaques, Technical Program Manager |

**SUMMARY:**

To keep the TAC abreast of developments in these projects I have invited representatives of Cal Am, MRWPCA, and MPWMD to provide oral progress/status reports on their projects at today's meeting, and to answer any questions the TAC may have.

| | |
|---|---|
| **ATTACHMENTS:** | None |
| **RECOMMENDED ACTION:** | None required |

## *SEASIDE BASIN WATER MASTER*
## *TECHNICAL ADVISORY COMMITTEE*

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

| | |
|---|---|
| **MEETING DATE:** | May 14, 2014 |
| **AGENDA ITEM:** | 2.D |
| **AGENDA TITLE:** | Update on Conversion of CAW Wells from Production to Monitoring |
| **PREPARED BY:** | Robert Jaques, Technical Program Manager |

**SUMMARY:**

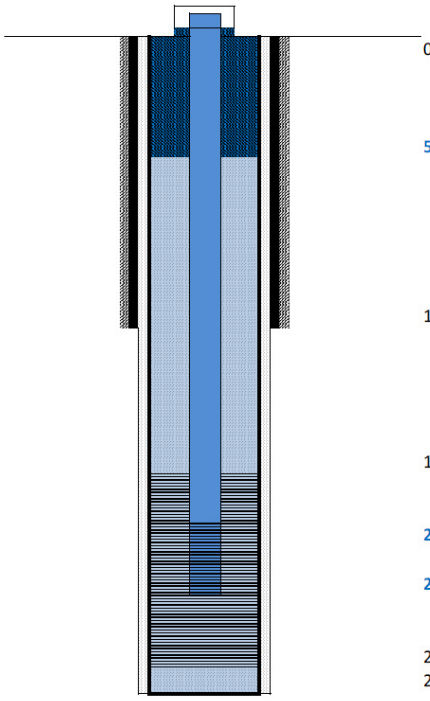
MPWMD has been updated by CAW on the status of the conversion of 3 of CAW's Seaside wells to monitor wells. This was approved by the Watermaster in the fall of 2012. For reference, the conversion drawings are attached. The first two (Military, Luxton) went according to the drawings MPWMD prepared with no problems. The third one, Hilby MGT, has an obstruction at 275' that the drilling contractor was unable to bail out. However, this still gives approximately 30' of saturation so they are going to complete the monitor well at this depth. MPWMD has OK'ed this since the well will still be usable as a water level monitoring well. MPWMD has asked CAW to forward the completion paperwork once it is done. CAW said they would do this, and then MPWMD can install the transducers in them.

Mr. Oliver of MPWMD will provide an oral update on this work at today's meeting.

| | |
|---|---|
| **ATTACHMENTS:** | Well Conversion Drawings |
| **RECOMMENDED ACTION:** | None required |

# Military Well

## Proposed Conversion to 2" Monitor Well



0' Ground Surface

50' monitor well seal

120' bottom of 20" conductor casing

184' top of well perforations

200' top of 2" monitor well perforations

230' bottom of 2" monitor well

264' bottom of well perforations
268' bottom of 14" well casing

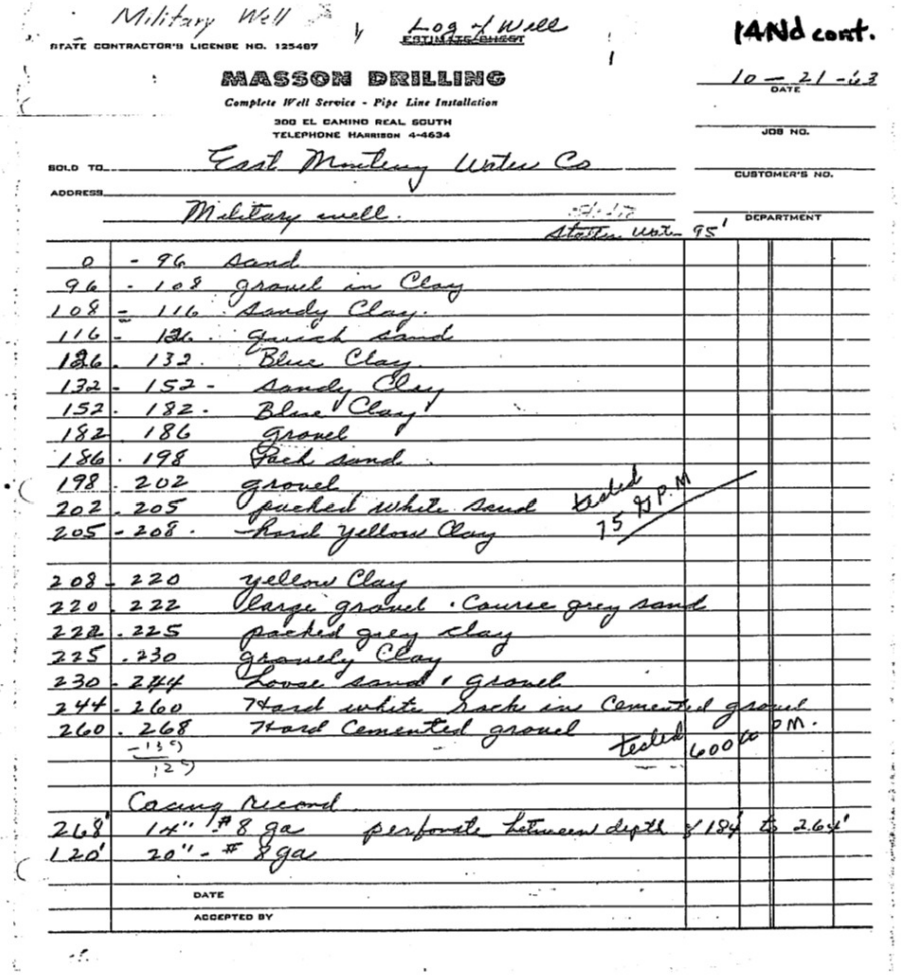
conductor casing seal

monitor well casing cement seal

inert sand pack fill material

NOTES:
1. Original well completion data from Masson Well Drilling "Log Of Well" report form, dated 10/21/1963.
2. Original seal material not specified (see well construction drawing).
3. Lowest recorded depth to water since 2008 = 185.0 ft (PWL, 9/30/10).

## Driller's Log



Military Well — Log of Well — 14NDcont.

STATE CONTRACTOR'S LICENSE NO. 125487

MASSON DRILLING
Complete Well Service - Pipe Line Installation
300 EL CAMINO REAL SOUTH
TELEPHONE HARRISON 4-4634

10 — 21 — 63
DATE

JOB NO.

SOLD TO East Monterey Water Co

CUSTOMER'S NO.

ADDRESS Military well. Stanton Well 95'

DEPARTMENT

| | | |
|---|---|---|
| 0 | - 96 | Sand |
| 96 | - 108 | gravel in Clay |
| 108 | - 116 | Sandy Clay |
| 116 | - 126 | Gravel sand |
| 126 | - 132 | Blue Clay |
| 132 | - 152 | Sandy Clay |
| 152 | - 182 | Blue Clay |
| 182 | - 186 | Gravel |
| 186 | - 198 | Rock sand |
| 198 | - 202 | gravel |
| 202 | - 205 | packed white sand Tested 75 gpm |
| 205 | - 208 | Hard yellow Clay |
| 208 | - 220 | yellow Clay |
| 220 | - 222 | Large gravel - Course grey sand |
| 222 | - 225 | packed grey clay |
| 225 | - 230 | Gravely Clay |
| 230 | - 244 | Loose sand & gravel |
| 244 | - 260 | Hard white Rock in Cemented gravel |
| 260 | - 268 | Hard Cemented gravel Tested 600 gpm. |
| | (-15) | |
| | (125) | |

Casing Record

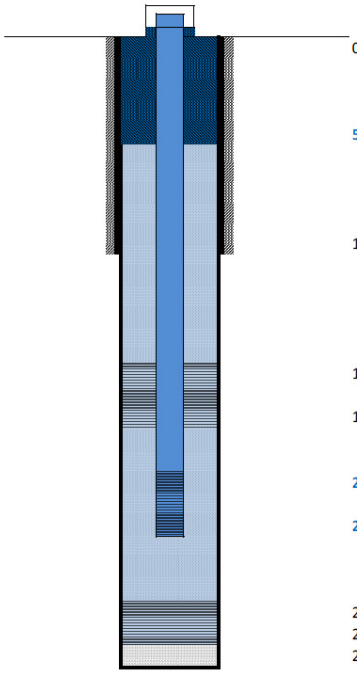
| | |
|---|---|
| 268' | 14" - # 8 ga perforate between depth of 184' to 264' |
| 120' | 20" - # 8 ga |

DATE

ACCEPTED BY

# Luxton Well

## Proposed Conversion to 2" Monitor Well



0' Ground Surface

50' monitor well seal

102' bottom of 18" conductor casing

150' top of well upper perforations

180' top of well upper perforations

200' top of 2" monitor well perforations

230' bottom of 2" monitor well

265' top of well lower perforations
277' bottom of well lower perforations
289' bottom of 18" well casing
(cement plug at bottom)

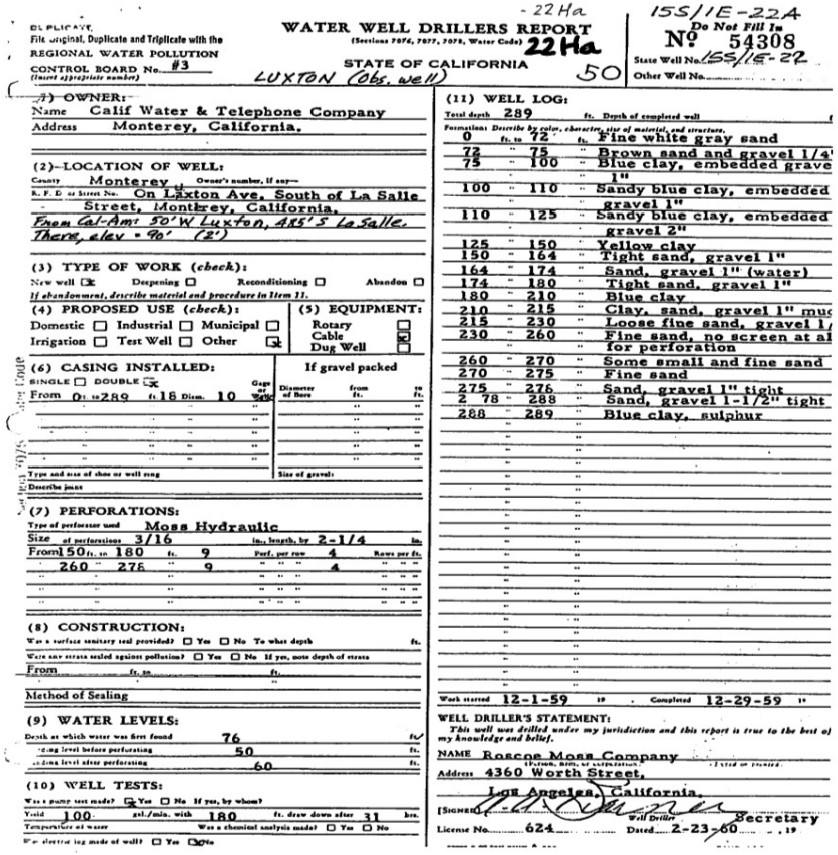
conductor casing seal

monitor well casing cement seal

inert sand pack fill material

NOTES:
1. Original well completion data from DWR Drillers Report, completed by Roscoe Moss Company, dated 2/23/1960.
2. Original seal material not specified (see well construction drawing).
3. Lowest recorded depth to water since 2008 = 98.8 ft (SWL, 2/23/12).

## Driller's Log



- 22 Ha

155/1E-22A

WATER WELL DRILLERS REPORT
(Sections 7076, 7077, 7078, Water Code) 22 Ha
STATE OF CALIFORNIA 50

Do Not Fill In
No. 54308

State Well No. 155/1E-22
Other Well No.

DUPLICATE
File original, Duplicate and Triplicate with the
REGIONAL WATER POLLUTION
CONTROL BOARD No. #3

LUXTON (Obs. well)

(1) OWNER:
Name Calif Water & Telephone Company
Address Monterey, California.

(2)–LOCATION OF WELL:
County Monterey Owner's number, if any—
R. F. D. or Street No. On Luxton Ave. South of La Salle Street, Monterey, California.
From Cal-Am: 50'W Luxton, 485'S La Salle. There, elev. = 90' (2')

(3) TYPE OF WORK (check):
New well ☒ Deepening ☐ Reconditioning ☐ Abandon ☐
If abandonment, describe material and procedure in Item 11.

(4) PROPOSED USE (check):
Domestic ☐ Industrial ☐ Municipal ☐
Irrigation ☐ Test Well ☐ Other ☒

(5) EQUIPMENT:
Rotary ☐
Cable ☒
Dug Well ☐

(6) CASING INSTALLED:
SINGLE ☐ DOUBLE ☒
From 0 ft. to 289 ft. 18 Diam. 10 Gage of Wall

If gravel packed
Diameter of Bore | from ft. | to ft.

Type and size of shoe or well ring
Describe joint
Size of gravel:

(7) PERFORATIONS:
Type of perforator used Moss Hydraulic
Size of perforations 3/16 in., length, by 2-1/4 in.
From 150 ft. to 180 ft. 9 Perf. per row 4 Rows per ft.
" 260 " 276 " 9 " " " 4 " " "

(8) CONSTRUCTION:
Was a surface sanitary seal provided? ☐ Yes ☐ No To what depth ft.
Were any strata sealed against pollution? ☐ Yes ☐ No If yes, note depth of strata
From ft. to ft.
Method of Sealing

(9) WATER LEVELS:
Depth at which water was first found 76 ft.
Standing level before perforating 50 ft.
Standing level after perforating 60 ft.

(10) WELL TESTS:
Was a pump test made? ☒ Yes ☐ No If yes, by whom?
Yield 100 gal./min. with 180 ft. draw down after 31 hrs.
Temperature of water Was a chemical analysis made? ☐ Yes ☐ No
Was electrical log made of well? ☐ Yes ☒ No

(11) WELL LOG:
Total depth 289 ft. Depth of completed well
Formations: Describe by color, character, size of material, and structure.

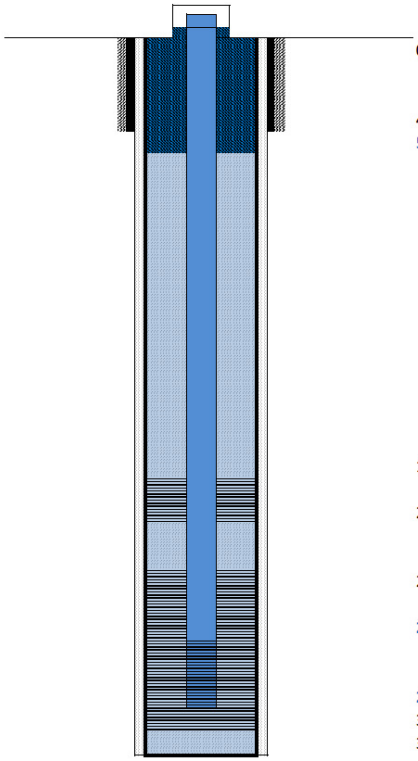
| | | | |
|---|---|---|---|
| 0 | ft. to 72 | ft. | Fine white gray sand |
| 72 | " 75 | " | Brown sand and gravel 1/4" |
| 75 | " 100 | " | Blue clay, embedded gravel 1" |
| 100 | " 110 | " | Sandy blue clay, embedded gravel 1" |
| 110 | " 125 | " | Sandy blue clay, embedded gravel 2" |
| 125 | " 150 | " | Yellow clay |
| 150 | " 164 | " | Tight sand, gravel 1" |
| 164 | " 174 | " | Sand, gravel 1" (water) |
| 174 | " 180 | " | Tight sand, gravel 1" |
| 180 | " 210 | " | Blue clay |
| 210 | " 215 | " | Clay, sand, gravel 1" muc |
| 215 | " 230 | " | Loose fine sand, gravel 1/ |
| 230 | " 260 | " | Fine sand, no screen at al for perforation |
| 260 | " 270 | " | Some small and fine sand |
| 270 | " 275 | " | Fine sand |
| 275 | " 276 | " | Sand, gravel 1" tight |
| 2 78 | " 288 | " | Sand, gravel 1-1/2" tight |
| 288 | " 289 | " | Blue clay, sulphur |

Work started 12-1-59 19 . Completed 12-29-59 19

WELL DRILLER'S STATEMENT:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.
NAME Roscoe Moss Company
(Person, firm, or corporation) (Type or print)
Address 4360 Worth Street,
Los Angeles, California.
[Signed] Secretary
Well Driller
License No. 624 Dated 2-23-60 , 19

# Hilby MGT Well

## Proposed Conversion to 2" Monitor Well



0' Ground Surface

40' conductor casing
50' monitor well seal

187' top of well upper perforations

211' bottom of well upper perforations

235' top of well lower perforations

260' top of 2" monitor well perforations

290' bottom of 2" monitor well
307' bottom of well lower perforations
311' bottom of 14" well casing

conductor casing seal

monitor well casing cement seal

inert sand pack fill material

NOTES:
1. Original well completion data from Walker Drilling Company driller report, dated 8/11/1953.
2. Original well seal material identified as construction cement.
3. Lowest recorded depth to water since 2006 = 246.6 ft (SWL, 9/27/12).

## Driller's Log

M.G.T. Well 15S/1E - 26 Da

**WALKER DRILLING CO.**
WATER WELL DRILLING
MODERN ROTARY EQUIPMENT

CAL-AM MGT

F. W. WALKER
Res. Phone 20944 79 Orchard Lane
SALINAS, CALIFORNIA

Specializing in
GRAVEL PACKING AND
SALT WATER SHUTOFFS

August 11, 1953

Location from Cal-Am:
60' E Luzerne, 250' N Hilby
Elev'n = 248' (2')
Elogged.
The present site SW of the tank has 5-7'± of fill: the elev'n above may be too low.
J. Logan 1982

Calif. Water and Telephone Co.
Monterey, California

Log of Water Well #1

| From | To | |
|---|---|---|
| 0 | 30 | Fine red sand |
| 30 | 53 | Fine sand |
| 53 | 73 | Fine sand |
| 73 | 96 | Fine sand |
| 96 | 118 | Sand |
| 118 | 140 | Sand |
| 140 | 164 | Sand |
| 164 | 186 | Sand and streaks of white clay |
| 186 | 208 | White sand and streaks of white clay |
| 208 | 230 | White sand and streaks of white clay |
| 230 | 253 | White sand and streaks of white clay |
| 253 | 275 | White sand and hardshell (270 to 275) |
| 275 | 297 | Hard packed sand |
| 297 | 319 | Packed gray and black sand |
| 319 | 343 | Sandy shale and traces of oil |
| 343 | 365 | Sandy shale, hard shells and traces of oil |
| 365 | 388 | " " " " " " " " |
| 388 | 410 | Sandy shale and streaks of white sand |
| 410 | 433 | " " " " " " " , taking fluid |
| 433 | 455 | " " " " " " " " |
| 455 | 478 | " " " " " " " " |
| 478 | 501 | 8' sand, 3' hard shells |
| 501 | 523 | Hard packed white sand |

This well was plugged back from 523 to 311 with 129 sacks of construction cement. 40' of conductor pipe at top of well was cemented outside with 71 sacks of cement to seal off any contaminated water.

CASING DETAIL

Perforations in this well start at 307 and come up to 235 feet. Perforations are 5/32 " X 1' horizontal slots. 24' of blank from 235 feet to 211 feet. Perforated from 211 feet to 187 feet and blank from 187 to top of ground. Well washed, gravel packed and swabbed with 22 yards of gravel. This casing is 14" by 1/4 " casing with centering guides every 48 feet.

F. W. Walker
F. W. Walker
WALKER DRILLING CO.

## *SEASIDE BASIN WATER MASTER TECHNICAL ADVISORY COMMITTEE*

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

| | |
|---|---|
| **MEETING DATE:** | May 14, 2014 |
| **AGENDA ITEM:** | 3 |
| **AGENDA TITLE:** | Continued Discussion of New Survey Information on the Wang Subdivision Wells |
| **PREPARED BY:** | Robert Jaques, Technical Program Manager |

**SUMMARY:**

At the February 12, and April 9, 2014 TAC meeting there has been discussion regarding the report prepared for the Wang subdivision titled "*Revised and Updated Project-Specific Hydrogeologic Report, Peter and Grace Wang 26-Lot Subdivision, (PLN #010422), Monterey County, California*" dated August 2, 2013, and a subsequent update of that report dated January 9, 2014. In those discussions it was pointed out that there were two reasons for the TAC's September 2012 recommendation to the Board, and the Board's subsequent concurrence, that the Watermaster not object to the use of the Wang wells to supply water to the subdivision:

1. The Wang wells are outside of the Decision-defined Basin boundary, and therefore not within the Watermaster's jurisdiction, and
2. Based on the available data at that time, it was not possible to determine whether or not hydraulic connectivity existed between the Laguna Seca subarea and the Wang wells.

This first reason is not changed by the information provided in these reports. However, based on the new survey data provided in those reports it appears more likely that these wells could draw water from the Laguna Seca subarea.

Mr. Oliver of MPWMD and Mr. Franklin of MCWRA stated that their agencies had also received these reports and would be submitting comments on them to the County. There was TAC consensus to defer making any recommendations to the Board until the TAC had the opportunity to review the comments prepared by these two agencies. MCWRA's comments were included in the April 9 TAC agenda packet and are again included with this agenda item. MPWMD's comments were not available for the April 9 meeting, but have since been received and are attached. Mr. Oliver reports that the attached MPWMD comments were prepared for the Monterey County Resource Management Agency (MCRMA) 4/17/14 Interagency Advisory Review (IAR) committee discussion of the Wang project. It is his understanding that MCRMA will be reviewing and incorporating these along with other comments as part of their process, but he has not yet received an update on that since the 4/17 meeting, so at this time these notes should be considered as a draft component of a more formal review letter.

One of MCWRA's conclusions from its review of the Report is that more information is needed to determine whether or not the Wang subdivision wells are hydraulically connected to the Laguna Seca subarea of the Seaside Basin.

MPWMD's principle conclusions are:

- Given the paucity of available water-level data in this area, an ongoing water-level monitoring program needs to be implemented in order to better assess water-level trends both within the Wang project area and the adjacent Laguna Seca subarea.
- Water levels in the Wang project area and in the adjacent Laguna Seca subarea are not substantially different, cited as being between 25 to 50 feet in the Report. This is well within the range of local water-

## *SEASIDE BASIN WATER MASTER TECHNICAL ADVISORY COMMITTEE*

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

| **AGENDA ITEM:** | 3 (Continued) |
|---|---|

level variability that has been recorded within the Laguna Seca subarea where in some instances wells within 1,000 feet of each other have had water-level differences of 50 feet or more.

- Existing water-level data does not support the Report's conclusion that there are significant groundwater level elevation differences between the Wang project area and the Laguna Seca subarea.
- In order to more definitively understand the hydrogeologic nature and connectivity between the Wang project wells and the Laguna Seca subarea, and aquifer test with observation well monitoring data would need to be conducted.
- There is uncertainty regarding the location of the Chupines Fault, and a lack of convincing evidence of an effective groundwater barrier between the Wang wells and the Laguna Seca subarea.

The TAC is requested to provide direction to the Technical Program Manager on what information about this topic should be provided to the Board, and what, if any, recommendations to make to the Board in that regard.

| | |
|---|---|
| **ATTACHMENTS:** | 1. Summary and Conclusions excerpted from the January 9, 2014 updated hydrogeologic report<br>2. Review Comments from MCWRA<br>3. Review comments from MPWMD |
| **RECOMMENDED ACTION:** | Determine whether or not to provide recommendations on this information to the Board |

# Revised and Updated Project-Specific Hydrogeologic Report

## Peter and Grace Wang 26-Lot Subdivision

## (PLN #010422)

## Monterey County, California

**Prepared for** **Peter and Grace Wang**
**Monterey County, California**

**August 2, 2013**
***Revised***
***January 9, 2014***

*Daniel B. Stephens & Associates, Inc.*
1300 Clay Street, Suite 600 • Oakland, California 94612

# Table of Contents

# Updated Project-Specific Hydrogeologic Report

## 1. Summary

The proposed Wang subdivision is located in an area south of the Chupines Fault. The Chupines Fault essentially delineates the southern boundary of the Laguna Seca Subarea of the Seaside Groundwater Basin. The Monterey Peninsula Water Management District defines the Chupines Fault as the southern boundary of the Laguna Seca Subarea based on Figure 1 of the Phase III Hydrogeologic Update report (Yates et al., 2002). The actual southern boundary of the Laguna Seca Subarea defined by the Seaside Groundwater Basin Watermaster is parallel to the fault and is located approximately 1,200 feet north of the Chupines Fault.

The three project and supply wells that are intended to serve as the primary and secondary sources of water for the proposed Wang subdivision are physically located in the project watershed and the associated underlying aquifer south of the Laguna Seca Subarea. The wells are located next to, near, or within the Chupines Fault zone, which defines the northern edge of the underlying aquifer (Yates et al., 2005; Clark Geological, 2009). The specific locations of the project wells do not clearly delineate the relative position with the fault because of the close proximity to the Chupines Fault zone, the complex geology (Clark Geological, 2009), and local structural disruption of the underlying geologic units. It is difficult to determine whether the three project wells are hydraulically connected to the Laguna Seca Subarea because of the distance (about 1,700 feet) and lack of subsurface data between the project wells and the Laguna Seca Subarea along Highway 68.

Rainfall each year normally results in 55 acre-feet (AF) of recharge into the aquifer beneath the project watershed. This amount will support the proposed Wang subdivision net use of 12 acre-feet per year (AFY) in normal rainfall years. There is at least 200 AF of water in storage in the portion of the aquifer directly beneath the proposed Wang subdivision and total aquifer storage of 494 AF that the proposed Wang subdivision can access from the upstream project watershed. Even using the lower figure of 200 AF with no aquifer recharge, groundwater storage is equivalent to 16 years of proposed Wang subdivision pumping. The State Water Board only requires the ability to meet a 3-year drought. The recharge and storage data noted above will satisfy the 20-year water supply required for approval of the new subdivision and will meet the Monterey County definition of long term water supply.

According to the Seaside Groundwater Basin Watermaster, the proposed Wang subdivision Wells 02-071, 03-01132, and 07-11024 do not appear to be hydraulically connected to the Laguna Seca Subarea. The Seaside Groundwater Basin Watermaster and Board stated on October 11, 2012 that Wells 02-071, 02-072, 03-01132, and 07-11024 are located outside of the Seaside Basin boundary as shown in the amended final decision entered in the lawsuit, California American Water v. City of Seaside et al., Monterey Superior Court (Case No. 66343) dated March 27, 2006.

The principal water bearing units in the project watershed and beneath the proposed Wang subdivision are the semi-consolidated Santa Margarita Sandstone (Miocene) and Pleistocene-Pliocene continental deposits (including the Paso Robles Formation). The project watershed also includes the Monterey Formation, which is typically a less reliable source of groundwater supply but can often be the only source of groundwater in the highland areas adjacent to the southern boundary of the Laguna Seca Subarea, including the underlying aquifer beneath the proposed Wang subdivision.

The transmissivities (between 1,080 and 6,600 gallons per day per foot [gpd/ft]) estimated from four pumping tests are relatively small. The specific yield or storativity was estimated to range between 0.15 and 1.5 percent and is typical of semi-consolidated to consolidated, poorly cemented, low-yielding aquifers that are controlled by primary (inter-granular pore spaces) porosity, which is reduced by post-depositional carbonate-cementing materials. This indicates that the direct and local impact from pumping the proposed Wang subdivision wells is limited to a radius of between 150 and 1,200 feet after pumping 24 hours, if no barrier boundary is encountered.

Based on the analysis of groundwater samples collected from Wells 02-071, 03-01132, and 07-11024, the total dissolved solids (TDS) concentration in the underlying aquifer is uniform and ranges from 816 to 880 milligrams per liter (mg/L), indicating that the overall water quality is within the definition (< 1,000 mg/L) of freshwater. TDS concentrations in the Laguna Seca Subarea range between 700 and 1,010 mg/L. The water samples that were collected during the pumping tests have elevated turbidity ranging from 0.93 to 13 nephelometric turbidity units (NTU). Elevated turbidity can result in elevated trace ion concentrations. For example, arsenic was detected in all of the wells, at concentrations ranging from 0.008 to 0.016 mg/L,

approaching or exceeding the California primary maximum contaminant level of 0.010 mg/L. However, dissolved arsenic concentrations are expected to be smaller once the turbidity concentrations are reduced to zero with a properly designed and/or developed water supply well. Total coliform bacteria were also detected in the groundwater sample collected from Well 03-01132 and are probably a result of the sampling protocol; Well 03-01132 should be re-developed, treated with a chlorine solution, and re-sampled after the well has been pumped to confirm the presence or absence of coliform bacteria. Re-development of the well will entail mobilizing a pump rig to the site, removing the pump; swabbing and bailing (or jetting) to remove residual drilling fluids; chlorinating to sterilize the well and pump; brief pumping test to remove drilling fluids and chlorine; and water quality testing. California Department of Health Services requires community water systems to treat water to remove coliform bacteria, when such bacteria are present.

Initially, on-site wastewater disposal (individual septic tanks) was proposed for the project and would have generated approximately 12.7 AFY of return flow to the project watershed. The project has been modified to convey wastewater to the Pasadera/Laguna Seca treatment facility. With this modified project plan there are no anticipated water quality impacts from, or accumulations of, nitrates at the proposed Wang subdivision.

All groundwater beneath the proposed Wang subdivision (120 acres) and the project watershed (296 acres) is derived from rainfall. The average rainfall is 19.42 inches per year. At least 55 AFY of rainfall is recharged to the underlying aquifer in the watershed. The net water demand for the proposed project (12 AFY) is available from groundwater recharge at the proposed Wang subdivision and upstream in the project watershed (approximately 446 AFY) during years of average precipitation. In addition, groundwater storage ranging from 200 AF (beneath the proposed Wang subdivision property) to 494 AF (beneath the project watershed) would provide surplus long-term supply.

Applicable mitigation measures include, but are not limited to (1) operating a groundwater treatment system (e.g., ion exchange and filtration) to address possible elevated concentrations of arsenic and the presence of coliform bacteria, (2) requiring water-conserving devices for all new development, and (3) xeriscaping and native vegetation landscaping. Additional possible mitigation measures include, but are not limited to (1) storm water detention ponds to promote

deep percolation of water, (2) dry wells to collect hard-surface storm water runoff and enhance percolation into the ground, (3) fog harvesting, and (4) porous pavement.

## 12. Conclusions

The proposed Wang subdivision property is located within an area that is located along the southern boundary of the Shallow Alluvial Aquifer defined by the MPWMD and outside of the Laguna Seca Subarea of the Seaside Groundwater Basin. Three water supply wells are intended to serve as the primary and secondary sources of water for the proposed subdivision. The wells are located in the project watershed and associated underlying semi-consolidated to consolidated aquifer that is located outside of the Seaside Groundwater Basin boundary as shown in the amended final decision entered in the lawsuit, California American Water v. City of Seaside et al., Monterey Superior Court (Case No. 66343) dated March 27, 2006, and do not appear to be hydraulically connected to the Seaside Groundwater Basin Laguna Seca subarea (Seaside Groundwater Basin Watermaster, 2012).

The principal aquifers in the project watershed are the poorly cemented Santa Margarita Sandstone and Paso Robles Formation. The Monterey Formation is a viable source for groundwater supply and may be the only reliable source of groundwater in some areas of the project watershed, including the proposed Wang subdivision. Review of the lithologic logs for the wells at the proposed Wang subdivision property indicates that Wells 02-071, 03-01132, and 07-11024 are partly completed within the Santa Margarita Sandstone and the Monterey Formation, and monitoring Well 02-072 is completed within the Monterey Formation.

Significant groundwater level elevation differences occur between the proposed Wang subdivision (Wells 02-071, 03-01132, and 07-11024) and the Laguna Seca Subarea wells (regional groundwater contour maps). Water level elevations beneath the proposed Wang subdivision are between 160 and 174 ft msl, while water level elevations in the Laguna Seca Subarea range between 180 and 200 ft msl along the margins of the groundwater basin (HydroMetrics, 2012). The Chupines Fault is responsible for these differences in water levels. Wells 02-071, 03-01132, and 07-11024 are located within or south of the Chupines Fault and are south of the Laguna Seca Subarea. Monitoring Well 02-072, which will not be used for water supply of the proposed Wang subdivision, has a significantly higher water level elevation (270 ft msl) than Laguna Seca Subarea wells, suggesting that groundwater flows from monitoring Well 02-072 to the Laguna Seca Subarea in that area.

All water occurring on the proposed Wang subdivision is derived from rainfall. The average rainfall is 19.42 in/yr. Estimates indicate that at least 55 AFY is recharged to the underlying aquifer. The proposed Wang subdivision plans to have a net water usage of about 12 AFY.

The transmissivities (between 1,080 and 6,600 gpd/ft) estimated from pumping tests are relatively small. The specific yield was estimated to range between 0.15 and 1.5 percent based on a literature review and measurements made in an observation well (Well 02-071) during the pumping test on Well 07-11024. This suggests that the direct and local impact from pumping the proposed Wang subdivision wells is limited to a radius of between 150 and 1,200 feet after pumping 24 hours, if no barrier boundary is encountered.

Analytical results for groundwater samples collected from the wells at the proposed Wang subdivision indicate an overall groundwater quality within the definition of fresh water (< 1,000 mg/L). Slightly elevated arsenic concentrations may be related to elevated turbidity concentrations. Total coliform bacteria were detected in the groundwater sample collected from Well 03-01132, but are probably due to the sampling protocols. Well 03-01132 should be re-developed and pumped so that a confirming groundwater sample can be collected and analyzed.

Initially, on-site wastewater disposal (individual septic tanks) was proposed for the project and would generate approximately 12.7 AFY of return flow to the watershed. The project has been

revised to be served by the Pasadera/Laguna Seca wastewater treatment facility. With the modified project plan that includes off-site wastewater treatment, there are no expected nitrate impacts from the proposed Wang subdivision. The net water demand for the proposed project (12 AFY) is estimated to be available from groundwater recharge at the proposed Wang subdivision watershed (approximately 446 AFY) during years of average precipitation. Additionally, groundwater storage ranging from 200 AF (beneath the proposed Wang subdivision property) to 494 AF (beneath the proposed Wang subdivision and project watershed) will provide additional supply.

Average rainfall amounts to 446 AFY. There is at least 200 AF of groundwater storage in the portion of the aquifer beneath the proposed Wang subdivision and a total aquifer storage (494 AF) that the proposed Wang subdivision can access from the project watershed. Even using the lower figure of 200 AF, there is a storage equivalent to 16 years of proposed Wang subdivision pumping (at 12 AFY) with no aquifer recharge. The State Water Board only requires the ability to meet a 3-year drought. The proposed Wang subdivision available water supply, combined with the concurrence by the Seaside Groundwater Basin Watermaster that the proposed Wang subdivision appears to be hydraulically disconnected to the Seaside Groundwater Basin Laguna Seca Subarea (Seaside Groundwater Basin Watermaster, 2012), will satisfy the 20-year water supply required for subdivision approval.

WATER RESOURCES AGENCY

# M E M O R A N D U M

Monterey County

**DATE:** March 6, 2014

**TO:** MCDEH

**FROM:** Peter Kwiek, PG

**SUBJECT:** Mr. & Mrs. Peter and Grace Wang Property, Revised & Updated Project Specific Hydrogeologic Report

The Agency has reviewed the report "Revised and Updated Project Specific Hydrogeologic Report, Peter and Grace Wang 26-Lot Subdivision," (PLN 10422), Monterey County California (report), Stephens & Associates, Inc (consultant), January 9, 2014. Our conclusion is that the report demonstrates the likely marginal on-site availability of a water supply for the proposed project but that more data is needed to determine whether the added demand could adversely impact the overdrafted Seaside Basin.

## Water Supply and Demand

The Agency feels that the consultant's finding of at least 200 acre feet (af) of accessible groundwater in storage is erroneous, and does not establish a 20-year water supply. However, the consultant also utilizes the site specific water balance criterion for determination of the availability of a long-term water supply, per the 1982 General Plan, which was in effect when the subject proposal was originally filed with the county. We have evaluated the report based on the latter approach.

Agency staff agree with the consultant that net project demand on local aquifers (12 af/y) is likely to be replenished by recharge associated with average annual rainfall, though with a smaller margin of error than implied by the consultant's analysis. Water balance calculations hinge on average annual precipitation totals. Although the report's assumed total of 18.09 inches/year is probably overstated, other parameters are reasonable and a more realistic precipitation value of 16.5 inches/year results in a close balance between supply (approximately 16 af/y) and demand (12 af/y).

On a larger scale, as the Agency stated in its 2004 review of the precursor hydrogeologic report (PES, Environmental, Inc, 2004), increased demand on the excessively overdrafted Santa Margarita Aquifer, from which extractions continue to equal 250% of safe yield, will likely add to the hydrologic imbalance of the adjudicated Seaside Basin. This would contribute to a decrease in groundwater storage and continued long-term degradation of water in the region. Despite the report's discussion of the Monterey Formation as possibly "the only source of groundwater in some parts of the upland and unnamed watersheds of Arroyo Del Rey, including the proposed Wang subdivision (page 15)", the proposed project's primary and secondary supply wells are perforated chiefly in the impacted Santa Margarita and Paso Robles formations. Only the low-yielding well 02-071 is perforated primarily within the Monterey Shale, and it is not capable of supplying water for the proposed subdivision.

Although the subject property lies just to the south of the recognized boundary of the Laguna Seca Subarea of the Seaside Basin (and therefore potentially beyond the administration of the Seaside Watermaster), available geologic cross sections and water level data presented in the subject report fail to establish the hypothesis of hydraulic separation between the subject property and the Laguna Seca Subarea. As the consultant notes, "long-term water level changes and trends are poorly documented between the proposed Wang subdivision and along the southern margin of the Laguna Seca Subarea (page 18)."

Lack of water level data proximal to the proposed subdivision but within the Laguna Seca Subarea precludes understanding of hydraulics and potential project impacts. Groundwater flow directions between aquifers underlying the subject property and the Laguna Seca Subarea of the Seaside Groundwater Basin (page 20) are speculative and lack sufficient supportive data.

The consultant's assertion concerning on-site water level trends that "water level declines for…wells [on the proposed Wang Subdivision] appear to average about a foot per year for the period 2002 to 2012 (page 18)," is unsupported by water level data presented for the four wells (Table 3 in the report). Specifically, the data is comprised of seasonally inconsistent samples covering between 2 and 5 distinct years, within the time range of the purported 10-year trend. Generally, water levels in wells tapping unconfined alluvial aquifers in Monterey County (such as within the subject property) tend to respond relatively quickly to precipitation events. Therefore, it is not always clear whether apparent year-to-year water level differences reflect actual storage change trends or the timing of measurements relative to transient seasonal fluctuations coinciding with rainfall-infiltration events. Thus, on-site water level trends are unknown.

Long term trends may only be discernable over decadal or longer timescales that account for seasonal fluctuations, wet and dry periods as well as long term trends. Monthly data for appropriately sited wells spanning decades may be needed to understand the nature of the hydraulic and hydrologic relationships between water bearing strata underlying the subject property and that of the Laguna Seca Subarea.

If, as the consultant speculates, water levels within the subject property are trending downward, the additional pumping demands of the proposed project may accelerate this trend. Also, if, as the consultant speculates, the flow direction of groundwater in wells screened within the impacted Santa Margarita Formation is from the Laguna Seca Subarea towards the Subject property, then water levels in the Subject Property may depend not merely on conditions within the subject watershed but also on conditions in the Seaside Basin and the Seaside Basin could be incrementally impacted by the subject proposal's increased demand. However, a paucity of relevant groundwater level data precludes definitive conclusions as to hydraulic connectivity, flow direction, long term changes, and trends.

**Conclusion**

The Agency finds that while subject report demonstrates the marginal on-site availability of a long-term water supply for the proposed project, determination of impacts to the adjudicated Seaside Basin await a better understanding of the hydraulic and hydrogeologic relationships between the subject property and the Laguna Seca Subarea. Data presented and referenced in the subject report is inconclusive as to local basin trends, gradients, flow direction and connectivity with the Seaside Basin. More data (properly located and of adequate duration and frequency) is needed to understand groundwater flow patterns and determine to what extent apparent groundwater gradients between the Laguna Seca Subarea and the Subject property actually exist and may or may not express the influence of a posited hydraulic barrier (i.e., The Chupines Fault). If the areas are hydraulically connected, the proposed project's added demand would likely add to regional overdraft and associated problems, without sufficient mitigation.

Staff concur with the report's recommended mitigation measures respecting water quantity and quality. Specifically, storm water retention, native vegetation, pervious pavement and dry wells would partially ameliorate the project's added contribution to basin overdraft. Additionally, water treatment should be required for wells on the subject property that do not meet state standards for both arsenic and total coliform bacteria.

*April 2014 notes for MCRMA use in review of*

# Revised and Updated Project-Specific Hydrogeologic Report
## Peter and Grace Wang 26-Lot Subdivision
## (PLN #010422)
**Prepared by Daniel B. Stephens & Associates, Inc. [DBSA]**
**August 2, 2013, Revised January 9, 2014**

**Page 11, second paragraph, fourth sentence.** This sentence states:

> "The Chupines Fault defines the southern extent of the unconsolidated or Shallow Alluvial Aquifer defined by the Monterey Peninsula Water Management District."

This statement, attributable to MPWMD (but without a specific citation as was described in our notes on the August 2, 2013 report), continues to be unclear and inaccurate in the context of the delineation of the southern boundary of the Laguna Seca Subarea of the Seaside Basin. While it is agreed that near the Wang property, "Shallow Alluvial Aquifer" sediments (e.g., fluvial, terrace, flood-plain, stream alluvium and basin deposits) are generally absent south of the Chupines Fault zone, it is not agreed that the fault defines the southern extent of shallow aquifer sediments in the Laguna Seca Subarea. In fact, the Chupines Fault exists beneath or within shallow alluvial (Qal) and continental (QTc) sediments, with these sediments occurring on both the northern and southern sides of the fault trace, as shown on Figure 2 and described on Page 17 of the Laguna Seca Subarea Phase III Hydrogeologic Update report prepared for MPWMD (Yates and others, 2002). The referenced statement above and other versions of it as found on Pages 15 and 28 of this report need to be corrected so as not to imply that the absence of shallow aquifer sediments is consistent with being located outside the boundary of the Laguna Seca Subarea. Rather, the southern boundary should be defined along the trace of the Chupines Fault zone; no further qualification is required.

**Page 12, Table 1.** Static water level (SWL) elevations for three of the Wang project wells are shown in this table, but these elevations do not agree with the elevations calculated from the reference point wellhead elevation and SWL measurement data that are shown in this table, which are: Well #02-071 = 174.31 ft; Well #03-01132 = 182.00 ft; Well #07-11024 = 164.57 ft. This discrepancy should be clarified or corrected.

**Page 18, fourth paragraph, fourth sentence.** This sentence states:

> "Although the temporal changes to water levels are poorly documented (see Table 3), water level declines for these wells appear to average about 1 foot per year for the period 2002 to 2012."

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Given the paucity of available water-level data, we concur that both seasonal (temporal) and long-term water levels for the Wang project wells are poorly documented. Accordingly, an ongoing water-level monitoring program needs to be undertaken in order to better assess water-level trends both within the Wang project area and in the adjacent area of the Laguna Seca Subarea. However, based on the DBSA assessment of water-level declines over time using the existing water-level data, we raised the question in our notes on the August 2, 2013 report regarding the potential implications to the long-term sustainability of the project's supply; this question has not been addressed in the January 9, 2014 revised report.

**Page 20, first paragraph, third sentence.** This sentence states:

> "In contrast to the flow direction observed for Well 02-072 (south to north), Wells 02-071, 03-01132, and 07-11024 (located south of or within the Chupines Fault) indicate a groundwater flow direction from north to south, based on water levels of 180 to 200 ft msl in January-March 2012 in the Laguna Seca Subarea (Figure 27 of HydroMetrics [2012]) and 161 to 174 ft msl in March 2012 beneath the Wang subdivision (Table 3)."

Given that the historical and current water levels and long-term trends are poorly documented in the vicinity of the Wang property, the significance of the suggested water-level differences between the Laguna Seca Subarea and the proposed Wang project main and back-up wells is questionable. If the differences in water levels between the Wang wells and the adjacent area of the Laguna Seca Subarea were better documented and on the order of 100 feet, i.e., the magnitude that had been described earlier based on incorrect well reference elevations (DBSA, 9/5/2012, Table 1; DBSA, 5/14/2012, Page 4), this magnitude of water-level displacement may have been considered relevant in terms of the potential that the Chupines Fault zone could be acting to impede groundwater flow between these areas. However, the suggested water-level differences on the order of 20 – 25 feet are not substantially different and are likely within the "noise" of local water-level variability as has been documented elsewhere within the Laguna Seca Subarea. For example, Santa Margarita aquifer water levels within the Laguna Seca Subarea have revealed a water-surface elevation difference of more than 50 feet in monitor wells that are approximately 1,000 feet apart (Yates and others, 2002, Page 20). Further, it is important to note that there are very few actual water-level control points (wells) in the Laguna Seca Subarea adjacent to the Wang property; the nearest control point on the contour map for the January-March 2012 period referenced in the statement above is approximately 5,000 feet from the Wang supply wells, and the nearest control point in the contour map for the July/August 2012 period is approximately 3,000 feet distant (HydroMetrics, 2012, Figures 27 and 28, respectively). In fact, the 200-ft elevation contour line on the January-March 2012 contour map had to be inferred based on lack of control data (HydroMetrics, 2012, Figure 27).

**Page 29, first paragraph, first sentence.** This sentence states:

> "Significant groundwater level elevation differences occur between the proposed Wang subdivision (Wells 02-071, 03-01132, and 07-11024) and the Laguna Seca Subarea wells (regional groundwater contour maps)."

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We do not concur with this statement. As described above, we believe the existing limited water-level data both within the Wang project area and in the adjacent area of the Laguna Seca Subarea to the north are insufficient to make this conclusion.

**Page 29, first paragraph, third sentence.** Sentence states:

> "The Chupines Fault is responsible for these differences in water levels."

We believe this statement, which implies that the Chupines Fault zone represents an effective flow barrier boundary between the Wang project wells and the adjacent Laguna Seca Subarea, cannot be supported by the data and evaluation provided in this report. Given that the geologic materials encountered in wells completed both within the Wang project area and the adjacent Laguna Seca Subarea can transmit water via the Santa Margarita aquifer and lacking proof that there is an effective barrier to groundwater flow between these two areas, we have conservatively presumed there is no flow barrier between the Wang project wells and the Laguna Seca Subarea, until conclusive evidence can be developed to the contrary. Further, we continue to believe, as has been described in multiple prior project review discussions, correspondence and work plans dating back to at least 2008 (e.g., see revised work plan in PES 12/4/2008 report), that in order to more definitively understand the hydrogeologic nature and connectivity between the Wang project wells and the Laguna Seca Subarea, a professionally-conducted aquifer test with appropriate observation well monitoring data would need to be conducted. This testing would need to include at a minimum one observation well screened in the Santa Margarita aquifer unequivocally located within the Laguna Seca Subarea and within the anticipated radius of influence of the test pumping.

**Figure 1, Location Map of Proposed Wang Subdivision**. This map shows the location of the Wang property and wells, along with projections of the groundwater basin, subarea and Chupines Fault boundaries. We note that when this map is geo-rectified and compared with the GIS overlay coverage of the fault system and subarea boundaries from the Laguna Seca Phase III report (Yates and others, 2002), the boundaries do not precisely coincide. This is shown on **Attachment 1** below. In particular, the location of the Chupines Fault is shown to wrap to the north of the main Wang wells on Figure 1 of the DBSA report, whereas the GIS overlay coverage shows fault traces plotting on the on the south side of these wells. The fault system coverage depicted in the Laguna Seca Phase III report was sourced from the from the USGS's digital mapping of the Monterey and Seaside 7.5-minute quadrangles and Spreckels 7.5-minute quadrangle (Clark, Dupré and Rosenberg, 1997; and Clark, Brabb and Rosenberg, 2000; respectively). This uncertainty with respect to the Chupines Fault location on Figure 1 relative to the USGS map data, along with the paucity of water-level data, occurrence of Santa Margarita aquifer sediments adjacent to the Wang supply well screened intervals and lack of convincing evidence of an effective groundwater flow barrier between the Wang wells and the Laguna Seca Subarea as described above, underscores the need for a more comprehensive and defensible approach to resolving the issue of the hydrogeologic relationship between the Wang project wells and the Laguna Seca Subarea.

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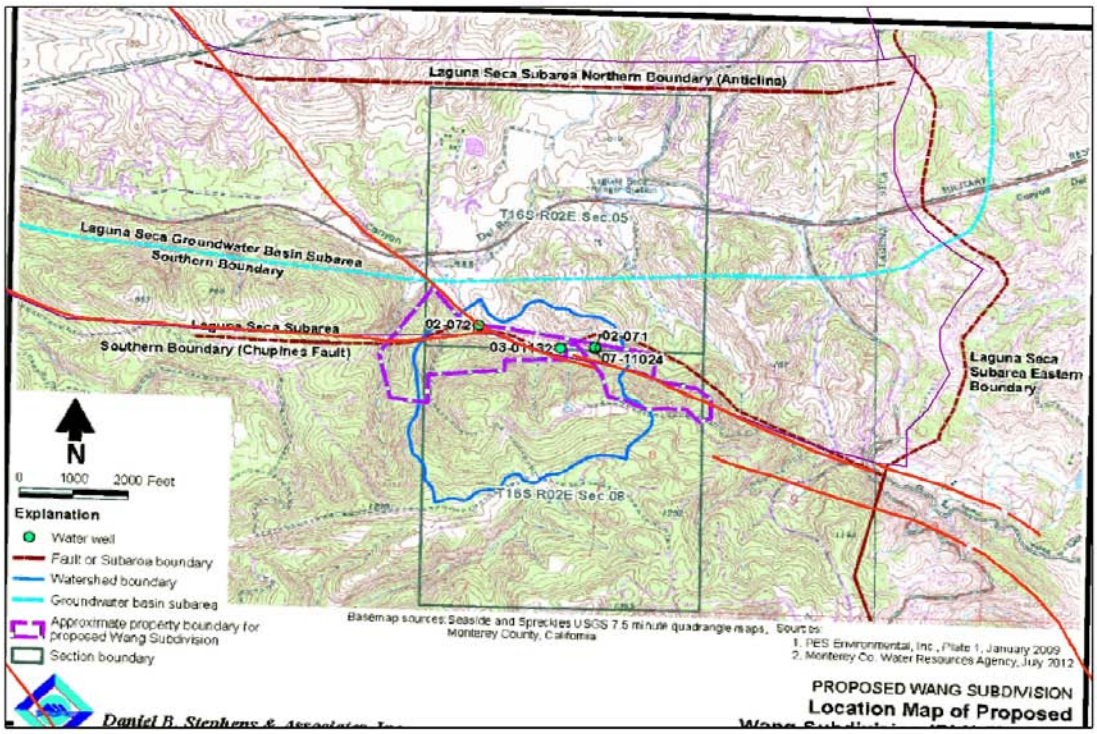
Laguna Seca Subarea Northern Boundary (Anticline)
T16S R02E Sec.05
Laguna Seca Groundwater Basin Subarea Southern Boundary
Laguna Seca Subarea Southern Boundary (Chupines Fault)
02-072
03-011322
02-071
07-11024
Laguna Seca Subarea Eastern Boundary
T16S R02E Sec.08
N
0 1000 2000 Feet
Explanation
Water well
Fault or Subarea boundary
Watershed boundary
Groundwater basin subarea
Approximate property boundary for proposed Wang Subdivision
Section boundary
Basemap sources: Seaside and Spreckles USGS 7.5 minute quadrangle maps, Monterey County, California
Sources:
1. PES Environmental, Inc., Plate 1, January 2009
2. Monterey Co. Water Resources Agency, July 2012
PROPOSED WANG SUBDIVISION
Location Map of Proposed
Daniel B. Stephens & Associates

## *SEASIDE BASIN WATER MASTER*
## *TECHNICAL ADVISORY COMMITTEE*

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

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|---|---|
| **MEETING DATE:** | May 14, 2014 |
| **AGENDA ITEM:** | 4 |
| **AGENDA TITLE:** | Continued Discussion of HydroMetrics Modeling of the Laguna Seca Subarea |
| **PREPARED BY:** | Robert Jaques, Technical Program Manager |

**SUMMARY:**

At the TAC's April 9, 2014 meeting there was discussion of the Board's direction on this matter at their April 2, 2014 meeting. That direction is summarized as follows:

With regard to the TAC's Technical Recommendations the Board unanimously approved authorizing HydroMetrics to perform additional modeling to better determine:

1. Whether reducing or eliminating pumping by Alternative Producers in the Laguna Seca Subarea (LSS) would appreciably reduce the rate at which groundwater levels are falling in the LSS.
2. The impact on groundwater levels in the LSS of pumping from outside the eastern and southeastern boundaries of the LSS.
3. Have MPWMD, working as a subcontractor to HydroMetrics, do further research on wells for which well drawdown and casing elevation data was not previously available for use in HydroMetrics' modeling of the LSSA, and if such data can be obtained provide it to HydroMetrics for inclusion in the final modeling report.

With regard to the Non-Technical Issues, the Board:

1. Directed staff to notify the Court of the findings of the HydroMetrics work and to inform the Court that the Watermaster would be conducting additional modeling to get a clearer understanding of the situation. Providing this notification to the Court is being pursued by the Executive Officer.
2. The Board chose to defer notifying producers within the LSS about those findings until the additional modeling work has been performed. This topic will likely be discussed by the Board after the TAC's review of the additional modeling work has been completed and any TAC recommendations coming out of that work have been presented to the Board.
3. The Board took no action regarding making a determination as to whether Alternative Producers in the LSS should be directed to reduce their pumping, nor did it take any action regarding contacting the Court about reestablishing the Basin boundary for the LSS. These issues will likely also be taken up by the Board after HydroMetrics completes the additional modeling that was authorized at the April 2 Board meeting.

The April 2 Board discussion included two other topics which are the focus of today's discussion:

1. Potentially having a peer review performed of the HydroMetrics' modeling work on the Laguna Seca subarea.
2. Developing a scope of work for HydroMetrics to perform further modeling and analysis to determine the proper location of the boundary of the Seaside Basin in the Laguna Seca subarea.

**Peer Review:** With regard to the first of these two items I made the following request to a number of agencies and individuals that I believed would have knowledge of firms that would have the necessary expertise to perform a peer review:

*At some point the Watermaster may need to have a peer review done of HydroMetrics' modeling work on the*

*Laguna Seca Subarea. This in anticipation of potentially needing to have other non-Parties to the Adjudication Decision accept the findings of that work in conjunction with discussions we may end up having with them regarding being brought into the Decision (if the Basin boundary is expanded in this area).*

*If you can provide me the names and contact information for any firms that you feel would be qualified to perform such a peer review, your input would be much appreciated. I don't envision getting into a peer review in the immediate future, but would like to start preparing for that if we need to do it.*

Here is a summary of the responses I received:

- HydroMetrics (Derrik Williams): The name you will likely hear many times is Gus Yates. He currently works for Todd Groundwater. He clearly has a history with the basin, having written some of the fundamental reports used in the model development. Additionally, he is currently conducting a peer review of our work for the Soquel Creek Water District. I don't think Gus wants to make a career around reviewing our reports, but he would be a good choice. Other suggestions might include West Yost & Associates in Davis. Tim Durbin used to work for them, and they have some good hydrogeologists, and they are working on the Carmel water transfer job [water transfer involving the Odello land near the Carmel River] (sort of local experience).
- MRWPCA (Bob Holden): We have used other hydrogeologic firms but they haven't been as good as Todd.
- MPWMD (Joe Oliver): I concur with the thoughts in HydroMetrics' response.
- Martin Feeney (hydrogeologist who performs work for the Watermaster involving the construction and operation of monitoring wells): I agree with Derrik and Joe. Gus would be the best choice. The last work I did in Laguna Seca was with Gus - he's the right guy. But if you need to have multiple choices, you might add Peter Lefler with Fugro in Oakland as a possibility.
- Todd Associates (Phyllis S. Stanin - hydrogeologists who are performing work for MRWPCA on the GWRP): We would be very interested in this. Specifically, Gus Yates, a Senior Hydrologist with Todd Groundwater, was the lead author on one of the definitive reports in Laguna Seca (Laguna Seca Subarea Phase III Hydrogeologic Update, prepared for MPWMD, Yates, Feeney, and Rosenberg, November 2002). He is also an accomplished groundwater modeler (former USGS) and is in the process of doing a peer review of a HydroMetrics model for Soquel Creek Water District. I'm sure that he would be excellent for such a task.

I am not aware of any contracting policies or rules that apply to the Watermaster in terms of having to solicit proposals from multiple firms to perform work of this type, since the Watermaster is an arm of the Superior Court and not a public entity like a city or a county. Given this, and the very specific knowledge of the Seaside Basin which would be necessary in order to perform a peer review of the work HydroMetrics has performed, I recommend that the Watermaster select Todd Groundwater, and specifically Gus Yates, when and if it is determined (by the Board) that a peer review should be performed.

**Developing a Scope of Work for HydroMetrics to Perform Further Modeling:** With regard to the second of these two items, if a proposed revised boundary for this area of the Seaside Basin does not come out of the additional Laguna Seca modeling that HydroMetrics is currently working on (it is not a scope item in that work), we will need to develop a scope of work for further modeling and analysis to determine the proper location of the boundary of the Seaside Basin in the Laguna Seca subarea. This will likely be a complicated undertaking and a number of assumptions will likely have to be made. Some of my thoughts about the topics the scope of work could include are:

## *SEASIDE BASIN WATER MASTER*
## *TECHNICAL ADVISORY COMMITTEE*

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

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| **AGENDA ITEM:** | 4 (Continued) |

1. Develop a well inventory within a reasonable distance outside the Basin in this area, so that this information can be added to the Watermaster's existing database and input into the Model.
2. Develop production rates for wells both inside and outside the current Basin boundary for use in performing this modeling.
3. Develop a series of hypothetical incrementally expanded Basin boundaries in this area and perform modeling within the expanded boundaries to develop Operating Safe Yields for each of the hypothetical expanded basins.
4. Within each hypothetically expanded basin, determine the pumping reductions that would be necessary to keep total pumping within the Operating Safe Yields determined under item 3, and to stabilize groundwater levels at levels which are acceptable.
5. Determine how far the Basin boundary would need to be extended in order for the pumping reductions determined under item 4 above to fall within a reasonable and tolerable range.
6. With the determination from item 5 above, prepare a proposed redefined Basin boundary in this area.

I request the TAC's input to assist me in developing the scope of work, and would like to have a preliminary discussion of this at today's meeting, so that if a contract with HydroMetrics to perform this additional modeling is needed, we will be able to develop it in as short a time period as possible.

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| **ATTACHMENTS:** | None |
| **RECOMMENDED ACTION:** | Approve Technical Program Manager's recommendation to select Todd Groundwater to perform a peer review of the Laguna Seca modeling work HydroMetrics has performed, in anticipation of the Board directing that a peer review be performed at a future date. |

## *SEASIDE BASIN WATER MASTER*
## *TECHNICAL ADVISORY COMMITTEE*

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

| | |
|---|---|
| **MEETING DATE:** | May 14, 2014 |
| **AGENDA ITEM:** | 5 |
| **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 Schedule of the activities being performed by the Watermaster, its consultants, and the public entity, MPWMD, which is performing certain portions of the work.

Attached is the most recent update of the Work Schedule for FY 2014.

This version includes new tasks for additional work, TAC discussions, and Board discussions regarding HydroMetrics modeling of the Laguna Seca subarea.

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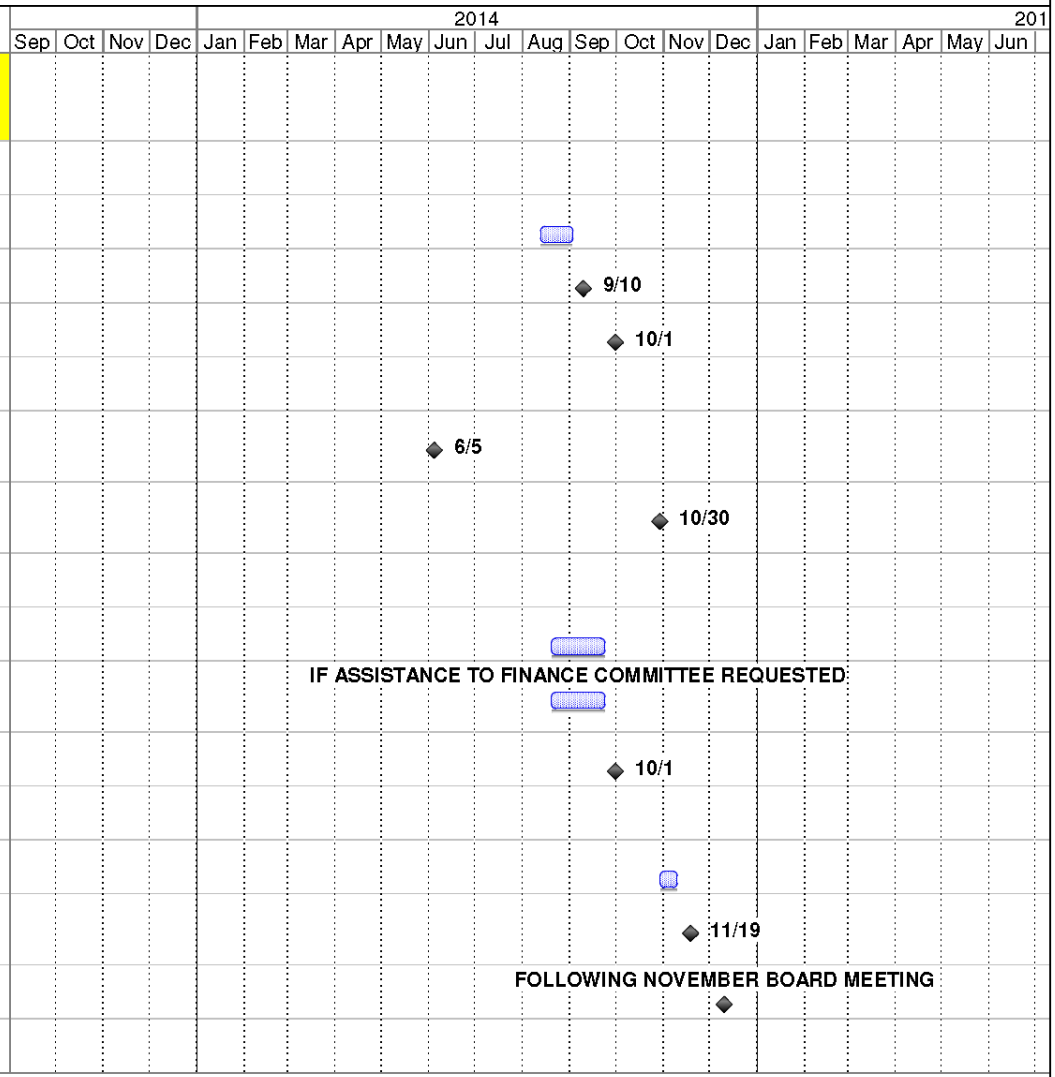
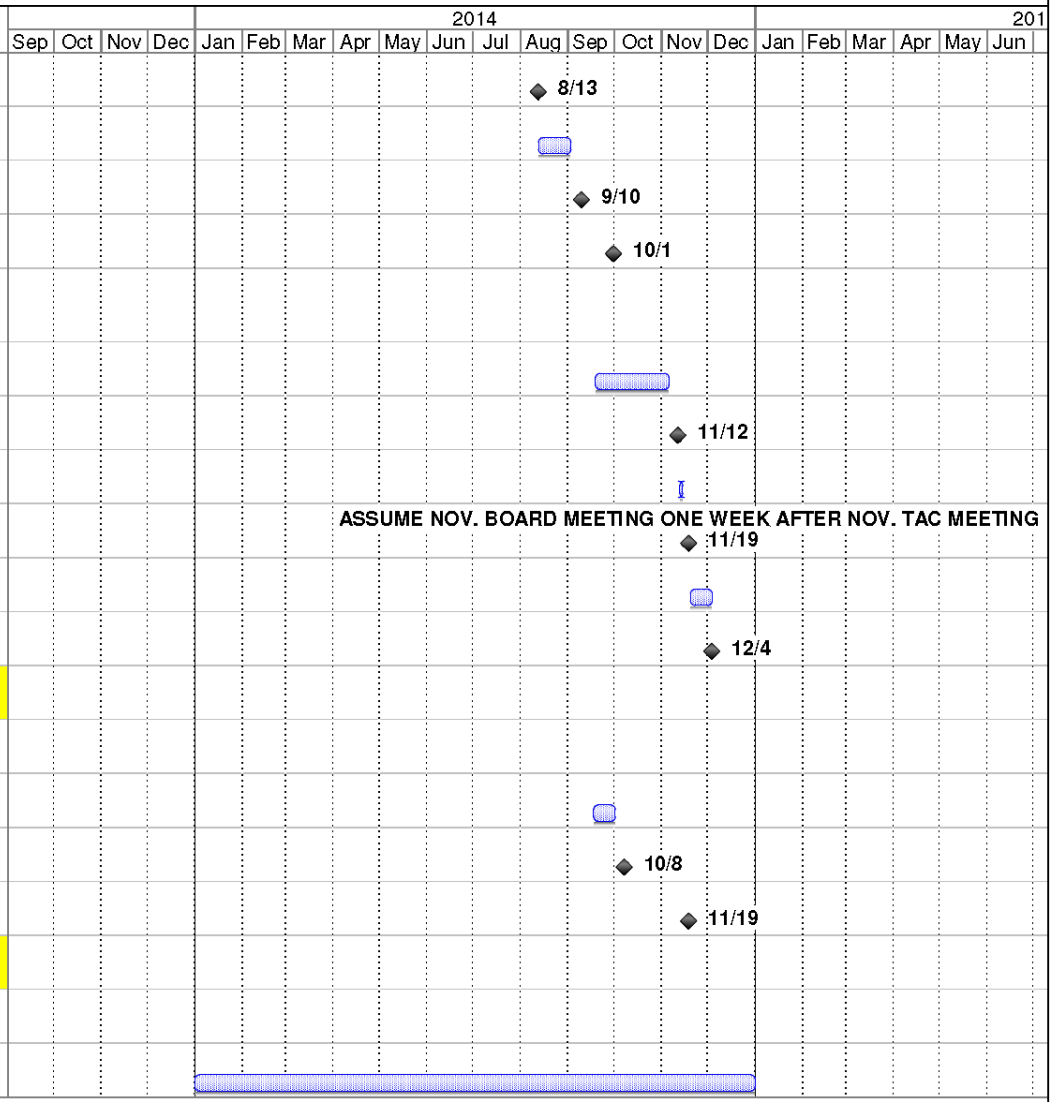
| **ATTACHMENTS:** | Schedule of Work Activities for FY 2014 |
| **RECOMMENDED ACTION:** | Provide Input to Technical Program Manager Regarding Any Corrections or Additions to these Schedules |

# Seaside Basin Watermaster
# Monitoring and Management Program
# 2014 Work Schedule

| ID | Task Name |
|---|---|
| 1 | ***CRITICAL PROJECT MILESTONES ASSOCIATED WITH TAC, BOARD, AND/OR CONSULTANT WORK*** |
| 2 | **2015 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 Annual Water Production, Water Level, and Water Quality Report for 2013 (Same as Task 42) |
| 9 | **Replenishment Assessment Unit Costs for Water Year 2014** |
| 10 | B&F Committee Develops Replenishment Assessment Unit Cost for 2014 Water Year |
| 11 | If Requested, TAC Provides Assistance to B&F Committee in Development of 2014 Water Year Replenishment Assessment Unit Cost |
| 12 | Board Adopts and Declares 2014 Water Year Replenishment Assessment Unit Cost |
| 13 | **Replenishment Assessments for Water Year 2014** |
| 14 | Watermaster Prepares Replenishment Assessments for Water Year 2014 |
| 15 | Watermaster Board Approves Replenishment Assessments for Water Year 2014 (At November Meeting) |
| 16 | Watermaster Levies Replenishment Assessment for 2014 |
| 17 | **Monitoring & Management Program (M&MP) Budgets for 2015 and 2016** |



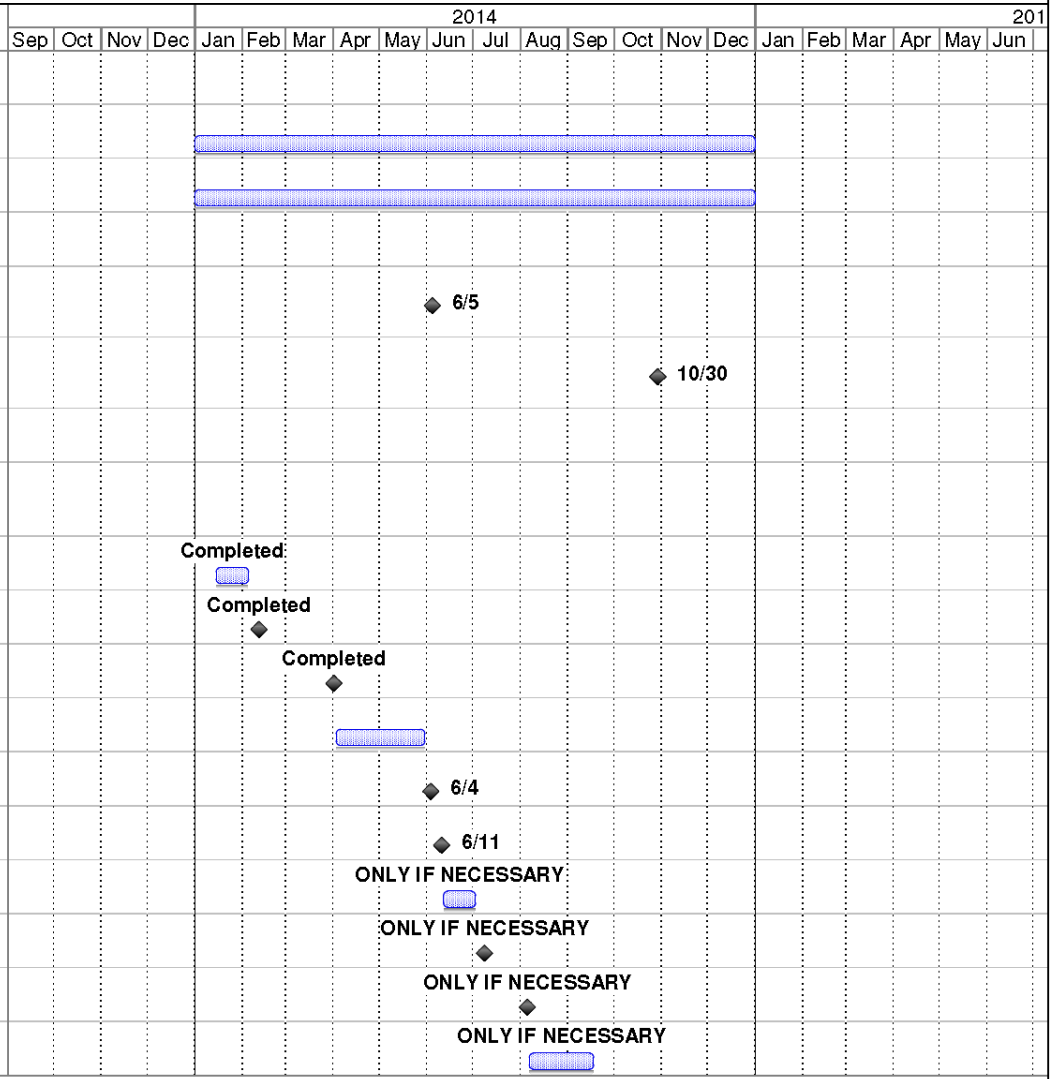
# Seaside Basin Watermaster
# Monitoring and Management Program
# 2014 Work Schedule



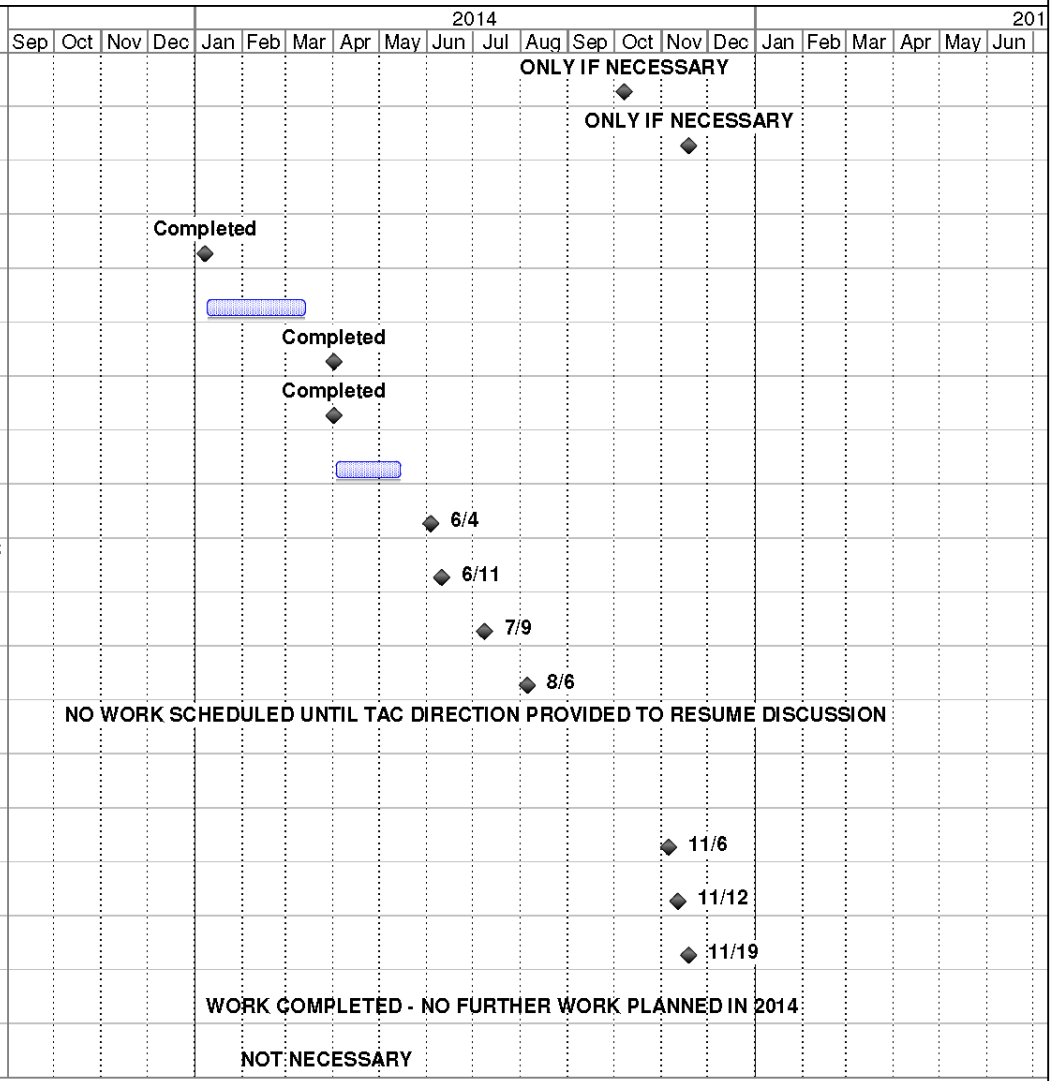

| ID | Task Name |
|---|---|
| 18 | Preliminary Discussion of Potential Scope of Work for 2015 M&MP |
| 19 | Prepare Draft 2014 and 2015 M&MP O&M and Capital Budgets |
| 20 | TAC approves Draft 2015 and 2016 M&MP O&M and Capital Budgets |
| 21 | Board approves 2015 and 2016 M&MP O&M and Capital Budgets |
| 22 | **2013 Annual Report (Note: Schedule Reflects Court Approval of Later Submittal Date for Annual Report)** |
| 23 | Prepare Preliminary Draft 2014 Annual Report |
| 24 | TAC Provides Input on Draft 2014 Annual Report |
| 25 | Prepare Revised Draft 2014 Annual Report (Incorporating TAC Input) |
| 26 | Board Provides Input on Revised Draft 2014 Annual Report (At November Board Meeting) |
| 27 | Prepare Final 2014 Annual Report (Incorporating Board Input) |
| 28 | Watermaster Submits Final 2014 Annual Report to Judge |
| 29 | ***MANAGEMENT*** |
| 30 | **M.1 PROGRAM ADMINISTRATION (All Work Performed by Watermaster Staff)** |
| 31 | Prepare Initial Consultant Contracts for 2015 |
| 32 | TAC Approval of Initial Consultant Contracts for 2015 |
| 33 | Board Approval of Initial Consultant Contracts for 2015 (At November Board Meeting) |
| 34 | ***IMPLEMENTATION*** |
| 35 | **I.2.a DATABASE MANAGEMENT** |
| 36 | **I.2.a.1 Conduct Ongoing Data Entry/Database Maintenance** |

# Seaside Basin Watermaster
# Monitoring and Management Program
# 2014 Work Schedule

| ID | Task Name |
|---|---|
| 37 | **I.2.b DATA COLLECTION PROGRAM** |
| 38 | **I.2.b.2 Collect Monthly Water Levels (MPWMD)** |
| 39 | **I.2.b.3 Collect Quarterly Water Quality Samples (MPWMD)** |
| 40 | **I.2.b.6 Reports (from MPWMD)** |
| 41 | Watermaster Prepares Combined Quarterly Water Production, Water Level, and Water Quality Reports for 1st & 2nd Quarters |
| 42 | Watermaster Prepares Annual Water Production, Water Level, and Water Quality Report for 2014 |
| 43 | **I.3.a ENHANCED SEASIDE BASIN GROUNDWATER MODEL** |
| 44 | **I.3.a.1 Update (and Potentially Recalibrate) Existing Groundwater Model** |
| 45 | Prepare RFS for HydroMetrics to Update Model and Check Accuracy |
| 46 | TAC Approves RFS to HydroMetrics |
| 47 | Board Approves RFS to HydroMetrics |
| 48 | HydroMetrics Updates Model and Checks Accuracy |
| 49 | HydroMetrics Presents Draft Model Update Report to TAC |
| 50 | HydroMetrics Presents Model Update Report to Board |
| 51 | Prepare RFS for HydroMetrics to Recalibrate Model |
| 52 | TAC Approves RFS to HydroMetrics |
| 53 | Board Approves RFS to HydroMetrics |
| 54 | HydroMetrics Recalibrates Model |



# Seaside Basin Watermaster
# Monitoring and Management Program
# 2014 Work Schedule




| ID | Task Name |
|---|---|
| 55 | HydroMetrics Presents Draft Model Recalibration Report to TAC |
| 56 | HydroMetrics Presents Model Recalibration Report to Board |
| 57 | **I.3.a.3 Perform Modeling of Laguna Seca Subarea** |
| 58 | HydroMetrics Completes Draft Modeling Report and Presents Results to TAC |
| 59 | Initial TAC Discussion of Findings from Modeling Report and Preparation of Initial Recommendations to Board |
| 60 | Initial TAC Recommendations Presented to Board |
| 61 | Board Direction Provided to TAC |
| 62 | HydroMetrics Performs the Additional Modeling Recommended by the TAC |
| 63 | HydroMetrics Presents Additional Modeling Report to TAC and TAC Prepares Recommendations to Board |
| 64 | Presentation of HydroMetrics Additional Modeling Report and TAC Recommendations to Board |
| 65 | Further TAC Discussions and Preparation of Additional Recommendations to Board (if necessary) |
| 66 | Additional TAC Recommendations Presented to Board (if necessary) |
| 67 | **I.3.c Refine and/or Update the BMAP** |
| 68 | **I.4.c Annual Seawater Intrusion Analysis Report (SIAR)** |
| 69 | HydroMetrics Provides Draft SIAR to Watermaster |
| 70 | TAC Approves Annual Seawater Intrusion Analysis Report (SIAR) |
| 71 | Board Approves Annual Seawater Intrusion Analysis Report (SIAR) |
| 72 | **I.4.d Complete Preparation of Seawater Intrusion Response Plan (SIRP)** |
| 73 | **I.4.e Refine and/or Update the SIRP** |

## *SEASIDE BASIN WATER MASTER TECHNICAL ADVISORY COMMITTEE*

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

| | |
|---|---|
| **MEETING DATE:** | May 14, 2014 |
| **AGENDA ITEM:** | 6 |
| **AGENDA TITLE:** | Other Business |
| **PREPARED BY:** | Robert Jaques, Technical Program Manager |

**SUMMARY:**
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.

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| **ATTACHMENTS:** | None |
| **RECOMMENDED ACTION:** | None required – information only |

## *SEASIDE BASIN WATER MASTER TECHNICAL ADVISORY COMMITTEE*

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

| | |
|---|---|
| **MEETING DATE:** | May 14, 2014 |
| **AGENDA ITEM:** | 7 |
| **AGENDA TITLE:** | Set Next Meeting Date |
| **PREPARED BY:** | Robert Jaques, Technical Program Manager |

**SUMMARY:**

The next TAC meeting date would normally be the 2nd Wednesday in June, which is June 11, 2014.

HydoMetrics expects to finish its updated modeling of the Laguna Seca subarea in time to make a presentation on it in early June. If the TAC meets on its normal June date, then HydroMetrics' presentation on this modeling work would not be made to the Board until the Board's July meeting, since the Board likes the TAC to first receive the information so it can provide its input and/or recommendations to the Board when the Board receives that information.

In order for this information to reach the Board as quickly as possible, I am recommending that the TAC change its June meeting date to the 1st Wednesday, June 4, and that the Board change its meeting date to the 2nd Wednesday, June 11.

HydroMetrics has confirmed that it will have its material ready to present to the TAC by June 4.

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| **ATTACHMENTS:** | None |
| **RECOMMENDED ACTION:** | Set the next TAC meeting date for June 4, 2014, rather than the normal date of June 11, 2014 |