



Final FORMER MARINE CORPS AIR STATION (MCAS) El Toro 106th Restoration Advisory Board (RAB) Meeting Minutes

Meeting Location: Irvine City Hall, Conference and Training Center, Irvine, California

Meeting Date/Time: 25 April 2012/ 6:38 PM to 8:05 PM

Minutes Prepared by: Erika Marx, Accord MACTEC 8A Joint Venture (AM8AJV)

Attachments:

Presentation Slides:

- Installation Restoration Program (IRP) Site 24 Status Update
- The Irvine Desalter Project, Site 18 – Principal Aquifer Update
- Status Update IRP Sites 1 and 2 Groundwater, Former MCAS El Toro

Attendees: A total of 26 people attended the RAB meeting:

Navy: Jim Callian, Base Realignment and Closure (BRAC) Environmental Coordinator (BEC) and RAB Co-chair; Content Arnold, Lead Navy Remedial Project Manager (RPM); Louie Cardinale, Navy RPM; and Marc Smits, Navy RPM.

Regulatory Agencies: Mary Aycock, United States Environmental Protection Agency (U.S. EPA); Viola Cooper, U.S. EPA; and John Broderick, California Regional Water Quality Control Board, Santa Ana Region (RWQCB).

RAB Members: Bob Woodings, Community Co-chair; Marcia Rudolph, Technical Subcommittee Chair; Peter Hersh; Mary Aileen Matheis; Chris Crompton; and Roy Herndon.

Other Attendees: Matt Brookshire, AMEC; Chris Johnson, Shaw; Jim Werkmeister, Heritage Fields; David Pedersen, Irvine Ranch Water District (IRWD); Lars Oldewage, IRWD; Jacob Moeder, IRWD; Crispin Wanyoike, AECOM; Jake Dunk, AMEC; Dhananjay Rawal, ECS, Inc.; Elisabeth Brown, Laguna Greenbelt; Erika Marx, Accord Engineering, Inc.; Jeff Bannon, Weston Solutions; and Ray Ouellette, Resident of Laguna Woods.

WELCOME/INTRODUCTIONS/AGENDA REVIEW:

Mr. Jim Callian, BEC and Navy RAB Co-Chair, welcomed everyone to this Former MCAS El Toro 106th RAB meeting. Mr. Callian asked Ms. Marcia Rudolph, RAB member and RAB Technical Subcommittee Chair, to lead the Pledge of Allegiance.

ANNOUNCEMENTS/ REVIEW OF ACTION ITEMS:

Mr. Callian began the meeting with the following announcements and discussion:

- Mr. Callian stated the meeting agenda for old business, new business (including the new RAB mailer), and the Technical Subcommittee report.

- Mr. Callian announced that tonight's three presentations would cover the status of Installation Restoration Program (IRP) Site 24 by Mr. Marc Smits, Navy RPM; IRP Site 18 by IRWD representatives Mr. David Pederson and Mr. Jacob Moeder; and IRP Sites 1 and 2 Groundwater by Mr. Crispin Wanyoike from AECOM.
- Mr. Callian initiated self-introductions.
- Mr. Callian presented his contact information as well as contact information for the three Remedial Project Managers from U.S. EPA, California Department of Toxic Substances Control (DTSC), and the RWQCB. Mr. Callian also announced that Mr. Bob Woodings, the RAB Community Co-Chair, is now retired and his new contact information will be provided in the next RAB mailer.
- Mr. Callian mentioned that, as a part of the Community Involvement Plan Update, the Navy has been conducting interviews with RAB members to find out how to better provide information to public. One of the items identified from the interviews was the need to phase out the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Administrative Record File currently located at Building 307 at the Former MCAS El Toro. The File will be relocated to the main Administrative Record File in San Diego. He also stated that Heritage Park Library in Irvine contains the Navy's Information Repository which has key documents available for public review.
- Mr. Callian presented slides listing key Navy and Regulatory Agency contacts, RAB points of contact, Administrative Record File and Information Repository locations and hours, and environmental and reuse/redevelopment websites.
- Mr. Callian reiterated that the RAB's focus was on environmental restoration, and not on reuse, in accordance with its charter from Congress; however, for information regarding reuse, information can be found on the Environmental Websites meeting handout.
- Mr. Callian stated that at the last RAB meeting, the RAB members voted unanimously to reduce the number of RAB meetings from quarterly to semiannually, and that upcoming meetings will be planned in accordance with documents that will be available. The next semiannual meeting is planned for August 29, 2012.
- Mr. Callian stated the meeting dates for 2013 include a meeting set for April 24, 2013 and a second meeting to be conducted sometime in August or November of 2013.
- Mr. Callian discussed the option of having a RAB site tour for the August 29, 2012 RAB meeting so that the RAB can see the progress at IRP sites. A brief RAB meeting can be conducted in the parking lot of Building 307 to provide necessary updates to attendees prior to commencing the site tour.
- Mr. Callian stated that according to the interviews conducted with RAB members as a part of the Community Involvement Plan Update, a majority of people interviewed were not interested in continuing to receive information via mail. Because of this, a survey was sent out with the most recent RAB mailer to identify those people interested in receiving RAB mailers via e-mail or U.S. mail, or those that wish to obtain information from the Navy's website. A response was requested by April 30, 2012 for those people who wish to remain on the RAB mailing list. The purpose of this survey is to reduce the amount of paper waste and to reduce unnecessary costs associated with the mailers. The future RAB mailers will include an agenda and public notice for the upcoming meeting, and the final meeting

minutes from the prior RAB meeting. In addition, the Navy will reduce the amount of time it takes to get the RAB meeting minutes finalized. Following a meeting, the draft meeting minutes will be sent to those RAB members who were in attendance at that respective RAB meeting within 45 days from the RAB meeting, they will provide any comments they have to Mr. Bob Woodings within 14 days, who will then review and give the comments to Mr. Jim Callian within 21 days. The Navy will make any needed corrections and finalize the meeting minutes. The final meeting minutes will then be posted on the Navy's website.

- Mr. Callian presented a quote excerpted from the RAB Mission Statement specifying that the purpose of the RAB was to discuss environmental restoration activities at Former MCAS El Toro.

APPROVAL OF 9 NOVEMBER 2011 RAB MEETING MINUTES:

Mr. Callian asked for approval of the November 9, 2011 RAB Meeting Minutes. Mr. Woodings asked for additions or corrections to the Minutes. There were none, and the Minutes were accepted as presented. Mr. Callian stated the Minutes would be finalized and posted on the Navy's BRAC website: www.bracpmo.navy.mil.

SUBCOMMITTEE MEETING REPORT:

Mr. Callian asked Ms. Rudolph for the Technical Subcommittee Meeting report. The first document Ms. Rudolph discussed was the Environmental Assessment for El Toro Custodianship Transfer for a Federal-to-Federal transfer of property, dated February 2002. Communities around Former MCAS El Toro have been subjected to explosions and ordnance disposals that still affect them today. The deadline for comment period was the end of March 2012, but people should still submit comments in the hope that they might be read. She is concerned about the impact that Federal Bureau of Investigation (FBI) activities will have on the wildlife corridor, and in particular Ms. Rudolph's concerns with the Riverside Fairy Shrimp. Ms. Rudolph stated she would like to have a representative from the FBI attend the next RAB meeting.

Ms. Rudolph next discussed the Draft Site Inspection Work Plan for Hangar 296. A radium paint room was located within the Hangar and was considered a controversial issue. Since there is an ongoing investigation at the site, Ms. Rudolph stated that she would like to have a presentation at the next RAB meeting on this particular document to bring people up to speed on this issue, which dates back to about 1996 or 1997. Ms. Rudolph requested information at the next RAB meeting regarding what the Navy's plan is on how to proceed in light of new information on the radium paint room. In the document, the action level for radium is now lower than it used to be, so there is more concern today regarding this issue than there would have been 10 or 15 years ago.

Mr. Callian gave a quick update regarding the ephemeral pond located on Navy property within IRP Site 1, the Former Explosive Ordnance Disposal (EOD) Training Range, in the northern end of this site that continues to provide habitat for Riverside Fairy Shrimp. Mr. Callian stated that the Navy is maintaining and will continue to maintain this ephemeral pond; however, he is not aware of any other vernal pools or ephemeral ponds in the area besides this one.

Ms. Elizabeth Brown asked Mr. Callian about the Port of Long Beach considering the creation of vernal pools in the central flat area near the bunkers, and noted that the process of earth moving had taken place and then suddenly stopped. Mr. Callian stated that he was unaware of any earth moving that has occurred on any Navy-owned property, and reiterated that everyone was present to discuss environmental restoration activities, not reuse. He also stated that there has been no redevelopment on IRP Site 1.

Mr. Callian invited public review of the Work Plan for Hangar 296 and indicated that the previous cleanup activities for the area were conducted to a cleanup goal of 5 picocuries per gram. The new action level is 2.05 picocuries per gram. Previous investigation of the industrial waste treatment plant located at the distal end of the industrial waste piping indicated there was no radiological contamination, but the current Work Plan addresses potential contamination issues regarding the industrial waste pipeline inside and leading from the Hangar.

Mr. Ray Ouellette asked Mr. Callian when we anticipated implementing the Work Plan for Hangar 296. Mr. Callian stated that the Work Plan would be implemented within the next 6 months or so. There has been an issue getting the Work Plan through DTSC and California Department of Public Health. The Navy has its support from the Radiological Affairs Support Office (RASO), which has also been involved in the preparation of the Work Plan.

Mr. Woodings asked if Mr. Callian could discuss the potential of having the RAB site tour in August 2012, and the possibility of the tour being merged with the FBI presentation. Mr. Callian stated that perhaps we could arrange a presentation prior to the RAB meeting because he does not want to take away time from the meeting. He also said that he could provide contact information to Mr. Woodings for the FAA and FBI and ask if they would be willing to come and answer any questions.

Ms. Rudolph asked Mr. Callian whether he had heard that because of the potential continued like-use of IRP Site 1 by the FBI, an environmental assessment was not necessary. Mr. Callian answered that currently the Navy is assessing potential soil contamination at IRP Site 1. An update on IRP Site 1 groundwater will be provided this evening.

REGULATORY AGENCY UPDATE:

Ms. Mary Aycock (U.S. EPA)

Ms. Aycock provided the following updates:

- The Record of Decision (ROD) for IRP Sites 1 and 2 Groundwater was finalized in February 2012. The next stage will be the remedial design/remedial action phase.
- The Draft Remedial Action Completion Report (RACR) for IRP Sites 3 and 5 was submitted on March 2, 2012, and is currently being reviewed.
- The Draft Annual Long-Term Monitoring Report for IRP Sites 2 *and* 17 [sic] is currently being reviewed, and the remedy for these sites has been operating successfully so far.
- The Final RACR for IRP Sites 8 and 12 will be coming out this Friday (April 27, 2012).

- Thank you to all RAB members for continued support on the projects at MCAS El Toro.

Mr. John Broderick (RWQCB)

Mr. Broderick stated that Mr. Quang Than (DTSC) could not attend the meeting tonight, and if anyone had any specific questions, he would answer them. There were no questions asked.

Mr. Callian added that he is proud that the Navy has finalized the environmental restoration and closeout process for IRP Sites 8 and 12, which will be transferred for unrestricted use.

Ms. Viola Cooper, U.S. EPA, added that she wanted to thank the Navy for their efforts to involve everyone in the update of the Community Involvement Plan.

PRESENTATIONS:

Installation Restoration Program (IRP) Site 24 Status Update

Mr. Marc Smits began with an overview of the presentation (Slide 2). He stated that an important fact is that contaminant concentrations continue to trend lower. The system has been operating for more than five years and the Navy has a large amount of data for IRP Site 24.

Slide 1 – Title slide.

Slide 2 – Presents an overview of the presentation, including background, system operation update, optimization, conclusions, and schedule.

Slide 3 – Provides background for IRP Site 24 and includes a discussion of the remedial action objectives, which are to reduce concentrations of volatile organic compounds (VOCs) to cleanup goals, prevent use of groundwater, and prevent migration of contaminated groundwater from migrating downgradient. The cleanup goal for trichloroethene (TCE), per the ROD issued in June 2002, is 5 micrograms per liter ($\mu\text{g}/\text{L}$).

Slide 4 – Presents a map of the groundwater plumes for IRP Sites 18 and 24.

Slide 5 – Provides more background on the remedy for IRP Site 24, which consists of 43 extraction wells and an associated conveyance system to remove VOCs from the groundwater. The system was started-up in October 2006.

Slide 6 – Presents a map of extraction well locations.

Slide 7 – Presents a picture showing the IRP Site 24 system compound.

Slide 8 – Provides background on the Navy documentation to support ongoing implementation/evaluation of the remediation.

Slide 9 – Discusses the system operation. The system has removed approximately 1,400 pounds of VOCs (mainly TCE) since startup in 2006. The system has pumped more than one billion gallons. Maximum TCE concentrations have decreased from 810 $\mu\text{g}/\text{L}$ during startup of the system to a maximum of 470 $\mu\text{g}/\text{L}$ in 2011.

Slide 10 – Continues the discussion of the system operation. TCE concentrations continue to decrease over time.

Slide 11 – Discusses the optimization of the remediation system. Over 5 years of operational data have been collected, and because the system has been operating so efficiently, it may be unnecessary to sample all the wells or to sample as frequently in the future.

Slide 12 – Presents the conclusions of the slideshow presentation. TCE concentrations generally continue to decrease over time while the system exceeds 98% efficiency for 2011.

Slide 13 – Provides a schedule for the upcoming status reports.

Slide 14 – Provides a list of acronyms and abbreviations used in the presentation.

Mr. Roy Herndon, RAB member, asked based on the trends do you foresee any opportunities to reduce the extraction rates. Mr. Smits responded that the hotspot areas are targeted for extraction and wells are operated in these areas more continuously, and those areas where concentrations are low are operated less continuously. The boundary wells are running at all times, and all other wells run in cycles.

Mr. Herndon asked whether the wells are operating properly or do they need rehabilitation. Mr. Smits responded that some motors and pumps breakdown due to continuous operation and need to be replaced, but nothing else within the wells warrants concern.

Mr. Callian added that TCE in the saturated soil releases slowly back into groundwater at a certain rate. When the pump in a well is turned off, the TCE in the soil is allowed to equilibrate with the groundwater (the concentration increases), then the pump is turned back on again and it can more effectively extract the TCE. This is why the pumps are cycled.

The Irvine Desalter Project: Site 18 - Principal Aquifer Update

Mr. Dave Pederson began with the layout of the Irvine Desalter Project facilities (Slide 1).

Slide 1 – Presents a diagram of the Irvine Desalter Project facilities. This diagram shows the location of the groundwater plume, along with locations of wells and the treatment facility.

Slide 2 – Discusses the Principal Aquifer components – Well ET-1, Well ET-2, and new Well 78 (old Well 78 was destroyed on March 16, 2011).

Slide 3 – Discusses Well ET-1 and the Principal Aquifer Treatment Plant (PAP), located at Jeffrey and Irvine Center Drive in Irvine. Well ET-1 pumps to the IRWD non-potable distribution system to treat TCE-impacted groundwater. Influent TCE concentrations are approximately 8 to 9 µg/L, while effluent TCE concentrations are less than 0.8 µg/L.

Mr. Pederson stated that the Irvine Desalter Project also includes a drinking water component that has nothing to do with the TCE groundwater contamination. The drinking water system component will not be discussed during this presentation.

Slide 4 – Presents a graph of the Well ET-1 discharge volume from October 1, 2011 to March 31, 2012. Mr. Pederson added that each month the well produces about 35 to 45 million gallons of groundwater discharge, and that the well runs continuously.

Slide 5 – Discusses Well ET-2, located at Culver and Irvine Center Drive in Irvine. Influent TCE concentrations are approximately 1 µg/L. Mr. Pederson added that water pumped from this

well does not require treatment prior to use in the recycled water system because the TCE concentrations are so low.

Slide 6 – Presents a graph of Well ET-2 discharge volume from October 1, 2011 to March 31, 2012.

Mr. Jacob Moeder took over for Mr. Pederson for slides 7-11.

Slide 7 – Provides a Well 78 Location Map. Well 78 is located on the southwest corner of Culver and Warner.

Slide 8 – Presents a photograph of the Well 78 Project Site.

Slide 9 – Presents photographs of the Well 78 vault and manhole construction.

Slide 10 – Presents photographs of Well 78 pump and hardscape construction. Mr. Moeder added that the hardscape is nearly complete today.

Slide 11 – Discusses the new Well 78. Its operation began on April 16, 2012. A Notice of Acceptance is expected in June 2012.

Mr. Pederson took over for Mr. Moeder for the final slides.

Slide 12 – Provides information regarding the groundwater pumping and TCE removal. A graph presents a summary of the total gallons of groundwater pumped from the Principal Aquifer wells. To date, the total mass of TCE removed is approximately 154.8 pounds.

Mr. Pederson commented that the groundwater from IRP Site 24 is very high in salt because it is shallow groundwater, and therefore cannot be used in the recycled water system. It has nothing to do with TCE concentrations in the groundwater, which is being effectively removed in the treatment system.

Slide 13 – Questions/Comments.

Mr. Peter Hersh, RAB member, asked with regard to pumping water into the non-potable distribution system, what is the storage capacity of the aquifer. Mr. Moeder added that the water is stored in an open water reservoir, not an aquifer. The water is used for irrigation purposes.

Mr. Jim Callian asked how deep is the new Well 78. Mr. Pederson stated it is approximately 1,000 feet and the casing is 18 inches in diameter.

Status Update: IRP Sites 1 and 2 Groundwater, Former MCAS El Toro

Mr. Crispin Wanyoike began with the presentation overview (Slide 2).

Slide 1 – Title slide.

Slide 2 – Presents an overview of the presentation, which includes a brief site background, the selected remedy, and upcoming documents.

Slide 3 – Provides the CERCLA Process Overview. This project is currently at the Remedial Design/Remedial Action phase.

Slide 4 – Provides a map of the locations of IRP Sites 1 and 2.

Slide 5 – Provides a description of IRP Site 1, which is a former Explosive Ordnance Disposal (EOD) Training Range. The chemical of concern (COC) for groundwater at this Site is perchlorate and has a cleanup goal of 6 µg/L.

Slide 6 – Presents a figure of perchlorate-impacted groundwater at IRP Site 1.

Slide 7 – Provides a description of IRP Site 2, Magazine Road Landfill. Some unauthorized disposal at Areas C1, C2, and D2 was identified as the potential source of VOCs in groundwater. Areas C1, C2, and D2 have subsequently been removed and consolidated into the former operational landfill area. COCs for groundwater at this Site are TCE; tetrachloroethene; cis-1,2-dichloroethene; 1,1,2-trichloroethane; and 1,2-dichloroethane.

Slide 8 – Presents a figure of IRP Site 2 VOC-impacted groundwater.

Slide 9 – Discusses the selected remedy for IRP Site 1 groundwater per the Final ROD (February 2012), which includes permeable reactive barriers (PRBs), active insitu bioremediation (ISB), groundwater monitoring, institutional controls, and five-year reviews.

Slide 10 – Illustrates the IRP Site 1 groundwater conceptual ISB/PRB locations.

Slide 11 – Provides the selected remedy for IRP Site 2 groundwater per the Final ROD (February 2012), which includes monitored natural attenuation (MNA), groundwater monitoring, institutional controls, and five-year reviews.

Slide 12 – Discusses the upcoming documents for IRP Sites 1 and 2 Groundwater, including the Remedial Design/Remedial Action Work Plan and the Remedial Action Fact Sheet.

Slide 13 – Provides the upcoming schedule for IRP Sites 1 and 2 Groundwater.

Slide 14 – Provides a list of acronyms and abbreviations.

Mr. Ouellette asked how long it would take to complete the remedy. Mr. Wanyoike responded that it would take approximately 15 to 30 years to complete the remediation.

OPEN QUESTIONS AND COMMENTS:

Mr. Callian opened the meeting for general questions and comments; there were none.

MEETING EVALUATION AND CLOSING:

Mr. Woodings stated that he enjoyed all three presentations tonight and the report from the Technical Subcommittee Chairman, Ms. Rudolph. Mr. Woodings mentioned that he would like to confirm the date of August 29, 2012 for the next site tour. Mr. Callian confirmed this date. Mr. Woodings also discussed a possible arrangement with the FAA and FBI to coincide with the tour, and asked if Mr. Callian could arrange this. Mr. Callian indicated that a good place to address the FAA and FBI issue is during the Technical Subcommittee Meeting and that he would give Mr. Woodings the appropriate contact information. Mr. Woodings commented that he appreciated Mr. John Broderick being here this evening. Mr. Callian announced that Mr. Broderick will be retiring next year.

The RAB meeting adjourned at 8:05 PM.

LIST OF HANDOUTS PROVIDED AT THE MEETING:

- 25 April 2012 Former MCAS El Toro RAB Meeting Agenda
- Public Notice for the 25 April 2012 RAB Meeting
- Draft RAB Meeting Minutes from the 9 November 2011 meeting for RAB review
- Sign-In Sheet from the 9 November 2011 Former MCAS El Toro RAB Meeting
- Final RAB Meeting Minutes from the 31 August 2011 meeting
- Presentation Slides: "Installation Restoration Program (IRP) Site 24 Status Update," "The Irvine Desalter Project - IRP Site 18 Principal Aquifer Update," and "Status Update IRP Sites 1 and 2 Groundwater Former MCAS El Toro"
- Environmental Websites
- Points-of-Contact
- Former MCAS El Toro IRP Site Location Map
- Former MCAS El Toro RAB Mission Statement and Operating Procedures
- Former MCAS El Toro RAB Fact Sheet/Membership Application
- Former MCAS El Toro Mailing List Coupon

Copies of the meeting minutes and handouts are available at the IR for former MCAS El Toro located in the Government Publication Section of the Heritage Park Regional Library, in Irvine, California. Library hours are 10:00 AM to 9:00 PM Monday through Thursday; 10:00 AM to 5:00 PM Friday and Saturday; and 12:00 PM to 5:00 PM on Sunday. The library phone number is (949) 936-4040.

Final minutes from previous RAB meetings can be found on the internet at the Navy BRAC Program Management Office (PMO) website: www.bracpmo.navy.mil.

INTERNET SITES:

Navy and Marine Corps Internet Access:

BRAC PMO Web Site (includes RAB meeting minutes): www.bracpmo.navy.mil

Department of Defense - Environmental Cleanup Home Page Web Site:

Homepage: www.dtic.mil/dtic

U.S. EPA:

Homepage: www.epa.gov

Superfund information: www.epa.gov/superfund

National Center for Environmental Assessment: www.epa.gov/ncea

Federal Register Environmental Documents: www.epa.gov/federalregister

California Agencies:

California Environmental Protection Agency Homepage: www.calepa.ca.gov

DTSC: www.dtsc.ca.gov

Department of Public Health: www.cdph.ca.gov

Santa Ana RWQCB: www.waterboards.ca.gov/santaana

Additional Websites: Reuse and Redevelopment

Orange County Great Park: www.ocgp.org

Great Park Conservancy: www.orangecountygreatpark.org



BACKGROUND

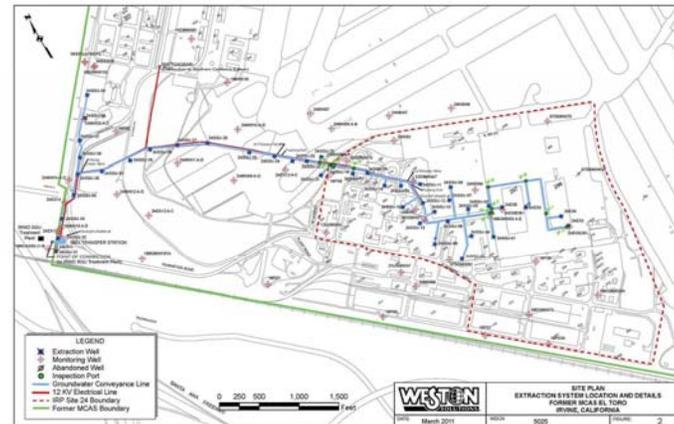


- The remedy for IRP Site 24 consists of the following elements:
 - Construction, maintenance, and operation of 39 extraction wells and associated conveyance system to remove VOCs from groundwater
 - Performance monitoring of extraction/groundwater monitoring wells
 - Treatment of VOC-contaminated groundwater
 - Institutional controls to prevent use of contaminated groundwater, protect equipment and allow access to the Navy, water districts, and regulators
- Groundwater extraction and conveyance system has been operating for more than five (5) years (system startup in October 2006)

5



EXTRACTION WELL LOCATIONS



BACKGROUND



- The Navy has prepared documentation to support the ongoing implementation and evaluation of the remedy:
 - Performance Monitoring and Sampling and Analysis Plan
 - Operation and Maintenance Manual
 - Interim Remedial Action Completion Report
 - Operating Properly and Successfully Report
 - Semiannual Data Summary Reports
 - Annual Remedy Status Reports

8



SYSTEM OPERATION



- System operated at an uptime efficiency of 98% from January 2011 to December 2011
- Flow rates from the combined wells averaged 397 gallons per minute between January 2011 to December 2011
- Total groundwater pumped to Irvine Ranch Water District (IRWD) treatment plant as of April 23, 2011 more than 1 billion gallons
- Approximately 1,400 pounds of VOCs, mainly TCE, removed from the groundwater since startup in September 2006
- Maximum concentration of TCE in groundwater in 2011 was 470 micrograms per liter (maximum concentration of TCE in groundwater at startup was 810 micrograms per liter)

9



SYSTEM OPERATION



- In general, TCE concentrations continue to decrease over time
- Groundwater elevations continue to be monitored to evaluate and optimize the extraction well system

10



OPTIMIZATION



- Collected more than 4,000 samples from the monitoring wells since startup of the system
- Extraction wells have been sampled monthly/quarterly since startup
- Have established steady-state performance with more than 5 years of operational data
- Unnecessary to sample all wells or to sample as frequently
- Transitioning into a long-term monitoring program where the focus is to ensure the extraction system operates effectively in reducing concentrations

11



CONCLUSIONS



- In general, TCE concentrations continue to decrease over time
- System continues to operate at an uptime efficiency that exceeds 98% for 2011
- Optimizing the groundwater monitoring program and system operation to ensure data are useful and the system is effective in reducing TCE concentrations

12



SCHEDULE



- Draft Annual Remedy Status Report (Jan 11 – Dec 11) May 18, 2012
- Final Annual Remedy Status Report (Jan 11 – Dec 11) Aug 3, 2012
- Final Semi-Annual Data Summary Report (Jan 12 – Jun 12) Oct 12, 2012

13

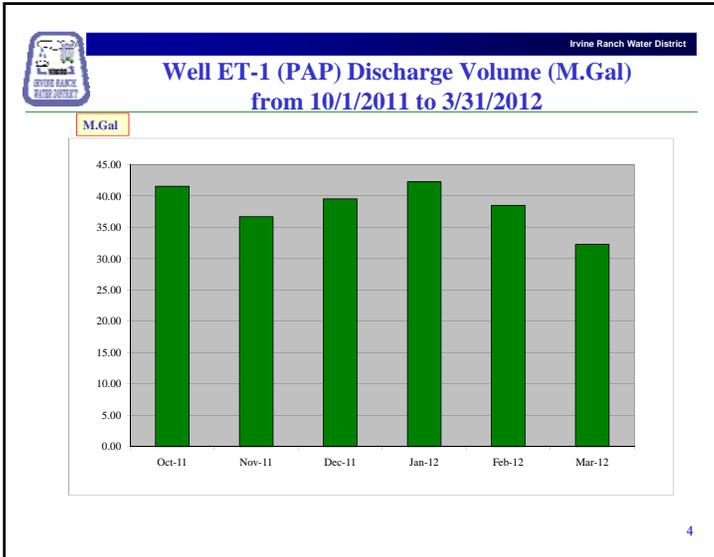


ACRONYMS AND ABBREVIATIONS



BRAC	Base Realignment and Closure
IRP	Installation Restoration Program
IRWD	Irvine Ranch Water District
OPS	Operating Properly and Successfully
TCE	Trichloroethene
VOCS	Volatile Organic Compounds

14

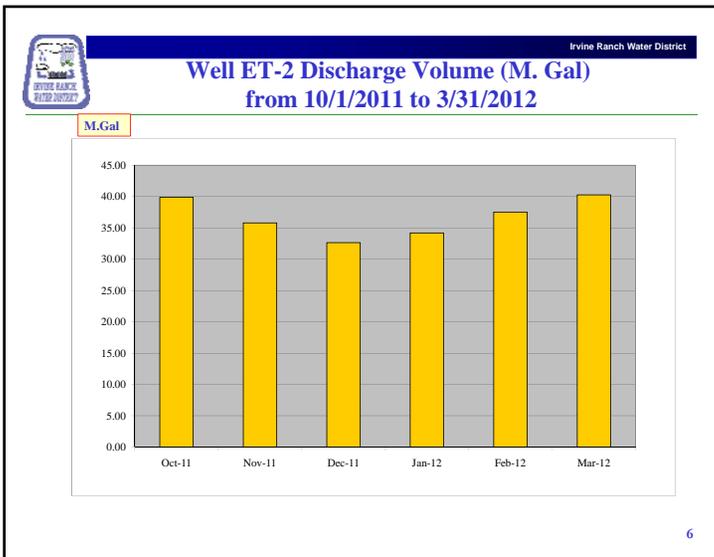


Irvine Ranch Water District

Well ET-2

- Located at Culver and Irvine Center Drive in Irvine.
- In the last two quarters (10/1/11 to 3/31/12) pumped ~ 231 million gallons to IRWD non-potable distribution system.
- Average operational flow rate in the last two quarters: ~ 837 gallons per minute.
- Influent TCE: ~ 1 ppb

5





Irvine Ranch Water District

New Well 78 Project Site

Ex. Palm Trees

New Well Location (Approximate)

Old Well 78

8

Irvine Ranch Water District

W78 Vault and Manhole Construction

Vault Floor

Vault Wall

Vault Roof

Vault Hatch

Discharge Manhole

9

Irvine Ranch Water District

W78 Pump, Wall, and Hardscape Construction

Pump Installation

Pump Bowls

Community Sign

Wall

Mosaic Bench

Hardscape

10

Irvine Ranch Water District

New Well 78 Summary

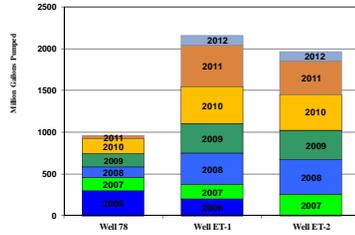
- Well equipped with 800 GPM pump
- Vault instrumentation calibration completed
- Continuous operation started on April 16, 2012
- Site available for public use by end of May 2012
- Notice of Acceptance expected in June 2012

11



Groundwater Pumping and TCE Removal

PRINCIPAL AQUIFER PUMPING



- Pumped 5.09 billion gallons of water from 2006 (startup) to March 31, 2012
- Total mass of TCE removed: ~ 70.3 kilograms or 154.8 pounds



Site 18 – Principal Aquifer Update

QUESTIONS/COMMENTS

???



Status Update IRP Sites 1 and 2 Groundwater Former MCAS EI Toro

Restoration Advisory Board (RAB) Meeting
April 25, 2012

Presented By
Crispin Wanyoike , PE (AECOM)

1



Presentation Overview

- Brief Site Background
- Selected Remedy
 - IRP Site 1 and Site 2
 - Remedial Action Objectives (RAOs)
 - Selected Remedy Documented in the ROD
- Upcoming Documents

2



CERCLA Process Overview

CERCLA Remedial Action Evaluation Process

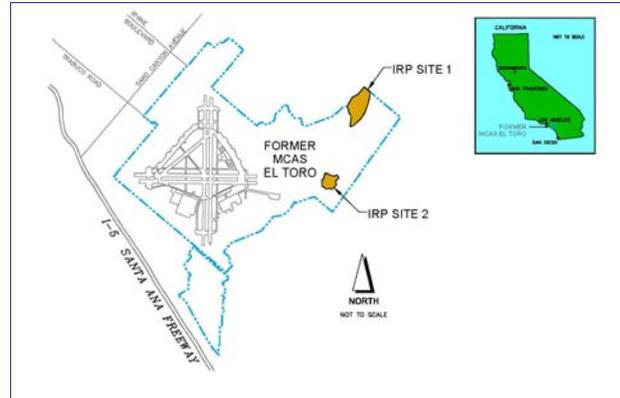
```

    graph TD
      A[Preliminary Assessment / Site Inspection] --> B[Remedial Investigation / Feasibility Study]
      B --> C[Proposed Plan / Remedy Selection]
      C --> D[Record of Decision]
      D --> E[Remedial Design / Remedial Action]
      E --> F[Site Closure]
      G[Current Phase of Sites 1 and 2 Groundwater] --> E
  
```

3



Site Locations



4



IRP Site 1 Description

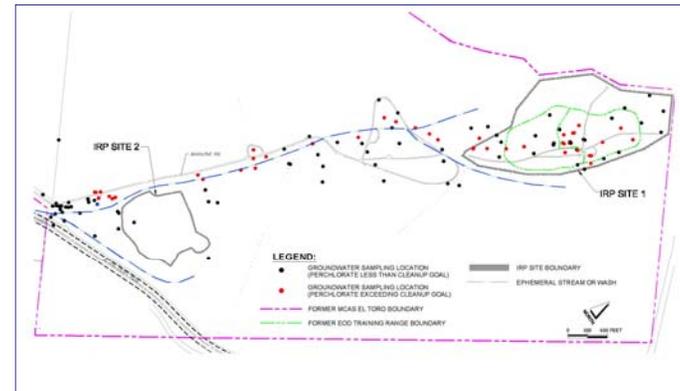


- IRP Site 1 is a former Explosive Ordnance Disposal (EOD) Training Range
- EOD training exercises were conducted at IRP Site 1 from 1952 until closure of former Marine Corps Air Station (MCAS) El Toro on 2 July 1999
- Military ordnance handled at the Site included hand grenades, land mines, cluster bombs, smoke bombs, and rocket-propelled munitions
- The chemical of concern (COC) for groundwater at IRP Site 1 is perchlorate – Cleanup Goal (CG) – 6 micrograms per liter ($\mu\text{g/L}$)

5



Perchlorate-Impacted Groundwater IRP Site 1



6



IRP Site 2 Description

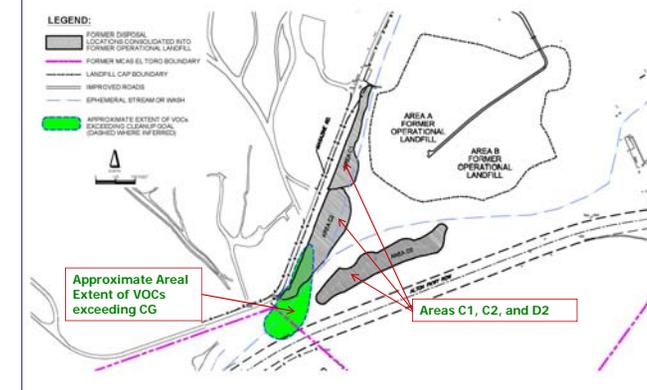


- IRP Site 2 is a former landfill known as Magazine Road Landfill
- IRP Site 2 was in operation (Areas A and B on the next slide) from the late 1950s until about 1980
- Some unauthorized disposal occurred on an intermittent basis at Areas C1, C2, and D2; this was identified as the potential source of volatile organic compounds (VOCs) in groundwater
- The construction of a landfill cap was completed in February 2008; this included consolidation of waste from Areas C1, C2, and D2
- COCs for groundwater at IRP Site 2 are:
 - Trichloroethene (TCE) - ($5 \mu\text{g/L}$)
 - Tetrachloroethene (PCE) - ($5 \mu\text{g/L}$)
 - Cis-1,2-dichloroethene (cis-1,2-DCE) - ($6 \mu\text{g/L}$)
 - 1,1,2-Trichloroethane (1,1,2-TCA) - ($0.5 \mu\text{g/L}$)
 - 1,2-Dichloroethane (1,2-DCA) - ($3 \mu\text{g/L}$)

7



IRP Site 2 VOC-Impacted Groundwater



8



Selected Remedy IRP Site 1 Groundwater

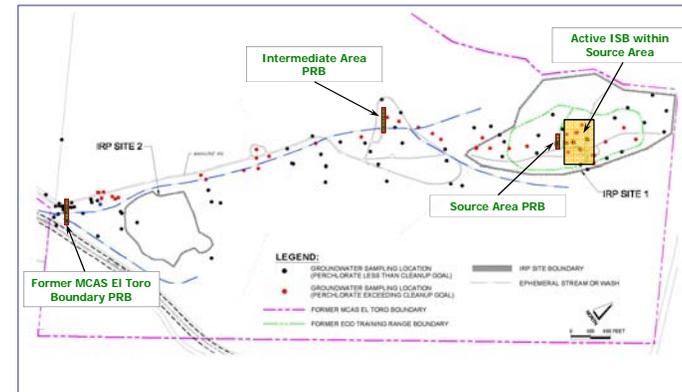


- Final Record of Decision (ROD): February 2012
 - Remedial Action Objectives
 - Minimize the potential for domestic use of groundwater with chemicals of concern at concentrations exceeding their respective cleanup goals (CGs)
 - Minimize off-Station migration of groundwater with COCs at concentrations exceeding their respective CGs
 - Selected Remedy
 - Permeable Reactive Barriers (PRBs)
 - Downgradient of the Source Area,
 - Intermediate Area, and
 - Near the former Station Boundary
 - Active Insitu Bioremediation (ISB) within the Source Area
 - Groundwater monitoring
 - Institutional Control (ICs)
 - 5-year reviews

9



IRP Site 1 Groundwater Conceptual ISB/PRB Locations



10



Selected Remedy IRP Site 2 Groundwater



- Final ROD: February 2012
 - Remedial Action Objectives-same as Site 1
 - Selected Remedy
 - Monitored natural attenuation (MNA), relying primarily on physical attenuation processes such as dispersion, dilution, sorption, and volatilization
 - Groundwater monitoring
 - ICs
 - 5-year reviews
 - The Site 1 Groundwater Remedy complements the Site 2 Groundwater Remedy.

11



Upcoming Documents



- Remedial Design / Remedial Action Work Plan
 - Regulatory Framework and Remedial Action Objectives
 - Remedy Design – Groundwater IRP Site 1 and IRP Site 2
 - Engineering Design Basis and Performance Monitoring Details
 - Remedial Action Implementation Procedures
 - Attachments
 - Sampling and Analysis Plan
 - Land-Use Control Remedial Design
 - Construction Quality Assurance / Construction Quality Control Plan
- Remedial Action Fact Sheet
 - Will include information about the RAOs, the selected remedy in the Final ROD, the remedial design, and pertinent remedial action implementation information

12



Schedule



- RD/RA Work Plan
 - Draft – May 2012
 - Draft Final - October 2012
 - Final – November 2012
- RA Fact Sheet – November 2012
- Remedial Action Construction – November 2012 to April 2013

13



Acronyms and Abbreviations



- 1,2-DCA = 1,2-Dichloroethane
- 1,1,2-TCA = 1,1,2-Trichloroethane
- BCT = BRAC Cleanup Team
- BRAC = Base Realignment and Closure
- CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act
- CG = cleanup goal
- cis-1,2-DCE = cis-1,2-Dichloroethene
- COC = chemical of concern
- EOD = Explosive Ordnance Disposal
- IRP = Installation Restoration Program
- IC = institutional control
- ISB = in-situ bioremediation
- µg/L = micrograms per liter
- MCAS = Marine Corps Air Station
- MCL = maximum contaminant level
- MNA = monitored natural attenuation
- NCP = National Oil and Hazardous Substances Pollution Contingency Plan
- PCE = Tetrachloroethene
- RAO = remedial action objective
- ROD = Record of Decision
- TCE = trichloroethene
- U.S. EPA = United States Environmental Protection Agency
- VOC = volatile organic compound

14