FINAL
FORMER MARINE CORPS AIR STATION (MCAS) EL TORO
108th Restoration Advisory Board (RAB) Meeting Summary

Meeting Location: Irvine City Hall, Room L-102, Irvine, California
Meeting Date/Time: 24 April 2013/6:30 PM to 8:30 PM
Summary Prepared by: Erika Marx, Accord MACTEC 8A Joint Venture (AM8AJV)

ATTACHMENTS:

Sign-In Sheets for the 24 April 2013 RAB meeting

Presentation Slides:

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

ATTENDEES: A total of 25 people attended the RAB meeting:

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

Regulatory Agencies: Mary Aycock, United States Environmental Protection Agency (U.S. EPA); Viola Cooper, U.S. EPA; Eileen Mananian, California Department of Toxic Substances Control (DTSC); and Triss Chesney, DTSC

RAB Members: Bob Woodings, RAB Community Co-chair; Marcia Rudolph, Technical Subcommittee Chair; Donald Zweifel; Chris Crompton; and Mary Aileen Matheis

Other Attendees: Lars Oldewage, Irvine Ranch Water District; Glenn Christensen, Weston Solutions; Cliff Wallace, Orange County Great Parks; Robert Reitenour, Lowe Enterprises; Crispin Wanyoike, AECOM; John Owsinski, Orange Coast Radio Control Club ; Jim Werkmeister, Five Point Communities; Desiré Chandler, E2 ManageTech; Donna Zweifel, resident of Fullerton; Dhananjay Rawal, Enviro Compliance Solutions, Inc. (ECS); Matt Brookshire, AM8AJV; Tony Guiang, AM8AJV; and Erika Marx, AM8AJV

WELCOME/INTRODUCTIONS/AGENDA REVIEW:

Mr. Jim Callian, BEC and Navy RAB Co-Chair, welcomed everyone to the Former MCAS El Toro 108th RAB meeting. He also thanked Mr. Cliff Wallace for making all of the arrangements for the meeting. Mr. Callian asked everyone to please remember to sign in. The Navy is required to have community input, as it is mandated by Congress in the Comprehensive Environmental Recovery, Compensation, and Liability Act (CERCLA). Mr. Callian initiated self-introductions. Mr. Callian stated that Mr. Roy Herndon (RAB Member) and Mr. Peter Hersh (RAB Member) expressed their regrets for not being able to make the meeting tonight, and asked that if any of the RAB members are unable to attend a meeting, to please contact either him or Mr. Bob Woodings. Ms. Marcia Rudolph, RAB Member and Technical Subcommittee Chair, led the Pledge of Allegiance.

ANNOUNCEMENTS/ REVIEW OF ACTION ITEMS:

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

- Mr. Callian referenced the meeting agenda for old business, new business, and the Subcommittee report.
- Mr. Callian announced that Ms. Patricia Hannon, who was not present at the meeting, will be taking over for Mr. John Broderick as the Regional Water Quality Control Board (RWQCB) representative, as he is retiring at the end of the month. Additionally, Ms. Eileen Mananian will be taking over Mr. Quang Than's position as the DTSC representative.
- Mr. Callian stated that the Former MCAS El Toro Installation Restoration Program (IRP) is a very mature program. The Navy has only one remaining Record of Decision (ROD) to complete and it is for IRP Site 1 Soil. All the remaining IRP Sites are in the Post-ROD phase (e.g., remedial design or long-term monitoring). He appreciates any input from the public.
- Mr. Callian stated that there were no action items to cover since the last RAB meeting, and asked Ms. Rudolph to give the Subcommittee report.

SUBCOMMITTEE MEETING REPORT:

Ms. Rudolph indicated that she has been involved with the RAB since the first three meetings prior to the RAB rules of operations being established. The Subcommittee Meeting covered the history of the Former MCAS El Toro RAB, including how it began and where it stands today. Ms. Rudolph announced that anyone who would like more information on this topic may contact her. Ms. Rudolph stated that she is looking forward to hearing more information about perchlorate. In the initial stages of the RAB, its members were not involved with or knowledgeable about the issue of perchlorate until Mr. Joe Farber, an expert in the field of jet propulsion, volunteered to serve as a mentor to explain what perchlorate was, why it was a problem, and why the community should insist the issue be addressed by the Navy. Initially, there was slight resistance from the Navy because perchlorate remediation is relatively expensive; however, enough knowledge was garnered with the help of Mr. Farber, and the RAB members were able to push to have the issue addressed by the Navy. In closing, Ms. Rudolph noted that Mr. Farber, who has since passed away, has left a profound impact on the RAB to this day.

Mr. Callian thanked Ms. Rudolph for her update and presented slides listing key Navy and Regulatory Agency contacts, RAB points of contact, and the CERCLA Administrative Record (AR) File and Information Repository (IR) locations and hours.

Mr. Callian presented a slide listing environmental and reuse/redevelopment websites, including the BRAC website, which he updates monthly.

Mr. Callian presented a slide with the meeting date for the next RAB meeting, which is set for August 21, 2013. The next meeting will conclude with a Former MCAS El Toro site tour. Mr. Callian expressed his gratitude to Mr. Wallace who offered to have the meeting at the OCGP Operations Trailer.

Mr. Callian reiterated that the RAB's focus is on environmental and restoration issues rather than reuse, according to its charter from Congress; however, information regarding reuse can be found in the Reuse/Redevelopment websites as shown in the introduction slides.

REGULATORY AGENCY UPDATE:

Ms. Mary Aycock (U.S. EPA)

Ms. Mary Aycock began by stating that although reuse issues are not discussed at RAB meetings, she will briefly discuss an issue regarding the redevelopment of Former MCAS El Toro. When the U.S. EPA receives notice that a contaminated site has been significantly cleaned up, these sites are nominated for inclusion in a delisting process, which takes certain parcels off the National Priorities List. Currently, Ms. Aycock is working on producing a Notice of Partial Deletion for certain parcels, meaning they will no longer be listed as Superfund sites. Ms. Aycock stated that the U.S. EPA has been asked by the community to examine whether it is appropriate to proceed with Notice of Partial Deletion for certain parcels already transferred under Findings of Suitability to Transfer (FOSTs) 1 through 7. After meeting with the U.S. EPA headquarters, it was determined that they will proceed with the delisting process for these certain parcels in FOSTs 1 through 7 which means those parcels will no longer carry the stigma associated with being a Superfund site. There will be a Notice of Intent and a Notice of Partial Deletion listed in the Federal Register. Preliminary copies will be issued to any interested parties in the next couple of months before going to the Federal Register. When the notices are published, public comments are welcome. Ms. Aycock stated that the Navy is and will always be responsible for the cleanup of these sites and would be accountable for any issues that arise during the delisting process. Ms. Aycock closed by thanking Mr. Callian and Mr. Jim Werkmeister for their input on this process as well as the community for their assistance in promoting the reuse of these properties.

Ms. Rudolph asked how long the delisting process would take. Ms. Aycock responded that once the notice is published in the Federal Register, the U.S. EPA has 30 days to solicit comments from the public. If there are any significant issues, the U.S. EPA will request to have a public hearing, if needed. Ms. Aycock is working to have the notice published by the end of this summer.

Mr. Donald Zweifel (RAB Member) asked if the parcels included in the U.S. EPA Notice for Partial Deletion are cleaned up to meet their intended re-use. Ms. Aycock responded that the parcels proposed for delisting have either been cleaned-up or a “No Further Action” has been issued. Each site has met its individual cleanup goals.

Mr. Zweifel also asked Ms. Aycock what would happen if a school were to be built on one of those sites and the standards for cleanup have not been met. Ms. Aycock responded that these properties already have predetermined uses for the OCGP, which do not include schools, and the properties have been cleaned-up to the standards that were set in the original Superfund ROD.

Mr. Zweifel asked if institutional controls (ICs) were being used on these sites. Ms. Aycock confirmed that ICs are still being used and that the Five-Year Reviews will continue as well. Mr. Callian added that those parcels proposed for delisting would not include parcels that have ongoing monitoring, (landfills are an example). Mr. Callian stated that most of the properties being delisted have never had any contamination. Ms. Aycock added that these parcels amount to approximately 1,900 acres of the Former MCAS El Toro’s 4,000 acres (less than 50%) proposed for delisting. Mr. Callian reiterated that all of the parcels being delisted are clean.

Mr. Zweifel asked to which parcels Ms. Aycock was referring. Ms Aycock responded that the various parcels included in FOSTs 1 through 7. A map of these areas will be included in the docket once the Notice of Partial Deletion is published in the Federal Register.

Ms. Eileen Mananian (DTSC)

Ms. Mananian introduced herself and stated that she had taken over Mr. Than's position after he left in December 2013. She has both a bachelor's degree and a master's degree in environmental and occupational health and has been with DTSC for more than 6 years. Ms. Mananian stated that the DTSC is continuing to look at parcels that have not been proposed for delisting. The most recent item on her agenda is the IRP Site 1 soil area where there are munitions. The DTSC has been working with its munitions expert in Sacramento to address concerns with the Feasibility Study for IRP Site 1.

Mr. Zweifel asked Ms. Mananian what the munitions expert had reported. Ms. Mananian responded some of the properties adjacent to IRP Site 1 have been proposed for residential areas. The munitions expert is currently working on protocols and guidelines for cleaning-up properties that have been used as former military training areas to transfer standards.

Mr. Zweifel asked Ms. Mananian if the fairy shrimp in the area would be affected by the remedial actions for IRP Site 1. Ms. Mananian responded that the DTSC is working with the Department of Fish and Game to ensure that the fairy shrimp are not harmed during the cleanup activities. Mr. Callian added that Navy is still evaluating and responding to agency comments for the Draft Feasibility Study for IRP Site 1.

PRESENTATIONS:

MCAS El Toro Installation Restoration Program Status Update

Mr. Callian provided an IRP Status Update and presented a slide with a summary of activities and deliverables for specific IRP Sites.

Bullet 1 – IRP Sites 1 and 2: Mr. Callian noted that these Sites will be covered in the presentation given by Mr. Crispin Wanyoike later in the meeting.

Bullet 2 – IRP Site 1: Mr. Callian noted that the Navy is working on the completion of the Draft Final Revised Feasibility Study Report for Soil, which Ms. Mananian had mentioned earlier.

Bullet 3 – Long-term operation, maintenance, monitoring, and reporting activities: Mr. Callian reported that the following sites are included in the above-mentioned activities: IRP Site 2 (soil), Former Magazine Road Landfill; IRP Site 3, Original Landfill; IRP Site 5, Perimeter Road Landfill; IRP Site 16, Former Crash Crew Training Pit No. 2, groundwater plume; IRP Site 17, Communications Station Landfill; IRP Sites 18 and 24, Principal Aquifer and Shallow Groundwater Unit groundwater plumes; and Anomaly Area 3, Primarily Construction Debris Landfill.

Mr. Callian stated that many of the IRP sites have been closed, as this is a very mature program. Mr. Callian asked if anyone had any questions.

Mr. Zweifel asked how much money has been spent in this program. Mr. Callian stated he did not have that information readily available, but he would consider covering that topic at the next RAB meeting.

Mr. Callian presented a slide that reiterated the process for the review of the RAB meeting summary. Mr. Woodings stated he would like to have the sign-in sheets included with the meeting summary in the future.

Installation Restoration Program (IRP) Site 24 Status Update

Mr. Marc Smits began his presentation by describing IRP Site 24 as the on-station Shallow Groundwater Unit (SGU) plume connected to the IRP Site 18 off-station Principal Aquifer plume. He noted, Mr. Lars Oldewage would provide the presentation for IRP Site 18.

Mr. Smits explained that the source for contamination at IRP Site 24 are the aircraft hangars located in the eastern portion of the former Station. The use of solvents during aircraft repair activities at these hangars led to the soil contamination and the SGU plume at IRP Site 24.

Slide 1 – Title slide.

Slide 2 – Overview of presentation.

Slides 3 and 4 – Presents background information for IRP Site 24. The Record of Decision (ROD) for IRP Site 24was issued in June 2002 and provided the Remedial Action Objectives. The cleanup goal for the main chemical of concern (COC) at IRP Site 24, trichloroethene (TCE), is 5 micrograms per liter (µg/L), or 5 parts per billion (ppb). The remedy for the site includes the construction, maintenance, and operation of 43 extraction wells to treat VOC-impacted groundwater. The groundwater extraction and conveyance system has been operating since October of 2006.

Slide 5 – Shows a figure of the extraction well locations at IRP Site 24.

While showing the source area for groundwater contamination at IRP Site 24, Mr. Smits noted soil was also contaminated but the Navy performed the remediation for soil and ultimately received a no further action and closure as documented in a 2006 ROD.

Slide 6 – Shows a picture of the IRP Site 24 system compound. The control station includes a computer system that will notify the contractor if a problem/anomalies arises.

Mr. Zweifel asked how often anomalies occur within this system. Mr. Smits responded that minor anomalies do not occur very often. More importantly, the computer will notify the Navy contractor when the system shuts down, which happens approximately once every couple of months. The computer will also send a signal if the treatment system operated by the Irvine Ranch Water District (IRWD) shuts down.

Slide 7 – Provides background information on the documents prepared by the Navy for the IRP Site 24 remedy.

Slide 8 – Shows a figure of the groundwater plume at IRP Site 24 from 2006.

Mr. Callian added that the green wells located along the western boundary of the Station were added after initial installation of the well system to ensure that the plume was not migrating beyond the base boundary.

Mr. John Owsinski asked if there is any timeline-based information available to see the rate at which the remedy is progressing, or is the progress based solely on looking at the plume contours. Mr. Smits responded that the progress is determined from evaluating the plume contours. There are approximately 100 monitoring points within the contours from which they gather information.

Mr. Owsinski asked if Mr. Smits could give a generalization on how the remediation is progressing in terms of a curve function. Mr. Smits responded that it is too early in the remediation process to show a graphical representation of progress. The cleanup is expected to take 30 years; modeling tools may be able to show the progress more accurately later on in the process.

Slide 9 – Presents a figure of the groundwater plumes at IRP Sites 18 and 24 from 2011. Mr. Smits noted that the IRP Site 18 plume is very dilute and is approximately 300 to 400 below feet below ground surface (bgs).

Mr. Callian added that the geology is much different on base than it is off base. He explained there is a confining layer beneath the plume on base. Further, with the direction of groundwater flow, the contaminants in the SGU flow to the base boundary , then off-base, and off-base dives deep into the Principal Aquifer. He noted the Principal Aquifer is much deeper, more coarse-grained, and transmits groundwater more readily.

Mr. Zweifel commented that potable water has not been pumped from the Irvine groundwater subbasin for quite some time. Mr. Callian responded that groundwater is pumped from the Irvine groundwater subbasin, as part of the Desalter Project; however, the contaminated water is not used for potable water. Mr. Smits added that Mr. Lars Oldewage would be presenting a figure of potable and non-potable wells in his presentation.

Ms. Mananian commented that the 2006 figure shows plume contours of 5 µg/L, 50 µg/L, and 500 µg/L; the 2011 figure only shows plume contours of 5 µg/L and 50 µg/L, which is an indication that COC concentrations are and continue to decrease. Mr. Smits added that between 2006 and 2011, all contours of 500 µg/L were gone. The goals of reducing both concentrations and the plume size are being achieved.

Slide 10 – Shows a figure of the groundwater plume at IRP Site 24 for 2012. Mr. Smits commented that the data has not changed much since 2011 except for in the upgradient portion of the plume where the result from one monitoring well was non-detect resulting in a change in the plume configuration in this area.

Mr. Owsinski asked for clarification of the term “non-detect”. Mr. Callian responded that a laboratory detection limit is the concentration at which a contaminant can be detected. In this case, the results are in ppb, which is very low. He went on to say non-detect meant the contaminant was not detected at or above the laboratory detection limit.

Slide 11 – Presents a slide of the system operation. The following achievements have been made: the system operated with an uptime efficiency of 99% from January 2012 to December 2012; flow rates have averaged 391 gallons per minute (gpm) (with the goal being 400 gpm); the total groundwater pumped to the IRWD SGU treatment system as of April 2012 is approximately 1.3 billion gallons; approximately 1,600 pounds of VOCs (mainly TCE) has been removed; and the TCE maximum concentration has been reduced from 460 µg/L in 2011 to 360 µg/L in 2012 (in 2006 the highest concentration was 810 µg/L).

Mr. Zweifel asked if TCE stands for trichloroethylene or trichloroethene. Mr. Callian added that they are synonyms.

Slide 12 – Presents additional aspects of the system operation. The following observations were made: TCE concentrations are on a downward trend; water levels continue to be monitored and evaluated in order to optimize the system; decreases in water level are due to a combination of effects including extraction well pumping, drought conditions, and potable and irrigation water production. Since 2006, the water level has decreased by about 20 feet.

Mr. Zweifel asked if the Principal Aquifer has been depleted by 20 feet because of the extraction well system. Mr. Callian responded that due to the increase in population in the metropolitan area, the IRWD and Orange County Water District are producing water for multiple uses.

Slide 13 – Presents an overview of the system optimization. The regulatory agency concurred-upon Final 2011 Annual Remedy Status Report recommended: reducing water level monitoring and Principal Aquifer sampling from semi-annually to annually; and reducing SGU sampling and extraction well sampling from quarterly to semi-annually. The frequency of sampling may be revised, as necessary. Additionally, the semi-annual results will be provided in a data package format to expedite the submittal.

Mr. Owsinski asked if the groundwater samples are sent to a laboratory or if real-time measurements are taken in the field. Mr. Smits responded that measurements like temperature and pH are taken in the field, and then the samples are sent to a laboratory for analysis. Mr. Callian added that data is not recorded on a continuous basis.

Slide 14 – Presents the ongoing/upcoming activities for IRP Site 24. These include: annual operation and maintenance; equipment replacements, protection/security upgrades, and inspections; coordination with lessees and property owners; reviewing and updating the groundwater flow and particle tracking model; and incorporating the modeling and monitoring results in the 2014 Five-Year Review Report.

Mr. Zweifel asked if there are any deed restrictions on the land. Mr. Callian responded that there will be deed restrictions on the properties that have interim ICs in place. When the properties are transferred, the ICs will be incorporated into the deed. Mr. Smits added that a 300-acre portion of IRP Site 24 does have deed restrictions.

Slide 15 – Presents the schedule for upcoming documents.

Slide 16 – Acronyms and abbreviations.

In conclusion, Mr. Smits added that Weston Solutions has been working for the Navy at IRP Site 24 since 2004. They have gone through the entire process of implementing and operating the remedy and have been on the project for almost 10 years. On behalf of the Navy, he thanked the Weston Solutions team for their efforts and recognized Weston Solution's successful transition of the project to the new contractor (ECS, Inc.). He asked if there were any questions or comments?

Mr. Robert Reitenour asked if the portion of FOST 7 located within IRP Site 24 was proposed for delisting. Ms. Aycock answered that this particular parcel is not being delisted. Mr. Reitenour asked if this was because the site has not received a "No Further Action." Mr. Werkmeister responded that the property is not being delisted because it has CERCLA restrictions and it is part of FOST 6. Ms. Aycock added that not all of the areas in FOSTs 1 through 7 are being delisted; only those portions that have met cleanup standards or have a "No Further Action" status will be delisted. A map of all of the delisted portions will be provided in the Notice of Partial Deletion.

Mr. Callian invited Mr. Lars Oldewage to present the Irvine Desalter Project at Site 18 (off-station Principle Aquifer Plume).

The Irvine Desalter Project, Site 18 – Principal Aquifer Update

Presentation Title (Page 1)

Slide 1 (Page 1) – Presents a figure of the Irvine Desalter Project facilities and the groundwater plume.

Mr. Oldewage explained that the Desalter Project has three elements. The first is the Shallow Groundwater Treatment Unit that treats the water extracted from the base by air stripping and the use of vapor activated carbon; the treated water is then conveyed to the Aliso Creek ocean outfall through the South Irvine brine line. The second element is the Potable Water Treatment Facility (consisting of five wells located upgradient from the VOC plume). Water extracted from this treatment facility goes to the reverse osmosis (RO) facility, and the treated water is then distributed through the potable water distribution system. The brine waste is conveyed through the brine line to the Aliso Creek ocean outfall.

Mr. Callian added that RO is the process by which water is forced through a membrane by both pressure and concentration gradients.

Mr. Zweifel asked if this process increases the salinity of the upper Newport Bay. Mr. Oldewage responded that the treated water does not go to the Newport Bay; it is conveyed to the Aliso Creek ocean outfall that goes offshore.

Slide 2 (Page 2) – Presents the components of the third element of the Irvine Desalter Project: the Principal Aquifer Treatment Plant. This treatment plant is composed of Well ET-1 and the Principal Aquifer Treatment Plant (PAP), Well ET-2, and New Well 78 (which went online April 16, 2012).

Slide 3 (Page 2) – Presents statistics for Well ET-1 and PAP. From October 1, 2012 to March 31, 2013, 211 million gallons of TCE-impacted groundwater has been treated, and the system operated with an average flow rate of 990 gpm. The treated groundwater is pumped to the IRWD non-potable distribution system.

Mr. Zweifel asked if this agricultural water is being used to irrigate lawns. Ms. Matheis responded that this water is referred to as “recycled water.” Mr. Callian added this water can be distinguished by the purple water distribution pipelines.

Slide 4 (Page 3) – Presents a graph of Well ET-1 (PAP) discharge volume from October 1, 2012 to March 31, 2013.

Mr. Zweifel asked why the graph shows that the discharge volume dipped in January. Mr. Oldewage responded that there was a low demand for non-potable water in January due to the season and seasonal storage reservoirs were already at capacity. Therefore, the wells were shut down and returned to service again approximately one month later. The wells run 10 months out of the year; they are shut down for 2 months for maintenance or capacity purposes.

Slide 5 (Page 3) – Presents statistics for Well ET-2. From October 1, 2012 to March 31, 2013, 169 million gallons of recycled water have been pumped to the IRWD non-potable distribution system, and the system operated with an average flow rate of 865 gallons per minute. TCE concentrations are 1 to 1.5 ppb.

Slide 6 (Page 4) – Presents a graph of the Well ET-2 discharge volume from October 1, 2012 to March 31, 2013.

Mr. Zweifel asked if Well ET-2 is also an agricultural well. Mr. Oldewage responded that this well pumps water to the recycled water pipelines.

Slide 7 (Page 4) – Presents statistics for New Well 78. Operation started on April 16, 2012 with an average operation flow of 795 gallons per minute. From October 1, 2012 to March 31, 2013, 174 million gallons have been pumped to the IRWD non-potable distribution system. TCE concentrations are 1 to 1.5 ppb.

Mr. Zweifel asked if the well has good recharge because the depletion of the Principal Aquifer is a problem. Ms. Matheis responded that the water is recharged by the Orange County Water District under its groundwater replenishment system; therefore, any over extraction is compensated.

Slide 8 (Page 5) – Presents a graph of Well 78 discharge volume from October 1, 2012 to March 31, 2013.

Slide 9 (Page 5) – Presents a graph of the Principal Aquifer groundwater pumping volume for each well from 2006 to 2013. Since its startup in 2006, 6.24 billion gallons of water have been pumped through the system. The total mass of TCE removed so far is approximately 190 pounds.

Slide 10 (Page 6) – Question and comment period.

Ms. Matheis commented that Mr. Zweifel has been referring to the wells as "agricultural wells." Wells were referred to as agricultural wells many years ago, but today there are many other uses for recycled water now on public lands. The only area in Orange County where recycled water is used for domestic purposes is the Newport Coast.

Mr. Callian introduced Mr. Wanyoike to present the IRP Sites 1 and 2 Groundwater update to the RAB.

Status Update: Remedial Design/Remedial Action, IRP Sites 1 and 2 Groundwater, Former MCAS El Toro

Slide 1 – Title slide.

Slide 2 – Presentation overview.

Slide 3 – Presents a figure of the locations of IRP Sites 1 and 2.

Slide 4 – Presents a site description for IRP Site 1. Mr. Wanyoike explained that IRP Site 1 was a former explosive ordnance disposal (EOD) training range from 1952 to 1999. The main COC at this site is perchlorate, a component of rocket fuel. The cleanup goal for perchlorate at this site is 6 µg/L. The perchlorate plume has migrated from IRP Site 1 and now extends down to IRP Site 2.

Slide 5 – Presents a site description for IRP Site 2 which is the former Magazine Road Landfill that operated from the 1950s to 1980. In February 2008, soil remedial actions included construction of a landfill cap as well as waste consolidation from Areas C1, C2, and D2. Groundwater COCs at this site are: TCE; tetrachloroethene; cis-1, 2- dichloroethene; 1,1,2-trichloroethane; and 1,2-dichloroethane.

Slide 6 – The Final ROD, issued in February 2012, specifies the following remedial action objectives: 1) minimize the potential for domestic use of groundwater with COC concentrations that exceed remediation goals; and 2) minimize the migration of groundwater with COC concentrations that exceed remediation goals beyond the former MCAS El Toro boundary.

Slide 7 – Presents the selected remedy for IRP Site 1, which is in-situ bioremediation (ISB) at the source area; downgradient of the source area between IRP Sites 1 and 2; and near the former MCAS El Toro boundary. The ISB will be performed by injecting a food source for the indigenous bacteria that are present in the ground. Once the food source is consumed by the bacteria, the dissolved oxygen is lowered, and the bacteria will be forced to consume the perchlorate. Groundwater monitoring, ICs, and Five-Year Reviews will also be conducted.

Slide 8 – Presents a more detailed explanation of the RD for IRP Site 1 groundwater which includes the implementation of two configurations: the permeable reactive barrier (PRB) and a grid pattern schematic.

Mr. Wanyoike noted the PRB schematic was implemented immediately downgradient of the source area, at the boundary of IRP Site 1 and 2, and near the former Station boundary. The grid pattern schematic was implemented at the source area. Mr. Callian commented that the PRB is similar to a picket fence, and it depends on the flow of perchlorate-impacted groundwater through this array.

Mr. Zweifel asked what type of food-grade oil is being used as the food source. Mr. Wanyoike responded that the food source is similar to molasses.

Slide 9 – Presents a figure of the ISB locations at IRP Site 1.

Mr. Callian commented that the perchlorate plume is very long, but also very narrow because it is located within a paleochannel. This allows for a shorter PRB. Mr. Zweifel asked for the definition of a paleochannel. Mr. Callian responded that a paleochannel refers to a channel that used to flow, but over time has been covered by geologic deposition. Mr. Zweifel asked if a paleochannel would be considered an alluvial feature. Mr. Callian confirmed this.

Slide 10 – Presents the selected remedy for IRP Site 2, which is monitored natural attenuation (MNA). The remedy also includes groundwater monitoring, ICs, and Five-Year Reviews. Mr. Wanyoike added that the reason that IRP Sites 1 and 2 are grouped together is that the remediation of perchlorate at IRP Site 1 is complimentary to and enhances the remediation of VOCs at IRP Site 2.

Mr. Zweifel asked for the definition of adsorption. Mr. Callian responded that adsorption has to do with the process of molecules adhering to soil particles via surface tension; in this case, VOC molecules adhere to soil particles. Desorption (VOCs releasing from the soil) is a very slow process and thus this remedy will take longer.

Slide 11 – Presents a figure of VOC-impacted groundwater at IRP Site 2.

Slide 12 – Describes the supplemental groundwater monitoring and direct-push technology (DPT) evaluation that occurred in January 2013. The purpose of the evaluation was to supplement existing data, refine and optimize the remedial design, and also to test the feasibility of using DPT for the PRB. For the groundwater monitoring, 3 wells were sampled for VOCs; 28 were sampled for perchlorate; and 22 were measured for groundwater levels.

Mr. Zweifel asked what the depth to groundwater was at IRP Site 1. Mr Wanyoike replied the depth to groundwater ranges from 40 to 100 feet bgs; in the intermediate area it is 40 to 60 ft bgs, and at IRP Site 2 it is 60 to 80 feet bgs.

Slide 13 – Presents the groundwater monitoring results. The analytical results have shown that: in general, perchlorate concentrations are lower now when compared to the previous sampling event; VOC concentrations are generally consistent with previous monitoring events; groundwater elevations have

remained consistent with previous events; and groundwater flow direction changes from south/southwest to west/northwest near the former MCAS El Toro boundary.

Slide 14 – Presents a groundwater elevation map for January 2013.

Slide 15 – Presents the DPT evaluation. The results indicated that 1) the push depths ranged from 44 to 72 feet bgs; and 2) the push depths can adequately inject the substrate across the entire target remediation zone. The overall conclusion is that DPT will be used for a full-scale implementation of substrate injection at the intermediate area PRB.

Slide 16 – Presents a picture of the Geoprobe® that was used for the DPT test.

Mr. Zweifel asked if this was a type of hydropunch. Mr. Wanyoike responded that the Geoprobe® is a rig that drives a hollow tube into the ground.

Mr. Zweifel asked how deep the Geoprobe® could peneterate. Mr. Wanyoike responded that at this particular location, the Geoprobe® penetrated to a maximum depth of approximately 70 feet bgs.

Slide 17 – Presents the schedule of upcoming documents for IRP Sites 1 and 2.

Slide 18 – Acronyms and abbreviations.

In conclusion, Mr. Wanyoike asked if there were any questions or comments.

Mr. Callian noted that what makes the DPT so efficient is that it does not generate the amount of waste that is generated during well installation. This method is more efficient and reduces the carbon footprint.

Mr. Zweifel asked what kind of indigenous bacteria are being used in this remedy. Mr. Callian responded that there are several strains. For example, when implementing enhanced bioremediation where both the bacteria and the food source are injected into the ground, the strain commonly used is Dehalococcoides (DHC). Further, he noted there are many patented bacteria strains that are specifically designed for different processes. At IRP Sites 1 and 2, the bacteria are indigenous.

Mr. Owsinski asked if there are graphs or charts available to the general public that can provide an indication as to how well the remedies are progressing. Mr. Callian responded that the Navy has spent a lot of time and effort to make sure that the remedies are operating properly and successfully. These remedies are long-term, and in order to make sure that the information being released is accurate and complete, the Navy does not want to make assumptions and present inaccurate data to the public.

Mr. Callian added that one of the duties of the RAB members is to distribute information from these meetings to the general public.

Ms. Aycock stated that Mr. Smits did a good job of showing the groundwater progress between 2006 and 2011, but the Navy needs to develop some type of graph for the public to understand how the remedies are progressing that could be incorporated into the IRP Status Update provided by Mr. Callian. Mr. Callian responded that he could highlight the contours that exceed 5 ppb, but with large dilute plumes, it is very difficult to present this information in a graph. It is still very early on in the remediation processes, which could take upwards of 60 years.

Ms. Aycock added that the BRAC Program Management Office (PMO) website is a good source of information and has all of the previous fact sheets and reports for each site.

Mr. Woodings asked, on behalf of Mr. Hersch, what effect the sequestration has had on the cleanup of former MCAS El Toro. Mr. Callian responded that one of the effects is there are fewer RPMs to work on projects, and work loads have increased for those RPMs still with the Navy. Another effect is that RPMs must plan budgets more carefully. Even though most projects are fully funded, the sites are now prioritized because the primary mission is the cleanup and transfer of sites. Some of the lower priority sites have had deadlines extended so that the higher priority sites can be addressed. Mr. Callian stated that his job, in part, is to help coordinate the environmental cleanup with the transfer process.

Ms. Rudolph commented that she would like to have updates on all of these sites discussed this evening at the next RAB meeting. She would also like have another presentation by Mr. Wanyoike on the progress of the remedies at IRP Sites 1 and 2. Mr. Callian responded that at the next RAB meeting, Mr. Wanyoike can present a brief summary on the progress at IRP Sites 1 and 2.

MEETING EVALUATION AND CLOSING:

Mr. Woodings stated that he would prefer the slides to be printed one slide per page. He mentioned, the maps and charts are especially hard to read when the slides are printed two per page. Mr. Woodings added that he likes the inclusion of an acronyms and abbreviations page because new attendees at the RAB meetings might not understand all of the acronyms that the Navy uses.

Mr. Owsinski asked if the original analytical data is available to the public. Mr. Callian responded that the information is available through the Ms. Diane Silva at the Administrative Records File. Her contact information was listed on a slide that Mr. Callian presented earlier. Mr. Woodings added that another source of information is the Information Repository, as well as BRAC PMO website, which has all of the meeting summaries from the previous RAB meetings posted.

Mr. Zweifel requested an enlargement of slide 2 (figure of the Irvine Desalter Project Facilities) from the IRP Site 18 presentation. Mr. Callian responded that he will e-mail the slide to Mr. Zweifel.

Mr. Wooding closed by saying that the presentations were well done, and he appreciates the preparedness of the presenters as well as the materials that were provided.

The RAB meeting adjourned at 8:30 PM.

LIST OF HANDOUTS PROVIDED AT THE MEETING:

- 24 April 2013 Former MCAS El Toro RAB Meeting Agenda
- Public Notice for the 24 April 2013 RAB Meeting
- Final RAB Meeting Summary from the 29 August 2012 meeting
- Presentation Slides – “Installation Restoration Program (IRP) Site 24 Status Update,” “The Irvine Desalter Project, Site 18 – Principal Aquifer Update,” and “Status Update, Remedial Design/Remedial Action, IRP Sites 1 and 2 Groundwater, Former MCAS El Toro”
- Where to Get More Information & Environmental Websites
- 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 summary 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. In addition, copies of the meeting summary and handouts are also available at the CERCLA AR File.

Final summaries 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 Website (includes RAB meeting summary): http://www.bracpmo.navy.mil/

Department of Defense – Environmental Cleanup Home Page Web Site:

Homepage: http://www.dtic.mil/envirodod/

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 Health Services, reorganized into the Department of Health Care Services and the Department of Public Health: www.dhs.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

This page intentionally left blank.

INSTALLATION RESTORATION PROGRAM (IRP)

SITE 24

STATUS UPDATE

Presented By

Marc P. Smits, P.E.

Base Realignment and Closure (BRAC) Program Management Office West

April 24, 2013

OVERVIEW

- BACKGROUND
- SYSTEM OPERATION UPDATE
- OPTIMIZATION
- UPCOMING/ONGOING ACTIVITIES
- SCHEDULE

BACKGROUND

- Record of Decision was issued in June 2002 to document the selected remedy for groundwater contamination at IRP Sites 18 and 24

- Remedial Action Objectives for the IRP Site 24 remedy are:

  - Reduce concentrations of volatile organic compounds (VOCs) to federal and state cleanup goals

  - Prevent use of groundwater containing VOCs at concentrations above cleanup goals

  - Prevent VOCs at concentrations above cleanup goals from migrating downgradient

- The cleanup goal for trichlorethene (TCE), the main VOC in groundwater at IRP Site 24, is 5 micrograms per liter

BACKGROUND

- The remedy for IRP Site 24 consists of the following elements:

  - Construction, maintenance, and operation of 43 extraction wells and associated conveyance system to remove VOCs from groundwater

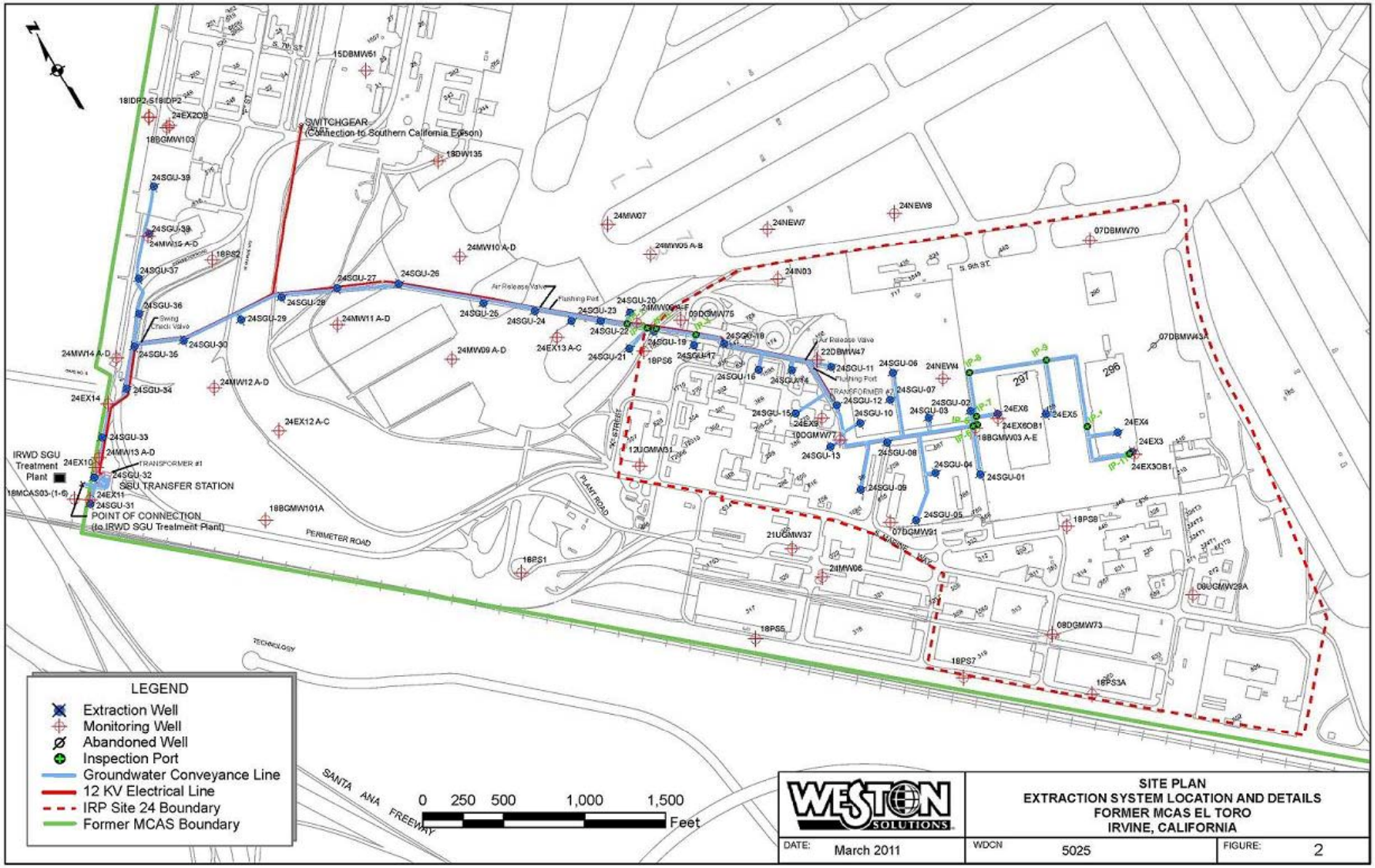
  - Performance monitoring of extraction/groundwater monitoring wells

  - Treatment of VOC-impacted groundwater

  - Institutional controls to prevent use of impacted groundwater, protect equipment, and allow access to the Navy, water districts, and regulators

- Groundwater extraction and conveyance system has been operating for more than six (6) years (system startup in October 2006)

EXTRACTION WELL LOCATIONS



IRP SITE 24 SYSTEM COMPOUND

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

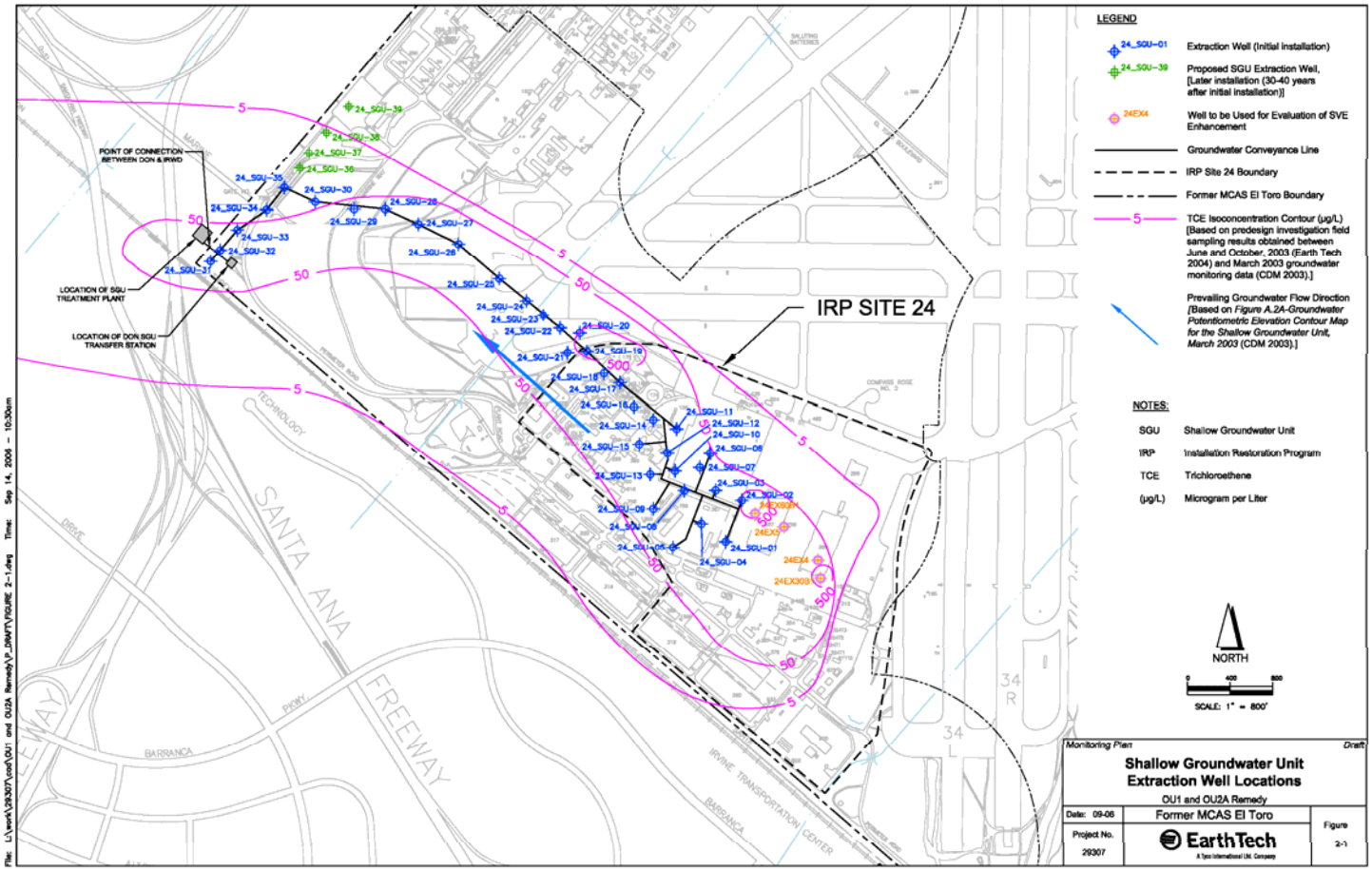
  - Interim-Remedial Action Completion Report

  - Operating Properly and Successfully Report

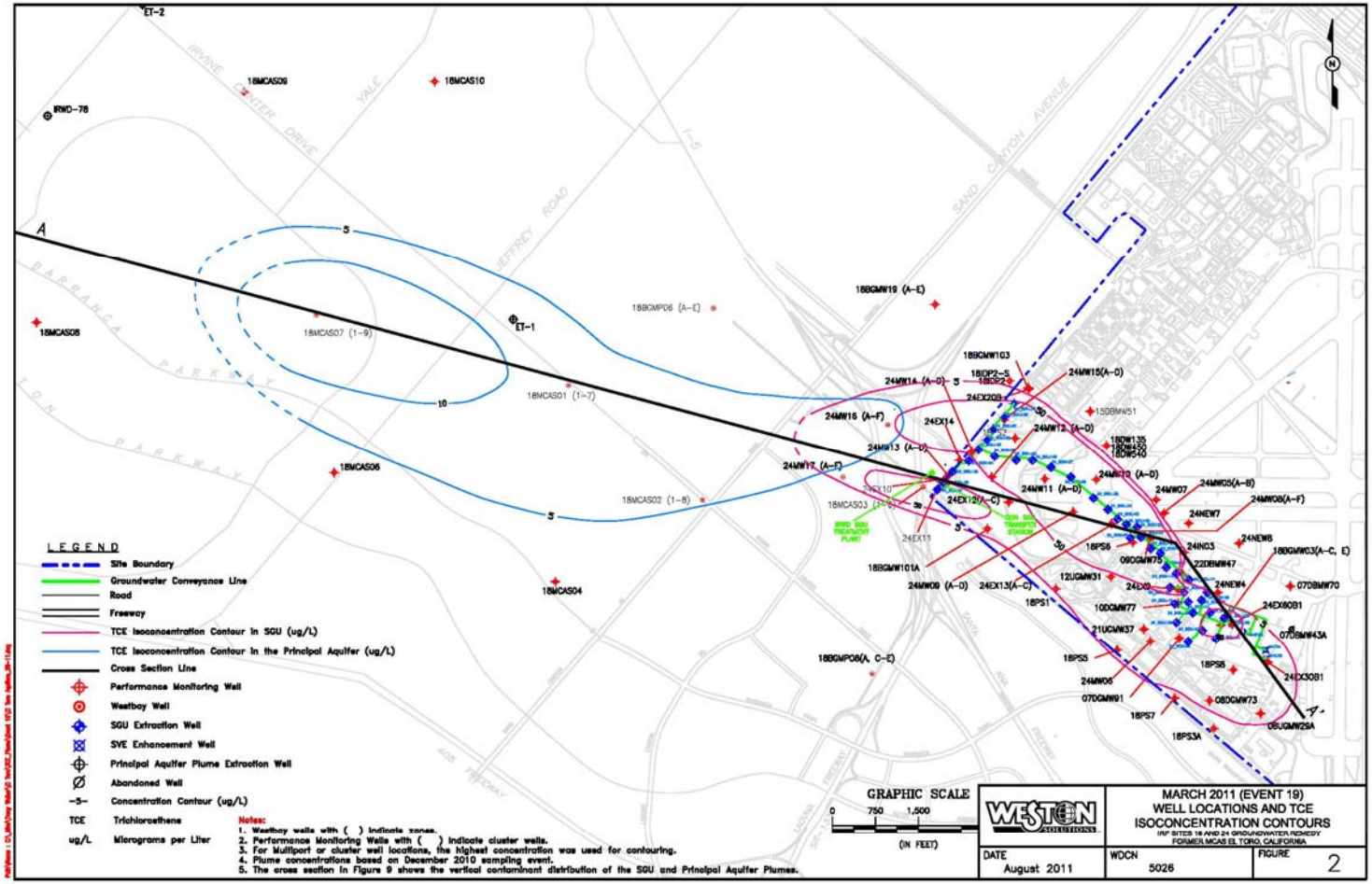
  - Semiannual Data Package Reports

  - Annual Remedy Status Reports

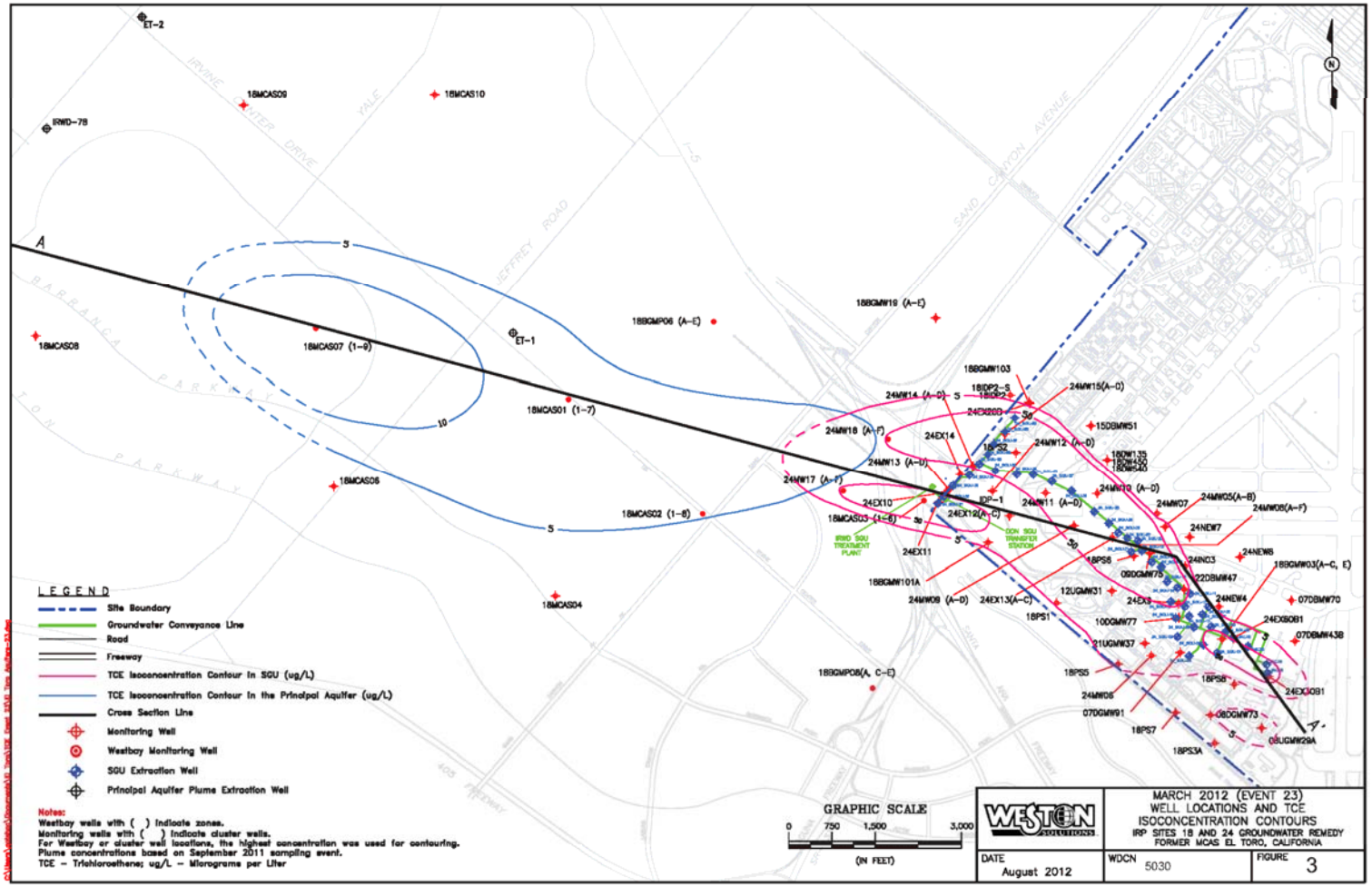
GROUNDWATER PLUME (2006)



GROUNDWATER PLUME (2011)



GROUNDWATER PLUME (2012)



SYSTEM OPERATION

- System operated at an uptime efficiency of 99% from January 2012 to December 2012
- Flow rates from the combined wells averaged 391 gallons per minute between January 2012 to December 2012
- Total groundwater pumped to Irvine Ranch Water District (IRWD) treatment plant as of April 19, 2012 approximately 1.3 billion gallons
- Approximately 1,600 pounds of VOCs, mainly TCE, removed from the groundwater since startup in September 2006
- Maximum concentrations of TCE in groundwater reduced from 460 micrograms per liter in 2011 to 360 micrograms per liter in 2012

SYSTEM OPERATION

- In general, groundwater monitoring results indicate that TCE concentrations continue to decline over time
- Water level elevations continue to be monitored to evaluate and optimize the extraction well system
- Decreases in water level elevations are likely a combination of effects from on-station extraction well pumping, off-station potable and irrigation water production, and drought conditions
- Decreases are consistent with decreases in groundwater elevations throughout the region

OPTIMIZATION

- Implemented optimization recommendations from the concurred-upon Final 2011 Annual Remedy Status Report
  - Reduce collecting water level measurements from Semi-Annual to Annual
  - Reduce Principal Aquifer (off-station) sampling from Semi-Annual to Annual
  - Reduce Shallow Groundwater Unit (on-station) sampling from Quarterly to Semi-Annual
  - Reduce extraction well (on-station) sampling from Quarterly to Semi-Annual
- If TCE concentrations in a monitoring well are not consistent with previous results and trends, the frequency of sampling may be revised to further evaluate TCE concentrations in this well
- Reporting semiannual results will be provided in a data package format to expedite submittal of the data

ONGOING/UPCOMING ACTIVITIES

- Conduct annual operation and maintenance at the extraction wellheads, equalization tanks, valves, pumps, and gauges
- Conducted non-routine activities including replacement of pumps and motors, protection of extraction well vaults during rain events, inspections after earthquakes, and security upgrades, as necessary
- Coordination efforts with lessees and property owners to ensure the system is protected when construction is conducted
- Conduct a review and update the existing three-dimensional, numerical groundwater flow and particle tracking model
- Modeling and monitoring results will be useful in evaluating the effectiveness and protectiveness of the remedy as part of the 2014 Five-Year Review

SCHEDULE

- Draft Annual Remedy Status Report (Jan 12 – Dec 12) June 2013
- Final Annual Remedy Status Report (Jan 12 – Dec 12) September 2013
- Final Semi-Annual Data Summary Report (Jan 13 – Jun 13) August 2013

ACRONYMS AND ABBREVIATIONS

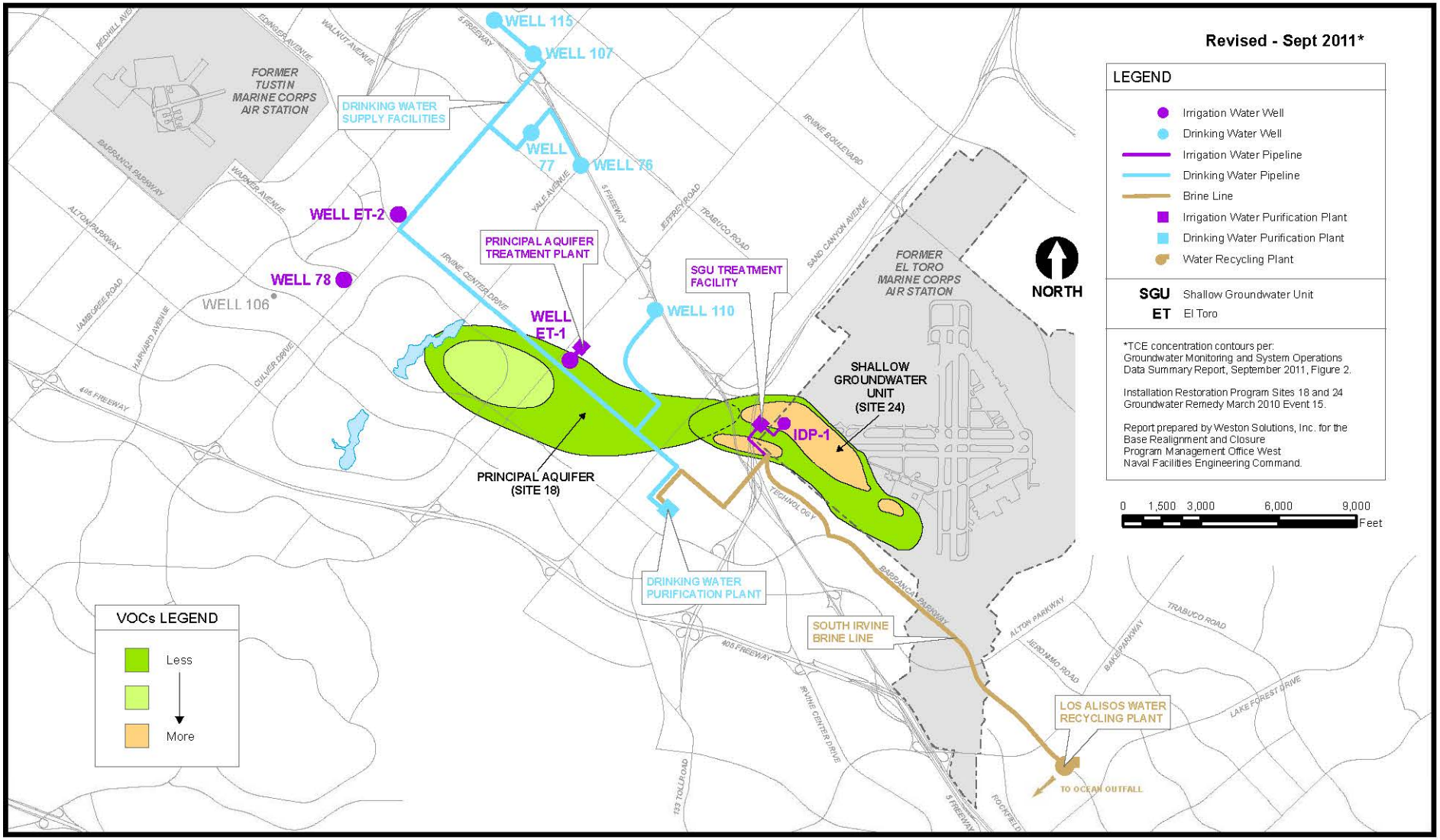
BRAC	Base Realignment and Closure
IRP	Installation Restoration Program
IRWD	Irvine Ranch Water District
OPS	Operating Properly and Successfully
TCE	Trichloroethene
VOCs	Volatile Organic Compounds

The Irvine Desalter Project

Site 18 – Principal Aquifer Update

El Toro RAB
April 24, 2013

Irvine Desalter Project Facilities



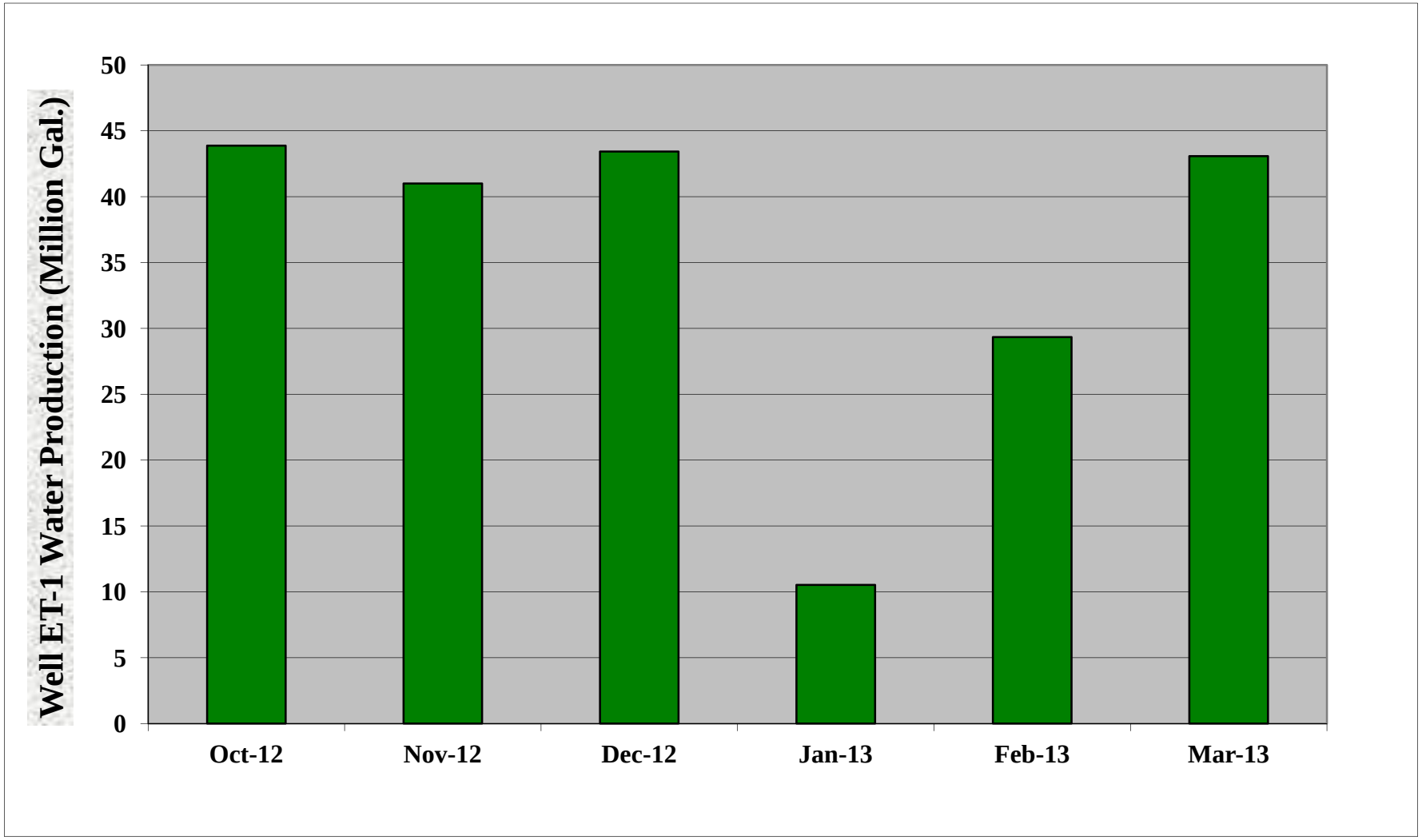
Principal Aquifer Components

- Well ET-1 & Principal Aquifer Treatment Plant (PAP)
- Well ET-2
- New Well 78 (online April 16, 2012)

Well ET-1 & PAP

- Located at Jeffrey and Irvine Center Drive in Irvine.
- In the last two quarters (10/1/2012 to 3/31/2013) PAP treated 211 million gallons of trichloroethylene (TCE)-impacted groundwater.
- Pumping to IRWD non-potable distribution system.
- Average operational flow rate in the last two quarters: 990 gallons per minute.
- Influent TCE in the last two quarters: 5-6 parts per billion (ppb).
- Effluent TCE in the last two quarters: <0.9 ppb.

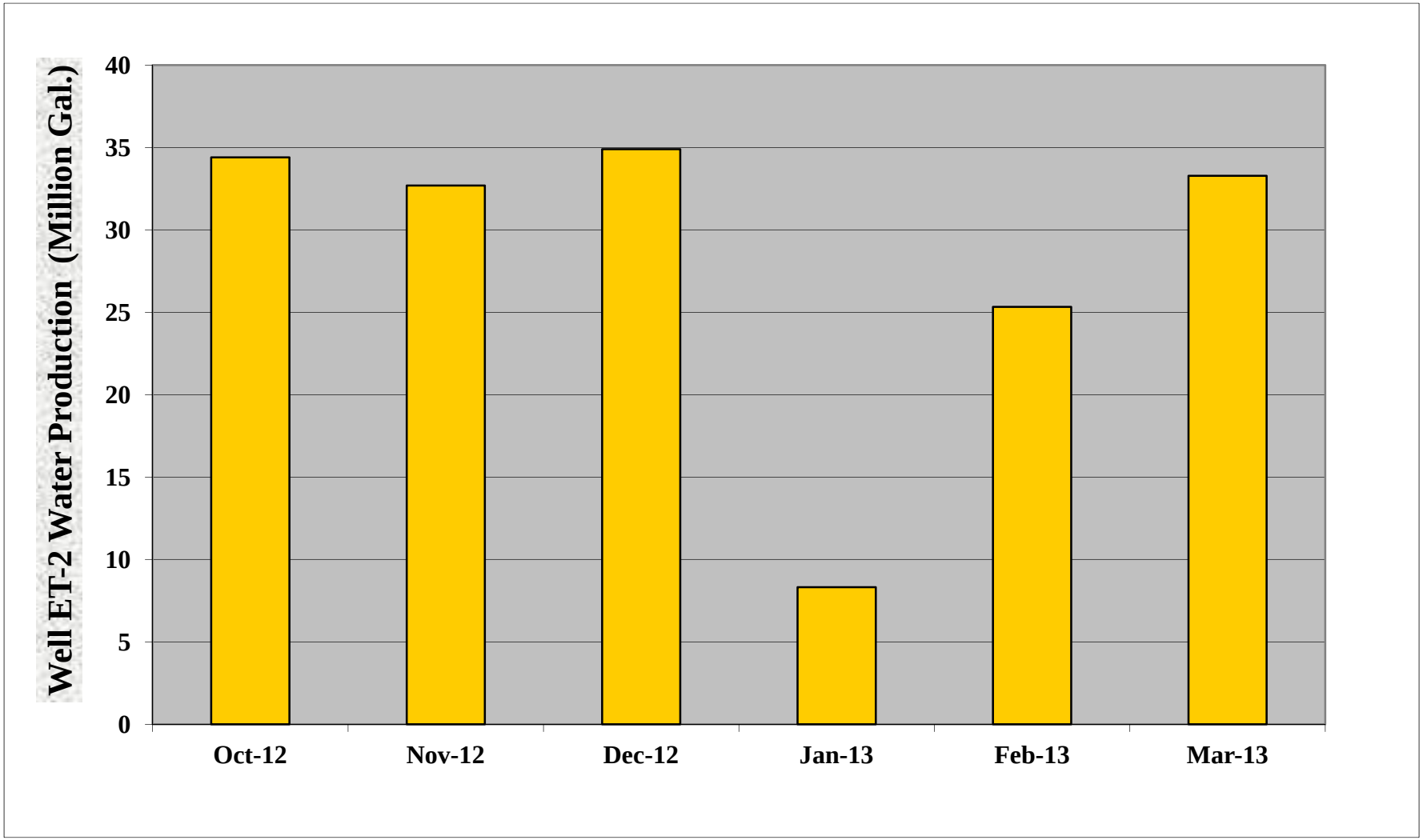
Well ET-1 (PAP) Discharge Volume (M.Gal) from 10/1/2012 to 3/31/2013



Well ET-2

- Located at Culver and Irvine Center Drive in Irvine.
- In the last two quarters (10/1/12 to 3/31/13) pumped 169 million gallons to IRWD non-potable distribution system.
- Average operational flow rate in the last two quarters: 865 gallons per minute.
- TCE: 1-1.5 ppb.

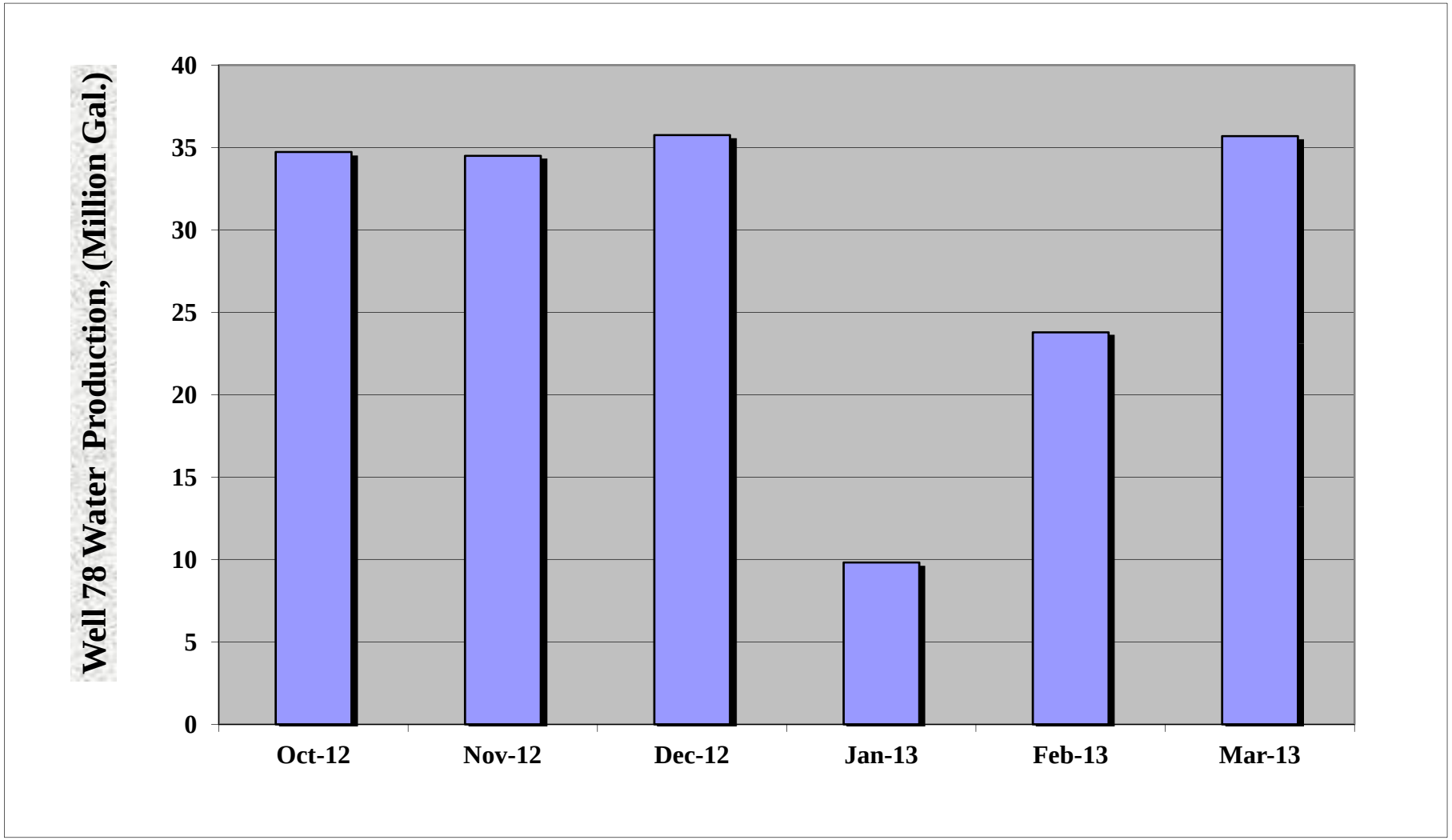
Well ET-2 Discharge Volume (M. Gal) from 10/1/2012 to 3/31/2013



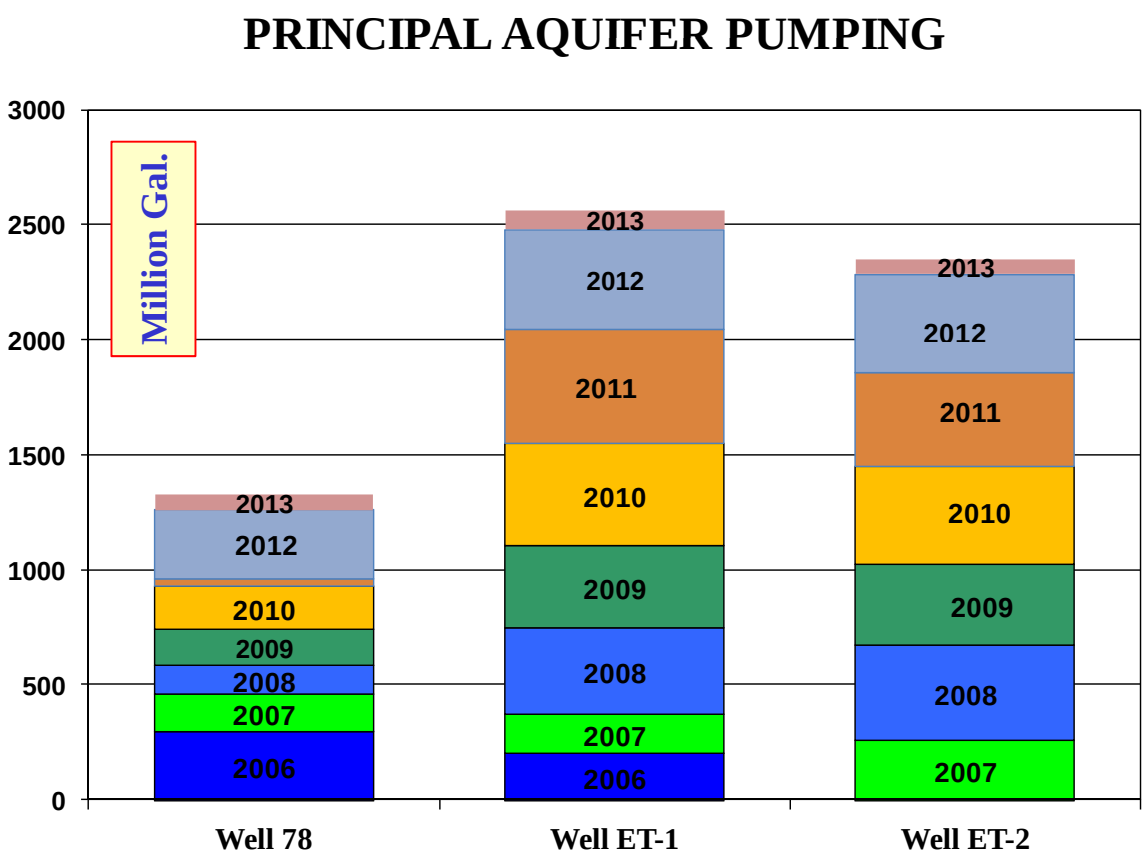
New Well 78

- Located at Culver and Warner in Irvine near the old Well 78 site. Well depth is 750 feet and is equipped with 800 GPM pump and 18-inch SS casing.
- Well routine operation started on April 16, 2012.
- In the last two quarters (10/1/12 to 3/31/13) pumped 174 million gallons to IRWD non-potable distribution system.
- Average operational flow in the last two quarters: 795 gallons per minute.
- TCE:1-1.5 ppb.

Well 78 Discharge Volume (M. Gal) from 10/1/2012 to 3/31/2013



Groundwater Pumping and TCE Removal



- Pumped 6.24 billion gallons of water from 2006 (startup) to March 31, 2013
- Total mass of TCE removed: ~ 85.7 kilograms or ~190 pounds.

Site 18 – Principal Aquifer Update

QUESTIONS/COMMENTS ???

Status Update
Remedial Design / Remedial Action
IRP Sites 1 and 2 Groundwater
Former MCAS El Toro

Presented By

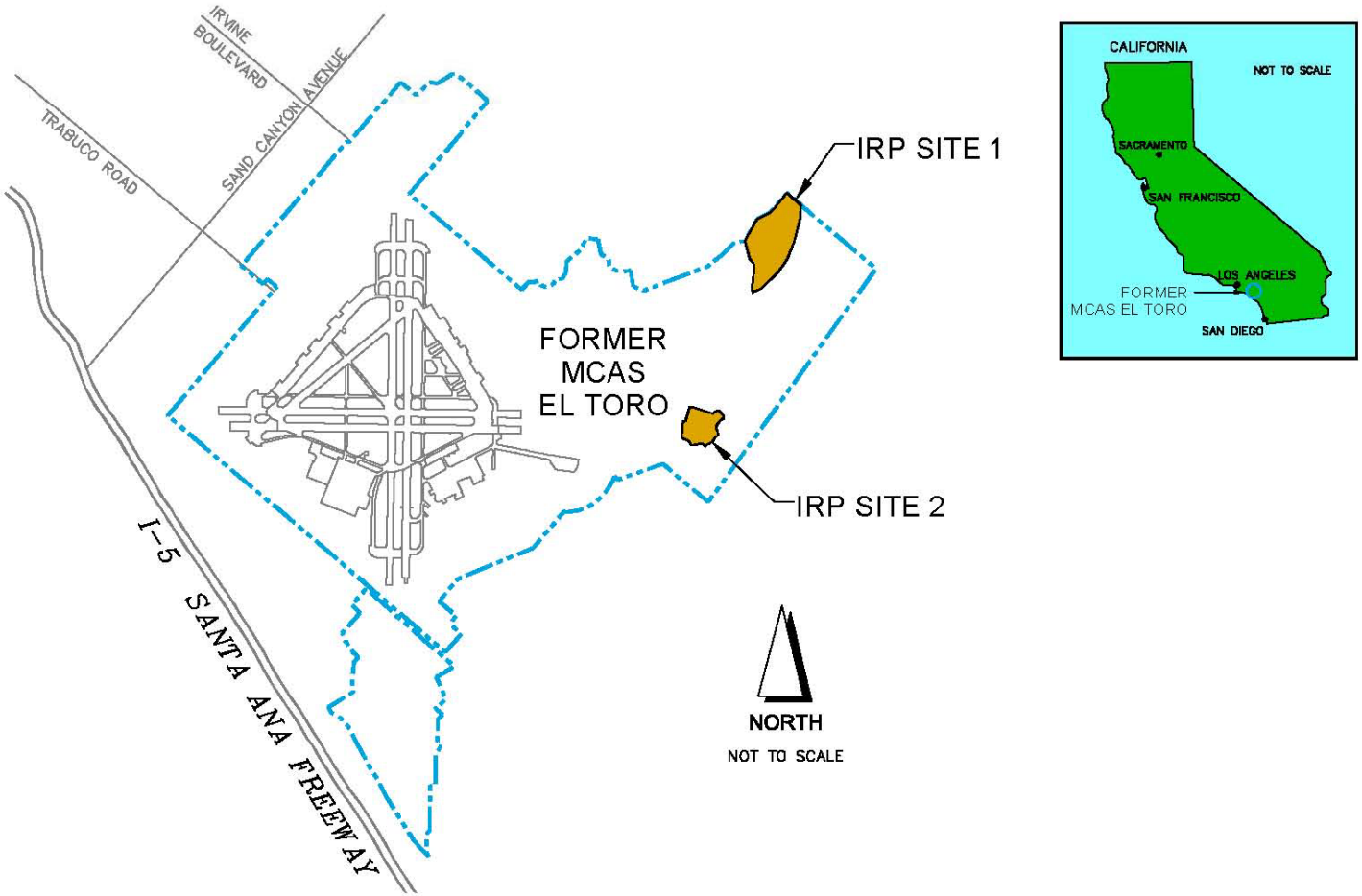
Crispin Wanyoike, PE (AEJV)

24 April 2013

Presentation Overview

- Brief Site Background
  - Site Locations
  - Nature and Extent of Impacted Groundwater
- Overview of the Record of Decision (ROD)
- Selected Remedy – IRP Site 1
- Selected Remedy – IRP Site 2
- Overview of Supplemental Groundwater Monitoring and Direct Push Technology Testing Completed in January 2013
- Schedule

Site Locations



Site Descriptions

- IRP Site 1
  - Former Explosive Ordnance Disposal (EOD) Training Range
  - EOD training exercises were conducted from 1952 until Station closure in 1999
  - Training activities included using hand grenades, land mines, cluster bombs, smoke bombs, and rocket-propelled munitions
  - The groundwater chemical of concern (COC) is perchlorate
  - Perchlorate concentrations greater than the Cleanup Goal (CG) extend from the central portion of IRP Site 1 to approximately the former Station Boundary

Site Descriptions (cont.)

- IRP Site 2
  - Former landfill known as Magazine Road Landfill
  - IRP Site 2 was an operational landfill from the late 1950s until about 1980
  - The construction of a landfill cap was completed in February 2008. This soil remedial action (RA) also included consolidation of waste from Areas C1, C2, and D2
  - Groundwater COCs : trichloroethene, tetracholorethene, cis-1,2-dichloroethene, 1,1,2-trichloroethane, and 1,2-dichloroethane

Selected Remedy

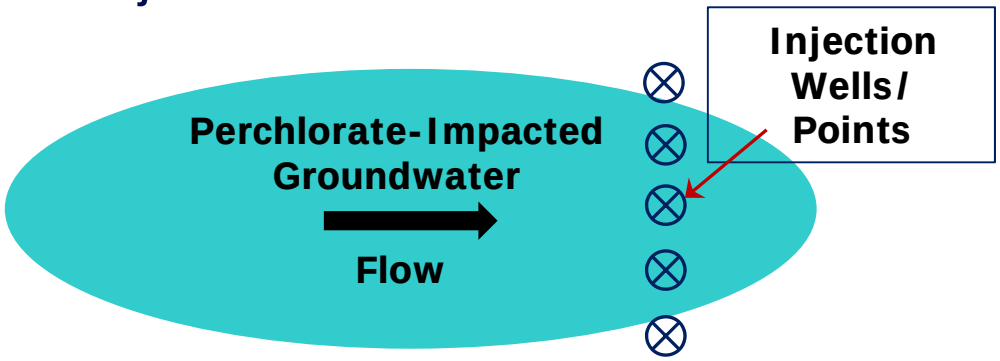
- February 2012: Final Record of Decision (ROD)
  - *Remedial Action Objectives (RAOs):*
    - Minimize the potential for domestic use of groundwater with concentrations of COCs exceeding the established respective remediation goals.
    - Minimize migration of groundwater with concentrations of COCs exceeding the established respective remediation goals beyond the former MCAS El Toro Boundary

Selected Remedy
IRP Site 1 Groundwater

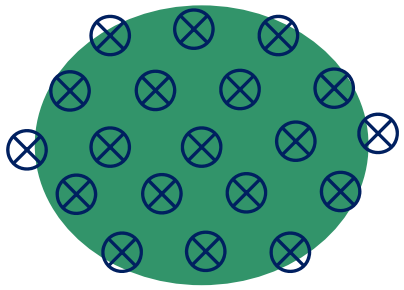
- In-Situ Bioremediation (ISB)
  - at the Source Area;
  - downgradient of the Source Area between IRP Sites 1 and 2; and
  - near the former Station Boundary
- Groundwater monitoring;
- Institutional Controls (ICs); and
- Five-Year Reviews.

Selected Remedy Design
IRP Site 1 Groundwater

- ISB for perchlorate-impacted groundwater will include the following:
  - Injected Permeable Reactive Barrier (PRB) immediately downgradient of the Source Area
  - ISB grid within the Source Area using direct injection
  - Injected PRB in the area between IRP Sites 1 and 2 (Intermediate Area PRB)
  - Injected PRB near the former Station Boundary

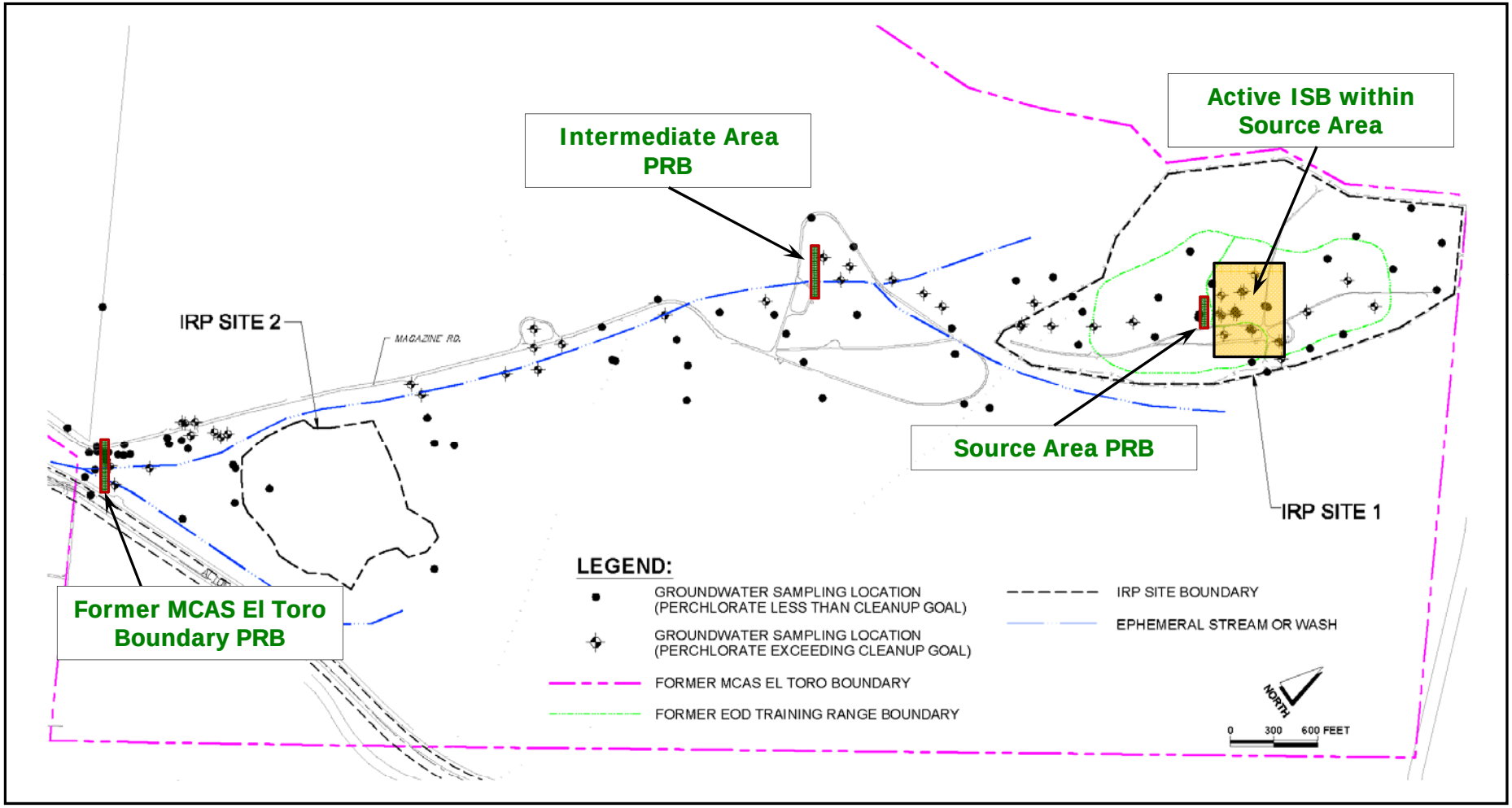


Schematic of Injected PRB



Schematic of Active ISB

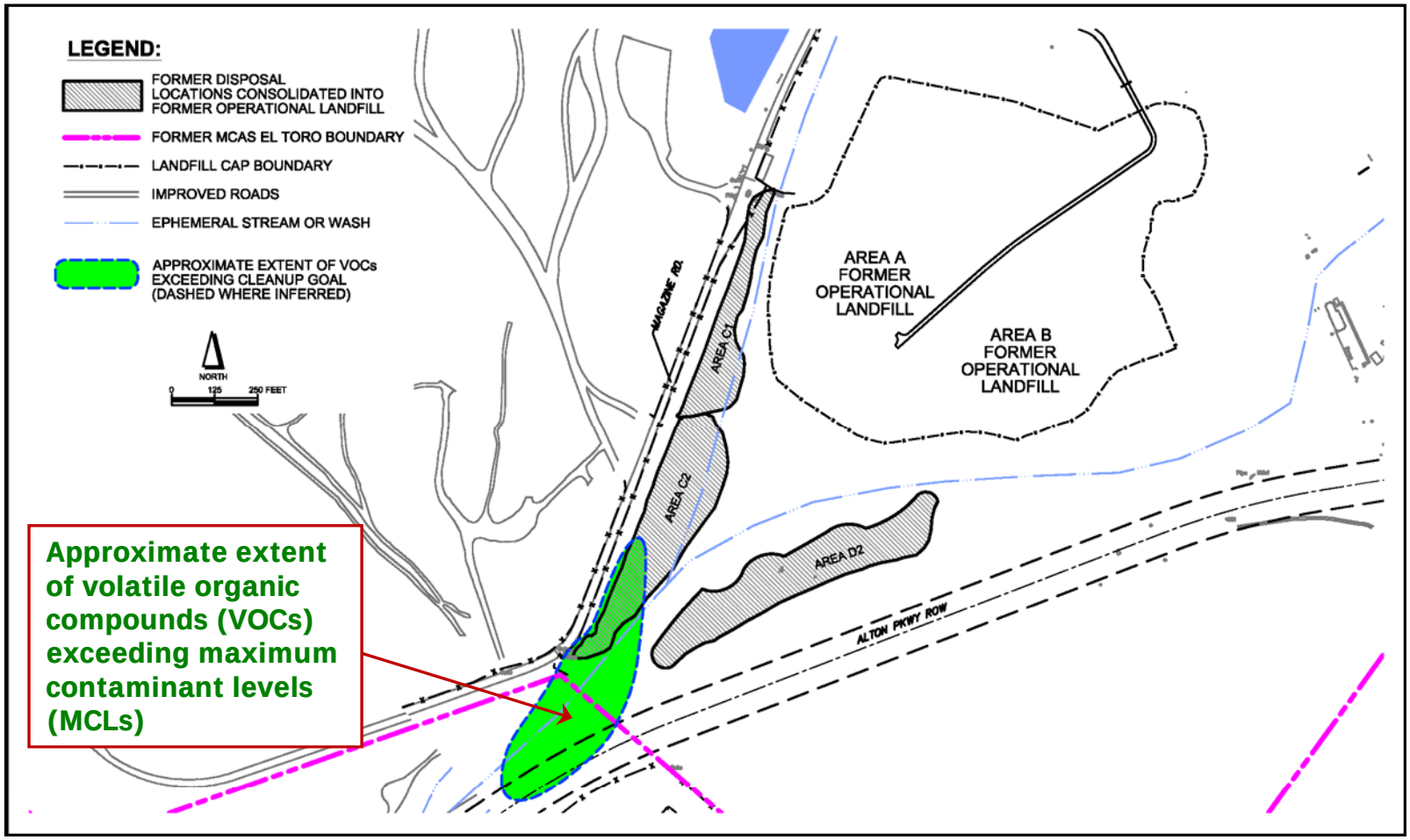
ISB Locations
IRP Site 1 Groundwater



Selected Remedy Design
IRP Site 2 Groundwater

- **IRP Site 2 Groundwater:**
  - Monitored Natural Attenuation (MNA)
    - MNA will rely on natural attenuation processes such as dispersion, dilution, sorption, and volatilization.
    - Groundwater monitoring will be conducted to evaluate the effectiveness of natural attenuation processes.
  - ICs
  - Five-Year Reviews

VOC-Impacted Groundwater
IRP Site 2



Supplemental Groundwater Monitoring and DPT Evaluation – January 2013

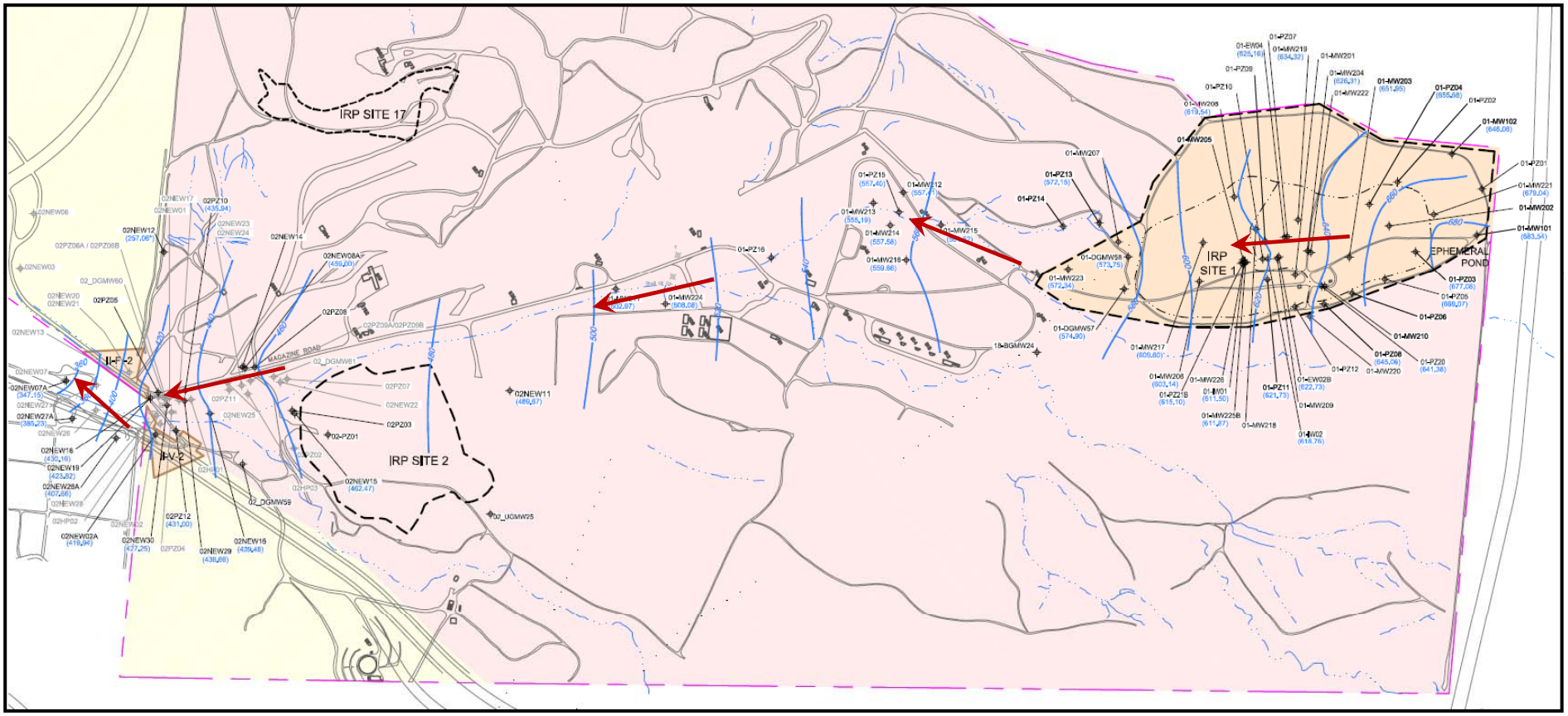
- *Purpose*
  - To supplement data collected during previous groundwater monitoring activities to refine and optimize the remedial design
  - To test the feasibility of using DPT for substrate injection for full-scale ISB implementation in the area between IRP Sites 1 and 2 (*Intermediate Area PRB)*

- *Groundwater Monitoring (January 2013)*
  - Number of Wells Sampled
    - VOCs: 3
    - Perchlorate: 28
    - Measure depth to Groundwater (in addition to wells sampled): 22

Groundwater Monitoring Results

- Analytical Results
  - In general, perchlorate concentrations are lower compared to the most recent previous sampling results
  - VOC concentrations results are generally consistent with previous monitoring events
- Groundwater Elevation and Direction
  - Groundwater elevations are generally consistent with those observed during previous events
  - The groundwater flow direction changes from south/southwest to west/northwest near the Station Boundary

Water Level Elevation Map
January 2013



Direct-Push Technology Evaluation

- Purpose
  - Test the feasibility of using DPT for substrate injection for full-scale ISB implementation
  - Three (3) Test Locations near the Intermediate Area PRB

- Results
  - Push depths ranged from 44 to 72 feet below ground surface
  - Push depths are sufficient to adequately inject substrate across the entire target remediation zone (alluvium/ weathered bedrock)

- Overall Conclusion
  - DPT will be used for substrate injection for full-scale implementation of the Intermediate Area PRB

DPT Test

Schedule

- Issue Draft Final RD/RA Work Plan – June 2013
- Issue Final RD/RA Work Plan – July 2013
- Issue Remedial Action Fact Sheet – July 2013
- Begin Remedial Action Implementation – July 2013

Acronyms and Abbreviations

CG	cleanup goal
COC	chemical of concern
DPT	direct push technology
EOD	explosive ordnance disposal
IC	institutional control
IRP	Installation Restoration Program
ISB	in-situ bioremediation
MCAS	Marine Corps Air Station
MCL	maximum contaminant level
MNA	monitored natural attenuation
PRB	permeable reactive barrier
RA	remedial action
RAO	remedial action objective
RD/RA	remedial design/ remedial action
ROD	record of decision
VOC	volatile organic compound