

**SPECIAL MEETING OF THE GROUNDWATER QUALITY COMMITTEE
OF THE BOARD OF DIRECTORS
WATER REPLENISHMENT DISTRICT OF SOUTHERN CALIFORNIA
4040 PARAMOUNT BOULEVARD, LAKEWOOD, CA 90712
12:30 P.M., TUESDAY, OCTOBER 26, 2010**

AGENDA

EACH ITEM ON THE AGENDA, NO MATTER HOW DESCRIBED, SHALL BE DEEMED TO INCLUDE ANY APPROPRIATE MOTION, WHETHER TO ADOPT A MINUTE MOTION, RESOLUTION, PAYMENT OF ANY BILL, APPROVAL OF ANY MATTER OR ACTION, OR ANY OTHER ACTION. ITEMS LISTED AS "FOR INFORMATION" MAY ALSO BE THE SUBJECT OF ANY "ACTION" TAKEN BY THE BOARD OR A COMMITTEE AT THE SAME MEETING.

- 1. DETERMINATION OF A QUORUM**
- 2. PUBLIC COMMENT**
- 3. APPROVAL OF THE MINUTES OF AUGUST 24, 2010**
Staff Recommendation: Approve as submitted.
- 4. GROUNDWATER CONTAMINATION UPDATE**
Staff Recommendation: For information.
- 5. GROUNDWATER QUALITY PROJECTS AND PROGRAMS**
Staff Recommendation: For information.
- 6. DIRECTORS' REPORTS, INQUIRIES, AND FOLLOW UP OF DIRECTIONS TO STAFF**
- 7. ADJOURNMENT**

Posted by Abigail C. Andom, Deputy Secretary, October 25, 2010.

In compliance with the Americans with Disabilities Act (ADA), if special assistance is needed to participate in the Board meeting, please contact Deputy Secretary Abigail Andom at (562) 921-5521 for assistance to enable the District to make reasonable accommodations.

All public records relating to an agenda item on this agenda are available for public inspection at the time the record is distributed to all, or a majority of all, members of the Board. Such records shall be available at the District office located at 4040 Paramount Boulevard, Lakewood, California 90712.

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UNAPPROVED
MINUTES

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**MINUTES OF AUGUST 24, 2010
SPECIAL MEETING OF THE GROUNDWATER QUALITY COMMITTEE
OF THE BOARD OF DIRECTORS OF THE
WATER REPLENISHMENT DISTRICT OF SOUTHERN CALIFORNIA**

A special meeting of the Groundwater Quality Committee of the Board of Directors of the Water Replenishment District of Southern California was held on Tuesday, August 24, 2010, 1:09 p.m., at the District Office, 4040 Paramount Boulevard, California. Chairperson Sergio Calderon called the meeting to order and presided thereover. Administrative Specialist Sheryll A. Moffat recorded the minutes.

1. DETERMINATION OF A QUORUM

Committee: Directors Sergio Calderon and Albert Robles
Director Rob Katherman was an observer.

Staff: Ted Johnson, Nancy Matsumoto, Phuong Ly,
Special Counsel Ellin Davtyan

Guests: Mark Trudell, Steve Winners, Janine Forrest and
Roy Fedotaft of Worley Parsons

2. PUBLIC COMMENT

None.

3. APPROVAL OF THE MINUTES OF JULY 28, 2010

The minutes were approved as submitted.

The agenda items were taken out of order.

7. CLOSED SESSION

Conference with Legal Counsel-Anticipated Litigation pursuant to
Government Code §54956.9 (b), One Case

The Committee went into closed session. The Committee reconvened in
open session.

District Counsel Ellin Davtyan reported that for Agenda Item 7, there was
no reportable action.

Director Katherman left the meeting.

- 4. **GROUNDWATER CONTAMINATION UPDATE**
- 5. **GROUNDWATER QUALITY PROJECTS/PROGRAMS**

Chairman Calderon said that Agenda Items 4 and 5 will be deferred to the September meeting.

- 6. **TIME AND FEE AMENDMENT TO MWH LABORATORIES PROFESSIONAL SERVICES AGREEMENT FOR WATER QUALITY TESTING**

Chief Hydrogeologist Ted Johnson said that the District currently uses MWH Laboratories to perform analytical testing for the majority of the District's water quality samples. Mr. Johnson stated that staff has been extremely satisfied with their work. He said that MWH discounted their rates to WRD by 35% compared to their 2006 rates and has not increased rates to WRD over the course of the current 3-year agreement. He noted that their rates to WRD are currently lower than any other laboratory rates identified by staff and they have committed to keeping their existing low rates during the time extension of the contract to June 30, 2011. Staff would like to extend their contract termination date to June 30, 2011.

After discussion, the Committee recommended that the contract be extended to June 30, 2011, subject to approval of form by District Counsel, and then be extended at the existing rates for an additional three (3) years to June 30, 2014, subject to approval of form by District Counsel.

- 8. **DIRECTORS' REPORTS, INQUIRIES, AND FOLLOW UP OF DIRECTIONS TO STAFF**

None .

- 9. **ADJOURNMENT**

There being no further business to come before the Committee the meeting was adjourned at 1:43 p.m.

Chairperson

ATTEST:

Director



MEMORANDUM

ITEM NO. 4

Prepared by: Phuong Ly

Reviewed by: Ted Johnson

Approved by: Robb Whitaker

DATE: OCTOBER 26, 2010

TO: GROUNDWATER QUALITY COMMITTEE

FROM: ROBB WHITAKER, GENERAL MANAGER

SUBJECT: GROUNDWATER CONTAMINATION UPDATE

CONTAMINATED GROUNDWATER SITES

With the cooperation and support of stakeholders such as the United States Environmental Protection Agency (USEPA), California Regional Water Quality Control Board, Los Angeles Region (RWQCB), and California Department of Toxic Substances Control (DTSC), WRD developed a list of high-priority contaminated groundwater sites within District boundaries. This list is a living document, subject to cleanup and "closure" of sites as well as discovery of new sites warranting further attention. Currently, the list includes 46 sites across the Central and West Coast Basins.

WRD has been working with the lead regulatory agencies for each of these sites to keep abreast of their status, review and provide recommendations as needed, facilitate progress in site characterization and cleanup, and provide technical and financial assistance when necessary. Below is a discussion of two sites that were recently updated with information obtained from the lead regulatory agency.

ARCO (BP) REFINERY (WEST COAST BASIN)

The 702-acre active refinery has been operating under various owners since 1923. The refinery produces a range of products, including gasoline, jet fuel, diesel, liquefied petroleum gas (LPG), sulfur, and petroleum coke. A cogeneration plant, located on site, produces power to supply the refinery and to export to utilities. Due to historical site activities, groundwater beneath the site is contaminated and investigation and remediation activities are being conducted under a Cleanup and Abatement Order issued by the RWQCB. Details follow regarding these ongoing investigation and remediation activities.

Constituents of concern in groundwater beneath the site include gasoline, diesel, volatile organic compounds (VOCs), and fuel oxygenates. One or more of these constituents have been detected in the water table aquifer, the Gage Aquifer, and the Lynwood Aquifer. As of March 2009, no chemicals of concern have been detected in the nearest active production (drinking water) wells.

Remediation activities at the site consist of light non-aqueous phase liquid (LNAPL) recovery (since January 1977). Currently, there are 9 fixed LNAPL recovery/groundwater remediation systems (pump-and-treat) and several mobile LNAPL recovery units operating on site and at

the site perimeter (to control off-site migration of LNAPL). As of the end of 2009, cumulative LNAPL recovered from groundwater totals 489,591 barrels (20,562,808 gallons).

Additionally, ARCO is a member of the Carson Regional Groundwater Group (CRGG), which is a group of refineries that are working with the USEPA and RWQCB to track commingled dissolved phase plumes in the region. CRGG is working with USEPA, RWQCB, the United State Geological Survey (USGS), and WRD to develop a 3-dimensional groundwater flow model to better understand the potential flow paths of LNAPL, petroleum hydrocarbon constituents, & fuel oxygenates to receptor wells (i.e., nearby drinking water production wells) in the region. CRGG has also installed multiple groundwater monitoring wells throughout the region that are screened in the Gage, Lynwood, and Silverado Aquifers. These wells are sampled on a semi-annual basis.

FORMER ASHLAND CHEMICAL COMPANY (CENTRAL BASIN)

The 10-acre site is currently developed as a business park, with 16 active commercial buildings. From the 1960s through January 2002, Ashland Chemical Company conducted chemical blending, packaging, and distribution at the site. There were 46 underground storage tanks (USTs) and 61 aboveground storage tanks (ASTs) used as part of the site operations. Soil and groundwater contamination has occurred at the site, but the site is actively undergoing investigation and remediation activities. Details follow regarding these ongoing investigation and remediation activities.

Chemicals of concern in groundwater beneath the site (specifically, the merged Artesia/Gage Aquifers) are volatile organic compounds (VOCs). The two nearest drinking water production wells are also contaminated with VOCs, specifically tetrachloroethene (PCE) and/or trichloroethene (TCE), with concentrations over their respective Maximum Contaminant Levels (MCLs). Both wells currently have wellhead treatment systems.

Soil removal actions and soil vapor extraction was conducted at the site between 1998 and 2003. In 2003, the RWQCB issued a "no further action" letter for site soils. Since 1990, groundwater pump-and-treat has been conducted on site to reduce VOC concentrations in VOCs in groundwater. Overall, over 8,800 pounds of VOCs have been recovered from groundwater. Additionally, air sparging was conducted from April 1998 through 2003 at the north portion of the site to enhance groundwater cleanup and reduce off-site VOC concentrations in groundwater.

In March and April 2010, two well clusters were installed at two off-site, downgradient locations, i.e. northwest of the site, to further assess the vertical and lateral extent of groundwater contamination. One of these wells was screened in the Hollydale Aquifer and the others were screened in the merged Artesia/Gage Aquifers. These new wells are expected to be first sampled in August 2010 and included in the subsequent semi-annual monitoring events.

FISCAL IMPACT

None at this time.

STAFF RECOMMENDATION

For information.



MEMORANDUM

ITEM NO. 5

Prepared by: Ted Johnson

Reviewed by: Ted Johnson

Approved by: Robb Whitaker

DATE: OCTOBER 26, 2010

TO: GROUNDWATER QUALITY COMMITTEE

FROM: ROBB WHITAKER, GENERAL MANAGER

SUBJECT: GROUNDWATER QUALITY PROJECTS AND PROGRAMS

The Committee has asked staff to present a summary of the Projects and Programs related to the Groundwater Quality Committee. This will be discussed at the October 27 meeting. A summary of these projects is as follows:

002 –Robert W. Goldsworthy Desalter Project

The Robert W. Goldsworthy Desalter has been operating since 2002 to remove brackish groundwater from a saline plume in the Torrance area that was stranded inland of the West Coast Basin Barrier after the barrier was put into operation in the 1950s and 1960s. The production well and desalting facility are located within the City of Torrance, and the product water is delivered for potable use to the City's distribution system. The treatment plan capacity is about 2,200 AFY.

Additional measures may be necessary in the future to fully contain and remediate the saline plume, which extends outside of the Torrance area. WRD is actively pursuing long-term solutions to this problem and continues to work with the City of Torrance Municipal Water Department, the pumpers' Technical Advisory Committee, and other stakeholders on the future of the saline plume removal in the West Coast Basin.

006 – Groundwater Quality Program

This comprehensive program constitutes an ongoing effort to address water quality issues that affect WRD projects and the pumpers' facilities. The District monitors and evaluates the impacts of proposed, pending and recently promulgated drinking water regulations and proposed legislation. The District assesses the justification and reasoning used to draft these proposals and, if warranted, joins in coordinated efforts with other interested agencies to resolve concerns during the early phases of the regulatory and/or legislative process.

The District continually evaluates current and proposed water quality compliance in production wells, monitoring wells, and spreading/injection waters of the basins. If noncompliance is identified, WRD staff quickly investigates to determine the causes of noncompliance, develops recommended courses of action and estimates their associated costs to address the problem, and implements the best alternative to achieve compliance.

Effective January 1, 2007, the District assumed responsibility for the Central Basin Title 22 Groundwater Monitoring Program that had been administered previously by the Central Basin Municipal Water District. This program provides services for monitoring of drinking water wells

as required by state statutes to ensure that they continue to be safe for domestic use. Twenty pumpers with 79 wells have elected to continue participation in this program. In addition, a new contract for sample collection and laboratory analysis was issued for this work. This program is paid for by the participants, and therefore, does not impact the District's replenishment assessment.

In recent years, new emerging contaminants have been identified as impacting local groundwater not only in the Central and West Coast Basins, but also in neighboring regions such as the Main San Gabriel Basin, Orange County Basin, Chino Basin, etc. Constituents such as perchlorate, n-nitroso dimethylamine (NDMA), hexavalent chromium, and 1,4-dioxane have emerged as contaminants of concern and pose a potential threat to the local resources. In addition, due to advancements in and greater sensitivity of new laboratory analytical methods, trace amounts of pharmaceutical drugs have also been found. Existing drinking water regulations are being revisited and may be revised in the near future, which would impact the use of some existing wells. New regulations may be established as well. Monitoring for potential contaminants began on January 1, 2008 to comply with the federal Unregulated Contaminated Monitoring Rule 2.

WRD's service area contains a large and diverse industrial and commercial base. Consequently, many potential groundwater contamination sources exist within District boundaries. Examples of potential contamination sources include leaking underground storage tanks, petroleum pipeline leaks at refineries and petrochemical plants, and discharges from dry cleaning facilities, auto repair shops, metal works facilities, and others. Such contamination sources may pose a threat to the drinking water aquifers. Accordingly, WRD established its Groundwater Contamination Prevention Program as a key component of the Groundwater Quality Program, in an effort to minimize or eliminate threats to groundwater supplies.

The Groundwater Contamination Prevention Program includes several ongoing efforts:

- Central and West Coast Basin ("CWCB") Groundwater Contamination Forum: Several years ago, WRD established this data-sharing and discussion forum with key stakeholders including the U.S. Environmental Protection Agency ("USEPA"), the California Department of Toxic Substances Control ("DTSC"), the California Regional Water Quality Control Board – Los Angeles ("RWQCB-LA"), the CDPH, the U.S. Geological Survey ("USGS"), and various cities and pumpers. Stakeholders drafted and signed a Memorandum of Understanding ("MOU") agreeing to meet regularly (meetings are held 3 to 4 times per year at WRD) and share data on contaminated groundwater sites within the District. WRD has acted as the meeting coordinator and data repository/distributor, helping stakeholders to characterize the extent of contamination to identify pathways for shallow contaminants to reach deeper drinking water aquifers, and develop optimal methods for remediating contaminated groundwater.
- With the cooperation and support of all stakeholders in this Forum, WRD developed a list of high-priority contaminated groundwater sites within the District. This list is a living document, subject to cleanup and "closure" of sites as well as discovery of new sites warranting further attention. Currently, the list includes over 40 sites across the CWCB. WRD works with the lead regulatory agencies for each of these sites to keep abreast of their status, offer data collection, review and recommendations as needed, and facilitate progress in site characterization and cleanup.
- In 2003, WRD developed a scope of work with the Los Angeles County Department of Health Services ("LACDHS") to clarify the status of 217 potentially abandoned (a.k.a.,

“unknown status”) wells located within District boundaries, as identified through researching WRD’s groundwater production database. WRD completed numerous tasks to determine the status of these wells, including: distributing, collecting and tallying a survey questionnaire to all well owners associated with the potentially abandoned wells; searching through thousands of hard-copy well construction and destruction permits at the DWR, LACDHS, and City of Long Beach; conducting field reconnaissance trips to locate and photograph wells. These efforts were successful: WRD was able to reduce the number of “unknown status” wells from 217 to 20, and most of the remaining 20 are suspected to have been paved over during development of industrial and residential neighborhoods. At this time, it is WRD’s intention to revisit its groundwater production database periodically, to identify any new “unknown status” wells, and to repeat the tasks listed above to clarify their status.

WRD is also participating in the Water Augmentation Study (“WAS”) of the Los Angeles and San Gabriel River Watershed Council. This is a multi-year investigation to evaluate the feasibility of capturing more storm runoff at localized sites in lieu of discharge into the storm drains, channels, and ultimately to the ocean. It is a potential source of new replenishment water, and would be in addition to stormwater currently captured and retained for percolation at in the existing spreading grounds within the District. The underlying concept for the WAS is to retain more stormwater rather than allow it to be lost to the ocean; however, precautions must be taken to ensure that this new water does not degrade groundwater quality if allowed to percolate at local sites. More stormwater could be saved by utilizing Best Management Practices (“BMPs”), e.g., bioswales, infiltration basins, and porous pavements. Much of the WAS is focused on evaluating the technical feasibility of this project and the potential impacts on groundwater quality. Other aspects of the WAS include modeling to estimate the amount of water that can be percolated in the local watershed and the economic value of this additional source of water. In 2009, a neighborhood demonstration project was constructed with BMP’s to evaluate the effectiveness and potential of a large-scale project.

Much of the work for the coming year will involve additional investigations at well sites known to have contaminated water, continued monitoring of water quality regulations and proposals affecting production and replenishment operations, further characterization of contaminant migration into the deeper aquifers, and monitoring and expediting cleanup activities at contaminated sites. All work under this program is related to water quality and cleanup efforts; therefore, 100% of it is funded from the Clean Water Fund.

010 – Geographic Information System (GIS)

The District maintains an extensive database and Geographic Information System (GIS) in-house. The database includes water level and water quality data throughout the entire WRD service area with information drawn not only from the District’s Regional Groundwater Monitoring Program and permit compliance monitoring, but also from water quality data obtained from the CDPH. The system requires continuous update and maintenance but serves as a powerful tool for understanding basin characteristics and overall basin health.

The GIS is used to provide better planning and basin management. The system is used to organize and store an extensive database of spatial information, including well locations, water level data, water quality information, well construction data, production data, aquifer locations, and computer model files. Staff uses the system daily for project support and database management. Specific information is available to any District pumper or stakeholder upon request and can be delivered through the preparation of maps, tables, reports, or other compatible format. Additionally, the District has made its web-based Interactive Well Search

tool available to selected users. This web site provides these users with limited access to WRD's water quality and production database.

District staff will continue to streamline and refine the existing data management system and website as well as satisfy both internal and external data requests. As part of the streamlining of the data, staff will fully automate the transfer of water quality data from the laboratory directly into the District's water quality database. Additionally, District staff will continue the development of applications to more efficiently manage and report groundwater production information. Continued use, upkeep, and maintenance of the GIS are planned for the coming year. The use of the system supports both replenishment activities and groundwater quality efforts. Accordingly, the cost for this program is equally split between the Replenishment and Clean Water Funds.

011 – Regional Groundwater Monitoring Program

The Regional Groundwater Monitoring Program provides for the collection of basic information used for groundwater basin management including groundwater level data and water quality data. It currently consists of a network of about 250 WRD and USGS-installed monitoring wells at over 50 locations throughout the District, supplemented by the existing groundwater production wells. The information generated by this program is stored in the District's GIS and provides the basis to better understand the dynamic changes in the Central and West Coast Basins. WRD staff, comprised of hydrogeologists and engineers, provides the in-house capability to collect, analyze and report groundwater data.

Water quality samples from the monitoring wells are collected twice a year. Water levels are measured in most monitoring wells with automatic data loggers daily, while water levels in all monitoring wells are measured by WRD field staff a minimum of four times per year. On an annual basis, staff prepares a report that documents groundwater level and groundwater quality conditions throughout the District.

Most of the work during the coming year will involve continuous field activities including quarterly and semi-annual data collection, continuous well and equipment maintenance, and annual reporting activities. In addition, new nested monitoring wells will be constructed. Work associated with the Regional Groundwater Monitoring Program also supports activities relating to both replenishment and water quality projects. The program, therefore, is funded 50% each from the Replenishment and Clean Water Funds.

012 – Safe Drinking Water Program

WRD's Safe Drinking Water Program ("SDWP") has operated since 1991 and is intended to promote the cleanup of groundwater resources at specific well locations. Through the installation of wellhead treatment facilities at existing production wells, the District hopes to remove contaminants from the underground supply and deliver the extracted water for potable purposes. Projects implemented through this program are accomplished through direct input and coordination with well owners. In May 2007, the latest treatment plant went online which was a removal system for iron, manganese, and arsenic. The removal mechanism is a pressurized filtration system.

The current program focuses on the removal of VOCs and offers financial assistance for the design and equipment of the selected treatment facility. Another component of the program offers no-interest loans for other constituents of concern that affect a specific production well. The capital costs of wellhead treatment facilities range from \$800,000 to over \$2,000,000.

Due to financial constraints, this initial cost is generally prohibitive to most pumpers. Financial assistance through the District's SDWP makes project implementation much more feasible.

There are several current projects in various stages of completion and new candidates for participation are on the rise. A total of fifteen (15) facilities are already completed and online and one facility has successfully completed removal of the contamination and no longer needs treatment. While continued funding of this program is anticipated for next year, the District has revised the guidelines of the SDWP to place a greater priority on projects involving VOC contamination or other anthropogenic (man-made) constituents, now classified as Priority A Projects. Further, any treatment projects for naturally-occurring constituents would be classified as Priority B Projects and funded on a secondary priority, on a case-by-case basis, and only if program monies are still available during the fiscal year. While such projects are of interest to WRD, availability of funding for them will not be determined until after the budget process.

Projects under the SDWP involve the treatment of contaminated groundwater for subsequent beneficial use. This water quality improvement assists in meeting the District's groundwater cleanup objectives. Thus, funding for the costs of the program is drawn wholly from the Clean Water Fund.

025 – Hydrogeology Program

This program accounts for the projects that relate to the hydrogeology of the Central and West Coast Basins and surrounding groundwater basins. Staff work performed under this program includes the preparation of the annual Engineering Survey and Report, which incorporates the calculation and determination of annual overdraft, accumulated overdraft, change in storage, pumping amounts, and replenishment needs and costs. Extensive amounts of data are compiled and analyzed by Staff to determine these values. Maps are created showing water levels in the basins and production patterns and amounts. The updates, maintenance, and use of the Regional Groundwater Flow Model developed by the USGS and WRD are part of this program. This model is a significant analytical tool utilized by WRD to determine basin benefits and impacts of changes proposed in the management of the Central and West Coast Basins.

An ongoing effort at the District to better characterize the hydrogeologic conditions across the Central and West Coast Basins is called the "Hydrogeologic Conceptual Model". This long-term project involves compiling and interpreting the extensive amounts of data generated during drilling and logging of the WRD/USGS monitoring wells, and collected from historical information for production wells and oil wells within the District. The ultimate goal of this project is to incorporate these data in WRD's database/GIS and apply the system to generate aquifer surfaces and cross-sections for comparison with historical interpretations of basin hydrogeology. The final conceptual model will significantly improve the understanding of the aquifer depths, extents, and thicknesses throughout the District, and will assist Staff, pumpers and stakeholders with planning for groundwater resource projects such as new well drilling, storage opportunities, or modeling.

Hydrogeologic analysis is also needed for projects associated with groundwater quality concerns and specific cleanup projects. Staff work may include investigative surveys, data research, and oversight of specific project studies. Such efforts are used to relate water quality concerns with potential impact to basin resources. An example of this type of Staff work is the District's Well Profiling Program. The District assists pumpers in evaluating

drinking water supply well contamination. Services may include existing data collection and review, and field tasks such as spinner logging and depth-discrete sampling. WRD's evaluation helps pumpers to determine the best course of action; e.g., sealing off a particular screened interval of a well, wellhead treatment, or well destruction.

For the ensuing year, it is expected that additional investigative research projects into the saline plume, well testing, and recycled water travel time using tracers will be performed. In 2010/2011, a major update to the regional groundwater flow model will continue to be performed by the USGS to incorporate 8 years of new information since the model was last updated.

The Hydrogeology Program addresses both groundwater replenishment objectives and groundwater quality matters. This dual service warrants that the cost of the program be split evenly between the Replenishment and Clean Water Funds.

FISCAL IMPACT

None at this time.

STAFF RECOMMENDATION

For information.