Responses to Comments on Draft Environmental Impact Report

Volume 1 of 2

For the
San Francisco Public Utilities Commission's

Regional Groundwater Storage and Recovery Project

July 9, 2014

Important Dates:	
Draft EIR Publication Date:	April 10, 2013
Draft EIR Hearing Dates:	May 14, 2013 in San Mateo County
	May 16, 2013 in San Francisco
Draft EIR Public Comment Period:	April 10, 2013 through June 11, 2013
Final EIR Certification Meeting Date:	August 7, 2014

City and County of San Francisco Planning Department
Case No. 2008.1396E
State Clearinghouse No. 2009062096

SAN FRANCISCO
PLANNING DEPARTMENT

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DATE: July 9, 2014

TO: Members of the Planning Commission and Interested Parties

FROM: Sarah B. Jones, Environmental Review Officer

SUBJECT: **Attached Responses to Comments on Draft Environmental Impact Report Case No. 2008.1396E Regional Groundwater Storage and Recovery Project**

Attached for your review please find a copy of the Responses to Comments document for the Draft Environmental Impact Report (EIR) for the above-referenced project. This document, along with the Draft EIR, will be before the Planning Commission for Final EIR certification on August 7, 2014. Please note that the public review period ended on June 11, 2013.

The Planning Commission does not conduct a hearing to receive comments on the Responses to Comments document, and no such hearing is required by the California Environmental Quality Act. Interested parties, however, may always write to Commission members or to the President of the Commission at 1650 Mission Street and express an opinion on the Responses to Comments document, or the Commission's decision to certify the completion of the Final EIR for this project.

Please note that if you receive the Responses to Comments document in addition to the Draft EIR, you technically have the Final EIR. If you have any questions concerning the Responses to Comments document or the environmental review process, please contact Timothy Johnston at 415-575-9035 or timothy.johnston@sfgov.org.

Thank you for your interest in this project and your consideration of this matter.

Regional Groundwater Storage and Recovery Project

Responses to Comments on Draft EIR

Volume 1 of 2

San Francisco Planning Department Case No. 2008.1396E
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Draft EIR Publication Date:	April 10, 2013
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Written comments should be sent to:

Sarah Jones, Environmental Review Officer
Regional Groundwater Storage and Recovery Project
San Francisco Planning Department
1650 Mission Street, Suite 400
San Francisco, CA 94103

9 RESPONSES TO COMMENTS

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9.1 INTRODUCTION

9.1.1 Purpose of the Responses to Comments Document

This Responses to Comments document has been prepared to respond to comments received on the Draft Environmental Impact Report (EIR) for the San Francisco Public Utilities Commission's (SFPUC) Regional Groundwater Storage and Recovery Project (GSR Project or Project). The Project is sponsored by the SFPUC in coordination with its partner agencies, which include the cities of Daly City and San Bruno, and the California Water Service Company (Cal Water) in its South San Francisco service area (collectively referred to as Partner Agencies).

This Responses to Comments document provides written responses to comments received during the public review period, and revises the Draft EIR, as necessary, to correct or clarify information. No new impacts or substantial increase in the severity of impacts has been identified as a result of information brought forward in the comments. The comments do not include feasible Project alternatives or mitigation measures that are substantially different from those analyzed in the Draft EIR and/or that the SFPUC has decided not to implement. Recirculation of the Draft EIR was thus not deemed to be necessary.

9.1.2 Environmental Review Process

Notice of Preparation and Public Scoping

On June 24, 2009, as described in the Draft EIR, the San Francisco Planning Department sent a Notice of Preparation (NOP) to governmental agencies, organizations, and persons interested in the proposed Project (see Attachment A in the Draft EIR). During the 35-day public scoping period that ended on July 28, 2009, the Planning Department accepted comments from agencies and interested parties identifying environmental issues that should be addressed in the EIR. A public scoping meeting was held on July 9, 2009 at the South San Francisco Municipal Services Building to receive oral comments on the scope of the EIR. In preparing the EIR on the proposed Project, the San Francisco Planning Department considered the public and agency comments made on the NOP.

Draft EIR Public Review

The Draft EIR for the proposed Project was published on April 10, 2013 and circulated to local, State, and federal agencies and to interested organizations and individuals for an initial 45-day public review period (the public review period was extended for two weeks, concluding on June 11, 2013). Paper copies of the Draft EIR were made available for public review at the following locations: (1) San Francisco Planning Department, 1660 Mission Street, 1st Floor, Planning Information Counter, San Francisco, California; and (2) San Francisco Main Library, 100 Larkin Street, and other area libraries located in San Mateo County.[1] On April 10, 2013, the Planning Department also distributed notices of availability of the Draft EIR;

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1 Electronic copies of the Draft EIR could be accessed through the internet at the following address: http://tinyurl.com/puccases.

published notification of its availability in a newspaper of general circulation in San Francisco; and posted notices at locations within the Project area. Additional notices of availability were distributed and published on May 29, 2013 to announce the extended public review period. The distribution list for the Draft EIR and all documents referenced in the EIR were also available for review at the San Francisco Planning Department, 1650 Mission Street, Suite 400.

During the initial 45-day public review period, the San Francisco Planning Department conducted three public hearings to receive oral comments on the Draft EIR. The first public hearing was held at the South San Francisco Municipal Services building on May 14, 2013. The second public hearing was held before the San Francisco Planning Commission on May 16, 2013 at San Francisco City Hall. A court reporter present at the May 14, 2013 and May 16, 2013 public hearings transcribed the oral comments verbatim and prepared written transcripts. A third public hearing was held before the San Francisco Planning Historic Preservation Commission on May 15, 2013.

During the Draft EIR public review period, the Planning Department received comments from seven federal, regional, or local government agencies; six organizations; and three individuals (including two comment letters/emails from one individual). Attachment RTC-A of this Responses to Comments document includes copies of the comment letters submitted during the Draft EIR public review period. Attachment RTC-B includes copies of the May 14, 12013 and May 16, 2013 public hearing transcripts, as well as a memorandum summarizing the comments received during the May 15, 2013 public hearing; five oral comments were received during the Project public hearings. See Section 9.2 (List of Persons Commenting) for a complete list of persons commenting on the Draft EIR.

Responses to Comments Document and Final EIR

The San Francisco Planning Department distributed the Responses to Comments document for review to the San Francisco Planning Commission as well as to the individuals, organizations, and agencies that commented on the Draft EIR. The Planning Commission will consider the adequacy of the Final EIR – consisting of the Draft EIR and the Responses to Comments document – in complying with the requirements of the California Environmental Quality Act (CEQA). If the Planning Commission finds that the Final EIR complies with CEQA requirements, it will certify the Final EIR as adequate.

Following certification of the Final EIR, the SFPUC will review and consider the certified Final EIR and the associated mitigation monitoring and reporting program (MMRP) before making a decision and taking an approval action on the proposed Project. Consistent with CEQA Guidelines Section 15097, the MMRP is a program designed to ensure that the mitigation measures identified in the Final EIR and adopted by decision-makers to mitigate or avoid the Project's significant environmental effects are implemented. CEQA also requires the adoption of findings prior to Project approval in cases where the certified EIR identifies significant environmental effects (CEQA Guidelines Sections 15091 and 15092). If the EIR identifies significant adverse impacts that cannot be mitigated to less-than-significant levels and the Project is approved, the findings must include a statement of overriding considerations for those impacts (CEQA Guidelines Section 15093[b]). The Project sponsor (in this case, the SFPUC) is required to adopt CEQA findings and the MMRP as conditions of Project approval.

The Draft EIR together with this Responses to Comments document constitute the Final EIR for the Project in fulfillment of CEQA requirements and consistent with CEQA Guidelines Section 15132. The Final EIR has been prepared in compliance with CEQA, including the CEQA Guidelines[2] and the San Francisco Administrative Code, Chapter 31.

In accordance with CEQA, the responses to comments focus on clarifying the Draft EIR's description of the Project and addressing physical environmental issues associated with the proposed Project. These issues include physical impacts or changes attributable to the Project rather than any social or financial implications of the Project. Therefore, this document provides limited responses to comments received during the public review period that were not relevant to the proposed Project or to its physical environmental effects.

9.1.3 Document Organization

This Responses to Comments document is organized to complement the Draft EIR and follows its sequential numbering of chapters. The Draft EIR consists of Chapters 1 through 8 and Appendices A through K. This Responses to Comments document consists of EIR Chapter 9 plus Attachments RTC-A and RTC-B, as follows:

Chapter 9, Responses to Comments

9.1 Introduction
9.2 List of Persons Commenting
9.3 Comments and Responses
9.4 Project Description Revisions
9.5 Draft EIR Revisions
9.6 References
Attachment RTC-A – Draft EIR Comment Letters and Emails
Attachment RTC-B – Draft EIR Public Hearing Transcripts and Memorandum

2 Title 14, California Code of Regulations, Chapter 3, Guidelines for Implementation of CEQA.

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9.2 LIST OF PERSONS COMMENTING

This Responses to Comments document is organized to respond to all comments received on the Draft EIR, including written comments submitted by letter or email as well as oral comments presented at public hearings. The complete set of written and oral comments received on the Draft EIR is provided in Attachment RTC-A, Draft EIR Comment Letters and Emails, and Attachment RTC-B, Draft EIR Public Hearing Transcripts and Memorandum.

9.2.1 Organization of Comments

Comments received on the Draft EIR include written comments submitted by letter or email, and oral comments presented at the May 14, 2013 public hearing conducted by the San Francisco Environmental Planning Department at the South San Francisco Municipal Services Center; the San Francisco Planning Commission public hearing held on May 16, 2013; or the San Francisco Historic Preservation Commission public hearing held of May 15, 2013. This chapter lists all persons who commented during the comment period, grouped according to whether they represent a governmental agency, organization, or individual, and the format in which their comment was received; see Table RTC 9.2-1 (List of Federal, State, Regional, and Local Agencies, and Commissions), Table RTC 9.2-2 (List of Organizations), and Table RTC 9.2-3 (List of Individuals). Each commenter within each of these categories has been assigned a unique commenter code for ease of identification; the codes are also listed in the tables.

Each unique commenter code includes a prefix that indicates whether the commenter represents a governmental agency (G), organization (O), is an individual (I), or submitted comments orally at the public hearing (PH). The prefix for governmental agencies (G) and organizations (O) is followed by a hyphen and the acronym of the agency or organization and the commenter's last name. The prefix for individual commenters (I) is followed by a hyphen and the individual's last name. The prefix for public hearing commenters (PH) is followed by a hyphen and the acronym of the specific public hearing and the commenter's last name. When multiple comments were received from a particular individual, a number in parentheses indicates the order in which comments (including letter, email, or public hearing comment) were received from that individual. The name of the commenter or organization and the format of the comment (letter, email, public hearing transcript), and comment date are indicated in the upper right-hand corner of the comment documents in Attachment RTC-A and Attachment RTC-B.

9.2.2 List of Agencies, Commissions, Organizations, and Individuals Commenting on the Draft EIR

The following comment letters and emails were submitted to the City during the public review period.

Table RTC 9.2-1
List of Federal, State, Regional, and Local Agencies, and Commissions

Commenter Code	Commenter	Agency or Commission	Via
G-VA-Madderom	Glenn Madderom, Chief	Cemetery Development and Improvement Service, U.S. Department of Veterans Affairs	Letter dated May 25, 2013
G-San Mateo PW-Chow	Mark Chow, PE Principal Civil Engineer for Utilities-Flood Control-Watershed Protection	Department of Public Works, San Mateo County	Letter dated May 17, 2013
G-BAWSCA-Sandkulla	Nicole M. Sandkulla, PE Water Resources Planning Manager	Bay Area Water Supply & Conservation Agency	Letter dated May 24, 2013
G-Daly City-Sweetland	Patrick Sweetland, Director of Water and Wastewater Resources	Department of Water and Wastewater Resources, City of Daly City	Letter dated June 10, 2013
G-San Mateo RS-LoCoco	Joseph A. LoCoco, Deputy Director	Road Services, San Mateo County	Email dated June 11, 2013
G-Colma-Laughlin	Michael P. Laughlin, AICP City Planner	Planning Department, Town of Colma	Letter dated May 28, 2013
G-San Bruno-Fabry	Klara A. Fabry, Public Services Director	City of San Bruno	Letter dated June 13, 2013
PH-PC-Commissioner Antonini	Commissioner Michael J. Antonini, San Francisco Planning Commission	San Francisco Planning Commission	Oral Comment, May 16, 2013
PH-HPC-Hasz	Karl Hasz, President, Historic Preservation Commission	Historic Preservation Commission	Letter dated January 15, 2014

Table RTC 9.2-1
List of Federal, State, Regional, and Local Agencies, and Commissions

Commenter Code	Commenter	Organization	Via
O-TRT-Drekmeier	Peter Drekmeier, Bay Area Program Director	Tuolumne River Trust	Letter dated June 5, 2013
O-RHH-Rosekrans	Spreck Rosekrans, Director of Policy	Restore Hetch Hetchy	Letter dated June 11, 2013
O-CGC-Maddow	Robert B. Maddow, Bold, Polisner, Maddow, Nelson & Judson	California Golf Club	Letter dated June 11, 2013
O-CLMP-Quick	Deborah E. Quick, Associate, Morgan Lewis & Bockius LLP	Cypress Lawn Memorial Park	Letter dated June 11, 2013

Table RTC 9.2-2
List of Individuals

Commenter Code	Commenter	Via
I-King	Christopher King	Letter dated April 26, 2013
I-Robert	Robert in San Bruno	Letter dated May 2, 2013
I-Lawrence (1)	Steve Lawrence	Email dated May 26, 2013
I-Lawrence (2)	Steve Lawrence	Email dated June 13, 2013
PH-SSF-Lapuyade	Thomas Lapuyade	South San Francisco Public Hearing, May 14, 2013
PH-SSF-Drekmeier	Peter Drekmeier, Tuolumne River Trust	South San Francisco Public Hearing, May 14, 2013

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9.3 COMMENTS AND RESPONSES

This chapter presents the substantive comments received on the Draft EIR and the responses to those comments.

Organization of Responses to Comments

To facilitate the preparation of responses, comments were assigned unique comment codes, and they are generally organized by subject and presented in the same order as in the Draft EIR. Comments related to the description of the Project or those on a specific analysis or mitigation measure are included under the relevant topical section. The order of the comments and responses in this chapter is shown below, along with the prefix assigned to each topic code.

General Comments ....GC

Introduction and Background.....................IN

Project Description .... PD

Plans and Policies ....PP

Land Use .... LU

Aesthetics.. AE

Cultural and Paleontological Resources... CR

Greenhouse Gas Emissions ....GG

Transportation and Circulation ....TR

Noise and Vibration .... NO

Recreation ....RE

Utilities and Service Systems .... UT

Hydrology and Water Quality...................HY

Alternatives .... AL

Within each subsection under each topic area, similar comments are grouped together and identified using the topic code prefix and sequential numbering for each subtopic. For example, General Comments (GC) are listed as GC-1, GC-2, GC-3, and so on. Each topic code has a corresponding heading that introduces the comment subject; these subsections present quotes of comments and include the commenter's name. However, the reader is referred to Attachments RTC-A and RTC-B for the full text and context of each comment. Figures and other attachments submitted by commenters and referenced in individual comments are included in Attachment RTC-A; they are not reproduced as part of the comments in this chapter.

Attachments RTC-A and RTC-B include comment matrices (Table RTC-A-1 and Table RTC-B-1) that list all comment letters, emails or oral comments received, and indicate the associated comment code and topic codes. In some cases, a comment is assigned multiple comment topics. Individual comments on separate topics from each commenter are coded as per the concerned topic within the comment letters; the comment codes are shown in the margins of the comments in Attachments RTC-A and RTC-B. Comments are transcribed verbatim and may contain grammatical or typographical errors.

Following each comment or group of comments, a comprehensive response is provided to address issues raised in the comment and to clarify or augment information in the Draft EIR as appropriate. Response numbers correspond to the topic code; for example, the response to comment GC-1 is presented under

Response GC-1. The responses may clarify the Draft EIR text or revise or add text to the Draft EIR. Revisions to the Draft EIR are shown as indented text. New or revised text is double underlined; deleted material is shown in ~~strikethrough~~. Corrections and/or clarifications to the Draft EIR are captured in the individual responses as well as in Section 9.5, Draft EIR Revisions.

9.3.1 General Comments

The comments and corresponding responses in this section cover general topics related to the Draft EIR and the Project. These include topics related to:

- GC-1, General Comments Unrelated to Adequacy of the Draft EIR
- GC-2, Project Merit
- GC-3, Adequacy of the Draft EIR
- GC-4, Discussion/Involvement with the SFPUC
- GC-5, Comments Not related to GSR Project Draft EIR
- GC-6, CEQA Process
- GC-7, Water Supply Planning

Comment GC-1: Comments that do not pertain to the adequacy of the Draft EIR.

This response addresses comments from the commenters listed below; each comment on this topic is quoted in full below this list:

- G-VA-Madderom
- G-San Mateo PW-Chow
- G-BAWSCA-Sandkulla
- G-Daly City-Sweetland
- G-San Mateo RS-LoCoco
- G-Colma-Laughlin
- G-SB-Fabry
- O-TRT-Drekmeier
- O-RHH-Rosekrans
- O-CGC-Maddow
- O-CLMP-Quick
- I-Robert
- I-Lawrence (1)
- PH-SSF-Lapuyade
- PH-SSF-Drekmeier
- PH-HPC-Hasz

<u>*Introductory and Concluding Remarks*</u>

"The U.S. Department of Veterans Affairs (VA) has reviewed the EIR for the Regional Groundwater Storage and Recovery Project, San Francisco, CA released for public review on April 10, 2013 by the San Francisco Planning Department.

Thank you for providing VA with the opportunity to comment on the Draft EIS document. Here are VA's review comments." *(Department of Veterans Affairs, letter, May 25, 2013 [G-VA-Madderom])*

"We also thank SFPUC for providing us with the opportunity to comment. Please don't hesitate to contact me at 317-916-3797 or via e-mail at Glenn.Madderom@va.gov, to discuss our comments further.

Thank you in advance for your consideration and attention to this matter." *(Department of Veterans Affairs, letter, May 25, 2013 [G-VA-Madderom])*

"The San Mateo County Department of Public Works, in its capacity as the Administrator of the San Mateo County Flood Control District (District), which includes the Colma Creek Flood Control Zone and the San Bruno Creek Flood Control Zone, hereinafter collectively referred as 'Zones,' has reviewed the Draft Environmental Impact Report for the subject project and offers the following comments:" *(San Mateo Department of Public Works, letter, May 17, 2013 [G-San Mateo PW-Chow])*

"If you have any questions, please contact me at (650) 599-1489." *(San Mateo Department of Public Works, letter, May 17, 2013 [G-San Mateo PW-Chow])*

"Thank you for the opportunity to provide the following comments from the Bay Area Water Supply & Conservation Agency (BAWSCA). BAWSCA represents the interests of 24 cities and water districts, an investor-owned utility, and a university, that purchase water wholesale from the San Francisco Regional Water System. These agencies, in turn, provide water to 1.7 million people, businesses, and community organizations in Alameda, Santa Clara, and San Mateo Counties. BAWSCA member agencies are highly dependent on the SFPUC Regional Water System (RWS) to provide a reliable supply of potable drinking water critical to the health and safety of consumers in the region.

These comments address the Draft Environmental Impact Report (DEIR) for the Regional Groundwater Storage and Recovery project dated April 10, 2013." *(BAWSCA, letter, May 24, 2013 [G-BAWSCA-Sandkulla])*

"Thank you for the opportunity to provide these comments on the DEIR for the Regional Groundwater Storage and Recovery Project dated April 10, 2013. If you have any questions, please contact me at (650) 349-3000." *(BAWSCA, letter, May 24, 2013 [G-BAWSCA-Sandkulla])*

"The City of Daly City welcomes the opportunity to comment on the Draft Environmental Impact Report (DEIR) for the Regional Groundwater Storage and Recovery Project. Daly City would again acknowledge a well-established track record of mutual cooperation with San Francisco aimed at preserving the Westside Groundwater Basin as a potable drinking water supply. Our agencies joint efforts include securing grant funding to install a series of groundwater sentinel wells, activities to construct and distribute recycled water, creating a fully vetted groundwater aquifer model, ongoing semi-annual groundwater monitoring among basin users, and efforts aimed at developing a Lake Management Plan addressing sustainable water levels at Lake Merced. It is from that vantage the City of Daly City offers the following comments." *(Daly City Department of Water and Wastewater Resources, letter, June 10, 2013 [G-Daly City-Sweetland])*

"Thank you Ms. Jones, for your consideration of our comments. Should you have any questions or require additional information, please do not hesitate to contact me directly." *(Daly City Department of Water and Wastewater Resources, letter, June 10, 2013 [G-Daly City-Sweetland])*

"San Mateo County's comments to the EIR for the SFPUC's Regional Groundwater and Storage Project are as follows:" *(San Mateo County Road Services, email, June 11, 2013 [G-San Mateo RS-LoCoco])*

"We thank you for the opportunity to comment." *(San Mateo County Road Services, email, June 11, 2013 [G-San Mateo RS-LoCoco])*

"Thank you for the opportunity to comment on the SFPUC Regional Groundwater Storage and Recovery Project EIR. We have also appreciated the outreach and informational meetings provided by SFPUC staff regarding this project. " *(Colma Planning Department, letter, May 28, 2013 [G-Colma-Laughlin])*

"We would like to make the following comments on the document and regarding several of the mitigation measures:" *(Colma Planning Department, letter, May 28, 2013 [G-Colma-Laughlin])*

"Please feel free to contact me if you have any questions concerning the Town's comments." *(Colma Planning Department, letter, May 28, 2013 [G-Colma-Laughlin])*

"The City of San Bruno provides the following comments on the Draft Environmental Impact Report for the Regional Groundwater Storage and Recovery Project ('DEIR')." *(City of San Bruno, letter, June 13, 2013 [G-San Bruno-Fabry])*

"San Bruno appreciates the opportunity to review and provide comments on the DEIR. Please do not hesitate to contact me should you have any questions regarding these comments." *(City of San Bruno, letter, June 13, 2013 [G-San Bruno-Fabry])*

"On May 15, 2013, the Historic Preservation Commission (HPC) held a public hearing and took public comment on the Draft Environmental Impact Report (DEIR) for the SFPUC's proposed Regional Groundwater Storage and Recovery Project (2008.1396E). After discussion, the HPC arrived at the question and comment below:" *(San Francisco Planning Department Historic Preservation Commission, letter, January 15, 2014 [PH-HPC-Hasz])*

"The HPC appreciates the opportunity to participate in review of this environmental document." *(San Francisco Planning Department Historic Preservation Commission, letter, January 15, 2014 [PH-HPC-Hasz])*

"The Tuolumne River Trust (TRT) appreciates the opportunity to comment on Case No: 2008.1396E – the Regional Groundwater Storage and Recovery Project (Project)." *(Tuolumne River Trust, letter, June 5, 2013 [O-TRT-Drekmeier])*

"Thank you for the opportunity to comment on the Draft Project EIR." *(Tuolumne River Trust, letter, June 5, 2013 [O-TRT-Drekmeier])*

"Restore Hetch Hetchy appreciates the opportunity to comment on Case No: 2008.1396E – the Regional Groundwater Storage and Recovery Project (Project)." *(Restore Hetch Hetchy, letter, June 11, 2013 [O-RHH-Rosekrans])*

"Thanks you for the opportunity to comment on the Regional Groundwater Storage and Recovery Project." *(Restore Hetch Hetchy, letter, June 11, 2013 [O-RHH-Rosekrans])*

"This law firm has been engaged as special counsel by the California Golf Club (Club) regarding the Draft Environmental Impact Report (DEIR) for the SFPUC's proposed Regional Groundwater Storage and Recovery Project (Project). On behalf of the Club, we hereby present comments in response to your April 10, 2013 Public Notice of Availability of the DEIR, and your May 28, 2013 Public Notice of Extension of Comment Period for the DEIR." *(California Golf Club, letter, June 11, 2013 [O-CGC-Maddow])*

"The Club looks forward to your responses to the comments raised in this letter, and to the forthcoming hearings on the Final EIR and on approval of the Project." *(California Golf Club, letter, June 11, 2013 [O-CGC-Maddow])*

"Morgan Lewis hereby submits the comments of our client, Cypress Lawn Memorial Park ('Cypress Lawn'), on the Draft Environmental Impact Report ('DEIR') for the San Francisco Public Utilities Commission (the 'SFPUC') Regional Groundwater Storage and Recovery project (the 'GSR Project'). Pursuant to Ms. Jones' e-mail of May 21, 2013, the San Francisco Planning Department and the SFPUC have agreed to accept and respond to comments from Cypress Lawn submitted on or before June 11, 2013." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

"These comments are supplemented by the comments of David Abbott and Jenny Cherney, Senior Hydrologists with Daniel B. Stephens & Associates ('DBS&A'). Together, Mr. Abbott and Ms. Cherney have combined experience of over 44 years in groundwater analysis and management. DBS&A's comments are attached as **Exhibit A** and fully incorporated herein by this reference." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

"Daniel B. Stephens & Associates, Inc. (DBS&A) is pleased to provide our comments regarding the subject draft environmental impact report (DEIR) on the behalf of Cypress Lawn Memorial Park (Cypress Lawn)." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

"**Conclusion**

This document provides DBS&A's comments on the DEIR based on our evaluation at this point in time. DBS&A had a limited time to review these voluminous materials. Due to these time constraints, DBS&A may have additional comments upon further evaluation of the DEIR and related materials and may supplement the comments and questions presented here." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

"I am writing in regards to the recent information sent out dated April 10, 2013, for Case No. 2008.1396E, Project Title: Regional Groundwater Storage and Recovery Project." *(Robert, letter, May 2, 2013 [I-Robert])*

"Although we may disagree on this matter, I hope you have heard these comments with an open mind, and thank you for your time." *(Robert, letter, May 2, 2013 [I-Robert])*

"Please accept these comments to the Draft EIR for Regional Groundwater Storage & Recovery:

(Amy, please forward this to the right email if it is not properly addressed; thank you.)" *(Steve Lawrence, e-mail, May 26, 2013 [I-Lawrence (1)])*

Comments Quoting or Summarizing Findings in Draft EIR

"**HY-9 and C-HY-5: Project operation could have a substantial, adverse effect on water quality that could affect the beneficial uses of Lake Merced (*Less than Significant with Mitigation*).** Daly City concurs. The impacts to Lake Merced are also a concern for the San Francisco Groundwater Project. Modeled lake levels are for the project conditions are lower than the existing condition scenario. Corrective actions are proposed that include adding supplemental water (either SFPUC system water, treated storm-water, or recycled water), if available, and/or altering or redistributing pumping patterns." *(Daly City Department of Water and Wastewater Resources, letter, June 10, 2013 [G-Daly City-Sweetland])*

"Lastly, the DEIR correctly notes that rising groundwater levels would not dilute nitrate concentrations. Furthermore, it correctly notes that pumping and in-lieu recharge could result in changes in groundwater flow directions and conceivably transport existing elevated concentrations of dissolved nitrates in groundwater towards Project wells or Partner Agency wells. The DEIR indicates that should this occur, the elevated nitrate concentrations in the water produced by the wells would be addressed through treatment, such as blending, to ensure that all drinking water standards for nitrate are met." *(Daly City Department of Water and Wastewater Resources, letter, June 10, 2013 [G-Daly City-Sweetland])*

"The DEIR found that implementation of the proposed GSR Project would lead to significant unavoidable construction-related land use, noise, and aesthetics impacts, and potential operations-related existing irrigators' well interference impacts. The GSR Project well facilities and sites contain no known hazardous materials as defined under Section 35962.5 of the Government Code." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

Specific Concerns Not Identified

"MR. JOHNSTON: All right. Thomas?

MR. LAPUYADE: Yes.

MR. JOHNSTON: Could you come up to the microphone?

MR. LAPUYADE: Actually, I filled it out just in the event I wanted to say something. That was a safety net --

MR. JOHNSTON: Okay.

MR. LAPUYADE: -- so you wouldn't put a muzzle on me.

MR. JOHNSTON: Okay, Mr. Lapuyade.

MR. LAPUYADE: Very good. Yes." *(Thomas Lapuyade, public hearing, transcript, May 14, 2013 [PH—SSF-Lapuyade])*

"MR. DREKMEIER: Right.

MR. JOHNSTON: So, if you're not prepared to comment tonight, you can still comment –

MR. DREKMEIER: I'll still submit written comments, but yeah, if you could direct me to that section, I'd appreciate it.

MR. JOHNSTON: Sure." *(Peter Drekmeier, public hearing, transcript, May 14, 2013 [PH-SSF-Drekmeier])*

"MR. DREKMEIER: And is there a time set for the hearing on Thursday in San Francisco?

MR. JOHNSTON: I think we're the second item of the regular calendar, so it will be towards the beginning. The hearing starts at 12:30.

MR. DREKMEIER: Okay. Thank you very much." *(Peter Drekmeier, public hearing, transcript, May 14, 2013 [PH-SSF-Drekmeier])*

Response GC-1

This group of comments contains introductory and concluding remarks, comments summarizing or quoting the Draft EIR, and comments that do not identify specific concerns. The San Francisco Planning Department appreciates the time spent by the commenters in reviewing the Draft EIR and preparing comments. Comments intended as introductory or concluding remarks do not pertain to the adequacy of the Draft EIR. For comments where no specific area of concern was identified, or where the comments summarize the work of the Planning Department on the Draft EIR, no specific response is provided. However, the San Francisco Planning Department wishes to thank the public and the Planning Commission members for their review and feedback on this Draft EIR.

Comment GC-2: Comments related to the Project's merit.

This response addresses comments from the commenters listed below; each comment on this topic is quoted in full below this list:

- O-RHH-Rosekrans
- O-CGC-Maddow
- I-Robert
- I-Lawrence (2)

"As currently proposed, we believe the proposed project does not adequately address groundwater opportunities within San Francisco's service territory and fails to bring San Francisco and its customers into compliance with federal law." *(Restore Hetch Hetchy, letter, June 11, 2013 [O-RHH-Rosekrans])*

"We congratulate San Francisco for its work in the South Westside Basin. We view this as a storage project, to be filled on an in-lieu basis by providing surface supplies to users who formerly relied on groundwater. By developing a cooperative project with Partner Agencies, San Francisco is developing a model groundwater storage project that will provide additional supply when it is needed most." *(Restore Hetch Hetchy, letter, June 11, 2013 [O-RHH-Rosekrans])*

"The additional 7.2 million gallons per day will be a valuable asset. We are also pleased that the monitoring program appears well designed." *(Restore Hetch Hetchy, letter, June 11, 2013 [O-RHH-Rosekrans])*

"The Club understands and acknowledges the Project objective with regard to regional water supplies, but accomplishment of any such objective must be done with full recognition of and respect for the rights of property owners who will be adversely impacted by the Project and who should be 'made whole' by the proponents of the proposed Project." *(California Golf Club, letter, June 11, 2013 [O-CGC-Maddow])*

"Yes, according to the website http://www.sanbrunowater.ca.govtwatersources.html Welcome to Water Conservation page, approximately 50% of the drinking water in San Bruno comes from the San Francisco Public Utilities Commission. Yet also, the reservoir at Crystal Springs, closer to San Bruno than San Francisco, is a valuable link in this chain already visibly available. This was observed after many enjoyable walks of pride near this beautiful and efficient reservoir, which showed how fortunate the area already is to have such a great source for water use. Yet we receive this information about these alternate vague sources, and are apparently supposed to welcome this, even when the paperwork states 'the proposed project would lead to significant unavoidable construction-related land use character, noise, and aesthetics impacts, and potentially, operations-related well interference impacts.'" *(Robert, letter, May 2, 2013 [I-Robert])*

"Given the long, intense interest of citizens in the Lake, it is very possible that people rise up in protest when their Lake is sucked dry.

Should San Francisco invest $100 million in a project that may suck the Lake dry?" *(Steve Lawrence, email, June 13, 2013 [I-Lawrence (2)])*

Response GC-2

General Comment GC-2 contains comments related to the Project's merit in which no specific concerns related to the adequacy of the Draft EIR were identified.

The San Francisco Planning Department appreciates the time spent by the commenters in reviewing the Draft EIR and preparing comments. Comments expressing opposition to or support for the Project do not pertain to the adequacy of the Draft EIR, but may be considered by the SFPUC Commission prior to their decision to approve, disapprove, or modify the Project.

Specific comments pertaining to the adequacy of the Draft EIR in specific topical areas are responded to in other sections of this response to comments document. For example, see Response HY-32 for a discussion of pumping impacts on Lake Merced, Response PD-1 for a discussion of the Project's objectives, and Response AL-1 for a discussion of alternatives.

Comment GC-3: General Comments related to the adequacy of the Draft EIR for the Project.

This response addresses comments from the commenters listed below; each comment on this topic is quoted in full below this list:

- G-VA-Madderom
- G-Colma-Laughlin
- O-TRT-Drekmeier
- O-CLMP-Quick
- PH-PC-Antonini

"As VA maintains burial operations at this facility, these impacts will greatly affect Veterans, Veterans families, visitors and VA personnel. VA believes that the proposed SFPUC wells on the NCA property would have a significant, adverse impact on NCA's operations and mission; preclude NCA from accessing the much needed, Federally-owned groundwater located below the NCA property; have significant environmental and historic preservation impacts; and reflect a true failure of the SFPUC to duly consider and pursue other viable alternatives besides attempting to locate their wells on NCA property." *(Department of Veterans Affairs, letter, May 25, 2013 [G-VA-Madderom])*

"After reviewing the document, we are in agreement with all the mitigation measures that will be applied to the project, and where we have not commented, we concur with the recommended mitigation measure." *(Colma Planning Department, letter, May 28, 2013 [G-Colma-Laughlin])*

"We sincerely hope the Final EIR for the Regional Groundwater Storage and Recovery Project will address the issues raised in this letter. The Project EIR must address current conditions and potential violations of the Kirkwood Agreement, and incorporate up-to-date information." *(Tuolumne River Trust, letter, June 5, 2013 [O-TRT-Drekmeier])*

"This letter is organized as follows:

- Section I comments on the DEIR's failure to adequately describe and analyze physical and legal impacts of the GSR Project on existing water rights.

- Section II describes general deficiencies in the DEIR's analysis, including in the Project Description and Project Setting.

- Section III includes comments on inadequacies in the DEIR's resource analyses.

- Section IV explains why Alternative 3B, with the incorporation of revised Mitigation Measure M-HY-6, is a superior alternative to the GSR Project, as proposed." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

"All of these inadequacies in the DEIR must be corrected, and feasible and effective mitigation measures incorporated, in order for the GSR Project to comply with CEQA's fundamental mandates that the public and decision makers be adequately and accurately informed, and the environment afforded all feasible and effective protections.[4]

> [4] *Vineyard Area Citizens for Responsible Growth v. City of Rancho Cordova* (2007) 40 Cal.4th 412, 428, citing Public Resources Code § 21061; *In re Bay-Delta Programmatic Envt'l Impact Report Coordinated Proceedings* (2008) 43 Cal.4th 1143, 1162." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

"**C. The DEIR is Overly Technical and Voluminous and Inadequate as An Informational Document.**

In addition, the DEIR, taken as a whole, is overly technical, voluminous, and is not presented in a manner that can be easily understood by the lay public.[30] For all of these reasons, the DEIR fails to satisfy CEQA's informational requirements.[31]

> [30] For example, the GSR Project well naming conventions used in the DEIR (Project well 'Site __') and the technical appendices ('CUP-__') are different, making it difficult to follow the analysis. The data in the EIR must be presented in a manner calculated to inform the public and those not involved in the EIR preparation process. The DEIR and the appendices must be revised so that the GSR Project wells are consistently identified in all documents.

> [31] *See* CEQA Guidelines §§ 15140 ['EIRs shall be written in plain language and may use appropriate graphics so that decision makers and the public can rapidly understand the documents'], 15141 ['The text of draft EIRs should normally be less than 150 pages and for proposals of unusual scope or complexity should normally be less than 300 pages'], emphasis added; *see also Bakersfield Citizens for Local Control v. City of Bakersfield* (2004) 124 Cal.App.4th 1184, 1197 ['An EIR must include detail sufficient to enable those who did not participate in its preparation to understand and to consider meaningfully the issues raised by the proposed project'], *quoting Association of Irritated Residents v. County of Madera* (2003) 107 Cal.App.4th 1383, 1391." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

"V. **Conclusion**

For all of the reasons set forth above, the DEIR is inadequate under CEQA and must be substantially revised. Given the critical and pervasive conceptual, definitional and analytical defects in the document, and the scope of the revisions necessary, it is likely that recirculation will be warranted as well pursuant to Public Resources Code Section 21092.1 and Guidelines Section 15088.5." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

"COMMISSIONER ANTONINI: Thank you. I read the draft report and I think it's extremely well done. Just a couple of comments on the entire picture." *(Commissioner Antonini, public hearing, transcript, May 16, 2012 [PH-PC-Antonini])*

Response GC-3

This comment group includes some comments that are summary in nature (i.e., that summarize comments made elsewhere within a comment letter). For comments that summarize detailed comments made elsewhere, this response directs the commenter to responses in other sections of this document, including those related to hydrology and water quality, overview, aesthetics, cultural resources, description of the Project, land use, utilities and service systems, greenhouse gas emissions, and alternatives.

Specific responses to comments pertaining to specific concerns on the adequacy of the Draft EIR are addressed in other sections of this response to comments document. See Response HY-52 for a discussion of the Kirkwood Agreement, Response HY-1 for a discussion of the relationship between the North and South Westside Groundwater Basins, Response HY-43 for a discussion of quantification of system losses, and HY-35 for a discussion of vertical stratification of water quality in different elevations of the Westside Groundwater Basin. Additionally, see Response CR-3 for a discussion of impacts on cultural and historical resources at the Golden Gate National Cemetery, and Response AL-1 for a discussion of alternatives.

For comments that agree with or commend the work of the Planning Department on the Draft EIR, no specific response is provided. However, the San Francisco Planning Department wishes to thank the commenters for their review and feedback on this Draft EIR.

Regarding the comment about well names, please refer to Table 10.1-3 (Regional Groundwater Storage and Recovery Project Proposed Municipal Wells) in Appendix H of the Draft EIR, which provides a listing of the wells that shows both their original names from the design phase, which are designated 'CUP-XX', and the Well Site numbers that were used in the Notice of Preparation and Draft EIR. For example, GSR Site 1 from the EIR is CUP-3A. The original numbers reflect the fact that a longer list of well site locations was considered in developing the Project, but because the final list of wells had non-sequential numbers it was deemed less confusing to renumber them Sites 1 through 16 for purposes of environmental evaluation.

Comment GC-3 also includes one individual comment regarding the length and technical detail of the Draft EIR. An EIR is an informational document intended to inform public agency decision-makers (in this case, the SFPUC) and the public of the significant environmental effects of a project; identify possible ways to minimize the significant effects; and describe reasonable alternatives to the project (CEQA Guidelines Section 15121). As such, the Draft EIR includes the technical information and Project details necessary to convey the environmental effects of a complex project that proposes several facilities and locations over a large area of San Mateo County as well as pumping operations within a groundwater basin that has multiple existing uses and hydrologic connections. The document, as a result, is longer than EIRs prepared for less complex projects.

Comment GC-4: Comment requesting further discussion/involvement with the SFPUC.

This response addresses a comment from the commenter listed below; the comment on this topic is quoted in full below this list:

- G-VA-Madderom

"In closing, VA appreciates SFPUC's efforts in engaging the community, in order to ensure that the most viable solution is selected. VA would like to have further discussions on the issues discussed above, and appreciates the opportunity to work more closely with SFPUC with regard to ensuring full and proper analysis of the potential significant adverse impacts associated with the contemplated SFPUC wells, as well as due consideration of any requisite mitigations and/or alternatives." *(Department of Veterans Affairs, letter, May 25, 2013 [G-VA-Madderom])*

Response GC-4

This comment expresses appreciation for the SFPUC's efforts and requests additional involvement with the SFPUC regarding the Project. As this comment does not pertain to the adequacy of the Draft EIR and no specific area of concern was identified, no specific response is required. However, the San Francisco Planning Department appreciates the time spent by the VA in reviewing the Draft EIR and preparing comments, and anticipates that the SFPUC will continue to coordinate with the VA on contemplated SFPUC wells within VA sites.

Comment GC-5: Comments not related to the GSR Project Draft EIR.

This response addresses comments from the commenter listed below; each comment on this topic is quoted in full below this list:

- G-San Mateo RS-LoCoco

"3)At Westborough Boulevard, access points to the 12' x 7' culvert need to be identified." *(San Mateo County Road Services, email, June 11, 2013 [G-San Mateo RS-LoCoco])*

"4)The County will require that the existing storm drain culvert on Westborough Boulevard immediately adjacent to the SFPUC's new jack and bore operations, be videoed before and after the SFPUC's construction to ensure that the SFPUC project does not result in settlement of the storm culvert or displacement of the storm culvert joints. Any settlement will need to be corrected by the project." *(San Mateo County Road Services, email, June 11, 2013 [G-San Mateo RS-LoCoco])*

Response GC-5

The comments regarding storm drain culverts on Westborough Boulevard apply to a separate SFPUC Project (Peninsula Pipelines Seismic Upgrade Project) that was discussed in the same comment email for this Draft EIR (Road Services 2013). As such, the comments are not applicable to the Project. A separate EIR (Peninsula Pipelines Seismic Upgrade Project, San Francisco Planning Department Case Number 2011.0123E, Final EIR certified October 17, 2013) has been completed for that project and is available for review on the website for the San Francisco Planning Department. That EIR provides the access point information requested by the commenter. Therefore, no specific response is provided herein.

Comment GC-6: Comment related to the CEQA process.

This response addresses a comment from the commenter listed below; the comment on this topic is quoted in full below this list:

- O-CLMP-Quick

"Cypress Lawn requests a copy of the Response to Comments when that document is issued.[1]

[1] DEIR, p. 2-13." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

Response GC-6

This comment requests a copy of the Final EIR. Copies of the Final EIR, including Responses to Comments, will be made available online, and copies will be provided to interested parties that commented on the Draft EIR or have previously expressed interest in receiving a copy.

Comment GC-7: General comment on water supply planning issues.

This response addresses comments from the commenter listed below; the comments on this topic are quoted in full below this list:

- O-RHH-Rosekrans

"San Francisco currently lags behind most of the state in diversifying its water supply and is overly reliant on imported water. While all California water agencies face challenges in droughts, San Francisco's concerns are particularly acute due to its status as a junior (to the Turlock and Modesto Irrigation Districts) water rights holder on the Tuolumne River. Increases in local storage will help to provide a water supply buffer in drought years while also helping to protect customers from a potentially catastrophic conveyance outage." *(Restore Hetch Hetchy, letter, June 11, 2013 [O-RHH-Rosekrans])*

"We are disappointed, however, that the groundwater production in the (north) Westside Basin will not be similarly operated. If groundwater supplies in the Westside Basin are to be pumped on every year, less water will accumulate in the aquifer and the Project will not be able to provide additional supply in drought years. We have heard anecdotally that it may not be feasible to operate the Westside Basin as a storage reservoir for two reasons: (1) that seawater intrusion may occur, and (2) that Lake Merced levels may be affected. We have not, however, seen any evidence in the EIR to support these anecdotes and we are not convinced that the Westside Basin could not be and should not be operated as a storage reservoir. The project neither has yet to identify the actual storage capacity of the Westside nor has identified ideas for substantive groundwater recharge. We ask the SFPUC to pursue the potential for such operation of the Westside aquifer as, were it possible, it would improve reliability for all SFPUC wholesale and retail customers.

More importantly, these programs encompass only a small portion of the SFPUC's service territory and many of San Francisco's customers have not maintained the local supplies that were once available." *(Restore Hetch Hetchy, letter, June 11, 2013 [O-RHH-Rosekrans])*

"It is apparent that some of San Francisco's customers are in violation of this provision of the Raker Act. For example, two of San Francisco's wholesale customers have stipulated in their 2010 Urban Water Management Plans that they have ceased to maintain their groundwater supplies:

> **<u>From Palo Alto's Urban Water Management Plan (2010):</u>**
> 'A 1950 engineering report noted, 'the capricious alternation of well waters and the SFWD water …has made satisfactory service to the average consumer practically impossible.' However, groundwater production increased in the 1950s, leading to lower groundwater tables and water quality concerns. In 1962, a survey of water softening costs to City customers determined that <u>the City should purchase 100% of its water supply needs from the SFWD</u>. A 20-year contract was signed with San Francisco, and the City's wells were placed in a standby condition. The SFWD later became known as the SFPUC. Since 1962 (except for some very short periods) the City's entire supply of potable water has come from the SFPUC.'
>
> **<u>From Hayward's Urban Water Management Plan (2010):</u>**
> 'Water service is provided by the City of Hayward for residential, commercial, industrial, governmental, and fire suppression uses. Originally, wells were used to supply Hayward with water. During the 1940s and 1950s, the well water was supplemented by water purchased from San Francisco's Hetch Hetchy system, owned and operated by the San Francisco Public Utilities Commission (SFPUC). In 1962, Hayward entered into an agreement with the SFPUC to purchase all Hayward water from the SFPUC. Hayward constructed over 20 miles of aqueduct in order to deliver Hetch Hetchy water and <u>ceased providing well water in 1963.'</u>" *(Restore Hetch Hetchy, letter, June 11, 2013 [O-RHH-Rosekrans])*

Response GC-7

Comments regarding broader questions of regional water supply planning do not relate to the adequacy of the Draft EIR, and therefore, no response is provided; these comments will be made available to the SFPUC Commission prior to their decision to approve, disapprove, or modify the Project. See Draft EIR pages 5.16-105 through 5.16-113 and 6.16-153 through 5.16-156 and Responses HY-22, HY-27, HY-28, HY-29, HY-30, and HY-31 regarding seawater intrusion. See Draft EIR pages 5.16-30 through 5.16-33, 5.16-38 through 5.16-40, 5.16-113 through 5.16-127, and 5.16-156 through 5.16-158, and Response HY-32 regarding Lake Merced water levels.

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9.3.2 Introduction and Background

The comment and corresponding response in this section covers topics in Chapter 2, Introduction and Background of the Draft EIR. This includes topics related to:

- IN-1, Purpose of the WSIP

Comment IN-1: Comment related to the purpose of the WSIP.

This response addresses a comment from the commenter listed below; the comment on this topic is quoted in full below this list:

- G-BAWSCA-Sandkulla

"**Section 2.1 -Introduction (page 2-4).** The DEIR needs to be revised to correctly reflect the purpose of the WSIP as adopted by the Commission on October 30, 2008. San Francisco has a perpetual obligation to provide 184 mgd to the Wholesale Customers. The obligation is documented in the 2009 Water Supply Agreement Between San Francisco and its Wholesale Customers. With the WSIP, the Commission deferred a decision to provide water supply in excess of 184 mgd to the Wholesale Customers (or 265 for the entire water system) until 2018." *(BAWSCA, letter, May 24, 2013 [G-BAWSCA-Sandkulla])*

Response IN-1

The comment expresses concern related to how the purpose of the Water System Improvement Program (WSIP) is described the Draft EIR. Chapter 2, Introduction and Background of the Draft EIR states on page 2-4: "The purpose of the WSIP is to increase the reliability of the regional water system with respect to seismic response, water delivery, and water quality through the year 2030, as well as water supply to meet water delivery needs in the service area through the year 2018." This is an accurate summary statement of the purpose of the WSIP. The Project does not make any changes to the purpose of the WSIP, and does not alter any commitments that the SFPUC has made to its wholesale customers. However, the Draft EIR has been revised to include further clarification on the purpose of the WSIP. The first paragraph of the Draft EIR, page 2-4, in Chapter 2, Introduction and Background, is revised as follows:

> The proposed Project is part of the SFPUC's Water System Improvement Program (WSIP). The purpose of the WSIP is to increase the reliability of the regional water system with respect to seismic response, water delivery, and water quality through the year 2030, as well as water supply to meet water delivery needs in the service area through the year 2018. In approving the WSIP, the SFPUC committed to full implementation of identified facility improvements, water supply delivery to regional customers through 2018, including 81 mgd for retail customers and 184 mgd for wholesale customers, with re-evaluation of 2030 demand projections and water supply options to meet customer demands by 2018.

This revision does not change the analysis or conclusions presented in the Draft EIR.

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9.3.3 Project Description

The comments and corresponding responses in this section cover topics in Chapter 3, Project Description of the Draft EIR. These include topics related to:

- PD-1, Project Objectives
- PD-2, Required Permits and Approvals
- PD-3, Project Figures
- PD-4, Facility Site Locations
- PD-5, Well Facility Design and Construction
- PD-6, Facility Classifications
- PD-7, SFPUC Easement at Golden Gate National Cemetery
- PD-8, Treatment for Volatile Organic Compounds
- PD-9, Use of Portable Generators
- PD-10, Pumping at Peak Capacity
- PD-11, Using Partner Agency Wells for GSR Pumping
- PD-12, Project Operating Period
- PD-13, Project Operations during Put Periods
- PD-14, Operating Agreement
- PD-15, Project Operational Triggers
- PD-16, SFPUC Storage Account
- PD-17, Groundwater Recharge from Precipitation
- PD-18, Recharge Test and Scaling Up from Pilot Test to Basin-wide Implementation
- PD-19, Maintenance Pumping Rates
- PD-20, Hydrogeology, Well Screening Intervals and Seals
- PD-21, Project Pumping in Prolonged Drought
- PD-22, Emergency Pumping
- PD-23, Project Pumping in WSIP PEIR
- PD-24, Project Implementation Alternatives
- PD-25, Clear Project Description
- PD-26, Commenter's Description of Project

Comment PD-1: Comment related to the Project objectives.

This response addresses a comment from the commenter listed below; the comment on this topic is quoted in full below this list:

- I-Robert

"After review, it seems the recent information provided describes a project without a specific need nor specific implementation, by an agency owned by the city and county of San Francisco, focusing on communities outside San Francisco." *(Robert, letter, May 2, 2013 [I-Robert])*

Response PD-1

This comment expresses concern about the Project need. The need for the Project is explained in Chapter 3, Project Description on page 3-2 of the Draft EIR, which explains that "Without the Project, the SFPUC could not meet its goals for dry-year delivery reliability." The comment is correct that Project facilities would be built outside of San Francisco; however, these facilities are located within the jurisdictions of the Partner Agencies of the Project, including the Cities of Daly City and San Bruno and the California Water Service Company (Cal Water), which serves South San Francisco. The Project would provide a dry-year water supply to the regional water system. In this way, the Project aims to provide regional water supply benefits.

Comment PD-2: Comments related to required permits and approvals.

This response addresses comments from the commenters listed below; each comment on this topic is quoted in full below this list:

- G-San Mateo PW-Chow
- G-San Mateo RS-LoCoco

"The San Mateo County Flood Control District should be listed as a Permitting Agency in Table 3-11, on page 3-144, of the DEIR, in order to gain access onto the District's property. For example, the District would need to approve the use of the access road to Site 9. Conditions of approval would need to be met, such as, but not limited to, all gates shall be locked when the contractor is not working at the site, any removed fence shall be restored to existing or better condition, and SFPUC shall repair or replace any damage to the access road pavement or fence sections as a result of its operations." *(San Mateo Department of Public Works, letter, May 17, 2013 [G-San Mateo PW-Chow])*

"5) The contractor will be required to pay encroachment fees in conjunction with encroachments received to perform work in the County right of way." *(San Mateo County Road Services, email, June 11, 2013 [G-San Mateo RS-LoCoco])*

Response PD-2

The comment identifies requirements for permits and fees. The Draft EIR identifies easement and access requirements separately from other types of permitting and approvals. Table 3-13 (Anticipated Property Rights Requirements) on page 3-146 of the Draft EIR identifies anticipated property rights requirements for each site and states that for Site 9 "Access easement would be needed from BART and San Mateo County." The SFPUC would work with San Mateo County to obtain the required easements and would comply with conditions of approval for the easement. As noted in Chapter 3, Project Description on page 3-126 of the Draft EIR, "After construction is complete, well sites would be restored to their general pre-construction conditions." This would include restoration of fencing and pavement as needed.

Table 3-11 (Regulatory/Permitting Agencies/Utility) acknowledges that encroachment permits from local public works or engineering departments would be required for Project construction in local streets. The comment is correct that the contractor would be required to pay a fee for applicable encroachment permits.

Comment PD-3: Comments related to information shown on Project Description figures.

This response addresses comments from the commenters listed below; each comment on this topic is quoted in full below this list:

- G-BAWSCA-Sandkulla
- I-King

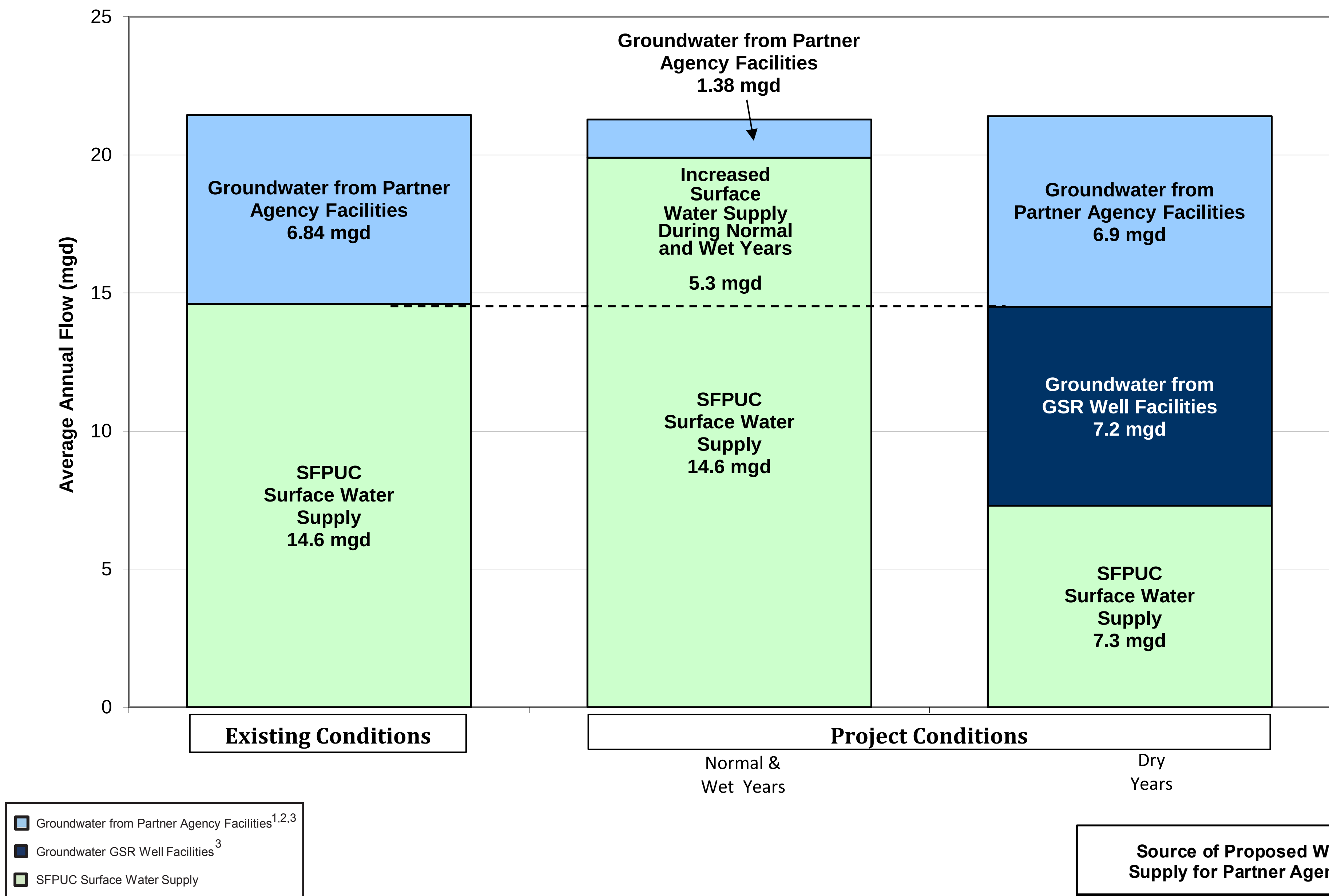
"**8. Section 3.4.1 – Groundwater Storage and Recovery, Figure 3-2 (page 3-9).** The volume of surface water deliveries should be added to the Project Conditions portion of Figure 3-2. Also, for Figure 3-2, please clarify, what year the demand is representative of (i.e. is it current conditions or 2035 conditions)."
(BAWSCA, letter, May 24, 2013 [G-BAWSCA-Sandkulla])

"I am writing to comment on case no. 2008.1396E, 'Regional Groundwater Storage and Recovery Project.' I noticed that in the document '2008.1396E_DEIR1 (April 2013 DRAFT Environmental Impact Report Volume 1 of 3), figure 3-37 (Site 16, Millbrae Corporation Yard), labels the properties at 9 Mateo Avenue and 15 Mateo Avenue as 'Convalescent Hospital.' These are actually residential properties: 9 Mateo Avenue is a multi-family apartment building, and 15 Mateo Avenue is a condominium building."
(Christopher King, letter, April 26, 2013 [I-King])

Response PD-3

The comment requests changes to figures in Chapter 3, Project Description. Regarding Figure 3-2 (Source of Proposed Water Supply for Partner Agencies) in Chapter 3, Project Description of the Draft EIR, the figure shows sources of supply, not demand. The figure shows surface water supplies for both existing and Project conditions (please refer to the labels on the lower axis of the figure). To further clarify the sources of supply during normal and wet years under the Project, the green portion of the center bar is revised on the graph to show 14.6 mgd of the SFPUC surface water supply, which corresponds to the amount currently available under existing conditions, and 5.3 mgd of "increased surface water supply during normal and wet years" in the area above the dotted line on the bar chart. This represents the additional surface water that would be supplied to Partner Agencies to allow a reduction in pumping, thereby providing in-lieu recharge. Please refer to Revised Figure 3-2, which follows this page.

Regarding Figure 3-37 (Site 16, Millbrae Corporation Yard), the comment is correct that the properties at 9 Mateo Avenue and 15 Mateo Avenue are multi-family residential properties; the property at 33 Mateo Avenue, just to the northeast of those addresses, is correctly labeled in Figure 3-37 as a convalescent hospital. Please refer to Revised Figure 3-37, which has corrected labeling. Because multi-family residences (both the apartment building and the condominium building) are considered sensitive receptors in the same manner as a convalescent hospital, the error in the figure does not affect the air quality or noise analysis or any of the environmental analyses in the document, and does not affect any conclusions regarding impacts.



[1] Groundwater from Partner Agency facilities during normal and wet years could vary from 1.38 mgd to 1.9 mgd.

[2] Partner Agency water supply facilities that are operated by the City of Daly City, City of San Bruno, and Cal Water.

[3] The specific volumes shown are based on historic rainfall and hydrology records, but actual volumes in any given year would depend on several factors, including: 1) the final location and capacity of the project well facilities, the volume of water in the SFPUC Storage Account and 3) direction from the Operating Committee regarding which wells should be used (SFPUC 2011c; MWH 2008).

Source of Proposed Water Supply for Partner Agencies

Regional Groundwater Storage and Recovery Project

Figure 3-2 REVISED

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Date Saved: 9/6/2012

Legend

- Proposed Well
- Existing Monitoring Well
- Existing PG&E Power Pole
- Proposed Underground Electrical
- Proposed Connection (Water)
- Proposed Alternate Connection (Water)
- Proposed Sanitary Sewer
- Proposed Storm Drain
- Construction Area Boundary
- Staging Area Boundary
- SFPUC Property Boundary
- Proposed Chemical Treatment Building
- Proposed Footprint of Other Permanent Areas (Concrete, Parking, etc.)

0 17.5 35 70
Scale Feet
1" = 70'

N

Site 16
Millbrae Corporation Yard

Regional Groundwater Storage and Recovery Project

Figure 3-37 REVISED

Source: SFPUC and Kennedy/Jenks, 04/19/11

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Comment PD-4: Comment related to GSR well facility site locations.

This response addresses a comment from the commenter listed below; the comment on this topic is quoted in full below this list:

- O-CLMP-Quick

"*Item 3 - Why are the locations of the GSR Project wells so close to the location of the Partner Agencies' wells?*

We note that the location of the proposed GSR Project wells are aligned along the central axis of the South Westside Basin and are parallel to the alignment of the wells of existing irrigators. We also note that the GSR Project wells are located in areas in which Partner Agencies' wells are not located. Is there any significance to this parallel arrangement? How were the locations for the GSR Project wells selected'? Was interference with existing irrigators' wells a factor in selecting the location of GSR Project wells? Will the recharge that occurs due to foregone pumping by Partner Agencies' wells spread evenly across the basin, allowing equivalent pumping at the GSR Project wells?" *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

Response PD-4

The comment refers to the location of proposed wells and questions how the locations were selected. The proposed well locations were developed through an SFPUC evaluation process, which is documented in the Alternatives Analysis Report (AAR) prepared for the Project. As noted in Chapter 7, Alternatives on page 7-7 of the Draft EIR, criteria for siting of GSR wells included site suitability, groundwater system considerations, distribution system considerations, and land use considerations. To operate the Project efficiently and to minimize the need for lengthy connecting pipelines, the sites needed to be in proximity to existing Partner Agency and SFPUC conveyance and treatment facilities. To minimize the need for land acquisition, the SFPUC is proposing sites within its own right-of-way or ownership wherever possible. Locations of proposed Project wells were also selected with consideration of other basin users. Section 4.2.2.4 of the AAR specifically states that "An important aspect of this project is to allow existing pumpers to continue their normal use of the groundwater basin while the new pumping associated with this project is simultaneously occurring" (MWH 2007).

To minimize well interference impacts on Partner Agency wells and existing irrigators, pumping during take periods would need to be distributed over a large geographic area. As noted in Chapter 7, Alternatives on page 7-7 of the Draft EIR, in the evaluation of alternatives "SFPUC increased the proposed number of wells to 16 wells to redistribute the required pumping over a larger geographic area and thereby reduce the potential for interference."

In-lieu recharge would occur throughout the Westside Groundwater Basin, through a process of natural recharge and reduced groundwater pumping by the Partner Agencies. During normal and wet years, groundwater levels near existing Partner Agency wells would increase because of reductions in Partner Agency pumping, benefiting both Partner Agencies and existing irrigators. Pumping from Project wells would not exceed the amount of groundwater that has accumulated in the SFPUC Storage Account by virtue of the amount of surface water that is transferred to the Partner Agencies in the period leading up to a drought or emergency, which is when the proposed wells would be operated. Mitigation Measure M-HY-14 (Prevent Groundwater Depletion) describes the development of a monitoring program for the SFPUC Storage Account. The measure includes the development of a Storage Account monitoring program in conjunction with the Operating Committee. The Storage Account monitoring program would include data from metered SFPUC in-lieu water deliveries, metered Project pumping, metered Partner Agency pumping, actual Project operation experience, and field monitoring of groundwater elevations. Impacts related to well interference and decreased production rates of existing nearby wells are addressed in the Draft EIR beginning on page 5.16-72. Also, refer to Response HY-15, which discusses mitigation for well interference impacts, and Response HY-48 for additional discussion on mitigation of groundwater depletion impacts.

Comment PD-5: Comments related to GSR well facility site design and construction.

This response addresses comments from the commenters listed below; each comment on this topic is quoted in full below this list:

- G-San Mateo PW-Chow
- G-San Mateo RS-LoCoco
- G-Colma-Laughlin

"The District advocates that trash management measures be incorporated into the design elements of the storm drainage system and appurtenances. Please ensure that trash collecting devices are installed at storm drain inlets and maintained by owner." *(San Mateo Department of Public Works, letter, May 17, 2013 [G-San Mateo PW-Chow])*

"1) At the Garden Village Elementary School, we suggest that the SFPUC consider planting a hedge against the fence that surrounds the new facility that is intended to be constructed near the intersection of Park Plaza Drive and 87th Street. We are also concerned that the fencing be adequately secured, in light of its proximity to a local school." *(San Mateo County Road Services, email, June 11, 2013 [G-San Mateo RS-LoCoco])*

"*Site 9 Overhead Electrical Connection.* Figure 3-4 shows that Site 9 requires an electrical connection through a commercial business in the Town of Colma. This electrical connection is proposed to be above ground, which is unacceptable. The line would impact the existing commercial business and visually impacts views from the Verano neighborhood. The Town of Colma requires undergrounding of utilities for all new construction, from the pole to the project site pursuant to Municipal Code Section 5.09. In addition, General Plan policy 5.02.361 requires that all new construction projects to place utilities underground. Power for this site should be taken from the South San Francisco side or undergrounded if on the Colma side." *(Colma Planning Department, letter, May 28, 2013 [G-Colma-Laughlin])*

Response PD-5

This comment includes suggested site design revisions. The Project does not include the construction of new storm drain inlets that would require trash collecting devices. The Project design includes underground pipeline connections to existing storm drains that are enclosed and, therefore, would not be susceptible to trash accumulation.

The SFPUC agrees that site security is important at all sites, including those located near schools. As noted in Chapter 3, Project Description, Section 3.4.2.5 (Site Access and Security) on page 3-37 of the Draft EIR, "Security fencing would be provided at all sites except Site 14. The proposed security fence would be either a black vinyl-coated eight-foot-high with one-inch mesh or an eight-foot-high black metal picket fence. The location of the fencing is shown on the site layouts. The fence would include a locked gate for access."

For Site 4, Garden Village Elementary School, Impact AE-3 (Project operation would have a substantial adverse impact on a scenic vista, resource, or on the visual character of a site or its surroundings) was found to be less than significant with mitigation. Mitigation Measure M-AE-3a (Implement Landscape Screening), which is described in Section 5.3, Aesthetics on page 5.3-91 of the Draft EIR, applies to Site 4 and requires planting of trees and shrubs to screen the facility. In addition to security fencing, the SFPUC would develop a landscape screening plan for Site 4, adjacent to the Garden Village Elementary School, which it can share with San Mateo County.

The Draft EIR previously identified this site as being on school grounds and requiring an existing baseball backstop to be removed and replaced. However, conditions have since changed and a solar array has been installed in the vicinity of the baseball backstop and presumably the field is no longer used for baseball. Figure 3-12 (Site 2, Park Plaza Meter, Site 3, Ben Franklin Intermediate School, Site 4, Garden Village Elementary School) is revised to illustrate the location of the solar array and the changed condition of the playing field at the Garden Village Elementary School.

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Site 2 Park Plaza Meter
Site 3 Ben Franklin Intermediate School
Site 4 Garden Village Elementary School

Legend

- Proposed Well
- Existing Test Well
- Existing Monitoring Well
- Existing PG&E Power Pole
- Proposed Underground Electrical
- Proposed Connection (Water)
- Proposed Storm Drain
- Construction Area Boundary
- Staging Area Boundary
- SFPUC Property Boundary
- Proposed Fenced Enclosure
- Proposed Footprint of Other Permanent Areas (Concrete, Parking, etc.)
- Proposed Access Driveway

N

0 30 60 120
Scale Feet
1" = 100'

Regional Groundwater Storage and Recovery Project

Figure 3-12 REVISED

Source: SFPUC and Kennedy/Jenks, 04/19/11

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The description of Site 4 on page 3-48 of the Draft EIR is revised as follows in response to the comment and changed conditions:

> ~~An existing baseball backstop would be temporarily relocated during construction; after construction is complete it would be returned to its original location.~~ Turf along the pipeline route would be replaced following construction. The SFPUC would notify the Jefferson Elementary School District of construction activities a minimum of nine months in advance of any construction on school grounds to allow the District to plan for any partial school ground closures.

For Site 9, electrical power would be supplied from the South San Francisco side of the site, from El Camino Real. In response to comments from the Colma Planning Department, the Site 9 design has been revised to include an underground (rather than overhead) power line routed from an area approximately 25 feet from El Camino Real through the perimeter of the Costco parking lot in an existing planter strip to Site 9. The power line would cross the San Mateo County Flood Control District via an existing conduit on the underside of the existing pedestrian bridge. The underground trenching for the power line would be approximately three feet deep and 18 inches wide. The alignment on the west side of the flood control channel would be approximately 1,000 feet long; the new alignment on the east side of the channel would be approximately 250 feet long. The parking lot and planter strip would be restored after construction is completed. The description of Site 9 on page 3-73 of the Draft EIR, in Chapter 3, Project Description has also been revised as follows:

> Electrical power would be provided to the site through a new ~~aboveground~~ underground connection routed from an existing junction box located approximately 25 feet from El Camino Real, through the perimeter of the Costco parking lot in an existing planter strip, to the well facility site. The electrical line would cross the San Mateo County Flood Control Channel via an existing utility conduit on the underside of the pedestrian bridge ~~to an existing PG&E power pole located approximately 590 feet east of the site~~. The total length of the underground electrical power line would be approximately 1,250 feet long.

A minor change to the construction area size for underground electrical line is also required. Table 3-9 (Construction Area Size and Characteristics) on page 3-133 of the Draft EIR is revised as follows:

TABLE 3-9
Construction Area Size and Characteristics

Project Site	Construction Area (square feet)
Construction Cluster C	
Site 9	~~18,690~~ 23,890

Minor changes to Table 3-13 (Anticipated Property Rights Requirements), presented on page 3-147 of Draft EIR, are required to reflect the necessary easements for undergrounding the power line as follows:

TABLE 3-13
Anticipated Property Rights Requirements[(a)]

Site	Site Name	Notes
Site 9	Treasure Island Trailer Court	Access easement would be needed from BART and San Mateo County. May need rights from adjacent property owner to connect to SFPUC Pipeline and to install underground power line.

Draft EIR Figures 3-23 (Site 9, Access Road, Treasure Island Trailer Court), 3-24 (Site 9, Treasure Island Trailer Court) and 5.14-7 (Site 9, Treasure Island Trailer Court, Jurisdictional Waters) have also been revised to reflect this change.

Minor changes to the discussion of Site 9 in Impact AE-3 of Section 5.3, Aesthetics, are also required. The second and third paragraphs on page 5.3-85 of the Draft EIR are revised as follows:

> The 2,095-square-foot well, chemical treatment, and filtration facility at Site 9 (see Figure 3-8) would be visible from a portion of the Treasure Island Trailer Court, over the property fence and pedestrian path connecting the Verano Condominium complex on Mission Road to El Camino Real, as well as the Verano Condominiums and other detached residences on Mission Road to the southeast (see Figure 3-24). The power source for Site 9 would be an ~~aerial~~ underground line extended from an existing off-site source. There are no views of this site from public roadways. The site is not within a scenic vista nor would it be visible from any nearby designated scenic roadways. As a result, no scenic vistas, resources, or roadways would be affected.

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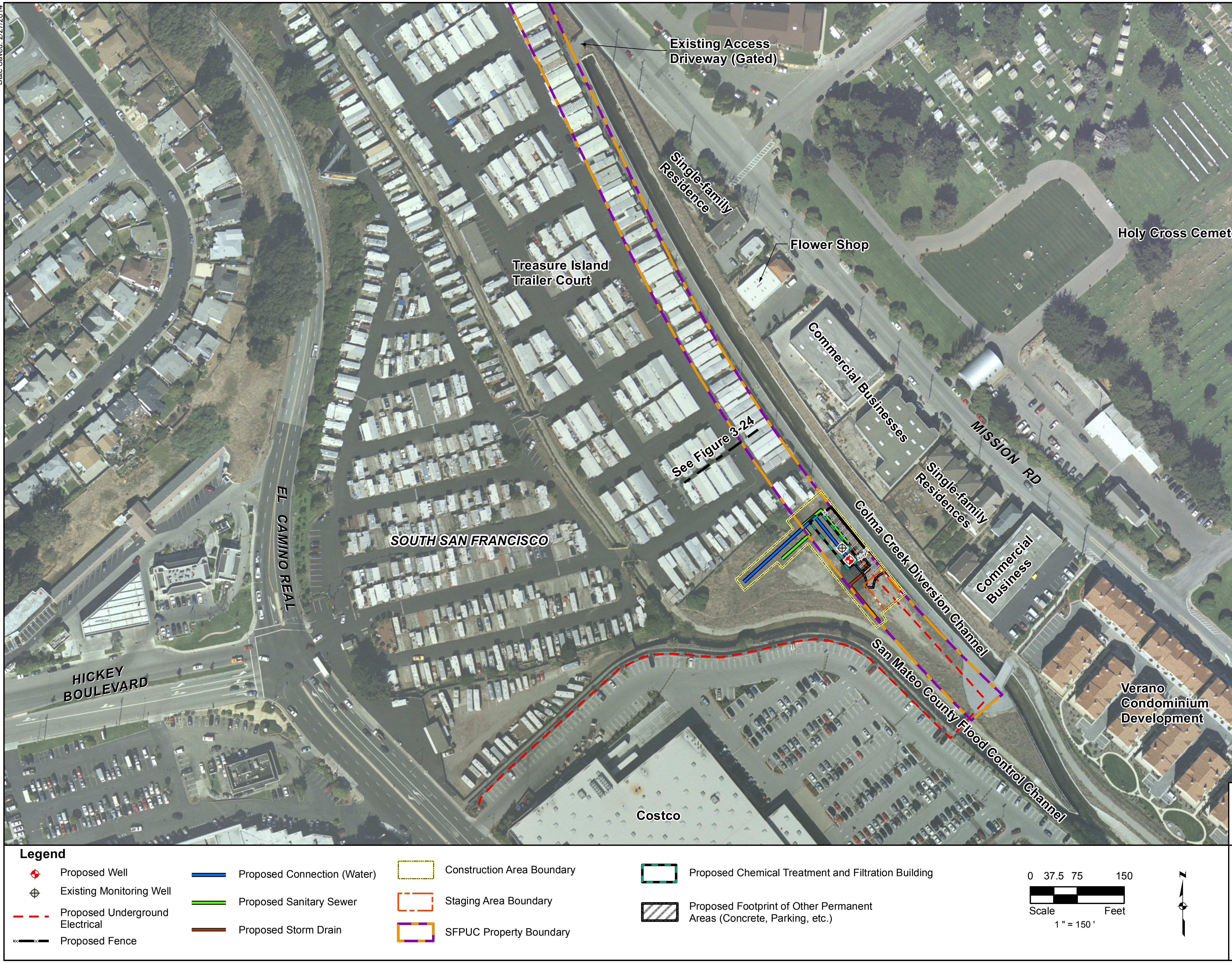

Site 9 Access Road and Electrical Connection Treasure Island Trailer Court

Regional Groundwater Storage and Recovery Project

Figure 3-23 REVISED

Source: SFPUC and Kennedy/Jenks, 05/16/11

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Site 9
Treasure Island Trailer Court

Regional Groundwater Storage and Recovery Project

Figure 3-24 REVISED

Source: SFPUC and Kennedy/Jenks, 05/16/11

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Site 9
Treasure Island Trailer Court
Jurisdictional Waters

Regional Groundwater Storage and Recovery Project

Figure 5.14-7 REVISED

Source: SFPUC and Kennedy/Jenks, 05/16/11, GHD 02/27/14

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> Development of the well facility at Site 9 would require the removal of one Monterey pine. The removal of this mature tree would not have an adverse impact on the visual character of the site, given the low overall visual sensitivity of the site and its surroundings. ~~For the same reason, the installation of the overhead power line would not have an adverse impact on the site's visual character, particularly given the presence of other aerial lines in the immediate area. The overhead power line would be consistent with the visual setting of the area.~~ While the overall visual sensitivity of this site is considered low, the change in visual contrast would be moderate, given that a structure would be constructed on a currently undeveloped site. In addition, views of the facility from the residences would be seen by only a relatively few individuals in a private setting. The gray or stone architectural finish described in Chapter 3, Project Description, Section 3.4.2.2 (Well Facility Types) would soften the utilitarian appearance of the structure. Therefore, the Project's impact on the site's visual character and scenic resources would be *less than significant*. As noted above, there would be *no impact* on scenic roadways, resources, or vistas at this site.

This revision does not change the conclusions or the significance determination in the Draft EIR.

Comment PD-6: Comment related to GSR well facility classifications.

This response addresses a comment from the commenter listed below; the comment on this topic is quoted in full below this list:

- G-San Bruno-Fabry

"2. DEIR, page 5.15-14. The classification of facilities as 'Important' (Class II) with an associated restoration time of 30 days may not be consistent with San Bruno's desire for emergency supplies. The project design should allow for more rapid restoration of service." *(City of San Bruno, letter, June 13, 2013 [G-San Bruno-Fabry])*

Response PD-6

The comment expresses concern about the facility classification and restoration timeframes. Because the Project is designed to provide supplemental supply during a drought, and not as ongoing operational supply, a more rapid restoration of service was not deemed necessary by the SFPUC. The facility sites are designed as Class II (important), which requires that a facility is repaired and operational within 30 days of an emergency event. The SFPUC is willing to work with the City of San Bruno to determine if a more rapid restoration of service for GSR wells is possible. If a more rapid restoration of service is found to be possible and is implemented, such a reduction in time for restoration of service would not affect the analysis in the EIR.

Comment PD-7: Comment related to SFPUC easement at the Golden Gate National Cemetery and characterization of the cemetery.

This response addresses a comment from the commenter listed below; the comment on this topic is quoted in full below this list:

- G-VA-Madderom

"Project Description (starting Page 3-102) Comments):

1. The description indicates that the '…well facility would be located on an existing SFPUC easement…' – the existing easement is only for conveyance of water (i.e. underground piping passing through) – it does not cover installation and operation of water production well(s)." *(Department of Veterans Affairs, letter, May 25, 2013 [G-VA-Madderom])*

Response PD-7

The comment indicates that the existing SFPUC easement at Site 14 only allows conveyance of water, not installation and operation of a well. The specific uses allowed by the easement do not change the evaluation of physical environmental impacts in the EIR. However, the approvals required from the U.S. Department of Veterans Affairs (VA) for the Project may be different than indicated in the Draft EIR.

The third sentence in Chapter 3, Project Description on page 3-102 of the Draft EIR has been revised as follows:

> The well facility would be located on an existing SFPUC pipeline easement in the northern portion of the cemetery.

The first row in Table 3-11 in Chapter 3, Project Description on page 3-143 on the Draft EIR has been revised as follows:

TABLE 3-11
Regulatory/Permitting Agencies/Utility

Regulatory/Permitting Agency/Utility	Potential Permit/Approval
Federal Regulatory/Permitting Agencies	
U.S. Department of Veterans Affairs (VA)	Agreement for installation and maintenance of well facilities at Site 14 and Site 15; possible amendment to existing easement; approval to demolish building located adjacent to SFPUC right-of-way on Site 14 and decommissioning pipelines; completion of environmental review under the National Environmental Policy Act (NEPA). Section 106 consultation for review and evaluation of Project impacts on cultural resources under the National Historic Preservation Act.

Comment PD-8: Comment related to treatment requirements for volatile organic compounds.

This response addresses a comment from the commenter listed below; the comment on this topic is quoted in full below this list:

- G-BAWSCA-Sandkulla

"**7. Section 3.4.2 – Production Wells and Associated Facilities (page 3-16).** The last sentence notes that certain additional treatment may be needed at some sites for certain water quality constituents. The text identifies Volatile Organic Compounds (VOCs) as a possible constituent for treatment. Table 3-3 (pages 3-18 through 3-22) indicates which sites are expected to need treatment and what constituents would be addressed. No sites indicate VOC treatment and there is no discussion of any specific treatment process or chemicals associated with VOC removal in the section on 'Well Plus Chemical Treatment' (page 3-29). Page 5.16-136 does suggest blending as a possible way to treat VOCs. The water quality discussion on page 5.16-29 notes that detected VOCs are rare and if detected are at low levels in the groundwater basin. Samples from Sites 1 and 11 detected VOCs in one sampling but only at Site 11 upon additional sampling. If there is a reasonable potential that VOCs may be encountered at one or more sites, the expected treatment scheme should be discussed in this section." *(BAWSCA, letter, May 24, 2013 [G-BAWSCA-Sandkulla])*

Response PD-8

This comment requests more information about expected treatment for volatile organic compounds (VOCs). It is not expected that a treatment process using chemicals would be required for VOC removal. The comment is correct that VOCs are not commonly found in the production and deep aquifers, and treatment for VOCs is thus not expected to be needed at most sites. The comment is also correct that low levels of VOCs were found at Site 11. As noted in Section 5.16, Hydrology and Water Quality on page 5.16-29 of the Draft EIR, the SFPUC is evaluating the potential presence of VOCs, but if present, only small quantities are expected and they can be addressed adequately to meet water quality requirements by the method presented in Chapter 3, Project Description. As noted on page 3-17 in Section 3.4.2 (Production Wells and Associated Facilities) of the Draft EIR, treatment "would be used to achieve water quality goals specific to the SFPUC and each of the Partner Agencies (i.e., blending with surface water…."

To clarify that blending may also be used to achieve water quality goals at Site 11 if VOC's are found, a footnote has been added to Table 3-3 (Site-specific Facility Characteristics) on page 3-22 of the Draft EIR as follows:

TABLE 3-3
Site-specific Facility Characteristics

Site	Method for Achieving Water Quality Goals for Iron/Manganese(f)

Notes:

(f) Blending may also be used at Site 11 if VOCs are found.

Comment PD-9: Comment related to the use of portable generators and potential use of permanent generators.

This response addresses a comment from the commenter listed below; the comment on this topic is quoted in full below this list:

- G-San Bruno-Fabry

"1. DEIR, pages 3-39, 5.2-17, 5.8-15 5.8-19, 5.8-29, and 5.8-30. The potential selection of drive-up portable generators should be included in the project description to allow for this potential. The DEIR should also include the analysis and potential impacts associated with the potential use of permanent, on-site generators to allow for this potential and provide flexibility in project implementation." *(City of San Bruno, letter, June 13, 2013 [G-San Bruno-Fabry])*

Response PD-9

The comment requests that generator use be included in the Project and evaluated in the EIR. Chapter 3, Project Description on page 3-39 of the Draft EIR states, "All well stations would have provisions for a drive-up portable generator connection." The SFPUC has determined that portable generators are suitable for use during power outages and provide sufficient flexibility for Project operations; therefore, permanent on-site generators are not proposed as part of the Project.

Comment PD-10: Comment related to the modeling of pumping at peak capacity of 8.3 million gallons per day (mgd).

This response addresses a comment from the commenter listed below; the comment on this topic is quoted in full below this list:

- G-San Bruno-Fabry

"5. DEIR, page 3-10: The potential impacts of pumping at the peak pumping capacity of 8.3 mgd (Section 3.4.2) should be modeled if such higher rates are being considered for the project as part of normal operations. Impacts of pumping at 8.3 mgd rather than the modeled 7.2 mgd will be more severe near the pumping locations and during the period of pumping. This is true even if the annual volume pumped is the same under both the 8.3 mgd and 7.2 mgd pumping rates. If the 8.3 mgd pumping rate is only intended to be used in the event of unscheduled down time then the document should state that the production at 8.3 mgd would only occur as a result of unscheduled down time in order to meet the annual target of 8,100 AFY. Additionally, an estimate of the frequency of pumping at this rate should be made and the corresponding analysis conducted." *(City of San Bruno, letter, June 13, 2013 [G-San Bruno-Fabry])*

Response PD-10

The comment requests that pumping rates of 8.3 mgd be modeled and evaluated if the Project is proposed to be operated at 8.3 mgd as part of normal operations. As described in Chapter 3, Project Description on page 3-10, the Draft EIR did analyze Project operation at an "annual average pumping capacity of 7.2 [million gallons per day] mgd," with a "peak pumping capacity of 8.3 mgd." The Project is not proposed to operate at 8.3 mgd as part of normal operations. Page 3-138 of the Draft EIR states that groundwater would be extracted "at a maximum annual volume of 8,100 af withdrawn at an average rate of 7.2 mgd." The peak pumping rate would not be used for normal operations but is rather a peaking rate that would be reached occasionally. The Project would normally operate at an annual average pumping capacity of 7.2 mgd. The SFPUC does not have an estimate of the frequency of time that wells would be operated at the peak capacity of 8.3 mgd, but anticipates that the amount of time the pumps would be run at that rate would be limited for the reasons stated below.

Peak pumping rates would typically be used when one or more of the wells have been out of service due to planned or unplanned maintenance for a period of time. Once the well is placed back in service, the pumping rate could be increased to allow recovery of stored water that was not pumped when the well was idle, e.g., pumping at 330 gallons per minute (gpm) for 365 days extracts a volume equivalent to pumping at 380 gpm for 317 days, as illustrated in Table RTC 9.3.3-1 (Comparison of Average vs Peak Pumping), below. The table shows the most extreme situation, in which a pump has been out of service for 48 days, requiring a longer duration of pumping at the peak rate. If the pump is only out of service for a few days, pumping at the peak rate would be for a commensurately shorter duration.

TABLE RTC 9.3.3-1
Comparison of Average Pumping vs Peak Pumping

	Gallons per minute (gpm)	Gallons per day (gpd)	Days Pumping per Year	MG/Year
Pumping year round using average rates, no time out of service	330	475,200	365	173
Pumping at peak rate after pump is out of service for 48 days.	380	546,480	317	173

The SFPUC may temporarily operate a well facility at a higher pumping capacity to redistribute pumping to reduce well interference as part of the revised Mitigation Measure M-HY-6 (Ensure Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation) (see Response HY-15 for a discussion of revisions to Mitigation Measure M-HY-6). To reduce well interference impacts, pumping could be reduced at some wells and increased at others to maintain overall Project yield. Pumping capacity at a well facility site that is contributing to a well interference impact would be reduced and pumping capacity at a well facility site that is not contributing to a well interference impact could be increased. The average pumping capacity would still be 7.2 mgd.

The Draft EIR analyzed an annual average pumping capacity of 7.2 mgd, which includes a peak pumping capacity of 8.3 mgd. The modeled pumping capacity of 7.2 mgd assumed that there would be some periods of pumping at lower capacity and some periods of pumping at a higher capacity. The peak pumping capacity would be 8.3 mgd. Therefore, occasional pumping at peak capacity rates was included in the analysis of impacts.

Comment PD-11: Comment related to using Partner Agency wells for GSR Project pumping.

This response addresses a comment from the commenter listed below; the comment on this topic is quoted in full below this list:

- O-CLMP-Quick

"*Item 4 – Can SFPUC use Partner Agencies' wells for GSR Project pumping rather than build new ones? Has this been evaluated?*

It appears that the GSR Project includes installation of production wells that could ultimately be used by some of the Partner Agencies rather than their existing wells. We understand that both the Partner Agencies' wells and the GSR Project wells will be pumped at the same time during take periods. It is unclear whether the Partner Agencies' wells will be eventually replaced by the Project wells, which may even be pumped during put periods while the Partner Agencies' wells remain idle. How would this impact the projected water elevation declines?" *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

Response PD-11

The comment reflects an inaccurate understanding of how the GSR and Partner Agency wells would be used under the Project. The Draft EIR, Chapter 3, Project Description, Section 3.8.1 (Operating Agreement), explains how the GSR and Partner Agency wells would work under an Operating Agreement, which the SFPUC would enter into with the Partner Agencies. The new wells to be installed by the SFPUC for the Project would not replace the Partner Agencies' existing wells. Continued operation of the existing Partner Agency wells is an integral part of the proposed Project operations. As stated in Draft EIR Section 1.4.4 (Project Operations) on page 1-10, "(d)uring dry years, the Partner Agencies would pump groundwater from proposed Project wells in addition to their existing wells to meet demands." Project wells would not be pumped during Put Periods, except as needed for periodic maintenance or for emergency use. For the Project to work as intended, existing Partner Agency wells would remain in operation, and Project wells would only be used. For further details, see Chapter 3, Project Description, Section 3.8.1 (Operating Agreement).

Comment PD-12: Comment related to the Project operating period.

This response addresses comments from the commenter listed below; the comments on this topic are quoted in full below this list:

- O-CLMP-Quick

"*Item 26 – Is the accounting system appropriate and sufficient for ensuring that the aquifers in the Westside Basin are not depleted and that current and planned water uses remain viable? Will the groundwater monitoring program be sufficient to identify years that should be take periods?*

The water level and pumpage monitoring data are keys to the success of the GSR Project, as well as for the protection of existing irrigators. Biannual water level monitoring is insufficient to predict short-term impacts. Water level data should be collected on a monthly (even weekly, daily or continuous) basis and should include both non-pumping and pumping water levels. Water level and pumpage data should be collected using standard protocols developed for the GSR Project. Pumpage data should be collected weekly and include both volumes of water pumped from the wells and elapsed time of pumping. In addition, the volume of surface water used in lieu of groundwater will need to be recorded on a regular basis. The shorter the monitoring intervals, the more meaningful and useful they will be to predict future impacts. Water level trends and pumpage volumes should be analyzed on a monthly basis during take periods to determine if any of the mitigation measures are triggered. The monitoring data and reports should be provided to all interested stakeholders, including the Partner Agencies and existing irrigators." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

"Operating periods have been defined as 8.5 years, but we believe that the appropriate operating period is twice that, or 17 years, to build up a reliable, meaningful, and significant baseline dataset that can be used to predict future responses." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

"During the course of the GSR Project, if sufficient data are collected to demonstrate the predicted responses from the model then the baseline years could be shortened." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

Response PD-12

The comment reflects an incorrect understanding of how the Project would be operated. The comment asks if the groundwater monitoring program is sufficient to identify years that should be Take Periods. The groundwater monitoring program would not identify Take Years. A Take Year would be determined based on drought conditions and/or maintenance needs.

The monitoring program described in Mitigation Measure M-HY-6 (Ensure Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation) includes installation of a flow meter to allow for measuring daily well production volumes and a groundwater level transducer/data logger for measuring groundwater levels at irrigators' wells. Water level data would be available on a daily basis during both times of pumping and non-pumping.

The monitoring program would document pumpage data and water use from irrigators' wells. The Project would also use meters to document surface water volumes delivered to the Partner Agencies as part of this Project.

Data from the Irrigation Well Monitoring and Reporting Program would be used to determine if the groundwater level were being lowered to a point that would result in an impact to an existing irrigator. If the monitoring data show that an existing irrigator's well could be impacted such that the Performance Standard could not be met, mitigation measures identified in the Draft EIR would be triggered.

Mitigation Measure M-HY-6 (Ensure Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation), as revised, requires that monitoring data reports produced by the monitoring requirements for this Project would be made available to existing irrigators for their wells at a frequency to be identified in the Irrigation Well

Monitoring and Reporting Program. Refer to Response HY-15 for revisions to the Mitigation Measure. The revised Mitigation Measure also specifies the minimum frequency for data collection and analysis needed for effectiveness of the measure, delegating details of data collection and analysis to the Irrigation Well Monitoring and Reporting Program. An option to limit monitoring to 17 years is included in the revised Mitigation Measure, subject to concurrence by the San Francisco Planning Department's Environmental Review Officer.

The commenter incorrectly identified an "operating period" for this Project of 8.5 years. The SFPUC uses an 8.5-year design drought for planning purposes. This Project would provide water supply during dry years and/or emergencies, and increase water supply reliability during times of drought. As described on page 3-5 of the Draft EIR, the Project wells would be operated at a time during a dry year when an SFPUC system water shortage is identified or when an emergency occurs, but there is no specific "operating period." Approximately 20 percent of the years are predicted to be dry years when the Project wells would be operating. For purposes of impact evaluation, the groundwater modeling and Draft EIR assume that, at maximum, Project operations would continue for 7.5 years, assuming that it would require approximately one year of drought before the SFPUC would initiate Project operations.

Comment PD-13: Comment related to Project operation during Put Periods.

This response addresses a comment from the commenter listed below; the comment on this topic is quoted in full below this list:

- G-San Bruno-Fabry

"11. DEIR, page 3-140. The following statement should be changed to reflect operations during Put Periods. The DEIR analysis should be consistent with this change in project description as well.

Change from:

Neither Project wells nor Partner Agency wells would be pumped in these Put Periods, apart from volumes needed to periodically exercise the wells.

to:

Pumping from Project wells and Partner Agency wells during Put Periods would be limited to volumes needed to periodically exercise the wells, emergency usage, and other functions described in the Operating Agreement." (City of San Bruno, letter, June 13, 2013 [G-San Bruno-Fabry])

Response PD-13

The comment suggests language changes to describe well use during Put Periods in more detail. The text revisions are consistent with the SFPUC's project proposal, but have been slightly revised for clarity.

In Chapter 3, Project Description on page 3-140 of the Draft EIR, the second sentence in the first paragraph in Section 3.8.2 (Project Operation) has been revised as follows:

> ~~Neither Project wells nor~~ Pumping from GSR wells and Partner Agency wells ~~would be pumped in these~~ during Put Periods, ~~apart from~~ would be limited to volumes needed to periodically exercise the wells, emergency usage, and other pumping recommended by the Operating Committee for purposes of managing the SFPUC Storage Account.

Comment PD-14: Comment related to the Operating Agreement.

This response addresses a comment from the commenter listed below; the comment on this topic is quoted in full below this list:

- G-San Bruno-Fabry

"9. DEIR page 3-10. In order to be consistent with the Operating Agreement, the following edits should be made and the environmental analysis conducted consistent with the edits set forth below.

Change from:

> *During dry years, Partner Agency water deliveries from the regional water system would be comprised of reduced surface water deliveries and groundwater pumped from Project wells, as identified in the Operating Agreement. The Partner Agencies' pumping from their existing wells would not exceed the annual average rates consistent with the pumping limits expressed in the Operating Agreement.*

to:

> *During dry years, Partner Agency water deliveries from the regional water system would be comprised of reduced surface water deliveries and groundwater pumped from Project wells, as identified in the Operating Agreement. The Partner Agencies' pumping from their existing wells would not exceed rates consistent with the pumping limits expressed in the Operating Agreement." (City of San Bruno, letter, June 13, 2013 [G-San Bruno-Fabry])*

Response PD-14

The comment suggests language changes to make the Draft EIR consistent with the GSR Operating Agreement. The change does not result in a change in conclusions of the analysis in the Draft EIR, because the change is expected to be consistent with the Operating Agreement, and the Draft EIR analyzed pumping rates consistent with the proposed terms of the Operating Agreement.

In Chapter 3, Project Description on page 3-10 of the Draft EIR, the third sentence in the second paragraph in Section 3.4.2 (Production Wells and Associated Facilities) has been revised as follows:

During dry years, Partner Agency water deliveries from the regional water system would be comprised of reduced surface water deliveries and groundwater pumped from Project wells, as identified in the Operating Agreement. The Partner Agencies' pumping from their existing wells would not exceed ~~the annual average~~ rates consistent with the pumping limits expressed in the Operating Agreement.

Comment PD-15: Comment related to Project operational triggers.

This response addresses a comment from the commenter listed below; the comment on this topic is quoted in full below this list:

- G-BAWSCA-Sandkulla

"**4. A clear description, perhaps in chart form, that describes the triggers/conditions under which the Project would be operated would be helpful.** For example, if the basin has not reached full storage capacity, will the Project be used in a dry year? The relationship of the Put water to SFPUC's self-imposed Interim Supply Limitation should also be clarified as part of this description." *(BAWSCA, letter, May 24, 2013 [G-BAWSCA-Sandkulla])*

Response PD-15

The comment requests clarification regarding conditions under which the Project would operate. The Project is intended to provide supplemental water supply during a drought, and would be used in dry years as long as there is water in the SFPUC Storage Account, even if the Project has not reached its full storage capacity. However, in compliance with the Operating Agreement and Mitigation Measure M-HY-14 (Prevent Groundwater Depletion), only the positive balance in the SFPUC Storage Account would be extracted.

The trigger for initiating groundwater pumping is described on page 3-5 of the Draft EIR, and the text of Draft EIR on that page has been revised slightly to clarify when pumping might occur:

The identification of a dry year for the purpose of initiating groundwater pumping under the Project would be based upon whether or not a water shortage has been identified for a given fiscal year during the SFPUC's annual determination of the supply of water available to the regional water system under its Water Shortage Allocation Plan (WSA)[2]. This identification would be made as part of the SFPUC's annual April 15 estimate of water supply available to the regional water system, with shortage allocations taking effect on July 1st, the start of the fiscal year. As a result of this timing, Project pumping would <u>normally</u> not occur until the second year of a drought. <u>During some dry years pumping may be initiated during the first year of a drought, so long as the duration of pumping does not exceed 7.5 years.</u> Approximately 20 percent of years are projected to be dry years when the Project would be in groundwater recovery mode (SFPUC 2009b).

Surface water delivered to the Partner Agencies during Put years (normal and wet years) is included in the SFPUC's adopted Water Supply Improvement Program (WSIP) and was analyzed in the Program Environmental Impact Report (PEIR) prepared for the WSIP (San Francisco Planning Department 2008). The surface water deliveries to the Partner Agencies are included in the SFPUC's Interim Supply Limitation of limiting water sales from SFPUC watersheds to an annual average of 265 mgd.

[2] In the July 2009 Water Shortage Allocation Plan (WSA), the SFPUC and its wholesale customers adopted a plan to allocate water between retail and wholesale customers during system wide shortages of 20 percent or less. The specific amount of rationing required by each wholesale customer, including the Partner Agencies, is determined either by agreement of the wholesale customers themselves or, in the absence of such agreement, by the SFPUC after discussion with the wholesale customers.

Two additional locations in the Draft EIR require changes to be consistent with this revision; the text is revised as follows.

Page 3-2, last paragraph:

The proposed Operating Agreement between the SFPUC and Partner Agencies (see Section 3.8.1 [Operating Agreement]) contemplates use of the dry-year supplies made available by the Project normally starting in the second year of the design drought. During some dry years pumping may be initiated during the first year of a drought.

Page 3-141, first paragraph:

Proposed Project wells would be operated during a Take Period under the following circumstances:

- Beginning normally in the second dry year of a multiple-year drought; during some dry years pumping may be initiated during the first year of a drought;
- During emergencies;
- During system rehabilitation, scheduled maintenance or malfunctioning of the water system; or
- Upon recommendation of the Operating Committee established by the Operating Agreement for purposes of Basin management[16]

[16] The Operating Committee would respond to issues as they arise. Additional CEQA review may be required.

Comment PD-16: Comments related to the SFPUC Storage Account.

This response addresses comments from the commenters listed below; each comment on this topic is quoted in full below this list:

- G-San Bruno-Fabry
- O-CLMP-Quick

"6. DEIR, page 3-141. The statement in Section 3.8.2 that '… when groundwater is pumped to provide a dry year supply, pumping would reduce the balance of water in the SFPUC Storage Account' does not reflect that maintenance and temporary usage of project facilities by SFPUC would also reduce the balance of water in the SFPUC storage account. The text must be updated to reflect all conditions that would reduce the balance of water in the SFPUC Storage Account." *(City of San Bruno, letter, June 13, 2013 [G-San Bruno-Fabry])*

"12. DEIR, page 3-141. Change the following text to accurately reflect accounting from:

> *During these Take Periods, when groundwater is pumped to provide a dry-year supply, pumping would reduce the balance of water in the SFPUC Storage Account.*

to:

> *During these Take Periods, when groundwater is pumped from Project wells for Project purposes, such as providing a dry-year supply or performing maintenance, pumping would reduce the balance of water in the SFPUC Storage Account." (City of San Bruno, letter, June 13, 2013 [G-San Bruno-Fabry])*

"II. **The DEIR's Project Description And Description Of The Project Setting Are Inadequate.**

A. **The Project Description Is Inaccurate And Inconsistent With The Resource Analyses.**

The GSR Project has been described as an 'in lieu' groundwater banking project. As described in the DEIR, the SFPUC would enter into agreements with 'Partner Agencies' that currently pump and distribute water from the Westside Groundwater Basin. Under these agreements, in wet (or 'put') periods the Partner Agencies would agree to 'forgo' their groundwater pumping and the SFPUC would agree to deliver replacement water (or 'in lieu' water) to the Partner Agencies. The forgone pumping by the Partner Agencies would enable additional groundwater to remain in the aquifer (that would otherwise have been pumped), which the SFPUC could then later use in dry (or 'take') periods. To implement the GSR Project, the SFPUC would maintain something called the 'SFPUC Storage Account' to quantify the amount of 'forgone' pumping by Partner Agencies (during wet/put periods) and thereby determine the amount of water available in the Westside Groundwater Basin for the SFPUC to pump (during dry/take periods).

Chapter 3 of the DEIR, the Project Description, asserts that the amount of groundwater pumped by the SFPUC in 'take/dry' periods would be limited to the amount water 'forgone' by the Partner agencies.[14]

Under the theory underpinning the DEIR's Project Description, limiting SFPUC groundwater pumping in dry/take periods to the amount of additional water actually stored in the aquifer during wet/put periods (as a result of forgone pumping by the Partner Agencies) would ensure that the GSR Project pumping would not reduce the groundwater table anymore than would otherwise occur under existing conditions if the Partner Agencies had not forgone their pumping. Such draw down of the groundwater table would not occur because, as suggested in the DEIR and in the April 2012 Fugro Memo, SFPUC would not extract water from the aquifer when there is not a 'positive balance' in the SFPUC Storage account.

The remaining portions of the DEIR, however, reveal that the SFPUC is well aware that the actual operation of the GSR Project's Storage Account will differ greatly from the theoretical model presented in the project description, and in fact will result in significant and repeated drawdown of the groundwater table during dry/take periods.[15] These other portions of the DEIR indicate, during dry/take periods, SFPUC pumping of the Westside Groundwater Basin will not in fact be limited to the additional water stored in the aquifer due to forgone pumping by Partner Agencies. Thus, the GSR Project described on Page 3.1.41 of the DEIR and in the April 2012 Fugro Memo does not appear to be consistent with the GSR Project described in other portions of the DEIR.

If the GSR Project groundwater pumping by the SFPUC was in fact equal to or less than the amount of actual additional groundwater banked in the aquifer due to forgone pumping by the Partner Agencies, then it would follow that the operation of the GSR Project (even in dry/take periods) should not result in any lowering of the groundwater table below levels that would have otherwise occurred had the GSR Project not been implemented. The fact that the DEIR predicts such a significant lowering of the groundwater table indicates that, contrary to the theoretical project descriptions, actual SFPUC pumping during dry/take periods will in fact not be limited to the amount of actual additional groundwater banked in the aquifer due to forgone pumping by the Partner Agencies. Rather, this lowering of the groundwater table indicates that as part of the GSR Project the SFPUC intends to pump amounts of groundwater in excess of the amount of water banked due to the forgone pumping.[16]

When the proposed actual operation of the GSR Project Storage Account is understood, it becomes evident that the 'Positive Balance' referred to in the DEIR is simply 'paper water.' Given the limited storage capacity of the Westside aquifer, the fact that the Partner Agencies may have forgone pumping for multiple years does not mean that the amount of forgone pumping equates to the amount of actual additional water stored/banked in the Westside aquifer. The GSR Project treat these two amounts as if they were one and the same, when in fact they are not - because once the aquifer is filled to capacity it cannot store additional water regardless of whether the Partner Agencies continue to forgo pumping. As such, much of the 'Positive Balance' (upon which the SFPUC determines how much it can pump in dry/take periods) is illusory from a hydrologic standpoint, a balance that exists on paper but not in the Aquifer.

As DBS&A's comments explain, the illusory/paper water aspects of this 'Positive Balance' constitute a fundamental flaw in the GSR Project Storage Accounting methodology.

The proposed operation of the GSR Project Storage Account is not based so much on the premise of a 'Positive Balance' as it is on the premise of 'Borrowing/Payback.' That is, during dry/take periods, the SFPUC will significantly drawdown the Westside aquifer by pumping amounts that are in excess of the additional water added to the aquifer as a result of the Partner Agencies' forgone pumping. However, as part of the GSR Project, the SFPUC proposes over the long run to 'payback' the groundwater it borrowed (via substantial drawdown of the groundwater table) through forgone pumping by Partner Agencies in subsequent wet/put periods, which over time should allow the groundwater table to eventually rebound.

This 'borrowing/payback' model is reflected in other portions of the DEIR and its technical appendices. For example, the April 2012 Fugro Memo states: 'During the majority of years (68 to 83%) while the project is in place there will be a net benefit (i.e. higher groundwater levels and higher groundwater pumping capacities) to third party wells from the proposed GSR Project.' However, the converse implication of this acknowledgement is that, for 17 to 32% of the years the GSR Project operates, there will be a net injury to third party wells from the proposed GSR Project (i.e., lower groundwater levels and lower groundwater pumping capacities). The net benefit years correspond to the wet/put periods while the net injury years result to the dry/take periods.

> [14]*See, e.g.,* DEIR, p. 3.1-141 ['Project wells would only be pumped in Take Periods if there is a positive balance in the SFPUC Storage Account']; *see also* App. H7 to DEIR, *SFPUC Regional Groundwater Storage and Recovery Project: South West Basin Third Party Well Survey and Well Interference Analysis* (April 2012) ('April 2012 Fugro Memo'), p, 2, 25 ['The GSR Project would only extract groundwater up to the amount that has been stored in the SFPUC Storage Account'].
>
> [15] *See, e.g.,* DEIR, pp. 5.16-86, 5.16-91 [acknowledging significant drawdown of the Aquifer at the end of the design drought]; *see also* April 2012 Fugro Memo, pp. 25-26 ['The analytical calculations indicate that the proposed GSR Project would cause cemetery well static water levels to be from 95 to 116 lower than would occur without the project at the end of the Design Drought'].
>
> Appendix C to the April 2012 Fugro Memo includes four figures (Figures C-11, C-12, C--13 and C-14) that confirm that, during dry/take period, the GSR Project is expected to cause the groundwater table where the Cypress Lawn well is located to drop as much as 120 feet below the level the groundwater table would be if the GSR Project was not implemented.
>
> [16] See **<u>Exhibit B</u>** to this letter, 'Modified Diagram of GSR Project,' attached hereto and incorporated herein by this reference, showing drawdown below stored amount." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

"14 Cal. Code of Regulations (the regulations adopted for implementation of CEQA, the 'Guideline') Section 15124 requires that an EIR must include an accurate, stable and consistent description of the proposed project. [18] Because the GSR Project DEIR at times claims that SFPUC groundwater pumping will be limited only to the amount water banked in the Westside Groundwater Basin through forgone pumping by Partner Agencies, yet at other times evidences that such pumping will occasionally be in excess of the amount of water banked in the Aquifer through such forgone pumping, the project description in the GSR Project DEIR does not meet the accuracy, stability or consistency requirements of CEQA Guideline Section 15124.

[18] See *County of Inyo v. City of Los Angeles* (1977) 71 Cal.App.3d 185, 197; *San Joaquin Raptor Rescue Center v. County of Merced* (2007) 149 Cal.App.4th 645, 655; *Communities for a Better Environment v. City of Richmond* (2010) 184 Cal.App.4th 70, 80." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

[The DEIR lacks…] "A clear description of the Storage Accounting methods used to evaluate when the SFPUC can remove water in storage (take periods)--instead, take periods are summarily projected to reduce water level elevations below historical conditions and result in unavoidable impacts to many of the irrigators' well s, including those owned and operated by Cypress Lawn." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

"*Item 27 - Is there a possible loss of water as rejected recharge? How is the SFPUC going to perform their accounting of water stored during take periods? Will it reflect actual water increases or will it only reflect reductions in pumping levels? How will it account for water loss to the ocean or leaving the areas of recharge?*

The SFPUC plans to provide surface water to the Partner Agencies in lieu of the Partner Agencies' pumping groundwater from their wells. During put periods (i.e., years with reduced pumpage by Partner Agencies) the GSR Project counts on natural ground water recharge to restore water levels in the groundwater basin. This really involves the SFPUC 'borrowing' (appropriating) water during dry take periods that are well in excess of what was banked via the 'forgone' pumping, and then (over time) paying this 'borrowed water' back during wet or normal put periods. Yet, during this 'payback' period when the groundwater table has plummeted, irrigators, including Cypress Lawn and other overlying landowners, are left with excessive drawdowns of the groundwater in the Westside Basin and all of the impacts on current and planned operations associated with the water elevations." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

"*Item 28 - Will the water accounting method for the Partners Agencies be clear and concise and provide the necessary information for the Storage Account?*

Forgone pumpage must be clearly documented on a regular and consistent basis. Unclear or incomplete records will only need to be rectified by estimating from other methods if needed, who will retrofit the Partner Agencies' and existing irrigators' wells to allow reliable water level measurements and pumpage volumes?" *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

"[Exhibit B – See Attachment RTC-A of this Final EIR]" *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

Response PD-16

This group of comments questions the accuracy of the description of the Project related to accounting of groundwater pumpage, groundwater recharge, and the Storage Account. Regarding the comment from the City of San Bruno concerning the text in Chapter 3, Project Description, the Draft EIR has been revised to clarify how pumping would be accounted for in the SFPUC Storage Account.

On page 3-141 of the Draft EIR, the second sentence in the last paragraph in Section 3.8.2 (Project Operation) has been revised as follows:

> In these circumstances, proposed Project wells could be operated continuously or for shorter intervals, depending on the need for water. During ~~these Take Periods~~ Project operations, when groundwater is pumped from GSR wells, ~~to~~ such as providing ~~e~~ a dry-year supply, performing maintenance, or during emergencies, pumping would reduce the balance of water in the SFPUC Storage Account.

Regarding comments asserting that the description of the Project does not accurately convey that the Project would pump water in excess of the amount in the SFPUC Storage Account, the comment reflects a basic misconception about how groundwater pumping affects groundwater levels. The comment states that "operation of the GSR Project (even in dry/take periods) should not result in any lowering of the groundwater table below levels that would have otherwise occurred had the GSR Project not been implemented." This statement assumes groundwater pumping under the Project would result in a uniform reduction in water levels across the entire groundwater basin. This concept is only accurate for withdrawals from surface water bodies, where removing water results in a consistent lowering of the water surface elevation across the entire body of water. For example, if water is pumped from a lake, the level of the entire lake is reduced. This is not true of groundwater pumping, which creates a "cone of depression" in the nearby vicinity of the individual well and not across the entire basin. Please refer to Figure 3-1 (Groundwater Storage and Recovery Schematic Diagram) on page 3-7 of the Draft EIR, which shows a schematic drawing of how groundwater storage and recovery typically function during groundwater pumping. Drawing C in Figure 3-1 shows the cone of depression expected to occur around both recovery wells and around drinking water wells during pumping operations. Even though pumping during Take Periods would not exceed the amount of water in the SFPUC Storage Account, localized cones of depression would occur around each Project well where groundwater levels would be lower than they would be without the Project. Groundwater elevations in the Westside Groundwater Basin would not be uniform, and there would be areas of higher elevations (farther from Project wells) and lower elevations (near Project wells). Well interference impacts would occur where existing irrigators' wells create a cone of depression that overlaps with the cone of depression of a Project well. Well interference alone is not necessarily an indicator that the SFPUC is proposing to withdraw more water from the Westside Groundwater Basin during take periods than its accounting shows is available in the SFPUC Storage Account. The concept of well interference is further illustrated in Figure 5.16-7 (Well Interference Schematic) in Section 5.16, Hydrology and Water Quality on page 5.16-77 of the Draft EIR.

In addition, please refer to Mitigation Measure M-HY-14 (Prevent Groundwater Depletion), which describes the development of a monitoring program for the SFPUC Storage Account. Refer also to Response HY-43 regarding procedures for accounting for "leakage" or Basin losses and Response HY-48 for revisions to Mitigation Measure M-HY-14. This measure was determined to be necessary because the groundwater modeling referenced in the comment did show that there was "leakage" from the basin resulting in a loss of water. As noted on page 5.16-145 of the Draft EIR:

> "The total decrease in groundwater storage volumes due to Project operation is predicted to result in a decline of approximately 416 afy more than under the modeled existing conditions (that is, without the Project). Over the 47-year simulation period, the total decline in groundwater storage is predicted to be approximately 20,000 af. This decline can be attributed to the fact that the storage efficiency of the Basin is less than 100 percent, that is, the stored groundwater naturally moves to other locations within the basin and/or out of the basin (e.g., water might move from an area of high groundwater levels to an area of low groundwater levels). Such movement of groundwater out of the Basin is known as "leakage." As described by Kennedy/Jenks (2012b), leakage would be highest when groundwater levels are highest (such as would be the case during prolonged Hold Periods) and lowest when groundwater levels are lowest (such as would be the case during the design drought). The effect of these losses would be that not all of the water added into the SFPUC Storage Account during normal and wet periods would be available for pumping during dry periods. As described in Chapter 3, Project Description, Section 3.8.1 (Operating Agreement), this possibility would be accounted for under the proposed Operating Agreement, whereby the Operating Committee would monitor and track the SFPUC Storage Account, including any leakage from the Basin attributable to the Project pumping."

Mitigation Measure M-HY-14 (Prevent Groundwater Depletion) includes both monitoring of losses from the SFPUC Storage Account, and a plan to replace water losses, by delivering additional surface water to the Partner Agencies. As noted in Section 5.16, Hydrology and Water Quality on page 5.16-146 of the Draft EIR, in the text of this measure: "To replace water losses in the SFPUC Storage Account due to Basin losses, the SFPUC may deliver additional surface water to the Partner Agencies when surplus surface water is available, creating additional in-lieu recharge to the Westside Groundwater Basin. This conversion of wet Hold Years to additional Put Years would offset the estimated losses from the Basin as a result of the Project by reducing Partner Agency pumping from their existing wells during those years." The measure includes a requirement that: "The GSR wells shall only be pumped when there is a positive balance in the SFPUC Storage Account, which will be adjusted for losses from the Basin due to leakage caused as a result of the Project. If the additional in-lieu recharge is not sufficient to offset losses identified by the Operating Committee as caused by storage losses from the basin, the GSR wells will only be operated to extract the volume of water in the SFPUC Storage Account."

The comment references "Exhibit B" (an attachment to the comment letter), which shows a mark-up made by the commenter to Figure 3-1 (Groundwater Storage and Recovery Schematic Diagram) from Chapter 3, Project Description of the Draft EIR. The figure is purposefully intended to be a schematic diagram, as indicated by the title of the figure, Groundwater Storage and Recovery Schematic Diagram, and is intended to illustrate the basic principle of how groundwater storage and recovery typically operates. For this reason, the figure does not show actual groundwater levels predicted to result from the Project. As noted above, the Project would only pump water that is in the SFPUC Storage Account; the area marked by the commenter on the Exhibit B as "Pumping Beyond Stored Amount" is thus incorrect.

In Chapter 3, Project Description on page 3-138 of the Draft EIR, it is specifically stated that the Operating Committee would "monitor and track the SFPUC Storage Account, including any losses from the Basin resulting from the Project." The Draft EIR thus does contain an accurate, stable and consistent description of the proposed Project.

The comment expresses concern about "rejected recharge" and contends that "once the aquifer is filled to capacity it cannot store additional water regardless of whether the Partner Agencies continue to forgo pumping." However, the Draft EIR documents that there is ample storage capacity available in the South Westside Groundwater Basin. As stated on page 5.16-19 of the Draft EIR: "Beginning in the 1950s and 1960s, groundwater levels in the South Westside Groundwater Basin declined to below sea level. This decline continued into the 1970s, after which groundwater levels stabilized at elevations of more than 100 feet below mean sea level (msl), resulting in vacated aquifer storage[1] of up to 75,000 acre-feet (af) in the Daly City, South San Francisco, and northern San Bruno areas (Kirker, Chapman & Associates 1972; LSCE 2005)." The Project would use 60,500 af of the available storage. Because there is ample capacity in the basin to store this amount, rejected recharge is not expected, and no problems are expected with storing the full amount of the SFPUC Storage Account.

The Storage Accounting methods are described in Chapter 3, Project Description on page 3-138 of the Draft EIR: "The SFPUC would track the amount of water that has been stored during normal and wet years (Put Periods), and the amount of water pumped from the SFPUC Storage Account (Take Periods). Accruals in the SFPUC Storage Account would be recorded based on metered, in-lieu surface water deliveries and corresponding metered decreases in groundwater pumping." In addition, Mitigation Measure M-HY-14 (Prevent Groundwater Depletion) further defines the Storage Accounting methodology. As described in Section 5.16, Hydrology and Water Quality on page 5.16-146 of the Draft EIR: "The SFPUC Storage Account monitoring program will use data from metered SFPUC in-lieu water deliveries to the Partner Agencies and regularly measured changes in groundwater elevations during a series of Put and Hold Years to determine the volume of stored water while developing rules to account for losses in groundwater storage, based on generally accepted principles of groundwater management."

Under the direction of the Operating Committee, as detailed in Chapter 3, Project Description of the Draft EIR, and with implementation of Mitigation Measure M-HY-14 (Prevent Groundwater

[1] Vacated aquifer storage is the volume of groundwater which is estimated to have been present historically in the aquifer, but which is no longer present, usually due to pumping.

Depletion), the Project would account for losses, and would not result in the SFPUC "borrowing" (appropriating) water during take periods or depleting the groundwater basin over the long term.

As noted in Chapter 3, Project Description on page 3-138 of the Draft EIR, the SFPUC, in conjunction with the Operating Committee, "would maintain an accounting of the storage volumes in the SFPUC Storage Account." The accounting would be clearly documented. See Response HY-43 for a description of how data from the Monitoring Network would be used in determining the amount of water available for extraction from the SFPUC Storage Account.

Comment PD-17: Comment related to groundwater recharge from precipitation.

This response addresses a comment from the commenter listed below; the comment on this topic is quoted in full below this list:

- O-CLMP-Quick

"*Item 29 - Is there sufficient availability of precipitation for the groundwater recharge that is assumed during the Put Periods?*

The DEIR reports that there is an average of 22 inches per year of rainfall over the Westside Basin, which is 45 square miles, or an average of 52,800 afy of rainfall. The DEIR assumes that 8,000 afy will be banked during put periods, or 15 percent of the total rainfall. Is this recharge sufficient for the GSR Project to be water budget neutral?" *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

Response PD-17

The comment asks about the availability of precipitation for groundwater recharge. The commenter may have a misunderstanding of the groundwater basin recharge that would occur with in-lieu surface water deliveries under the Project. As a result of implementing the Project, Partner Agencies would not pump groundwater during the time that they receive surface water deliveries from the SFPUC in wet and normal years (Put Years). The groundwater recharge associated with the Project would be a consequence of stored water that would accumulate in the Westside Groundwater Basin as a result of Partner Agencies foregoing groundwater pumping. Thus, the water stored from the Project would be a result of the in-lieu surface deliveries and not from precipitation recharge, although recharge from precipitation would, of course, continue to occur. The Project would not change the precipitation recharge of the Basin and would not rely on precipitation recharge to create the storage account.

Comment PD-18: Comment related to recharge test and scaling up from pilot test to basin-wide implementation.

This response addresses a comment from the commenter listed below; the comment on this topic is quoted in full below this list:

- O-CGC-Maddow

"With regard to the short-term in-lieu recharge test that was conducted by the proponents of the proposed Project, the Club is concerned about whether the conclusions drawn from that test are sufficiently certain to support the leap from a short-term pilot program to full-scale Basin-wide implementation. Based upon the materials in the DEIR, the Club cannot tell if the test results were conclusive with regard to the ability of the aquifer to in fact recharge at the rates and volumes necessary to support the proposed Project. The Club understands that there is a high degree of certainty with regard to the 'take' portion of operations under the proposed Project, but does not understand if there is a similar degree of certainty with regard to the 'put' portion." *(California Golf Club, letter, June 11, 2013 [O-CGC-Maddow])*

Response PD-18

The comment expresses concerns about the applicability of the pilot program to full-scale, Basin-wide implementation. The In-lieu Recharge Demonstration Study referenced in the comment is described in Section 5.16, Hydrology and Water Quality on page 5.16-20 of the Draft EIR. As noted there, the study was conducted from October 2002 through April 2007. During the study,

> "The SFPUC undertook groundwater monitoring throughout the South Westside Groundwater Basin and adjacent areas along the Pacific Coast and San Francisco Bay, before, during, and after the Demonstration Study to determine the extent to which groundwater levels and storage were affected. After approximately three years (from fall 2002 to spring 2005) of operating the Demonstration Study, the SFPUC reported that in-lieu recharge can be successfully accomplished by reducing pumping, resulting in increases in groundwater storage."

The SFPUC is confident that the results of the study are sufficiently robust to confirm that in-lieu recharge (the Put portion of the Project) can be accomplished. In addition, the ongoing operations of the Partner Agencies provide ample evidence that recharge reliably occurs in the basin on an ongoing basis. The Partner Agencies have relied on natural recharge to provide their groundwater supply, and the basin has been recharging naturally for decades. Nevertheless, the Project includes extensive monitoring and an accounting program for the SFPUC Storage Account, which would confirm that full-scale operation of the Project is resulting in sufficient recharge to support the Project. Thus, the Project provides that Take Periods would be calibrated to coincide with actual storage. See Response HY-43 for a description of how data from the

Monitoring Network would be used in determining the amount of water available for extraction from the SFPUC Storage Account and pages 5.16-142 through 5.16-146 in the Draft EIR for a discussion of groundwater depletion and Mitigation Measure M-HY-14 (Prevent Groundwater Depletion).

Comment PD-19: Comment related to maintenance pumping rates.

This response addresses a comment from the commenter listed below; the comment on this topic is quoted in full below this list:

- G-BAWSCA-Sandkulla

"**3. The project maintenance pumping rates for the Project wells are very different from that of the Project Partner wells.** The document should discuss the difference in assumptions regarding the maintenance of the Project wells and the Project Partner wells. If the Project wells need to be exercised more than the currently projected rates, please address the impact that will have on the Project operations and yield." *(BAWSCA, letter, May 24, 2013 [G-BAWSCA-Sandkulla])*

Response PD-19

This comment requests more information on maintenance pumping. As stated in Chapter 3, Project Description on page 3-139, "During normal and wet years, Project wells would be operated by the SFPUC or the Partner Agencies only periodically to exercise the wells for maintenance purposes. Maintenance pumping of the Project wells would be at a rate of approximately 0.04 mgd. The Partner Agencies would pump their existing wells at a rate of approximately 1.38 mgd to 1.9 mgd for maintenance purposes." The comment is thus correct that the Project wells and Partner Agency wells are operated at different rates for maintenance pumping.

The difference in rates is due to a difference in the age of the wells, which results in different recommendations regarding the percent of time that the wells are expected to be operated during Put Periods to avoid clogging and scaling of the well screen and to exercise the pump and valves. The existing Partner Agency wells are conservatively assumed to be operated 20 percent of the time during Put Periods. The GSR well facilities would be new and constructed of stainless steel and, thus, the SFPUC's Conceptual Engineering Report (CER) recommended exercising four hours per month (CER Section 2.2.4.2). The rate of Partner Agency exercising may be modified based on actual field experience, and may be less than was assumed in the Draft EIR. It is thus not expected that the wells would need to be exercised more than is currently projected. Water from the Basin used for maintenance pumping would reduce the amount of water in the SFPUC Storage Account and would be taken into account through management of the Storage Account. Also see pages 5.16-142 through 5.16-146 in the Draft EIR for a discussion of groundwater depletion and Mitigation Measure M-HY-14 (Prevent Groundwater Depletion).

Comment PD-20: Comment related to hydrogeology of individual wells and well screening intervals and seals.

This response addresses a comment from the commenter listed below; the comment on this topic is quoted in full below this list:

- O-CLMP-Quick

"*Item 30 - Should GSR Project wells be screened and sealed based on the hydrogeology at each of the individual locations?*

The DEIR indicates that all Project wells will be sealed at 50 feet bgs. The hydrogeology of the individual wells is likely to vary significantly as indicated in the DEIR, and the well construction including screening intervals and wells seals should be based on the hydrogeology and conditions at each well location." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

Response PD-20

The comment asks if well screening and sealing should vary for each location. Wells would be drilled up to a depth of 750 feet below ground surface. The depth to the screen and seal would be based on hydrology and conditions at each well location. See Chapter 3, Project Description on page 3-125, Section 3.5.1.1 (Construction Methods for Production Wells) of the Draft EIR, which describes construction methods for production wells. In general, screens would be located 340 to 700 feet below ground surface, except for Site 16 where the proposed screen would be from 240 feet to 410 feet below ground surface (Draft EIR page 5.16-135, first full paragraph). Thus, the answer to the commenter's question is yes, the wells would be screened and sealed based on the hydrogeology at each well location.

The sanitary seal would generally be installed to a depth of 50 feet above the top of the screen. In other words, the seal would generally extend to a depth of 290 feet below ground surface, except for Site 16 where the proposed seal would extend to a depth of 190 below ground surface.

Comment PD-21: Comment related to Project pumping in the event of a drought more severe and/or more prolonged than the 8.5-year design drought.

This response addresses a comment from the commenter listed below; the comment on this topic is quoted in full below this list:

- O-CLMP-Quick

"*The DEIR fails to consider the impacts of unrestricted GSR Project and Partner Agency drawdown in the event of a drought that is more severe and/or more prolonged than the 8.5 year 'design drought':* The DEIR only considers the GSR Project's adverse impacts in the event of a modeled 8.5 year 'design drought.'[43] It fails to consider the adverse impacts that the GSR Project would have in the event of a drought that lasted longer than the modeled 8.5 year period.

[43] *See* DEIR, p. 5.16-83." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

Response PD-21

The comment requests an evaluation of impacts for a drought lasting longer than the 8.5-year design drought. However, the SFPUC has not proposed a project that would respond to a drought longer than 8.5 years, and CEQA does not require evaluation of a project which is not proposed. As indicated in the Project Objectives on page 3.3 of the Draft EIR, the Project is proposed to: "Provide a new dry-year groundwater supply for SFPUC customers and increase water supply reliability during the 8.5-year design drought cycle." The Draft EIR need not evaluate the impacts of a Project which would be designed to respond to a longer drought.

The 8.5-year drought scenario is the same 8.5-year "design drought" used in the WSIP water supply modeling conducted for the PEIR. Since the GSR Project is one of the water supply projects included in the WSIP, it is important that the GSR Project's basic description and objectives be consistent with the programmatic analysis conducted for the PEIR.

The Project would extract only as much water as calculated to be in the SFPUC Storage Account. When the Storage Account is depleted, no more water would be extracted under the Project, regardless of the length of drought.

Comment PD-22: Comment related to emergency pumping.

This response addresses a comment from the commenter listed below; the comment on this topic is quoted in full below this list:

- O-CLMP-Quick

"The DEIR also does not define the types of 'emergency' that would allow indefinite and unlimited pumping. This term must be defined and the DEIR must include objectively defined limits for emergency pumping." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

Response PD-22

The comment requests that the Draft EIR define emergencies and the limits of emergency pumping. The draft Operating Agreement for the Project defines an emergency as a "sudden, non-drought event, such as an earthquake or other catastrophic event that results in an insufficient supply of water available to all or part of a Party's service area, or to the combined SFPUC System wholesale and retail service area, for basic human consumption, firefighting, sanitation, and fire protection" (SFPUC 2012).

Emergency use would result in a corresponding debit to the volume of water stored in the SFPUC Storage Account if, as stated in the draft Operating Agreement, "the SFPUC determines, in its sole discretion, that such pumping is required in order to maintain water deliveries from the SFPUC System to its combined wholesale and retail service area at the level of service goals as may be established by the SFPUC during the Term of this Agreement (e.g., emergency, SFPUC System rehabilitation, scheduled maintenance, or malfunctioning of the SFPUC System that prevent the SFPUC from meeting water demands in its combined retail and wholesale service area at the level of service goals for the delivery of SFPUC System Water as may be established by the SFPUC during the Term of this Agreement)" (SFPUC 2012). The Project Description does not identify water volumes or pumping limits for meeting emergency needs.

All Project wells would be equipped with flow meters that would monitor and record well pumping volumes.

Comment PD-23: Comment related to Description of Project Pumping in the WSIP PEIR.

This response addresses a comment from the commenter listed below; the comment on this topic is quoted in full below this list:

- O-CLMP-Quick

"Further, while the DEIR states that project pumping can proceed at a rate of 7.23 mgd during take periods, the WSIP PEIR stated that project pumping could not exceed 6.0 mgd during take periods.[41] The DEIR fails to identify and explain the discrepancy and the basis for substantially increasing the rate of groundwater pumping.

[41] WSIP PEIR, p. 3-39 ['This additional volume of water available (storage) [61,000 af] would equate to an additional 6 mgd of delivery yield during drought years (average over 8.5-year design drought)']." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

Response PD-23

The commenter states that the PEIR indicates that the groundwater conjunctive use Project pumping could not exceed 6.0 mgd during Take Periods. This is not a correct understanding of the PEIR statement, which is repeated here in full from page 3-39:

> "The groundwater conjunctive-use program would provide up to 8,100 acre-feet per year[23] of drought supply to the SFPUC. […] The total volume of water to be banked during a succession of nondrought years is estimated to be approximately 61,000 acre-feet. This additional volume of water available (storage) would equate to an additional 6 mgd of delivery yield during drought years (average over 8.5-year design drought)."

[23] The conjunctive use program has been designed to provide an extraction capacity of approximately 8,100 acre-feet during a dry year, equivalent to about 7 mgd, over 7.5 years. While the initiation of the extraction component of the conjunctive use program would occur as the first response to anticipated drought, the realization of a drought does not typically occur until the second year of a dry sequence. Thus, in the 8.5-year design drought, the extraction component of the conjunctive use program would only occur for 7.5 years. Groundwater pumping of about 7 mgd over 7.5 years is approximately equivalent in volume to 6 mgd over 8.5 years.

Therefore, the rate of groundwater pumping in the Draft EIR (7.2 mgd over 7.5 years) is substantially equivalent to the rate presented in the PEIR (about 7 mgd over 7.5 years). The total volume of water assumed in the PEIR to be "banked" by this Project was approximately 61,000 acre-feet (af). The SFPUC Storage Account proposed by the Project would hold up to 60,500 acre-feet (af). In addition, the pumping rate in Chapter 3, Project Description of the Draft EIR is fully evaluated in the Project-specific document, which does not rely upon nor tier from the analysis of pumping in the PEIR. Therefore, no significant inconsistency between the PEIR and the Draft EIR regarding pumping rates and their evaluation exists.

Comment PD-24: Comment related to Project implementation alternatives.

This response addresses a comment from the commenter listed below; the comment on this topic is quoted in full below this list:

- O-CGC-Maddow

"Accordingly, the Club suggests that a more prudent approach to implementation of the proposed Project might be phased implementation, beginning with those portions of the proposed Project that would be located in areas where the most information now exists and where the risk to pumpers like the Club might be minimized. As more data becomes available about water quality and quantity issues and adverse consequences for other pumpers, it would appear to be good public policy for the proponents of the proposed Project to have some 'off-ramps' or 'adaptive management' milestones so that the Project could be tailored to adjust to new or unexpected consequences." *(California Golf Club, letter, June 11, 2013 [O-CGC-Maddow])*

Response PD-24

The comment suggests a phased approach to implementation of the Project. The concept of adaptive management is already incorporated in Mitigation Measure M-HY-6 (Ensure Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation), and Mitigation Measure M-HY-6 applies to operation of the Project as a whole. The approach for this mitigation is described in Response HY-15, which responds to comments on, and explains and discusses revisions to, Mitigation Measure M-HY-6. The measure includes a monitoring program, and as noted there, "If monitoring data and extrapolated trends predict that the well interference groundwater impact level would be reached within the ensuing six months due to Project operation, the SFPUC shall initiate implementation of one or more of the mitigation actions before the groundwater impact level is reached to allow sufficient time to have the most appropriate mitigation in place that would result in meeting the Performance Standard." Two of the applicable mitigation actions could include redistribution or reduction in GSR pumping, which are described in Response HY-15[2]:

Mitigation Action #1: Redistribute GSR pumping

The SFPUC would redistribute Project pumping from affected areas to other areas; however, in no case would redistribution be undertaken where the resulting groundwater levels would then decline to a level that would cause a significant well interference impact at another irrigation well. This mitigation action is expected to be an interim measure, implemented until such time as an alternate measure can be implemented that also mitigates the impact to less-than-significant levels without compromising Project objectives. The periodic analyses of data from the Irrigation Well Monitoring and Reporting Program would continue while this action is undertaken. The action would cease when the data analysis demonstrates that the Performance Standard is met without continued redistribution of GSR pumping, or, if an interim measure, until an alternative measure is in place.

Mitigation Action #2: Reduce GSR pumping

The SFPUC would reduce Project pumping (including a cessation in Project pumping) at wells in the vicinity of affected irrigation wells. This mitigation action is expected to be an interim measure, implemented until such time as an alternate measure can be implemented that also mitigates the impact to less-than-significant levels without compromising Project objectives. The periodic analyses of data from the Irrigation Well Monitoring and Reporting Program would continue while this action is undertaken. The action would cease when the data analysis demonstrates that the Performance Standard is met without continued reduction of GSR pumping, or, if an interim measure, until an alternative measure is in place.

This approach would allow the Project to be operated in an adaptive management manner to adjust to new or unexpected consequences, as requested by the comment.

[2] As described in Response HY-15, the mitigation actions from the Draft EIR have been renumbered. See Table 9.3.14-1 (Renumbering of Mitigation Actions in Mitigation Measure M-HY-6) in Section 9.3.14, Hydrology and Water Quality of this Responses to Comments document for a guide to the new numbering.

Comment PD-25: Comment related to providing a clear description of the Project.

This response addresses a comment from the commenter listed below; the comment on this topic is quoted in full below this list:

- G-BAWSCA-Sandkulla

"**1. One clear, definitive description of the Groundwater Storage and Recovery Project (Project) should be decided on and used consistently throughout the document.** The project is described multiple times and in multiple ways. One consistent description should be used that includes the following:

- Clear description of how the in-lieu recharge will work;
- Clear description of how the dry-year groundwater pumping from the Westside basin by the Project Partners results in additional water being added to the RWS (i.e., directly through adding groundwater into the RWS and also by reducing surface water user by the Project Partners, which in turn makes that water available to other RWS users;
- Which specific entities should expect to receive groundwater pumped from the Westside Basin during drought years or other uses of the Project; and
- Clarify that the Project can be used in drought years, but also under other circumstances (e.g., emergencies)." *(BAWSCA, letter, May 24, 2013 [G-BAWSCA-Sandkulla])*

Response PD-25

The comment requests that the description of the Project be clear, definitive and used consistently throughout the Draft EIR. All of the information referenced in the comment as being needed for a consistent description of the Project is presented in Chapter 3, Project Description of the Draft EIR, and is used clearly and consistently throughout the document. The commenter does not point out any inconsistencies in the description of the Project. Clarification for the items listed in the comment is provided as follows:

Clear description of how the in-lieu recharge will work

Page 3-4 of the Draft EIR describes how in-lieu recharge works:

> "The proposed Project would provide supplemental SFPUC surface water to the Partner Agencies during normal and wet years. During these years, the Partner Agencies would reduce their groundwater pumping by a comparable amount to increase the amount of groundwater in storage through natural, or in-lieu, recharge.
>
> During normal and wet years, the volume of groundwater in the South Westside Groundwater Basin would increase due to natural recharge and reduced groundwater pumping by the Partner Agencies, eventually reaching an increased storage volume of up to 60,500 af (about 20 billion gallons)."

Clear description of how the dry-year groundwater pumping from the Westside Groundwater Basin by the Project Partners results in additional water being added to the regional water system (i.e., directly through adding groundwater into the regional water system and also by reducing surface water user by the Project Partners, which in turn makes that water available to other regional water system users

Text on page 3-4 and 3-5 of the Draft EIR describes how additional water is added to the regional water system during dry years:

> "During dry years, the Partner Agencies and the SFPUC would pump the stored groundwater as needed to supplement other supplies. This new dry-year water supply would thereby increase the available water supply to all regional water system customers."

The water stored in the basin through the Project for dry year supply would be piped to the Partner Agency's distribution system and to the SFPUC Regional Distribution System. The use of the Project's stored water during dry years would result in a benefit of 7.2 mgd of dry-year supply to the regional water system.

Which specific entities should expect to receive groundwater pumped from the Westside Groundwater Basin during drought years or other uses of the Project

Page 3-6 of the Draft EIR lists the entities that would receive groundwater during drought years:

> "The SFPUC Regional Distribution System downstream of the GSR Wells would thus have a blend of surface water and groundwater during dry years that would be delivered to the City of Brisbane, the Guadalupe Valley Municipal Improvement District, the City of San Francisco, San Francisco International Airport, and possibly the City of Millbrae."

While the above-mentioned customers would directly receive groundwater pumped from the Westside Groundwater Basin, the Project would benefit all regional water system customers by increasing the amount of water available system wide as described on page 3-4 and 3-5 of the Draft EIR, as follows.

> "During normal and wet years, the volume of groundwater in the South Westside Groundwater Basin would increase due to natural recharge and reduced groundwater pumping by the Partner Agencies, eventually reaching an increased storage volume of up to 60,500 af (about 20 billion gallons). During dry years, the Partner Agencies and the SFPUC would pump the stored groundwater as needed to supplement other supplies. This new dry-year water supply would thereby increase the available water supply to all regional water system customers."

Clarify that the Project can be used in drought years, but also under other circumstances (e.g., emergencies)

Page 3-3 of the Draft EIR clearly identifies the fact that the Project can be used in emergencies, as this is listed as one of the objectives in Section 3.2 (Project Goals and Objectives): "Increase the dry-year and emergency pumping capacity of the South Westside Groundwater Basin by an average annual 7.2 mgd". Use of the Project for emergencies is also discussed on page 3-39: "In the event of a regional or local emergency or a planned/unplanned shutdown of the regional water system or of any Partner Agency distribution facility, the Project well facilities may be operated until service is restored regardless of year type (i.e., wet/normal/dry)." Use of the Project in emergencies is also described on page 3-140 in Section 3.8.1, which describes the draft Operating Agreement: "In the event of a sudden, non-drought event such as an earthquake or other catastrophic event, the Operating Committee may allow Partner Agency use of Project facilities for the duration of the emergency." Also see Response PD-22, regarding definition of emergency and emergency use.

Comment PD-26: Comment related to commenter's description of the Project.

This response addresses a comment from the commenter listed below; the comment on this topic is quoted in full below this list:

- O-CLMP-Quick

"**Project Description**

The following information concerning the proposed GSR Project was derived in its entirety from the DEIR, including its appendices and referenced documents. The proposed GSR Project would be located in San Mateo County and is sponsored by the SFPUC in coordination with its partner agencies, which include the cities of Daly City and San Bruno, and the California Water Service Company (Cal Water) in its South San Francisco service area (collectively referred to as Partner Agencies). The GSR Project includes operation of groundwater well facilities at 16 different locations in Daly City, Colma, South San Francisco, San Bruno, Millbrae, and in unincorporated San Mateo County.

The SFPUC is proposing a project to increase water supply reliability during dry years and in emergencies by increasing water storage in the South Westside Groundwater Basin during wet and normal years for subsequent recapture during dry years. The proposed GSR Project consists of the construction and operation of 16 new production wells and water treatment facilities to recover the stored groundwater. Each facility would include the construction of a groundwater production well and associated fenced enclosure or treatment building, distribution pipelines to connect the well to the existing regional water system or to the local distribution system, and overhead or underground utility connections. Most well facilities would provide disinfection and additional treatment (i.e., pH adjustment, fluoridation, and/or iron/manganese removal). In addition, the proposed GSR Project includes upgrades to the Westlake Pump Station to serve three new well facilities, including new fluoride, chlorine, and ammonia chemical storage tanks, replaced or upgraded chemical metering pumps, a resized transformer, and up to three new booster pumps to deliver the additional water into the Daly City distribution system, all of which would be located within the existing pump station building.

The Partner Agencies currently supply potable water to their retail customers through a combination of groundwater from the South Westside Groundwater Basin and purchase of SFPUC surface water. The GSR Project would provide supplemental SFPUC surface water to the Partner Agencies during normal and wet years. During normal and wet years, the Partner Agencies would reduce their groundwater pumping by a comparable amount to increase the amount of groundwater in storage through natural recharge during these periods; this is referred to as in-lieu recharge. During normal and wet years, the volume of groundwater in the South Westside Groundwater Basin would increase due to natural recharge and reduced groundwater pumping by the Partner Agencies. During dry years, the Partner Agencies and the SFPUC would pump the stored groundwater using 16 new facilities. This new dry-year water supply would be blended with water from the regional water system, and would thereby increase the available water supply to all regional water system customers. An Operating Agreement among the SFPUC and this Partner Agencies would guide overall groundwater management and surface water de liveries associated with the proposed Project.

According to the DEIR, there have been water level declines due to pumping beginning in the 1950s and 1960s that stabilized in the 1970s in the Daly City, South San Francisco, and Northern San Bruno areas. The pumping and associated water level declines resulted in 75,000 acre-feet (af) of vacated water storage. During normal and wet years, when water would be stored in the groundwater basin (put periods), the SFPUC could require the Partner Agencies to accept delivery of up to 5.52 million gallons per day (mgd) (16.9 acre-feet per day [afd]) of regional water system water in lieu of pumping a like amount of groundwater from their existing facilities. As a result of the in-lieu deliveries, up to 60,500 af of groundwater storage or put credits could accrue to the SFPUC storage account during an 8.5-year accounting period. During shortages of SFPUC system water due to drought, emergencies, or scheduled maintenance, the Partner Agencies would return to pumping from their existing wells. In addition, the SFPUC and the Partner Agencies would pump groundwater using the new wells installed by the SFPUC as part of the proposed Project (take periods) and deduct the volumes from the SFPUC storage account, at a maximum annual volume of 8, 100 af withdrawn at an average rate of 7.2 mgd (22.1 afd) for up to 8.5 years. The SFPUC would not direct pumping during these take periods unless a positive balance exists in the SFPUC storage account. When the SFPUC storage account is full, defined as 60,500 af, but there is no shortage requiring the SFPUC to pump groundwater from Project wells (hold periods), pumping could not exceed 7.6 mgd (23.3 afd) in any year of the 5-year averaging period under the terms of the proposed Operating Agreement." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

Response PD-26

The comment accurately quotes information from Chapter 3, Project Description of the Draft EIR, and therefore does not require a response.

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9.3.4 Plans and Policies

The comments and corresponding responses in this section cover topics in Chapter 4, Plans and Policies of the Draft EIR. This includes topics related to:

- PP-1, Colma Spanish/Mediterranean Architectural Requirement

Comment PP-1: Comment related to Colma Spanish/Mediterranean architectural requirement.

This response addresses a comment from the commenter listed below; the comment on this topic is quoted in full below this list:

- G-Colma-Laughlin

"*Global Comment for all Colma Sites: Spanish/Mediterranean Architectural Requirement*. The Land Use Element (pg. 5.02.13 Commercial Land Use Development Guidelines and pg. 5.02.33, Land Use Policy 5.02.3110), requires that all new buildings visible from public roads should incorporate a Spanish/ Mediterranean architectural theme. This is also a policy in the Open Space and Conservation Element. In addition, the Colma Municipal Code has a 'DR' zoning overlay for all of the sites that requires Spanish/ Mediterranean design. For the structure proposed on Site 8 and possible structures on Sites 7 and Alternate Site 17, the exteriors should incorporate Spanish/Mediterranean elements which include articulated building walls, tile roof elements, trellis, and other features." *(Colma Planning Department, letter, May 28, 2013 [G-Colma-Laughlin])*

Response PP-1

This comment expresses concern about the design of well facility sites located in Colma and compliance with Colma land use general plan policies. The discussion in Chapter 4, Plans and Policies of the Draft EIR includes a section on the *Town of Colma General Plan*. Text on page 4-10 of the Draft EIR recognizes the Town of Colma's policy regarding "incorporating a Spanish/Mediterranean architectural theme into facility designs." The SFPUC is working with the Town of Colma to modify the architectural design of Site 8 to meet the Town's Spanish/Mediterranean design requirements. The preferred configuration of Site 7 is to consolidate treatment at Site 6, which would eliminate the need for a building at Site 7. Because Site 17 is an alternate site, the building at this site has not been designed. As currently described in Chapter 3, Project Description on page 3-17 of the Draft EIR, "the buildings would be about 15 feet above finished grade and constructed of board-formed concrete and metal panels. The exterior building colors would be gray or earth tone with anti-graffiti coating." Modifications in the style of the building at Site 8 would not result in any different or more severe impacts. Please also refer to Responses AE-2 and AE-4 for additional information regarding the aesthetics of Site 8.

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9.3.5 Overview

The comments and corresponding responses in this section cover topics in Section 5.1, Overview, of the Draft EIR. These include topics related to:

- OV-1, Cumulative Projects
- OV-2, References
- OV-3, Modeling Climate Change
- OV-4, Groundwater Modeling
- OV-5, Uncertainty of Model Results

Comment OV-1: Comments providing new information on additional cumulative projects other than those presented in the Draft EIR.

This response addresses comments from the commenters listed below; each comment on this topic is quoted in full below this list:

- G-VA-Madderom
- G-Daly City-Sweetland
- O-CLMP-Quick

"A) The Draft EIS fails to recognize the fact that the two wells that are being proposed to be placed on Golden Gate National Cemetery (GGNC) property will adversely and negatively impact the environment, by eliminating VA's future ability to utilize Federally owned groundwater located below the cemetery, for cemetery irrigation needs and purposes. VA is planning to re-establish existing irrigation wells on GGNC property, in order to reduce dependence on SFPUC potable water currently being used for cemetery irrigation purposes, and to support and enhance National Cemetery Administration operations and mission of honoring and providing dignified burial services to Veterans and their families. Establishment of two SFPUC owned wells on VA national cemetery property will have significantly adverse and negative effects upon VA, including environmental impacts impinging on VA's ability to reduce the use of potable water to maintain the national cemetery grounds." *(Department of Veterans Affairs, letter, May 25, 2013 [G-VA-Madderom])*

"D) There are substantial environmental benefits that will be obtained thru VA re-establishing irrigation wells to reduce reliance on SFPUC potable water system, in lieu of SFPUC placing two wells on GGNC property. It would benefit the environment by reducing the quantity of potable water needed to maintain the national shrine appearance of the cemetery grounds, while at same time increasing the availability of SFPUC potable water to be supplied for other public uses within the SFPUC water distribution district. This benefits SFPUC and the environment, by lessening the GGNC potable water usage impact on their infrastructure, and eliminating the associated energy, chemical, processing, labor, and conveyance costs of providing potable water to GGNC for irrigation purposes. By investing in new irrigation well infrastructure and associated well operational costs, NCA will be able to reduce annual irrigation expenses, so that those cost savings can be used to benefit veterans in other ways. This is a very responsible approach to acquiring resources necessary for operation of the GGNC. It also demonstrates

NCA's prudent stewardship of taxpayer dollars, and VA being environmentally responsible, while supporting and enhancing NCA's mission of honoring and providing dignified burial services to Veterans and their families." *(Department of Veterans Affairs, letter, May 25, 2013 [G-VA-Madderom])*

"Daly City is working in conjunction with San Francisco on a Lake Merced Management Plan as part of its efforts associated with the Vista Grande Drainage Basin Improvement Project." *(Daly City Department of Water and Wastewater Resources, letter, June 10, 2013 [G-Daly City-Sweetland])*

"Cypress Lawn's planned expansion of an additional five acres will also be irrigated with groundwater from the Aquifer." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

The following comments are quoted from O-CLMP-Quick, Exhibits C and D, which present Cypress Lawn Memorial Park's proposed changes to Mitigation Measure M-HY-6 (Ensure Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation). Exhibit C provides the proposed final (i.e., clean) version of the changes, and Exhibit D provides the same revisions in ~~strike-through~~ and <u>underline</u> to indicate the suggested edits.

> "***Definition of Terms***
>
> <u>Existing or planned land use.</u> All existing and planned land uses served by irrigators' wells are related to turf irrigation. The only planned known (future) land uses are the potential expansion of the Holy Cross Cemetery to include up to an additional 30 acres of irrigated turf and the planned expansion of the Cypress Lawn Memorial Park to include an additional approximately 39 acres of irrigated turf." *(Cypress Lawn Memorial Park, letter, Exhibit C, June 11, 2013 [O-CLMP-Quick])*
>
> "***Definition of Terms***
>
> <u>Existing or planned land use.</u> All existing and planned land uses served by ~~[existing]~~ irrigators' wells are related to turf irrigation. The only planned known (future) land ~~[use is]~~ **<u>uses are</u>** the potential expansion of the Holy Cross Cemetery to include up to an additional 30 acres of irrigated turf **<u>and the planned expansion of the Cypress Lawn Memorial Park to include an additional approximately 39 acres of irrigated turf.</u>**" *(Cypress Lawn Memorial Park, letter, Exhibit D, June 11, 2013 [O-CLMP-Quick])*

Response OV-1

These comments provide new information on additional projects proposed by other parties that were not known nor included in the list of cumulative projects when the Draft EIR was published.

The U.S. Department of Veterans Affairs (VA) comment indicates that they intend to re-establish their existing irrigation wells in the future, with construction of new well infrastructure, to irrigate the Golden Gate National Cemetery (GGNC). The VA comment also provides information about the future environmental benefits of such re-establishment. As described in Chapter 3, Project Description, Section 3.4.3 (Facility Sites) of the Draft EIR, the existing VA wells are not currently in use; as noted on page 3-102 of the Draft EIR, the SFPUC had conducted preliminary discussions with local VA staff regarding "demolition of an existing, unused pump station, tank, and well located" near Site 14.

Therefore, the use of existing VA wells was not included in the groundwater analysis in the Draft EIR either as part of the modeled existing conditions or as part of the cumulative scenario. The VA comment letter provides little information upon which to base an analysis of the cumulative effects, and no additional information is publicly available to the City's knowledge. Given the lack of any existing proposal, description, or known actions, related to the re-establishment of GGNC irrigation wells, it does not appear to be a reasonably foreseeable future project. However, potential cumulative impacts are analyzed and reported here to the extent possible at the request of the commenter. Given the paucity of information provided by the VA, any analysis of the re-establishment of wells is necessarily based on reasonable assumptions based on the limited information provided by the VA comment letter. Table 5.1-3 (Projects Considered for Cumulative Impacts) and Figure 5.1-3 (Location of Projects Considered in the Cumulative Analysis) are revised as shown below. In addition, possible cumulative impacts resulting from the VA's re-establishment of their wells have been evaluated and are presented at the end of this response under headings for each environmental topic.

The City of Daly City indicates that a Lake Merced Management Plan will be prepared as part of their Vista Grande Drainage Basin Improvement Project. Preparation of a Lake Management Plan is acknowledged in Table 5.1-3 (Projects Considered for Cumulative Impacts) on page 5.1-26, in the description of the Vista Grande Drainage Basin Improvement Project. Such a plan was included in the cumulative impact analysis in the Draft EIR.

The Cypress Lawn comment indicates the cemetery intends to expand by either five acres (on page 2 of their letter) or 39 acres (on page 12 of Appendix D to their letter) and will use groundwater for irrigation of this planned expansion. Cypress Lawn has not previously indicated such an intent to the City or other public agencies, to the City's knowledge, and the amount of information provided by Cypress Lawn necessarily requires the City to make a number of speculative assumptions about the proposal. No other details, including the location of the expansion area, have been provided. Similar to the situation described above regarding re-establishment of GGNC wells, the establishment of new irrigation wells by Cypress Lawn does not appear to be a reasonably foreseeable future project. However, potential cumulative impacts are analyzed and reported here to the extent possible at the request of the commenter. Given the paucity of information provided by Cypress Lawn, the analysis is necessarily based on reasonable assumptions based on the limited information provided by the Cypress Lawn comment letter. This analysis conservatively assumes that Cypress Lawn will expand by 39 acres.

The addition of these possible cumulative projects and their analysis for cumulative impacts does not change the conclusions of the Draft EIR or add any new significant impacts or substantially more severe impacts that would not be mitigated by measures already identified. Re-circulation of the EIR is thus not required.

Draft EIR Table 5.1-3 (Projects Considered for Cumulative Impacts) and Figure 5.1-3 (Location of Projects Considered in the Cumulative Analysis) are revised as shown below. In addition, possible cumulative impacts resulting from the cemetery expansion have been evaluated and are presented below under headings for each environmental topic.

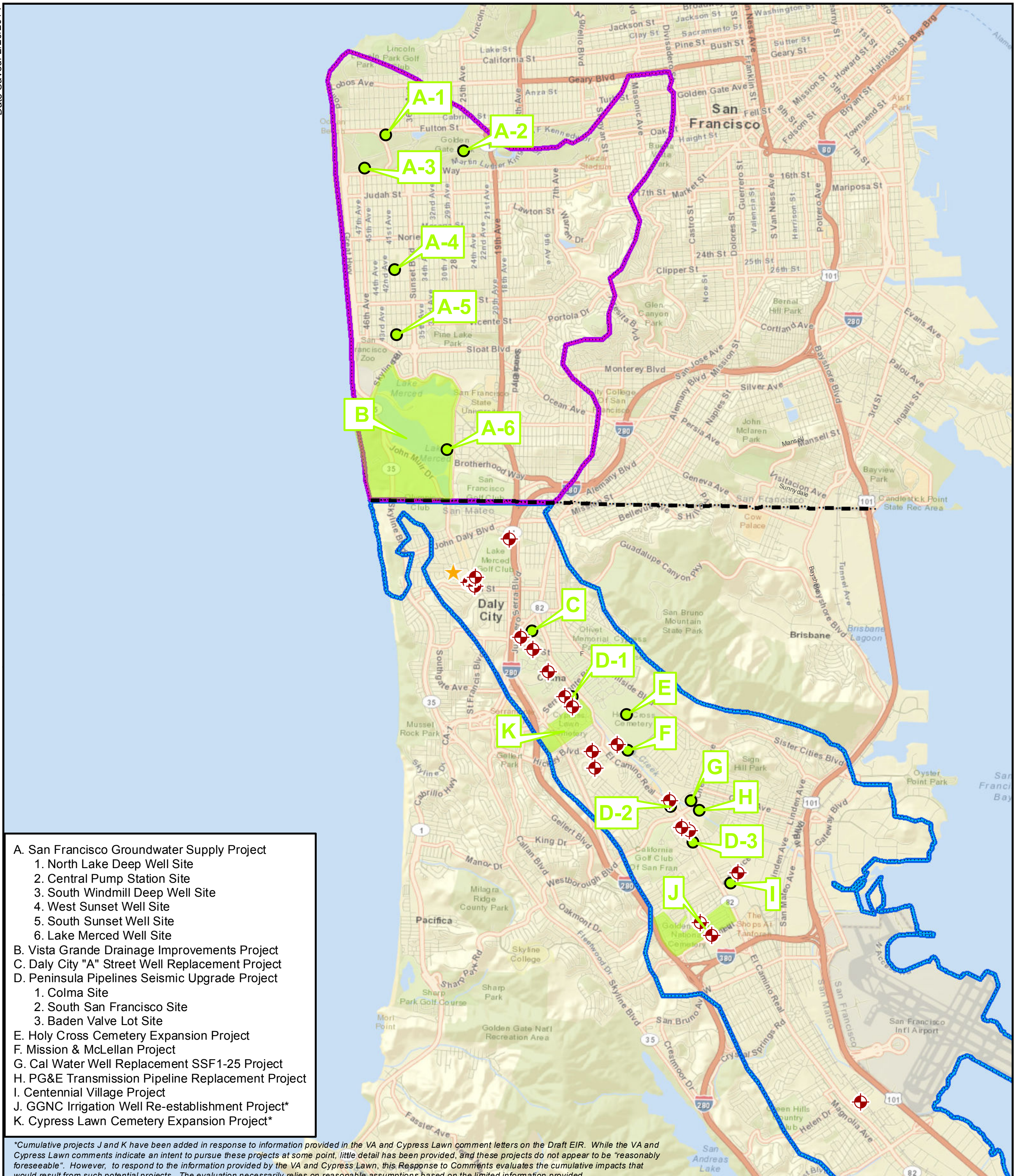
TABLE 5.1-3
Projects Considered for Cumulative Impacts

Cumulative Project No.	Project Name (Jurisdiction)	Project Description	Potential Cumulative Impact Topics	Potentially Affected Project Components/ Areas of Overlap	Estimated Construction Schedule	Approximate Distance to GSR Project
J[a]	GGNC Irrigation Well Re-establishment Project (San Bruno)	The existing irrigation wells at the GGNC would be re-established, including construction of associated well infrastructure, for ongoing irrigation of the Cemetery, which is approximately 161 acres, requiring an estimated annual average of up to 0.27 mgd to be pumped (estimate based on current water sales to the GGNC of 100 million gallons per year) (SFPUC 2011)	Construction: land use, aesthetics, population & housing, cultural resources, traffic, noise, air quality, GHG, recreation, utilities public services, biological resources, geology, hydrology and water quality, hazards and hazardous materials, energy resources Operation: aesthetics, cultural resources, noise, air quality, GHG, hydrology, hazards, energy	Well construction could potentially occur near GSR Sites 14 and 15. It is unknown whether the timing of well construction at the cemetery would overlap with the GSR Project construction. The increased pumping would be from the Westside Groundwater Basin, the same as the GSR Project.	No current known plans.	Could be immediately adjacent to Sites 14 and 15
K[a]	Cypress Lawn Cemetery Expansion (Colma)	Cypress Lawn Cemetery buildout would include an expansion of the cemetery by up to 39 acres and may require an additional 0.05 mgd to be pumped from the existing wells at the cemetery (Fugro 2012b).	Construction: land use, aesthetics, population & housing, cultural resources, traffic, noise, air quality, GHG, recreation, utilities public services, biological resources, geology, hydrology and water quality, hazards and hazardous materials, energy resources Operation: utilities and service systems, hydrology and water quality, hazards and hazardous materials, energy resources	Expansion could potentially occur near GSR Sites 8 and 17 (Alternate). It is unknown whether the timing of expansion of the cemetery would overlap with the GSR Project construction. The increased pumping would be from the Westside Groundwater Basin, the same as the GSR Project.	No current known plans.	Expansion location is unknown; assumed to occur immediately adjacent to Site 17 (Alternate), and approximately 700 feet south of Site 8, where cumulative impact, if any, would be greatest.

Note:

(a) Cumulative projects J and K have been added in response to information provided in the VA and Cypress Lawn comment letters on the Draft EIR. While the VA and Cypress Lawn comments indicate an intent to pursue these projects at some point, little detail has been provided, and these projects do not appear to be "reasonably foreseeable". However, to respond to the information provided by the VA and Cypress Lawn, this Responses to Comments document evaluates the cumulative impacts that would result from such potential projects. The evaluation necessarily relies on reasonable assumptions based on the limited information provided.

Date Saved: 2/20/2014



Legend

- Proposed Project Well Facility Sites
- Westlake Pump Station
- Cumulative Project Locations
- Cumulative Project Area
- County Boundary
- North Westside[1] Groundwater Basin
- South Westside[1] Groundwater Basin

0 0.75 1.5
Scale Miles
1 inch = 1.5 miles

N

Location of Projects Considered in the Cumulative Analysis

Regional Groundwater Storage and Recovery Project

Figure 5.1-3 REVISED

[1] The Westside Groundwater Basin has been administratively divided at the San Francisco-San Mateo County line.

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Section 5.2, Land Use

The Draft EIR concluded that construction and operation of the proposed Project could result in a cumulatively considerable contribution to cumulative impacts related to land use that would be significant and unavoidable at three sites (Sites 9, 12, and 19 [Alternate]), less than significant with mitigation at Sites 11 and 17 (Alternate), and less than significant at the remaining sites. The addition of cumulative project J (GGNC Irrigation Well Re-establishment Project) would slightly alter the analysis but would not change the conclusion that the impact would be significant and unavoidable; the only change is that the cumulative land use impact would be less than significant at one additional site, Site 15.

Daytime and nighttime construction period noise impacts at Site 14, which the Draft EIR identified as *significant and unavoidable*, and nighttime construction noise impacts at Site 15, which the Draft EIR identified as *less than significant with mitigation*, could make a considerable contribution to noise-related land use impacts if cumulative project J were to be constructed at the same time as the GSR Project Implementation of Mitigation Measures M-NO-1 (Noise Control Plan) and M-NO-3 (Expanded Noise Control Plan) would reduce noise-related land use impacts at Site 15 to *less-than-significant* levels and, therefore, the cumulative noise-related impact at Site 15 would be *less than significant with mitigation*. The potential for the GSR Project to make a considerable cumulative contribution to daytime and nighttime construction noise near Site 14 would not occur because the SFPUC would coordinate with the GGNC so that project J and the work at Site 14 are not constructed at the same time. Chapter 3, Project Description on page 3-102 of the Draft EIR is revised as follows:

> Site 14 would be located north of Sneath Lane in the GGNC in San Bruno on land owned by the U.S. Department of Veterans Affairs (VA). The site layout is shown on Figures 3-34 and 3-35. The well facility would be located on an existing SFPUC easement in the northern portion of the cemetery. The proposed Project at Site 14 includes a new production well. The Project may also include demolition of an existing, unused pump station, tank, and well located nearby within the cemetery[6]. Demolition would include closure and abandonment of the existing well according to California Well Standards and removal of the pump station, the tank, and any aboveground piping (California Department of Water Resources 1991). <u>If instead, the VA decides to re-establish an irrigation well or wells at the GGNC, the SFPUC would coordinate construction activities associated with Site 14 with the VA so that construction associated with the VA irrigation well project and work at Site 14 do not overlap.</u>
>
> [6] Following preliminary discussions with the VA, the SFPUC is including in the project description and analyses in this Draft EIR the demolition of the pump station, tank, and well. However, this work would only proceed with approval from the VA and only in connection with implementation of a well facility at Site 14.

The addition of cumulative project K (Cypress Lawn Cemetery Expansion Project) does not change the analysis and conclusions of the cumulative impacts in the Draft EIR Land Use Section. The Draft EIR already identified that construction period noise from cumulative projects could occur at Sites 8 and 17 (Alternate) and concluded that the impact would not cause significant land use disruption nor would the projects change the character of the area. Site 8 would not require nighttime noise construction, and nighttime noise impacts for Site 17 (Alternate) are *less than significant with mitigation*. Cumulative project K would not require nighttime construction. Daytime construction noise associated with construction at sites 8 and 17 (Alternate) would be reduced to *less than significant with mitigation*. As with the proposed Project, the daytime construction at the cemetery would be temporary and is not expected to rise to levels that would disrupt land use because the types of construction equipment would likely be similar to those used for typical construction projects in the area.

Impact C-LU-1 on page 5.2-39 of the Draft EIR is revised as follows:

> *Alter the character of the vicinity or disrupt or displace a land use during construction*
>
> Construction of most of the cumulative projects listed in Table 5.1-3 (Projects Considered for Cumulative Impacts) would result in construction-related traffic safety hazards, noise, dust, and equipment exhaust in the vicinity of the proposed GSR Project sites. The cumulative projects identified in Table 5.1-3 are typical construction projects that can be assumed to occasionally occur within the cumulative study area on an ongoing basis; some are public works improvement projects, some are replacement of aging water and transportation infrastructure, and some are housing and commercial development projects. Potential cumulative impacts associated with construction period noise could occur at Sites 8, 12, 17 (Alternate), and 19 (Alternate), which overlap with the Peninsula Pipeline Seismic Upgrade Project; at Sites 11, 12, and 19 (Alternate), which overlap or are adjacent to the PG&E Transmission Pipeline Replacement Project (cumulative project H); at Site 11, which is close to the Cal Water Well Replacement SSF1-25 Project (cumulative project G); ~~and~~ at Site 9, which is close to the Mission & McLellan Project (cumulative project F), at Site 15, which is located at the GGNC along with the GGNC Irrigation Well Re-establishment Project (cumulative project J); and at Sites 8 and 17 (Alternate), which are located near the Cypress Lawn Cemetery Expansion Project (cumulative project K). Although Site 14 is also located at the GGNC, as it is in the vicinity of one of the former GGNC irrigation wells, if GGNC implements project J, the SFPUC would not construct in the Site 14 area at the same time as project J, and no cumulative impact would occur. (see Chapter 3, Project Description, under the heading Site 14: Golden Gate National Cemetery). Land use disruption at Sites 9, 12, and 19 (Alternate) is considered a *significant and unavoidable* impact of the GSR Project because of nighttime construction noise. No nighttime construction is needed at Site 8 because the well has already been drilled at that location, and nighttime noise impacts are *less than significant with mitigation* at Sites 11, 15, and 17.
>
> Although construction of these projects could overlap with construction of the proposed GSR Project, cumulative impacts related to the existing character of the vicinity would be *less than significant*. Nighttime construction would occur in the same vicinity for both GSR Site 11 and the Cal Water Well Replacement SSF1-25 Project, but with mitigation the GSR

Project's contribution to cumulative land use impacts would be *less than significant*. None of the other cumulative projects would require nighttime construction near a GSR Project facility site. Daytime construction noise is less than significant at Sites 8 and 17 (Alternate), and can be reduced to less than significant with mitigation at Sites 11, 15, and 19 (Alternate). As with the proposed Project, the daytime construction activities associated with cumulative projects would be temporary and are not expected to rise to levels that would disrupt land use because the types of construction equipment and vehicles would be similar to those used for typical construction projects throughout the study area. Sites 9, 12, and 19 (Alternate) would result in significant disruptions to land use due to *unavoidable significant* impacts from daytime construction noise. Mitigation Measures M-NO-1 and M-NO-3 would reduce construction noise impacts, but the impact would remain significant at those sites. Combined with impacts of construction of cumulative projects at these sites, the GSR could result in cumulatively considerable contribution to a cumulative land use impact related to the existing character of the vicinity (*significant and unavoidable*).

The following text changes are required as a result of the revised cumulative impact analysis and mitigation measure:

Table 5.2-2 (Summary of Impacts – Land Use) on Draft EIR page 5.2-19 is revised as follows for Site 15 under Impact C-LU-1:

TABLE 5.2-2
Summary of Impacts – Land Use

Sites	Impact C-LU-1: Construction and operation of the proposed Project could result in a cumulatively considerable contribution to cumulative impacts related to land use.
Site 15	LSM

Appendix C - Summary of Impacts and Mitigation Measures for the Groundwater Storage and Recovery Project page Appendix C-1 from the Draft EIR is revised as follows. This change is made in response to this comment. There are also additional changes in response to other comments, and these changes are shown in Chapter 9.5.

APPENDIX C
Summary of Impacts and Mitigation Measures for the Groundwater Storage and Recovery Project

Impact Statement	Site 15	Mitigation
Impact C-LU-1. Construction and operation of the proposed Project could result in a cumulatively considerable contribution to cumulative impacts related to land use.	LSM	**M-NO-1: Noise Control Plan (1, 3, 4, 5, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17 [Alternate], 18 [Alternate], and 19 [Alternate])** **M-NO-3: Expanded Noise Control Plan (1, 3, 4, 5, 9, 10, 11, 12, 13, 14, 15, 16, 17 [Alternate], 18 [Alternate], and 19 [Alternate])** **M-NO-5: Operational Noise Control Measures (Sites 1, 5 [On-site Treatment], 7 [On-site Treatment], 9, 12, 18 [Alternate], and the Westlake Pump Station)**

Section 5.3, Aesthetics

The Draft EIR concluded that the proposed Project could make a considerable contribution to cumulative impacts related to scenic resources and visual character, which would be mitigated to a less-than-significant level with implementation of identified mitigation measures. The addition of cumulative project J (GGNC Irrigation Well Re-establishment Project) and cumulative project K (Cypress Lawn Cemetery Expansion) slightly alters the analysis but does not change the conclusions of cumulative impacts in the Draft EIR for Section 5.3, Aesthetics. The addition of cumulative project K and cumulative project J would result in two additional sites, Sites 14 and 15, contributing considerably to the cumulative impact; the contribution of both would be mitigated through the implementation of mitigation measures identified in the Draft EIR.

The VA, in its comment letter, described cumulative project J as a plan "to re-establish existing irrigation wells on GGNC property." For the purposes of this analysis, it is therefore assumed that the re-establishment of wells would have short-term visual impacts during construction, but, because the wells already exist at the GGNC, there would be no substantial change in the visual environment associated with operation of the existing wells. The Peninsula Pipelines Seismic Upgrade (PPSU) Project Colma Site (cumulative project D-1) would be visible from the vicinity of GSR Sites 8 and 17 (Alternate). The Cypress Lawn expansion would also be visible from Sites 8 and 17 (Alternate), and construction at all three sites would be temporary. Construction of the GSR Project at Sites 8 and 17 (Alternate) would have less than significant impacts on visual quality from construction activities, as would construction at Cypress Lawn.

Impact C-AE-1 on pages 5.3-102 through 5.3-103 of the Draft EIR is revised as follows:

Scenic vistas, scenic resources, and visual character

The construction area of some of the cumulative projects listed in Table 5.1-3 (Projects Considered for Cumulative Impacts) would be visible to viewers who can also view proposed GSR Project construction areas (in the event that both the proposed GSR Project and cumulative projects were constructed at the same time): the Peninsula Pipelines Seismic Upgrade (PPSU) Project Colma Site (cumulative project D-1) and the Cypress Lawn Cemetery Expansion (cumulative project K) would be visible from the vicinity of GSR Sites 8 and 17 (Alternate); the PPSU Project South San Francisco Site (cumulative project D-2) would be visible from the vicinity of GSR Sites 12 and 19 (Alternate); the Mission & McLellan Project (cumulative project F) would be visible from the vicinity of GSR Site 9; the PG&E Transmission Pipeline Replacement Project (cumulative project H) would be visible from the vicinity of GSR Sites 11, 12, and 19 (Alternate)~~,~~; the GGNC Irrigation Well Re-establishment Project (cumulative project J) may be visible from the vicinity of GSR sites 14 and 15; and the Centennial Village Project (cumulative project I) would be visible from the vicinity of the pipeline construction areas for proposed GSR Site 13 (see Figures 5.3-5, 5.3-6, 5.3-7, 5.3-8, and 5.3-10 for photographs of these locations). None of these areas of visual overlap include scenic corridors, scenic vistas, or scenic resources, except construction at the GGNC, portions of which would be visible from Sneath Lane, a locally designated scenic roadway. No cumulative projects have been identified that would be visible to viewers who would also be in view of construction areas at Sites 1, 2, 3, 4, 5, 6, 7, 10, ~~14, 15,~~16, or 18 (Alternate).

As described in Impact AE-1, construction of the GSR Project would have less-than-significant impacts at GSR Sites 8, 9, 11, 17 (Alternate), and 19 (Alternate), and significant impacts at Sites 12, ~~and~~ 13, 14, and 15 due to some degradation of visual quality from the construction staging areas, equipment, materials storage areas, and tree removal. Depending on the extent of overlap among the construction schedules, the cumulative impacts related to visual quality during construction could be *significant*. Therefore, the GSR Project's contribution to this cumulative impact could be cumulatively considerable given that the GSR Project would require construction staging areas, construction equipment, and material storage in areas with high visual quality.

However, as discussed in Impact AE-1, the GSR Project's impacts related to construction-period impacts on the visual quality in the vicinity of Sites 12, ~~and~~ 13, 14, and 15 would be reduced to a less-than-significant level with implementation of Mitigation Measure M-AE-1a (Site Maintenance), Mitigation Measure M-AE-1b (Tree Protection Measures), ~~and~~ Mitigation Measure M-AE-1c (Develop and Implement a Tree Planting Plan at Site 12), Mitigation Measure M-AE-1d (Construction Area Screening at Site 15), and Mitigation Measure M-CR-1a (Minimize Construction-related Impacts on Elements of the Historical Resource at Site 14), (see Impact AE-1, above, for description). Implementation of these mitigation measures would ensure that the construction area is maintained by storing construction materials and equipment generally away from public view and by removing construction debris promptly at regular intervals, ~~and~~ by minimizing tree removal ~~is minimized~~, by screening construction areas, and by implementing measures to protect historical resources. With implementation of these mitigation measures, the GSR Project's contribution to cumulative impacts related to visual quality during construction would not be cumulatively considerable (*less than significant*).

New sources of substantial light

If constructed at the same time, the construction area of some of the cumulative projects listed in Table 5.1-3 (Projects Considered for Cumulative Impacts) would be visible to viewers who can also view proposed GSR Project construction areas, as listed above. None of the cumulative projects listed above under the heading of *Scenic vistas, scenic resources, and visual quality* would be expected to require nighttime construction for which lighting would be required. Although not likely, construction staging areas for these cumulative projects may require nighttime lighting.

As described in Impact AE-2, the GSR Project would have less-than-significant impacts with regard to the creation of new sources of substantial light at GSR Sites 9, 12, 14, 15, and 19 (Alternate), because a lighting plan for those sites that require nighttime construction would be prepared and implemented, ensuring that lighting would be directed downward, covering only the area to be occupied by the drilling rig.

Depending on the extent of overlap between the construction schedules for the projects listed in Table 5.1-3 (Projects Considered for Cumulative Impacts), implementation of these projects together with the proposed GSR Project at Sites 9, 12, 14, 15, and 19 (Alternate) could result in a cumulative impact relative to the creation of new sources of substantial light. However, these impacts would be temporary (only as-needed during construction) and brief (only during drilling for approximately seven days and up to 48 hours for pump testing). Due to the limited need for lighting on the GSR Project and the controls required in the GSR Project's lighting plan, the potential cumulative impact resulting from the creation of new sources of substantial light associated with construction-related activities would be *less than significant*.

Operation

Scenic vistas, scenic resources, and visual character

~~Two~~ Three of the cumulative projects listed in Table 5.1-3 (Projects Considered for Cumulative Impacts) would be visible to viewers who can also view proposed GSR Project permanent facilities at Sites 9, ~~and~~ 13, 14, and 15. The Mission & McLellan Project (cumulative project F) and Site 9 would be visible to viewers at and in the area of the Verano Condominiums. The Centennial Village Project (cumulative project I) and Site 13 would be visible to those traveling along South Spruce Avenue. The GGNC Irrigation Well Re-establishment Project (cumulative project J) and Site 14 would be visible within the GGNC and possibly from residences along Greenwood Drive, and cumulative project

J and Site 15 may both be visible from the GGNC and Sneath Lane. These areas of visual overlap would not include scenic corridors, scenic vistas, and scenic resources, except for cumulative project J and Site 15 along Sneath Lane, a locally designated scenic roadway. Depending on the extent of overlap of cumulative project J and Sites 14 and 15, cumulative impacts on the visual character of the GGNC could be significant. However, as discussed in Impact AE-3, the GSR Project's impacts on visual quality at Sites 14 and 15 would be reduced to a less-than-significant level with implementation of Mitigation Measures M-CR-5a (Minimize Facilities Siting Impacts on Elements of the Historical Resource at Site 14) and M-CR-5b (Minimize Facilities Siting Impacts on Elements of the Historical Resource at Site 15). Because cumulative project J involves re-establishment of existing wells, once construction is complete, the operation of the existing wells is not expected to change the current visual character of the GGNC. With implementation of these mitigation measures, the GSR Project's contribution to cumulative impacts related to visual quality during operation would not be cumulatively considerable (*less than significant*).

Section 5.4, Population and Housing

The Draft EIR concluded that the proposed Project would not result in Project-related impacts to population and housing. The addition of cumulative projects J (GGNC Irrigation Well Re-establishment Project) and K (Cypress Lawn Cemetery Expansion) does not alter the analysis or conclusions of cumulative impacts in the Draft EIR for Section 5.4, Population and Housing. Implementation of the GSR Project would not contribute considerably to significant cumulative impacts relative to population and housing, considering that any such contribution would only be the result of the secondary and indirect impacts of growth that may be attributable to the proposed GSR Project within the context of the WSIP, as described in Chapter 6, Other CEQA Issues, Section 6.1 (Growth Inducement) of the Draft EIR.

Section 5.5, Cultural and Paleontological Resources

The Draft EIR concluded that construction of the proposed Project could make a considerable contribution to an adverse change in the significance of an historic resource, which could be mitigated to a less-than-significant level. The addition of cumulative projects J (GGNC Irrigation Well Re-establishment Project) and K (Cypress Lawn Cemetery Expansion) would slightly alter the analysis but not the conclusions of cumulative construction impacts in the Draft EIR for Section 5.5, Cultural and Paleontological Resources. Cumulative project K could result in operational impacts at the Cypress Lawn Cemetery, however, operation of GSR facilities would have no effect on historic resources at the Cypress Lawn Cemetery, so there would be no cumulative impact on the Cypress Lawn Memorial Park District. Cumulative project J involves re-establishment of existing wells and is thus not expected to result in operational impacts to historic resources at the GGNC. Also, as discussed in Impact CR-5, the GSR Project's operational impacts on historical resources at Sites 14 and 15 would be reduced to a less-than-significant level with implementation of Mitigation Measures M-CR-5a (Minimize Facilities Siting Impacts on Elements of the Historical Resource at Site 14) and M-CR-5b (Minimize Facilities Siting Impacts on Elements of the Historical Resource at Site 15). With implementation of these mitigation measures, the GSR Project's contribution to cumulative impacts related to historical resources at the GGNC would not be cumulatively considerable (*less than significant*).

Impact C-CR-1 on page 5.5-64 of the Draft EIR is revised as follows:

Historical Resources

~~One~~ Two of the cumulative projects listed in Table 5.1-3 (Projects Considered for Cumulative Impacts), the Holy Cross Expansion project (cumulative project E) and the Cypress Lawn Cemetery Expansion project (cumulative project K), could cause an adverse change in the significance of a historical resource. As shown in Table 5.5-5 (Historical Architectural Resources in the Record Search Area, but Outside the Architectural C-APE), the Holy Cross Cemetery District and Cypress Lawn Memorial Park District ~~is a~~ are National Register-eligible districts. The Holy Cross Expansion project and the Cypress Lawn Expansion project could have a direct and significant impact on historical resources if the projects were to change the character of the cemeteries~~y~~ in a way that would compromise ~~its~~ their eligibility to be listed in the National Register, their existing historical resources, or nearby historical resources. However, construction of GSR facilities at Sites 8 and 17 (Alternate), the closest sites to the Holy Cross and Cypress Lawn cemeteries~~y~~, would have no effect on historic resources, so there would be no cumulative impact on the Holy Cross Cemetery District or the Cypress Lawn Memorial Park District. There are no other cumulative projects with the potential to affect historical resources (*no impact*).

Section 5.6, Transportation and Circulation

The Draft EIR concluded that construction and operation of the proposed Project could result in a cumulatively considerable contribution to cumulative impacts related to transportation and circulation, which could be reduced to a less-than-significant level with mitigation. The addition of cumulative projects J (GGNC Irrigation Well Re-establishment Project) and K (Cypress Lawn Cemetery Expansion) slightly alters the analysis of cumulative impacts in the Draft EIR for Section 5.6, Transportation and Circulation but does not alter the conclusions of cumulative impacts in the Draft EIR relative to congestion, because the roadways near cumulative project J and K would continue to function at an acceptable level of service in the cumulative scenario, such that there would be no significant cumulative impact on transportation and circulation, and with implementation of Mitigation Measure M-C-TR-1 (Coordinate Traffic Control Plan with other SFPUC Construction Projects), the contribution of the Project to cumulative impacts on emergency access and alternative modes of transportation would be less-than-cumulatively considerable (*less than significant*).

Impact C-TR-1 on page 5.6-60 of the Draft EIR is revised as follows:

Conflict with a plan or policy regarding performance of the traffic system

Most of the cumulative projects listed on Table 5.1-3 (Projects Considered for Cumulative Impacts), in Section 5.1, Overview, Section 5.1.7 (Cumulative Impacts) would result in construction-related incremental vehicle trip additions to the local roadways in northern San Mateo County if construction of these projects were to occur at the same time as construction of the GSR Project. For example, the SFPUC's Peninsula Pipelines Seismic Upgrade Project would, at its Colma and South San Francisco sites, as well as the Baden Valve Lot staging area (cumulative projects D-1, D-2, and D-3, respectively), use similar construction traffic routes as GSR Sites 8, 12, 17 (Alternate), and 19 (Alternate). The Cypress Lawn Cemetery Expansion (cumulative project K) could also potentially use similar construction traffic routes as GSR Site 17 (Alternate). The Daly City "A" Street Well Replacement Project (cumulative project C) could be constructed during the same timeframe as the GSR Project and may overlap with construction of GSR Sites 5, 6, and 7. The Cal Water Well Replacement SSF1-25 Project (cumulative project G) and the PG&E Transmission Pipeline Replacement Project in South San Francisco (cumulative project H) could overlap GSR construction at Sites 11, 12, and 19 (Alternate), and the construction access routes may be the same for both projects. Also, the GGNC Irrigation Well Re-establishment Project (cumulative project J) would use similar construction traffic routes as GSR Sites 14 and 15. In addition to the projects listed, it can be reasonably assumed that traffic volumes throughout the cumulative study area may increase slightly by the time GSR Project construction occurs in 2014 and 2015.

Table 5.6-9 (Cumulative Traffic Peak Hour Construction Trips) on pages 5.6-63 and 5.6-64 of the Draft EIR is revised as follows to account for peak hour construction traffic trips from cumulative projects J and K.

TABLE 5.6-9
Cumulative Traffic Peak Hour Construction Trips

Local Roadway Segment	GGNC Irrigation Well Re-establishment Project (J)[b]	Cypress Lawn Cemetery Expansion Project (K)[b]	Total Peak Hour Trips
Collins Avenue from Serramonte Boulevard to El Camino Real	6	---	~~12~~ 18
Sneath Lane from I-280 to El Camino Real	---	5	5

Table 5.6-10 (Local Roadway Project plus Cumulative Projects Level of Service) on pages 5.6-65 and 5.6-66 of the Draft EIR is revised as follows to reflect updated levels of service calculations with the addition of construction traffic from cumulative projects J (GGNC Irrigation Well Re-establishment Project) and K (Cypress Lawn Cemetery Expansion).

TABLE 5.6-10
Local Roadway Project plus Cumulative Projects Level of Service

Roadway Segment	Closest Project Facility Sites	Existing plus Project[a]				Existing plus Project plus Cumulative Projects[b]				Local LOS Standard [c]
		V/C Ratio		LOS		V/C Ratio		LOS		
		A.M. Peak	P.M. Peak	A.M. Peak	P.M. Peak	A.M. Peak	P.M. Peak	A.M. Peak	P.M. Peak	
Collins Avenue from Serramonte Boulevard to El Camino Real	17 (Alt)	0.24	0.27	A	A	0.27~~6~~	0.30	A	A	D
Sneath Lane from I-280 to El Camino Real	14, 15	0.51	0.51	A	A	0.54	0.54	A	A	D

Section 5.7, Noise and Vibration

The Draft EIR concluded that construction and operation of the proposed Project could result in a cumulatively considerable contribution to cumulative impacts related to noise. The addition of cumulative projects J (GGNC Irrigation Well Re-establishment Project) and K (Cypress Lawn Cemetery Expansion) alters the analysis but not the conclusions of cumulative impacts in the Draft EIR for Section 5.7, Noise and Vibration. The Draft EIR concluded that noise impacts from the proposed Project would make a significant and unavoidable contribution to cumulative noise impacts at two sites, Sites 12 and 19 (Alternate), and less-than-significant impacts with mitigation at nine sites. The addition of cumulative project J (GGNC Irrigation Well Re-establishment Project) would result in a cumulative noise impact at one additional site, Site 15, which would be reduced to *less than significant with mitigation*.

Daytime and nighttime construction period noise impacts at Site 14, which the Draft EIR identified as significant and unavoidable, and nighttime construction noise impacts at Site 15, which the Draft EIR identified as less than significant with mitigation, could make a considerable contribution to noise impacts if cumulative project J were to be constructed at the same time as the GSR Project. Implementation of Mitigation Measures M-NO-1 (Noise Control Plan) and M-NO-3 (Expanded Noise Control Plan) would reduce noise-related land use impacts at Site 15 to less-than-significant levels and, therefore, the cumulative noise impact at Site 15 would be less than significant with mitigation. The potential for the GSR Project to make a considerable cumulative contribution to daytime and nighttime construction noise near Site 14 would not occur because one of the wells that might be re-established under project J (GGNC Irrigation Well Re-establishment Project) is located at Site 14, and the SFPUC would coordinate with the GGNC so that cumulative project J and the work at Site 14 are not constructed at the same time. Thus, no cumulative impact would occur at Site 14 (see Project Description, at page 3-102, as revised earlier in this Response).

Impact C-NO-1 on pages 5.7-95 through 5.7-98 of the Draft EIR is revised as follows:

- **Colma**. Peninsula Pipelines Seismic Upgrade Project (PPSU) at the Colma Site (cumulative project D-1), ~~and~~ Holy Cross Cemetery Expansion Project (cumulative project E), and Cypress Lawn Cemetery Expansion (cumulative project K). Construction at cumulative project D-1 and K may conflict with the Colma Municipal Code, but construction at cumulative project E (Holy Cross Cemetery Expansion) would be located far enough away from residences that it likely would not conflict with the Town's Municipal Code.

- **San Bruno**. GGNC Irrigation Well Re-establishment Project (cumulative project J). Construction at cumulative project J could conflict with the San Bruno Municipal Code, which regulates the maximum noise levels in residential zones.

The cumulative projects listed above are in proximity to Sites 5, 8, 9, 11, 12, 13, 14, 15, 17 (Alternate), and 19 (Alternate), all of which except for Sites 5 and 15 have potentially significant noise impacts during construction. For Site 14, no cumulative effects would occur because construction would not occur at the same time as cumulative project J. For the other sites, ~~Therefore,~~ cumulative impacts related to exposure of people to noise levels in excess of standards established by local general plan or noise ordinance, or applicable standards of other agencies would be *significant*, and the GSR Project's contribution could be cumulatively considerable, given that GSR Sites 8, 9, 11, 12, 13, 17 (Alternate), and 19 (Alternate) would have *significant* construction noise impacts.

Of the GSR sites that would be in close proximity to cumulative projects within San Bruno, GSR Project construction would result in a less-than-significant impact at Site 15 related to conflicts with the San Bruno noise ordinance. Cumulative impacts could be significant, and the GSR Project's contribution to the identified significant cumulative noise impact in San Bruno could be cumulatively considerable. However, as discussed in Impact NO-1, the GSR Project's construction impacts related to conflict with the San Bruno noise ordinance would be reduced to a less-than-significant level with implementation of Mitigation Measure M-NO-1 (Noise Control Plan) (see Impact NO-1, above, for description). Implementation of this mitigation measure would ensure that construction activities (other than well drilling and testing) would occur during allowable hours and that noise levels from construction would be reduced below the noise ordinance threshold during construction of the GSR Project. With implementation of this mitigation measure, the GSR Project's contribution to cumulative impacts related to a conflict with the San Bruno noise ordinance would not be cumulatively considerable (*less than significant*).

Temporary increase in ambient noise levels

Of the GSR sites in close proximity to cumulative projects, GSR Project-related daytime and nighttime construction (as discussed under Impact NO-3) would cause *less-than-significant* temporary noise impacts at Site 8 and *significant* impacts at Sites 5, 9, 11, 12, 13, 14, 15, 17 (Alternate), and 19 (Alternate). For Site 14, no cumulative effects would occur because construction would not occur at the same time as cumulative project J. In the case of other listed sites, it is assumed that construction of some of the cumulative projects listed in Table 5.1-3 (Projects Considered for Cumulative Impacts) would also result in a substantial temporary increase in ambient noise levels in the Project vicinity above levels existing without these cumulative projects.

Construction of the proposed GSR facilities at Site 15 would cause significant temporary noise impacts during the nighttime construction activities by increasing noise levels at the nearest residences of up to 58 dBA which would exceed the nighttime sleep interference threshold. However, as discussed in Impact NO-3, the GSR Project's construction-related noise impacts at Site 15 would be reduced to a less-than-significant level with implementation of Mitigation Measures M-NO-1 (Noise Control Plan) and M-NO-3 (Expanded Noise Control Plan) (see Impact NO-3, above, for description), and the Project's contribution to cumulative impacts related to noise during construction at Site 15 would not be cumulatively considerable *(less than significant).*

The following Draft EIR text changes are required as a result of the revised cumulative impact analysis and recommendation for mitigation measures.

Table 5.7-13 (Summary of Impacts – Noise and Vibration) on page 5.7-30 is revised as follows for Site 15 under Impact C-NO-1:

TABLE 5.7-13
Summary of Impacts – Noise and Vibration

	Cumulative
Site	**Impact C-NO-1: Construction and operation of the proposed Project could result in a cumulatively considerable contribution to cumulative impacts related to noise.**
Site 15	LSM

Appendix C - Summary of Impacts and Mitigation Measures for the Groundwater Storage and Recovery Project page Appendix C-2 from the Draft EIR is revised as follows:

APPENDIX C
Summary of Impacts and Mitigation Measures for the Groundwater Storage and Recovery Project

Impact Statement	Site 15	Mitigation
Impact C-NO-1. Construction and operation of the proposed Project could result in a cumulatively considerable contribution to cumulative impacts related to noise.	LSM	M-NO-1: Noise Control Plan (1, 3, 4, 5, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17 [Alternate], 18 [Alternate], and 19 [Alternate]) M-NO-3: Expanded Noise Control Plan (1, 3, 4, 5, 9, 10, 11, 12, 13, 14, 15, 16, 17 [Alternate], 18 [Alternate], and 19 [Alternate]) M-NO-5: Operational Noise Control Measures (Sites 1, 5 [On-site Treatment], 7 [On-site Treatment], 9, 12, 18 [Alternate], and the Westlake Pump Station)

Section 5.8, Air Quality

The Draft EIR concluded that construction and operation of the proposed Project could result in a cumulatively considerable contribution to cumulative impacts related to air quality but this impact would be reduced to a less-than-significant level with mitigation. The addition of cumulative projects J (GGNC Irrigation Well Re-establishment Project) and K (Cypress Lawn Cemetery Expansion) does not alter the analysis or conclusions of cumulative construction impacts in the Draft EIR for Section 5.8, Air Quality, because 1) the cumulative impact for construction-related criteria pollutant emissions is considered significant at all sites, and implementation of Mitigation Measures M-AQ-2a (BAAQMD Basic Construction Measures) and M-AQ-2b (NO_x Reduction during Construction of Alternate Sites) would reduce fugitive dust emissions and NO_x emissions to less-than-cumulatively considerable (less than significant) levels; and 2) cumulative projects J and K are not located within 1,000 feet of the maximally exposed individual and therefore would not affect the construction-related health risk assessment.

Similarly, the addition of cumulative projects J (GGNC Irrigation Well Re-establishment Project) and K (Cypress Lawn Cemetery Expansion) does not alter the analysis or conclusions of cumulative operational air quality impacts in the Draft EIR because 1) the significance thresholds applicable to operational emissions represent the levels at which a project's individual emissions of criteria pollutants and precursors would result in a cumulatively considerable contribution to the San Francisco Bay Area Air Basin's existing air quality violations, and 2) the GSR Project's operational emissions would not be affected by the addition of cumulative projects J and K and would not exceed the significance thresholds, and, therefore, cumulative impacts relative to operational emissions would not be cumulatively considerable (*less than significant*).

Section 5.9, Greenhouse Gas Emissions

The Draft EIR concluded that the proposed Project would not result in a cumulatively considerable contribution to greenhouse gas (GHG) emissions. The addition of cumulative projects J (GGNC Irrigation Well Re-establishment Project) and K (Cypress Lawn Cemetery Expansion) does not alter the analysis or conclusions of cumulative impacts in the Draft EIR for Section 5.9, Greenhouse Gas Emissions, because while cumulative projects J and K would increase the cumulative impact of regional and statewide GHG emissions, the contribution of GHG emissions from GSR Project construction would be temporary in nature and extremely small in terms of both the statewide and Bay Area annual GHG emissions, and would therefore not be cumulatively considerable. In addition, operation of the GSR Project would not cause an increase in GHG emissions, because the Partner Agency wells would use less electricity from Pacific Gas and Electric Company (PG&E) over the long-term, and the new GSR wells would use hydroelectrically generated electricity from the SFPUC Power Enterprise, as explained in the Draft EIR on page 5.9-10. Therefore, the GSR Project's contribution to cumulative GHG emissions and associated climate change impacts would not be cumulatively considerable (*less than significant*).

Section 5.10, Wind and Shadow

The Draft EIR concluded that the proposed Project would have no impacts related to wind and shadow. The addition of cumulative projects J (GGNC Irrigation Well Re-establishment Project) and K (Cypress Lawn Cemetery Expansion) does not alter this conclusion.

Section 5.11, Recreation

The Draft EIR concluded that the proposed Project would not result in significant cumulative impacts on recreational resources. The addition of cumulative projects J (GGNC Irrigation Well Re-establishment Project) and K (Cypress Lawn Cemetery Expansion) does not alter the analysis or conclusions of cumulative impacts in the Draft EIR for Section 5.11, Recreation, because the cumulative projects are not located on or near recreational resources and would not result in additional cumulative recreation impacts.

Section 5.12, Utilities and Service Systems

The Draft EIR concluded that the proposed Project could result in a cumulatively considerable contribution to cumulative impacts related to utilities and service systems, but this impact would be reduce to less-than-significant levels with mitigation. The addition of cumulative projects J (GGNC Irrigation Well Re-establishment Project) and K (Cypress Lawn Cemetery Expansion) does not alter the analysis or conclusions of cumulative impacts in the Draft EIR for Section 5.12, Utilities and Service Systems. Cumulative projects J and K would be located in the same geographic area as the GSR Project and would likely include ground disturbing activities. Therefore, these cumulative projects would likely contribute to the cumulative construction-related utility disruption, worker safety, and waste management impacts identified in the Draft EIR. The addition of these two cumulative projects would not increase the GSR Project's contribution, because the mitigation measures identified in the Draft EIR sufficiently reduce GSR Project impacts to less-than-significant levels by requiring utility identification and notification, worker safety measures, and a waste management plan, such that impacts are not cumulatively considerable (*less than significant*). No additional cumulative impacts would occur.

Section 5.13, Public Services

The Draft EIR concluded that the proposed Project would have no impacts related to public services. The addition of cumulative projects J (GGNC Irrigation Well Re-establishment Project) and K (Cypress Lawn Cemetery Expansion) does not alter this conclusion.

Section 5.14, Biological Resources

The Draft EIR concluded that the proposed Project could result in a cumulatively considerable contribution to cumulative impacts related to biological resources, but this impact would be reduced to less-than-significant levels with mitigation. Because cumulative project J involves re-establishment of existing wells, it is not expected to have a significant impact on biological resources. The addition of cumulative project K (Cypress Lawn Cemetery Expansion) could result in additional cumulative construction impacts, within the same geographic area as the GSR Project, to special-status birds, migratory birds, and special-status bats if removal of trees or structures were required. However, the addition of cumulative project K does not alter the analysis or conclusions of cumulative impacts in the Draft EIR for Section 5.14, Biological Resources. Implementation of mitigation measures would reduce the GSR Project's contribution to cumulative impacts on biological resources by requiring protection measures for special-status birds, migratory birds, and special-status bats, such that the GSR Project's contribution to cumulative impacts on biological resources would not be cumulatively considerable (*less than significant*).

Section 5.15, Geology and Soils

The Draft EIR concluded that the proposed Project would not result in significant cumulative impacts on recreational resources. Because of the localized nature of the geologic and soils impacts, the addition of cumulative projects J (GGNC Irrigation Well Re-establishment Project) and K (Cypress Lawn Cemetery Expansion) does not alter the analysis or conclusions of cumulative impacts in the Draft EIR for Section 5.15, Geology and Soils.

Section 5.16, Hydrology and Water Quality

The Draft EIR concluded that the proposed Project could result in a cumulatively considerable contribution to impacts relative to surface water hydrology and water quality associated with project construction, well interference, beneficial uses of surface waters, and groundwater depletion. The addition of cumulative projects J and K (GGNC Irrigation Well Re-establishment Project and Cypress Lawn Cemetery Expansion) slightly modifies the analysis but not the conclusions of cumulative impacts in the Draft EIR for Section 5.16, Hydrology and Water Quality. See Response HY-15 for a discussion of revisions in the conclusion related to cumulative well interference impacts, which is revised to less than significant with mitigation.

Impact C-HY-1 Surface Water

<u>Degradation of Water Quality</u>

The addition of cumulative project J (GGNC Irrigation Well Re-establishment Project) and cumulative project K (Cypress Lawn Cemetery Expansion) would not change the cumulative impacts analysis in the Draft EIR for surface water quality and sedimentation. Because cumulative project J involves re-establishment of existing wells, it is not expected to have a significant impact on surface water quality and sedimentation. The proposed SFPUC Peninsula Pipelines Seismic Upgrade (PPSU) Project (cumulative project D-1 through D-3) includes seismic upgrades to SFPUC existing pipelines that deliver water from the Harry Tracy Water Treatment Plant to the regional water system. Pipeline work for the PPSU Project would occur within the construction boundaries of GSR Sites 8 and 17 (Alternate) and the Cypress Lawn Cemetery Expansion could occur immediately adjacent to GSR Site 17 (Alternate). Construction of the PPSU Project and the GSR Project would overlap geographically and may use some of the same staging areas during construction, and construction of the cemetery expansion could occur at the same time in the same area.

The Draft EIR identified a potentially significant cumulative impact and identified the GSR Project's contribution as potentially cumulatively considerable given that construction has the potential to result in significant construction-related water quality impacts. However, the addition of cumulative project K does not change the finding, because it does not change the contribution of the GSR Project. The Draft EIR includes a description of how implementation of Mitigation Measure M-HY-1 (Develop and Implement a Storm Water Pollution Prevention Plant [SWPPP] or an Erosion and Sedimentation Control Plan) and Mitigation Measure M-HY-2 (Management of Well Development and Pump Testing Discharges) address erosion and sedimentation management through the use of control measures, waste management strategies, and hazardous materials pollution control. As concluded in the Draft EIR, the GSR Project's potential contribution to cumulative water quality impacts would not be cumulatively considerable following mitigation (less than significant with mitigation). The conclusion remains the same with the addition of cumulative project K near GSR Project Sites 8 and 17 (Alternate) given that the GSR Project's contribution has not changed.

Increased Flood Hazard

None of the present or probable future projects considered in the cumulative impact analysis and listed in Table 5.1-3 (Projects Considered for Cumulative Impacts) would be located in a mapped flood hazard zone, including cumulative projects J and K (San Francisco 2008; San Mateo County 2012). As a result, there would be no cumulative impacts from increased flood hazard.

New Impervious Surfaces

As discussed under Impact HY-4, the GSR Project would result in the creation of new impervious surfaces, which could increase erosion and siltation, or increase the rate or amount of stormwater runoff, or cause flooding on- or off-site. The GGNC re-establishment of existing wells (cumulative project J) may have a minor addition of new impervious surfaces; however, the Cypress Lawn Cemetery Expansion (cumulative project K) would also create new impervious surfaces and could result in the similar localized effects, resulting in a potentially significant cumulative impact on hydrology. As evaluated in the Draft EIR, the relatively minor increase in impervious surface areas (e.g., 205 feet to 3,675 square feet) associated with construction of individual GSR facilities would not have a cumulatively considerable impact on hydrology. The addition of cumulative projects J and K would not change the conclusion due to their small size.

Impact C-HY-1 on page 5.16-147 of the Draft EIR is revised as follows:

> **Degradation of Water Quality**
>
> Construction activities associated with the GSR Project could result in the degradation of water quality from increased soil erosion and associated sedimentation of water bodies, as well as an accidental release of hazardous materials, as analyzed above in Impact HY-1. The discharged groundwater from GSR well development, well pumping tests, initial disinfection, and excavation dewatering could also result in increased sources of silt-laden runoff resulting in on- or off site erosion or siltation and/or the violation of water quality standards and degradation of water quality (Impact HY-2). It is assumed that several of the cumulative projects listed in Table 5.1-3 (Projects Considered for Cumulative Impacts), particularly those projects located in close proximity to the proposed well sites, could adversely affect some of the same water bodies during construction. In particular, the proposed SFPUC Peninsula Pipelines Seismic Upgrade (PPSU) Project (cumulative project D-1 through D-3) includes seismic upgrades to SFPUC existing pipelines that deliver water from the Harry Tracy Water Treatment Plant to the regional water system. Pipeline work for the PPSU Project would occur within the construction boundaries of GSR Sites 8 and 17 (Alternate). The Cypress Lawn Cemetery

Expansion (cumulative project K) may occur immediately adjacent to GSR Site 17 (Alternate) and about 700 feet away from GSR Site 8. Construction of the PPSU Project and the GSR Project would overlap geographically and may use some of the same staging areas during construction, and construction of the Cypress Lawn Cemetery Expansion could occur at the same time in the same geographic area. Therefore, cumulative impacts from the proposed SFPUC PPSU Project and the Cypress Lawn Cemetery Expansion related to surface water quality and sedimentation, such as potential erosion from vegetation removal, grading, and excavation, could be significant, and the GSR Project's contribution to this cumulative impact could be cumulatively considerable given that its construction has the potential to result in *significant* construction-related water quality impacts.

Impact C-HY-1 on pages 5.16-148 to 5.16-149 of the Draft EIR is revised as follows:

New Impervious Surfaces

As discussed under Impact HY-4, the GSR Project would result in the creation of new impervious surfaces, which could increase erosion and siltation, or increase the rate or amount of stormwater runoff, or cause flooding on- or off-site. Other cumulative projects listed in Table 5.1-3 (Projects Considered for Cumulative Impacts), including well facilities associated with the SFGW Project (cumulative project A-1 through A-6), residential and commercial facilities associated with the Mission & McLellan Project (cumulative project F), ~~and~~ the Centennial Village Project (cumulative project I), and the Cypress Lawn Cemetery Expansion (cumulative project K) would also create new impervious surfaces and could result in the similar localized effects, resulting in a potentially *significant* cumulative impact on hydrology. However, due to the relatively minor increase in impervious surface areas (e.g., 205 feet to 3,675 square feet) associated with construction of individual GSR facilities, the GSR Project's contribution to this potential impact on hydrology would not be cumulatively considerable (*less than significant*).

Impact C-HY-2 Well Interference

Well interference impacts of the GGNC Irrigation Well Re-establishment Project (cumulative project J) have been evaluated based on available information about the existing wells (Fugro 2013). If the GGNC were to use existing wells for irrigation of their property, the wells would need to pump approximately 0.27 mgd (SFPUC 2011). Based on available information about screen intervals of the GGNC wells, analysis shows that groundwater levels at GGNC Wells #1 and #4 would be below the top of the screen both with and without the GSR Project. No information about the screen interval for GGNC Well #3 was available.

It is not possible to perform a specific calculation of the reduction in pumping capacity without information on the pump installed in each GGNC well. Given that the existing pumps, if still installed in the wells, have not been used for almost 50 years, it is likely that new pumps would need to be installed. The closest irrigation wells to the GGNC are at the California Golf Club wells #7 and #8 approximately 0.9 mile to the north. The cumulative well interference analysis at the California Golf Club wells was conducted taking into account pumping at seven GSR wells, Sites 9 through 15. The additional well interference from the GGNC pumping of 0.27 mgd would slightly increase the significance of cumulative well interference impacts at the California Golf Club wells, but the contribution of the Project to such cumulative impacts would remain the same, because GSR pumping would be the same under the cumulative scenario as in the Project scenario.

Well interference impacts of the Cypress Lawn Cemetery Expansion (cumulative project K) have been evaluated based on available information about the existing wells (Fugro 2013). Cypress Lawn's 39-acre expansion would increase pumping in the Westside Groundwater Basin by approximately 0.05 mgd, similar to the Holy Cross Expansion Project (cumulative project E) which would increase pumping by approximately 0.04 mgd. Both cumulative projects would have negligible effects on cumulative well interference impacts at any irrigation well, because the additional pumping would be so small (Fugro 2012; Fugro 2014).

The cumulative impacts on Cypress Lawn well #4 would be the same as the Project impacts, even with the addition of the 39 acres of additional turf irrigation from the possible expansion, because additional pumping from cumulative project K would be so small. Refer to the Project impact results provided for Cypress Lawn in Response HY-21. Well interference impacts at Cypress Lawn would cause the irrigation well to not meet peak irrigation demand at the end of the design drought under existing conditions, under conditions with the GSR Project operating, and under a future condition with GSR Project operations and Cypress Lawn's 39-acre expansion. Therefore, there would be a significant cumulative well interference impact at Cypress Lawn Cemetery.

With implementation of the revised Mitigation Measure M-HY-6 (Ensure Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation), the Project's contribution to the significant cumulative impact on well interference at California Golf Club, GGNC, and Cypress Lawn irrigation wells would be reduced to less-than-significant levels because the mitigation measure includes a Performance Standard that would ensure irrigators have sufficient water to support land uses. Refer to Response HY-15 for the revised Mitigation Measure M-HY-6 (Ensure Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation). Therefore, with implementation of the revised mitigation measure, the GSR Project's contribution to the cumulative impacts related to well interference would not be cumulatively considerable (*less than significant*).

Impact C-HY-2 on page 5.16-149 of the Draft EIR is revised as follows. These changes are made in response to this comment. There are additional changes in response to other comments, and these changes are shown in Chapter 9.5, Draft EIR Revisions.

Impact C-HY-2: Operation of the proposed Project would result in a cumulatively considerable contribution to cumulative impacts related to well interference. (Less than Significant ~~and Unavoidable~~ with Mitigation)

The geographic scope for the analysis of potential cumulative impacts on well interference in the study area is the area within three miles of each of the GSR wells, because if an existing irrigation well were located within 1.5 miles of a GSR Project well on one side, and a cumulative project well within 1.5 miles on the other side of it, hypothetically, it could be affected by both. Table 5.1-3 (Projects Considered for Cumulative Impacts) and their locations are shown on Figure 5.1-3 (Location of Projects Considered in the Cumulative Analysis).

~~Two~~ Four cumulative projects, the SFGW Project (cumulative project A-1 to A-6), GGNC Irrigation Well Re-establishment Project (cumulative project J), Cypress Lawn Cemetery Expansion (cumulative project K) and the Holy Cross Cemetery Expansion Project (cumulative project E) would increase pumping in the Westside Groundwater Basin, potentially leading to lower groundwater levels. One cumulative project, the Vista Grande Drainage Basin Improvement Project (cumulative Project B) would discharge treated stormwater to Lake Merced, which could – in turn – potentially increase groundwater levels near Lake Merced.

Additional drawdowns due to the proposed SFGW Project are estimated using the Westside Basin Groundwater Model. These potential drawdowns are combined with estimated groundwater levels for the GSR Project to estimate the combined effects of both projects (Fugro 2012). Additional drawdowns due to the Holy Cross Cemetery Expansion Project and the Cypress Lawn Cemetery Expansion are estimated to be negligible relative to well interference impacts (Fugro 2012c; Fugro 2014). Additional drawdowns due to the GGNC Irrigation Well Re-establishment Project were calculated using the Theiss method for 7.5 years of continuous pumping of all GSR wells within a 1.5-mile radius of each GGNC well; this included GSR wells at Sites 12, 13, 14, and 15. The Vista Grande Drainage Improvements Project would not increase well interference, because it would not decrease groundwater levels. Because pumping under cumulative conditions would be at maximum levels during a drought, this analysis focuses on the well interference that could occur at the end of the design drought.

The Draft EIR is revised on page 5.16-150, as follows to include the additional text below:

Cumulative project J (GGNC Irrigation Well Re-establishment Project), is far enough away from the SFGW Project (cumulative projects A-1 through A-6) that it would not be affected by pumping for that project (significant well interference is not expected to occur beyond 1.5 miles from a well, as explained in the Draft EIR on page 5.16-78 in Section 5.16 Hydrology and Water Quality under the heading Existing Irrigation Wells and Associated Land Uses. The closest SFGW Project well is approximately six miles from the wells at cumulative project J). However, the GSR Project is predicted to have well interference impacts on the GGNC wells if they are re-established. There are three existing wells that could be brought back into service: GGNC Wells #1, #3, and #4. There is not sufficient information about GGNC Well #3 to allow analysis of well interference. Table 5.16-17a shows that pumping water levels at GGNC Wells #1 and #4 would be below the top of the well screens both under existing conditions and with Project operation, but that the pumping water level would be lower with the GSR Project.

TABLE 5.16-17a
Estimated Pumping Depth to Water at the end of the Design Drought with Cumulative Project J, Re-establishment of GGNC Wells (feet below ground surface)

GGNC Well No.	Top of Well Screen	Pumping Water Level without GSR Project	Pumping Water Level with GSR Project
1	< 176 (a)	388	459
4	208	290	341

Source: Fugro 2014

Note:
(a) Estimated top of well screen based on limited information

Although pumping capacity would likely be reduced at the GGNC wells due to Project operation, as compared to capacity without the GSR Project, it is not possible to perform a specific calculation of reduction in pumping capacity, because information on the existing pumps is not available and it is likely that new pumps would be installed in the future.

Cumulative pumping and the resulting groundwater level decreases identified above in Table 5.16-17 are projected to affect the pump discharge rates of existing irrigation wells, as shown in Table 5.16-18 (Estimated Pump Discharge Rate at the End of the Design Drought with Cumulative Projects). Pump discharge rates at the three golf clubs are projected to decrease due to cumulative pumping approximately one to three percent more than from the GSR Project pumping alone.

TABLE 5.16-18
Estimated Pump Discharge Rate at the End of the Design Drought with Cumulative Projects

Existing Irrigation Well	With GSR Project (gpm)	With Cumulative Projects (gpm)	Percent Reduction Compared to GSR Project
San Francisco Golf Club #2	660	655	1
Olympic Club #8	935	910	3
Olympic Club #9	660	640	3
Lake Merced Golf Club #3	INA	INA	INA

Note:
INA: Information on this existing irrigation well that would allow calculation of impacts of the Project on pump discharge rate is not available.

Table 5.16-19 (Estimated Peak Demands and 12-Hour Production Capacities) compares 12-hour production capacities for each well potentially affected by the cumulative projects. Also included in calculations in Table 5.16-19 is the increased demand resulting from the reasonably foreseeable 30-acre expansion of Holy Cross Cemetery to a future total area of 180 acres and from the possible Cypress Lawn expansion of 39 acres. Production capacities of the existing wells at Holy Cross Cemetery and Cypress Lawn are assumed to be the same in the future as they are now. As stated above, this increased demand at Holy Cross Cemetery and Cypress Lawn does not result in additional drawdowns that cause well interference impacts, but the analysis evaluates whether well interference from the Project affects the ability of Holy Cross Cemetery and Cypress Lawn to meet ~~its~~ their expansion demand.

TABLE 5.16-19
Estimated Peak Demands and 12-Hour Production Capacities(1)

Land Use	Estimated Peak Demand (af per 12-hour period)	Estimated 12-Hour Production Capacity for Primary, Active, and Secondary Wells (af)		
		Existing Conditions	With GSR Project	With Cumulative Projects
Holy Cross Cemetery (with expansion)	2.6	3.5	2.9	2.9
Cypress Lawn Cemetery (with expansion)	3.7	1.8	1.1	1.1

Note:

INA: Information on the existing irrigation well that would allow calculation of impacts of the Project on production capacity is not available.

[1] The apparent discrepancy between Cypress Lawn's Estimated Peak Demand of 3.1 af per 12-hour period and 12-Hour Production Capacity for Existing Conditions of 1.8 af per 12-hour period would be evaluated as part of the Irrigation Well Monitoring and Reporting Program.

The Draft EIR is revised on pages 5.16-151 through 5.16-152, as follows. Additional revisions are made in response to comment HY-15. All of the changes to the Draft EIR are presented in Section 9.5, Draft EIR Revisions.

The well interference water level and pump capacity impacts at Holy Cross Cemetery and Cypress Lawn would be ~~are~~ the same with the GSR ~~p~~Project and the cumulative projects. The well at Holy Cross Cemetery is predicted to~~would~~ meet peak demand even with ~~its~~the Cemetery's expansion. Therefore, there would be *less-than-significant* cumulative impacts relative to well interference at Holy Cross Cemetery.

The pumping capacity of the wells at Cypress Lawn is not predicted to meet peak irrigation demand (as estimated for purposes of this EIR) without the Project in a normal year and likewise is not predicted to meet this estimated peak irrigation demand without the Project at the end of the design drought. The pumping capacity of the Cypress Lawn wells, under conditions with the GSR Project and under a future condition with GSR Project operations and Cypress Lawn's 39-acre expansion, is predicted to be reduced so that the wells would meet less of the peak irrigation demand under Project and cumulative conditions than would be the case without the GSR Project. Therefore, there is predicted to be a significant cumulative well interference impact from the GSR Project and Cypress Lawn Cemetery Expansion.

With implementation of Mitigation Measure M-HY-6 (Ensure ~~Existing~~ Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation), ~~the potentially *significant*~~ the Project's contribution to a significant cumulative impact on well interference would be reduced to a less-than-cumulatively considerable level, in a similar manner as described above for the Project-specific impacts. ~~Mitigation Action #6, Replace Irrigation Well, would be effective at reducing the Project's contribution to cumulative impacts to less-than-considerable levels, because the replacement well could be constructed deep enough to access an aquifer with sufficient water to meet peak irrigation demand while simultaneously avoiding any cumulative effects related to well interference (SFPUC 2012c).~~ Therefore, Mitigation Measure M-HY-6 would reduce the Project's impacts ~~of~~ on well interference to a level that would allow irrigators' wells to continue to support ~~where~~ existing and planned land uses~~would be supported~~ to the extent that the wells would be able to do so under existing conditions~~, except that the feasibility of the mitigation measure cannot be assured until the existing irrigation well owners have agreed to allow the mitigation to take place on their property. Because such assurance has not yet been provided, Impact C-HY-2, with implementation of Mitigation Measure H-HY-6, is conservatively deemed to be cumulatively considerable~~ (*less than significant with mitigation.* ~~*significant and potentially unavoidable with mitigation*~~)

Impact C-HY-3 Subsidence

Cumulative impacts on land subsidence would increase slightly due to the increased pumping from cumulative project J (GGNC Irrigation Well Re-establishment Project) of 0.27 mgd in San Bruno; and cumulative project K (Cypress Lawn Cemetery Expansion Project) of 0.05 mgd in Colma. However, these increases in cumulative pumping in the Westside Groundwater Basin are small (approximately a 1.6 percent increase) compared to the total pumping that would occur in the Basin during a Take Year when subsidence would be greatest (GSR Project, Partner Agency, and irrigator cumulative pumping volumes would at maximum be 19.94 mgd as shown in the Draft EIR on pages 5.1-9 and 5.1-10). Given that the maximum cumulative impact presented in the Draft EIR was 3.5 inches of subsidence and the significance threshold is 6 inches, the slight increase in Westside Groundwater Basin pumping due to cumulative projects J and K plus the GSR Project would not cause a significant cumulative impact on land subsidence.

Impact C-HY-4 Seawater Intrusion

Cumulative impacts on seawater intrusion would increase slightly due to the increased pumping from cumulative project J, GGNC Irrigation Well Re-establishment Project, of 0.27 mgd in San

Bruno; and cumulative project K, Cypress Lawn Cemetery Expansion, of 0.05 mgd in Colma. The cumulative impact analysis in the Draft EIR on pages 5.16-153 through -156 indicates that seawater intrusion would be more likely to occur in both the North and South Westside Groundwater Basins due to the operation of the cumulative projects plus the GSR Project, and a significant cumulative impact was identified. However, the GSR Project would not contribute to this significant cumulative impact in either the North or South Westside Groundwater Basins, because the GSR Project would increase groundwater levels on average. Therefore, the GSR Project would not have a considerable contribution to the cumulative impact relative to seawater intrusion (*less than significant*).

Impact C-HY-5 Lake Merced

Cumulative project J (GGNC Irrigation Well Re-establishment Project, and cumulative project K (Cypress Lawn Cemetery Expansion) are too far away from Lake Merced or Pine Lake to affect cumulative impacts of groundwater pumping on those surface water resources (Fugro 2014).[1]

Impacts C-HY-6 and C-HY-7 Water Quality Standards and Water Quality Degradation

For reasons that follow, impacts on water quality may decrease slightly due to the increased pumping from cumulative project J (GGNC Irrigation Well Re-establishment Project) of 0.27 mgd in San Bruno; and cumulative project K (Cypress Lawn Cemetery Expansion) of 0.05 mgd in Colma. Cumulative impacts relative to drinking water standards would be less than significant even with the additional cumulative irrigation pumping because the SFPUC and Partner Agencies are subject to drinking water regulations and would ensure that standards are met through treatment or blending. However, impacts relative to rising groundwater levels encountering PCAs in the shallow soils or shallow water-bearing zones would decrease, if anything, because slightly increased irrigation pumping during all year types by the GGNC and Cypress Lawn would tend to slightly decrease groundwater levels. Cumulative impacts from mobilization of nitrate masses in Daly City would not be affected by increased pumping at the GGNC in San Bruno because, at a distance of approximately 3.5 miles, it is reasonable to assume that such an effect would not occur. Similarly, mobilization of nitrate masses in Daly City would not be substantially affected by increased pumping by Cypress Lawn in Colma because the increased pumping volumes are so small. Therefore, cumulative impacts relative to water quality standards and water quality degradation would be *less than significant*.

[1] Significant changes to Lake Merced or Pine Lake water levels are not expected to be caused by wells located beyond 2.0 miles from the lakes (SFPUC 2012b). Cumulative projects J and K are closer to Lake Merced than Pine Lake, and are located approximately 6 miles and 3.5 miles, respectively, from Lake Merced.

C-HY-8 Groundwater Depletion

Cumulative impacts on long-term groundwater depletion may increase slightly due to the increased pumping from cumulative project J (GGNC Irrigation Well Re-establishment Project) of 0.27 mgd; and cumulative project K (Cypress Lawn Cemetery Expansion) of 0.05 mgd. The cumulative impact analysis in the Draft EIR on page 5.16-161 indicates that, over the long term, groundwater depletion would occur due to the operation of the cumulative projects plus the GSR Project, and a significant cumulative impact has been identified. However, implementation of Mitigation Measure HY-14 (Prevent Groundwater Depletion) would reduce the GSR Project's contribution to this significant cumulative impact to a less-than-considerable level, because additional in-lieu recharge would be allowed and the Project pumping would be restricted to extract only the volume of water in the SFPUC Storage Account, which would be adjusted to account for Westside Groundwater Basin losses (i.e., groundwater depletion). Therefore, with implementation of this measure, the GSR Project would not have a considerable contribution to any potential long-term cumulative depletion of groundwater storage *(less than significant with mitigation).*

Section 5.17, Hazards and Hazardous Materials

The addition of cumulative projects J (GGNC Irrigation Well Re-establishment Project) and K (Cypress Lawn Cemetery Expansion) slightly alters the analysis of cumulative impacts in the Draft EIR for Section 5.17, Hazards and Hazardous Materials.

Impact C-HZ-1 on page 5.17-44 of the Draft EIR is revised as follows:

> *Safety Hazard near an Airport*
>
> Of the cumulative projects listed in Table 5.1-3 (Projects Considered for Cumulative Impacts), cumulative projects D-1, and E through J~~I~~ would also be located within lands subject to the San Mateo County Airport Land Use Plan (ALUP). The Holy Cross Expansion Project, ~~and the~~ California Water Service Company Water Well Replacement Project, and Cypress Lawn Cemetery Expansion (cumulative projects E, ~~and~~ G, and K respectively) are cemetery expansion and well replacement projects.

The addition of cumulative projects J (GGNC Irrigation Well Re-establishment Project) and K (Cypress Lawn Cemetery Expansion) does not alter the conclusions of cumulative impacts in the Draft EIR, because the GSR Project well facility buildings would be well below FAR Part 77 airport-related height limitations, and the GSR Project's contribution to potentially significant cumulative impacts from increased safety hazards near an airport would not be cumulatively considerable (*less than significant*).

Section 5.18, Mineral and Energy Resources

The Draft EIR concluded that the proposed Project would not result in a cumulatively considerable contribution to cumulative impacts related to mineral and energy resources. The addition of cumulative projects J (GGNC Irrigation Well Re-establishment Project) and K

(Cypress Lawn Cemetery Expansion) slightly alters the analysis of cumulative impacts in the Draft EIR for Section 5.18, Mineral and Energy Resources but not the conclusion. Impact C-ME-1 on page 5.18-12 of the Draft EIR is revised as follows:

> ***Operation***
>
> *Energy Resources*
>
> Most of the cumulative projects listed in Table 5.1-3 (Projects Considered for Cumulative Impacts) would result in incremental increases in energy demand during long-term operation. The San Francisco Groundwater Supply Project (cumulative projects A-1 to A-6) would use the SFPUC Power Enterprise electricity to pump up to 4 mgd of groundwater for potable water supply. Expansion of the Holy Cross Cemetery (cumulative project E) and Cypress Lawn Cemetery (cumulative project K) would increase energy use to pump an additional 0.04 mgd and 0.05 mgd, respectively, of groundwater for cemetery operations. The Mission & McLellan Project (cumulative project F) would increase energy demand to supply power to 20 new condominium units. The GGNC Irrigation Well Re-establishment Project (cumulative project J) would increase energy use to pump groundwater for irrigation. Lastly, the Centennial Village Project (cumulative project I) would increase energy demand with a new shopping center and 132 new apartment units.

The addition of cumulative projects J (GGNC Irrigation Well Re-establishment Project) and K (Cypress Lawn Cemetery Expansion) does not alter the conclusions of cumulative impacts in the Draft EIR, because operation of the GSR Project would not increase energy use in the long-term and would not be wasteful of energy resources, therefore, the GSR Project's contribution to a cumulative impact on energy resources would not be cumulatively considerable (*less than significant*).

Section 5.19, Agriculture and Forest Resources

The Draft EIR concluded that the proposed Project would not result in impacts to agriculture and forest resources. The addition of cumulative projects J (GGNC Irrigation Well Re-establishment Project) and K (Cypress Lawn Cemetery Expansion) does not alter the analysis or conclusions of cumulative impacts in the Draft EIR for Section 5.19, Agriculture and Forest Resources, because neither cumulative project J or K would impact agricultural or forest resources.

Comment OV-2: Comment related to references in Section 5.1, Overview.

This response addresses a comment from the commenter listed below; the comment on this topic is quoted in full below this list:

- G-San Bruno-Fabry

"7. DEIR, page 5.1-12. The citation of San Bruno 2011 in Section 3.8.1 is incorrect. The reference section includes San Bruno 2011 as

> *San Bruno, City of. 2011.* History. *Website accessed April 15, 2011 at: http://sanbruno.ca.gov/city_history.html.*

which has no reference to the apportionment of groundwater production." *(City of San Bruno, letter, June 13, 2013 [G-San Bruno-Fabry])*

Response OV-2

The comment refers to two separate City of San Bruno citations; the first is found on page 5.1-12 in Section 5.1, Overview of the Draft EIR, and the second is found on page 3-139 in Chapter 3, Project Description of the Draft EIR. Both citations refer the reader to the City of San Bruno's *2010 Urban Water Management Plan*, published in 2011. The *Urban Water Management Plan* is included in the reference lists for Section 5.1, Overview (see page 5.1-33 in Section 5.18, Mineral and Energy Resources), and Chapter 3, Project Description (see page 3-150 in Section 3.11, References of the Draft EIR). In both instances, the in-text citation correctly refers the reader to the right source material.

The reference cited in the comment – the San Bruno City History website—was utilized in Section 5.5, Cultural and Paleontological Resources of the Draft EIR (citation is on page 5.5-17 and reference is on page 5.5-70 of the Draft EIR). Thus, no revisions to the Draft EIR text are required.

Comment OV-3: Comment related to modeling climate change.

This response addresses a comment from the commenter listed below; the comment on this topic is quoted in full below this list:

- O-CLMP-Quick

"The analysis of the effects of climate change (e.g., how warmer temperatures and changing precipitation patterns may change the drought cycle) on GSR Project is conspicuously absent from the DEIR chapter concerning hydrology. Instead, the DEIR appears to assume that the drought cycles and precipitation patterns that occurred over the past 47 years will simply be repeated. Yet it is common knowledge now, after intensive research over the past decade (and longer), that climate change will impact all of California's water resources.[44] State and federal agencies have developed many tools for evaluating projects in light of climate change.[45] The DEIR must be revised to consider this important issue, which implicates the assumptions upon which the GSR Project is based.

> [44] *See* DWR pamphlet, Climate Change in California (2007), available at: http://www.water.ca.gov/climatechange/docs/062807factsheet.pdf.
>
> [45] *See, e.g.,* Climate Change Handbook (DWR and U.S. EPA, 2011), available at: http://www.water.ca.gov/climatechange/CCHandbook.cfm; *see also* Evaluating Projects, Resource Management Strategies, and IRWM Plan Benefits with Climate Change (DWR and U.S. EPA, 2011),

available at: http://www.water.ca.gov/climatechange/docs/Section%206%20Evaluating%20Projects-Final.pdf." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

Response OV-3

The comment requests that the Draft EIR consider how climate change will affect historic drought cycles and precipitation patterns assumed in the hydrology analysis. The Draft EIR considers the effect of changes in drought cycles and precipitation patterns due to climate change by using the concept of a design drought. As explained in Section 5.1, Overview, Section 5.1.6.1 (Westside Basin Groundwater Model) of the Draft EIR, the design drought assumes more severe drought conditions than observed historically. The use of the design drought concept to account for climate change is particularly useful because the effect of future climate change on the Westside Groundwater Basin is uncertain due to the following primary factors:

- From a global or regional perspective, general agreement exists that climate change will affect groundwater recharge, but the extent and nature of those effects are largely unknown. Groundwater recharge is dependent upon many of the same weather-related factors that control precipitation (intensity, frequency, volume, and temperature) that are expected to vary under climate change scenarios. Much of the available information on how climate change could affect groundwater resources is qualitative and is not easily translated into the specific numerical values used in predictive groundwater recharge models such as the Westside Basin Groundwater Model. This has resulted in some studies that predict increases in groundwater recharge, while others predict decreases in groundwater recharge in response to climate change.
- At a local level, the quantification of the effects of climate change on groundwater recharge is highly site-specific. Many of the variables that influence groundwater recharge are the same local variables that are expected to vary under climate change (i.e., snowmelt timing, ground and air temperature, precipitation and runoff profiles, and vegetation type and distribution). The interactions can be complex and will vary based on how each of these variables is weighted within the particular model in response to site-specific conditions.
- The general circulation models used in developing climate change scenarios incorporate resolutions that are much larger than many of the groundwater recharge basins for example, these models use grids of 40 to 100 square miles whereas many groundwater basins are much smaller in area. Therefore, precipitation patterns derived from these models do not accommodate the changes in elevation or topographical features that create "micro-climates" and these micro-climates can typically have a substantial effect on the actual amount of precipitation that is available for groundwater recharge. (GHD 2014d)

As a result of the lack of suitable data inputs for the groundwater modeling as described above, the Draft EIR considers the effect of climate change on the Project by utilizing the hydrologic construct of a design drought. This is described in the Draft EIR on page 5.1-18:

> "The Westside Basin Groundwater Model does not explicitly include changes in hydrologic parameters in response to climate change, because the effect of climate change

on the groundwater basin is uncertain. However, if climate change were to cause more frequent drought conditions than observed historically, then such conditions would be included in the Model results through the use of the design drought – a drought that is more severe than any observed during the 47 years of historic records used in creating the Model. In addition, it is possible that climate change might have occurred during the period of the observed rainfall and temperature record. If so, then the observed rainfall and temperature data would include the effects of climate change as part of the overall data record. Since the observed rainfall and temperature data are used as inputs to the Westside Basin Groundwater Model then the possible effects of climate change upon the 47 years of historical record would be included implicitly in the simulations."

Comment OV-4: Comments related to groundwater modeling.

This response addresses comments from the commenter listed below; the comments on this topic are quoted in full below this list:

- O-CLMP-Quick

[The DEIR lacks] … "• Verifiable projections for the groundwater model used to determine GSR Project impacts." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

"*Item 33 – What is the basis for the model layers? What is the basis for increased elevation in layers 2 and 3 under Lake Merced? How does this layer depiction impact modeling results?*

A critical feature of the Westside Basin Groundwater Flow Model is the layering used in the model. Figure 10.1-3 overlays the Westside Basin Groundwater Flow Model structure on the single cross section of regional geology included in the DEIR. The model layers appear to be inconsistent with the regional geology that is presented. The lack of transparent and consistent information precludes careful review by the interested public." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

"*Item 34 – What was the basis for developing subareas or model parameter zones? Would additional perpendicular cross sections help support the basis for the subareas? How do the parameters used for the distinct subareas impact the modeling results?*

Each model layer in the Westside Basin Groundwater Model was divided into subareas (also referred to as parameter zones) within which aquifer parameters are assumed to be uniform. Choosing the parameters used in the model is a very important decision and has large impacts on the predictions and validity of the model." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

Response OV-4

These comments address specific technical questions related to the groundwater modeling. Please refer to Section 5.1, Overview, Section 5.1.6 (Groundwater Modeling Overview), starting on page 5.1-6 of the Draft EIR which provides background information on the development and calibration of the model. As explained there, the Westside Groundwater Basin Model is an existing model, "developed over a period of several years by the City of Daly City, with assistance from the City of San Bruno, the California Water Service Company (Cal Water), and the SFPUC." Additional information about the model is contained in the Technical Memoranda that were prepared for the groundwater analysis, which are included as Appendix H to the Draft EIR. Consistent with Section 15147 of the CEQA Guidelines, the highly technical and specialized analysis and data regarding the evaluation of groundwater impacts was placed in an appendix and summarized in the body of the Draft EIR. Due to the highly technical nature of the comments submitted by the hydrogeologist retained by the commenter, the responses below are necessarily fairly technical. Each of the detailed technical comments is addressed below. Responses are based on a memo prepared by Kennedy/Jenks Consultants (Kennedy/Jenks 2013), who also prepared *Technical Memorandum 10.1, Groundwater Modeling Analysis for the Regional Groundwater Storage and Recovery Project and San Francisco Groundwater Supply Project* contained in Appendix H of the Draft EIR. An overview of model development is provided below, along with a response to each Item Number from the comment.

Overview of Model Development

As discussed in the Draft EIR and in Appendix H, *Technical Memorandum 10.1, Groundwater Modeling Analysis for the Regional Groundwater Storage and Recovery Project and San Francisco Groundwater Supply Project*, of the Draft EIR, the Westside Basin Groundwater Model is a pre-existing regional, Basin-wide groundwater model. The analysis used in the Draft EIR is based on Version 3 of the model, which is the product of more than a decade of work by Daly City, San Bruno, Cal Water, and the SFPUC to develop an accurate groundwater model for the Westside Groundwater Basin.[2] The model has been calibrated over a historical simulation period of 51 years, covering various types of hydrological events from wet periods to droughts of different magnitude and duration. Calibration is performed to ensure that the model actually simulates documented historical conditions. During calibration it was documented that when known conditions such as groundwater pumping, rainfall, and other hydrologic parameters are input to the model, the model accurately predicts the groundwater levels that were documented to occur under those conditions. Model calibration demonstrated a high degree of accuracy, with a root mean square error (a statistical measure of the difference between modeled and actual groundwater levels that provides a measure of the overall error in the model) of four percent.

[2] The City of Daly City initiated and primarily directed the modeling effort for the purpose of supporting groundwater management by Daly City and developed Version 1 of the model in 2002. Later, the City of San Bruno, Cal Water, and the SFPUC also provided funding and support for two updated versions of the model in 2009 (Version 2) and 2011 (Version 3). Version 2 evaluated changes in groundwater storage under various projected groundwater pumping conditions. Version 3 includes new geologic and groundwater data collected in the Westside Groundwater Basin to update historical data; the Draft EIR used Version 3 of the model for the analysis of the Project.

Typically a calibration is considered good when the error is below 15 percent. Hydrogeologists with public agencies including the SFPUC, Cal Water, the City of Daly City, and City of San Bruno, and consultants including Kennedy/Jenks Consultants, Luhdorff and Scalmanini Consulting Engineers, Fugro Consultants, and WRIME all reviewed the model. Through the calibration process, the influence of these parameters is balanced to achieve a representative simulation of groundwater flow in the Project area. The model has thus been documented to have a strong ability to predict relative changes over time, and all of the parties to the modeling effort have accepted the model for use in selected applications to support water resources planning and management on an ongoing basis (see Appendix H of the Draft EIR, *Technical Memorandum 10.1, Groundwater Modeling Analysis for the Regional Groundwater Storage and Recovery Project and San Francisco Groundwater Supply Project*). Because this is a well-established, validated and accepted model, the Draft EIR can appropriately apply the model for the analysis of the Project. Detailed information about model calibration and the accuracy of the model can be found in Appendix H, *Technical Memorandum 10.1, Groundwater Modeling Analysis for the Regional Groundwater Storage and Recovery Project and San Francisco Groundwater Supply Project,* of the Draft EIR.

Because of this long history of model development, the Westside Basin Groundwater Model represents an appropriate and verifiable quantitative tool available for assessing groundwater conditions in the Westside Groundwater Basin. HydroFocus has documented the development of each phase of the model in the following reports, all of which are referenced in Appendix H, *Technical Memorandum 10.1, Groundwater Modeling Analysis for the Regional Groundwater Storage and Recovery Project and San Francisco Groundwater Supply Project,* of the Draft EIR (the HydroFocus 2011 reference is also cited on page 5.16-178 of the Draft EIR):

- HydroFocus, 2007. *Westside Basin Groundwater-Flow Model (version 2.0), Historical Calibration Run (1959-2005) Results and Sensitivity Analysis*;
- HydroFocus, 2009. *Westside Basin Groundwater-Flow Model: Revised Historical Simulation and No-Project Simulation*; and
- HydroFocus, 2011. *Technical Memorandum*, *Westside Basin Groundwater-flow Model: Updated Model and 2008 No Project Simulation Results*.

Comment Letter Item 33

The comment requests an explanation of the model layers and how the layers impact modeling results. As cited in the Draft EIR, HydroFocus documented model development and calibration, including the basis for the definition of model layers (HydroFocus 2007, 2009, 2011). According to HydroFocus (2007), it developed the model layering using standard practices employed by professionals developing groundwater models. The model layering considers conceptual Basin geology, the relationships between water levels and well construction, previous hydrogeologic and modeling reports, water quality data, and stability of the process employed by the model to solve the groundwater-flow equation (i.e., the definition of layers was adjusted during model calibration to improve the accuracy of the modeling results). To define the model layers HydroFocus primarily used the following reports, which are cited in Appendix H, *Technical*

Memorandum 10.1, Groundwater Modeling Analysis for the Regional Groundwater Storage and Recovery Project and San Francisco Groundwater Supply Project, of the Draft EIR (LSCE [2004, 2006, 2010] and Rogge [2003] and are also referenced in Section 5.16, Hydrology and Water Quality on page 5.15-179 of the Draft EIR):

- LSCE, 2010. *Task 8B Technical Memorandum No. 1, Hydrologic Setting of the Westside Basin*;
- LSCE, 2006. *Hydrogeologic Conditions in the Westside Basin, 2005*;
- LSCE, 2004. *Update on the Conceptualization of the Lake-Aquifer System Westside Ground-Water Basin San Francisco and San Mateo Counties*;
- Rogge, 2003. *Dimensions of the Westside Groundwater Basin San Francisco and San Mateo Counties, California*; and
- Guidetti, J. R. and C. F. Schaefer, San Mateo County Environmental Health Services Division, 1995. *Groundwater Investigation and Wellhead Protection Program for the Greater San Bruno Area*.

The model layers are, in fact, consistent with regional geology. The increased elevation in layers 2 and 3 under Lake Merced is due to the availability of more detailed information in this area regarding key clay layers in the Lake Merced area such as the "X" and "Y" clays, and the presence of an additional clay layer (the -100-foot clay) in this area. These clay layers are not continuous across the entire Basin, so the model layering adapts to geologic conditions relevant for those areas as discussed in HydroFocus (2007, 2009, 2011). The comment refers to Figure 10.1-3, which is contained in Appendix H, *Technical Memorandum 10.1, Groundwater Modeling Analysis for the Regional Groundwater Storage and Recovery Project and San Francisco Groundwater Supply Project*, of the Draft EIR. As can be seen in that figure, there are clay layers under Lake Merced that are not present elsewhere in the basin. Model layers 2 and 3 under Lake Merced are shallower than elsewhere in the basin because of the presence of the lake and of the additional shallow clay layer (the -100-foot clay). The top of layer 2 was defined as the bottom elevation of the lake (-10 feet) in most areas around Lake Merced, and the depth of the layer was defined so as to include the -100-foot clay layer that is not present elsewhere in the Basin. To keep the layers consistent with local geology, model layer 3 under Lake Merced was defined so as to coincide with the "X" and "Y" clays, which are the discontinuous clay layers under the shallower -100-foot clay layer in Figure 10.1-3.

MODFLOW is the software used in preparation of the Westside Basin Groundwater Model. In MODFLOW, the model layering is incorporated into the calculations in two ways. First, the model layer thickness is multiplied by the layer hydraulic conductivity (groundwater conductive properties of the layer) to obtain the transmissivity (rate at which groundwater flows through a layer), which is used in the groundwater flow equation. Second, the simulated groundwater elevation is compared with the elevation of the top of the model layer to determine whether the aquifer is confined or unconfined.

The depiction of the model layers is based on validated and accepted data and has gone through a lengthy review process from 2002 to 2011 as part of the calibration of the model as explained above. As noted there, hydrogeologists with public agencies and consultants all reviewed the model, including the definition of model layers. Through the calibration process, the influence of these parameters is balanced to achieve a representative simulation of groundwater flow in the Lake Merced area. Therefore, the San Francisco Planning Department has determined that the modeling results provide appropriate and reasonable analysis of groundwater elevations and the confined/unconfined aquifer condition in the Lake Merced area.

Comment Letter Item 34

The comment questions the basis for developing subareas and model parameter zones. HydroFocus (2007) documents the basis of the subareas or model parameter zones. In summary, each model layer was divided into subareas (parameter zones) and aquifer properties were assumed to be uniform within each parameter zone. The parameter zone boundaries were selected to represent geologic features such as the broad clay layers near Lake Merced and San Bruno, tilted Merced Formation materials southwest of the Serra Fault, and the extent of bay mud. Additional parameter zones were delineated during model calibration. For example, this was done when multiple wells exhibited similar simulation errors and the error could be diminished by adjusting the hydraulic characteristics in a new parameter zone.

Additional perpendicular cross sections were used in the analysis for the model development. These cross sections are included in supporting documents by Luhdorff and Scalmanini Consulting Engineers (LSCE) listed below, all of which are referenced in Section 5.16, Hydrology and Water Quality on page 5.16-179 of the Draft EIR.

- LSCE, 2010. *Task 8B, Technical Memorandum 1 Hydrologic Setting of the Westside Basin*;
- LSCE, 2006. *Hydrogeologic Conditions in the Westside Basin*; and
- LSCE, 2004. *Update on the Conceptualization of the Lake-Aquifer System Westside Ground-Water Basin San Francisco and San Mateo Counties*.

MODFLOW incorporates the hydraulic conductivity and storage properties of the aquifer directly into the groundwater flow equation. The depiction of the aquifer properties is considered to represent validated and accepted data and, as noted under Item 33, has gone through a lengthy review process from 2002 to 2011. The calibration process balanced the influence of the aquifer properties to achieve a representative simulation of groundwater flow in the Westside Groundwater Basin. HydroFocus (2007) assessed the impact of the parameters used for the subareas during the sensitivity analyses of the model, and determined that the parameters used in the model are appropriate.

Comment OV-5: Comment related to the uncertainty of model results.

This response addresses comments from the commenter listed below; the comments on this topic are quoted in full below this list:

- O-CLMP-Quick

"*Item 35 – How does uncertainty and lack of data impact the model results, particularly with respect to water level elevation predictions under the different scenarios?*

The model subareas with the highest root-mean-square-error (RMSE) are the Colma and San Bruno subareas. The DEIR attributes this to historical water level measurement limitations, model scaling, and uncertainty in vertical hydraulic conductivity and vertical hydraulic gradients. The DEIR should acknowledge the level of uncertainty and its implications for the analysis, and should take a conservative approach at estimating impacts predicted by the model." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

"*Item 36 – How does the modeled 'existing conditions' compare to historic and current measured water levels? How do the potentiometric surfaces compare and how do the individual well records compare to modeled results?*

A model is only as useful as the information that is used to construct it. The DEIR did not present actual historical and/or current water level data or rainfall data or show comparisons with actual data and the modeling results. The only hydrographs and potentiometric surfaces that are presented in the DEIR are those based on modeling using a hypothetical rainfall history. Even for the model scenario for 'existing conditions,' the use of the hypothetical rainfall history makes it difficult to evaluate how accurate the modeling analysis is without being able to compare it to real conditions." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

"*Item 37 – Was a sensitivity analysis conducted? How sensitive are the modeling results to variations in the model layer configuration, the parameters used, the boundary conditions, the initial conditions, hypothetical rainfall scenario, production rates, time frame for recovering waters during the take period, and distribution of Project sites?*

No modeling sensitivity analysis, which is a standard procedure in groundwater model development, was presented in the DEIR for the Westside Basin Groundwater Flow Model. The DEIR should be revised to report the results of a sensitivity analysis and the analysis itself should be reported in a technical appendix." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

"*Item 38 – How well did the Westside Basin Groundwater Model results compare with measured current conditions? Are actual historical potentiometric surfaces similar to modeled potentiometric surfaces for existing conditions?*

No model validation of modeled water level conditions to actual water level conditions was presented in the DEIR, as required by best practices." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

Response OV-5

The comments in this grouping address issues related to uncertainty of the groundwater model and its results. Responses to each Item Number in the comment are provided below.

Comment Letter Item 35

The comment requests that the Draft EIR acknowledge model uncertainty. All models have inherent uncertainties, and the Draft EIR acknowledges the level of uncertainty in the groundwater model, and documents that the analysis is conservative. A discussion of the strengths and limitations of the Westside Basin Groundwater Model is provided in Section 4.3 of Appendix H, *Technical Memorandum 10.1, Groundwater Modeling Analysis for the Regional Groundwater Storage and Recovery Project and San Francisco Groundwater Supply Project*, of the Draft EIR, and summarized starting in Section 5.1, Overview on page 5.1-17 of the Draft EIR, in the section titled Other Westside Groundwater Basin Model Assumptions. As noted there, the Draft EIR used a variety of analytical tools in the analysis of impacts so as to address various limitations in the groundwater model. The Draft EIR acknowledges that there is necessarily uncertainty associated with the modeled analyses. Page 5.1-17 states, "there are some specific areas of weakness and/or limitations in the model and model calibration."

The quality of any numerical groundwater model is dependent upon the accuracy of the conceptual understanding of the hydrogeology and the quality and quantity of the data. Since natural systems are complex, a model represents a simplification of the natural system. To address these uncertainties, as with all models, the model makes assumptions as necessary to define the aquifer properties and boundary conditions. The Westside Basin Groundwater Model was constructed in a manner that properly represents the key features of the Westside Groundwater Basin in order to provide accurate and useful simulation results. In support of numerical model development, a range of reasonable values is defined for aquifer properties and the hydrologic budget. Values are based on measured field data and hydrogeological analysis that represent the major physical features of the Westside Groundwater Basin that are well documented in the HydroFocus (2007, 2009, 2011) reports on the model development and calibration.

As discussed in the Draft EIR, starting on page 5.1-6 and in Appendix H of the Draft EIR, the Westside Basin Groundwater Model is a pre-existing regional, Westside Groundwater Basin - wide groundwater model. Because of the long history of model development (as discussed in Response OV-4), the Westside Basin Groundwater Model represents a well-established, validated, and accepted tool for assessing groundwater conditions in the Westside Groundwater Basin. The model has been accepted for use for the types of applications conducted for the Draft EIR to support water resources planning and management.

The model is used conservatively, and as noted in the second paragraph on page 5.1-19 of the Draft EIR, "Even though the Westside Basin Groundwater Model is not intended to predict precise Westside Groundwater Basin or surface water levels in a given year, over the course of the 47-year model period, the model does portray a reasonable range of anticipated Westside Groundwater Basin and surface water levels such that, for EIR purposes, impacts that would be affected by changes in Westside Groundwater Basin and surface water levels (e.g., biology, hydrology, water quality, etc.) can be conservatively evaluated."

Specific to groundwater levels, HydroFocus incorporated new data into Version 3.1 of the Westside Groundwater Model (HydroFocus 2011) to include additional groundwater level measurements in the Daly City, Colma, South San Francisco, and San Bruno areas for the nested monitoring wells that provide vertical groundwater characterization data.

As stated on page 5.1-7 of the Draft EIR: "The adequacy of the model calibration was assessed by calculating the average difference between modeled and observed groundwater levels. The calibrated groundwater levels were on average (throughout the entire modeled area) within 19 feet of the observed water levels, which is approximately four percent of the total range in observed groundwater levels across the modeled area. Typically, calibration is considered adequate when this difference is less than 15 percent (Kennedy/Jenks 2012a). Based on these results, the Westside Basin Groundwater Model is considered reasonably well calibrated and a tool that may be used for basin-scale analyses and comparison of water resources management alternatives."

Comment Letter Item 36

The comment requests an explanation of how the modeled existing conditions compare to historic and current measured water levels. Modeled existing conditions are derived directly from the historic conditions observed in the Westside Groundwater Basin. The "hypothetical rainfall history" referenced in the comment is, in fact, based on actual historical "hydrologic parameters measured from 1958 to 2005" (see page 5.1-7 of the Draft EIR). The Draft EIR analysis uses an existing well-vetted groundwater model where the procedures suggested by the comment have already been conducted as part of the analysis. Comparisons to historical and current measured water levels and the rainfall history were addressed in detail in the documentation developed by HydroFocus (2007, 2009, 2011) for model development and calibration. The Draft EIR does not repeat this information in detail but instead provides summaries with appropriate citations to additional information.

As noted at the top of page 5.1-7 of the Draft EIR:

> "The Westside Basin Groundwater Model Version 3.1, which was used for the analysis in this EIR, was calibrated to observed groundwater conditions within the Basin for a period of 51 years, from October 1958 through September 2009 (HydroFocus 2011). The calibration used available records of historical hydrologic and pumping data, including more than 2,000 observed monthly water levels in 125 wells representing a broad range of locations, depths, and hydrologic conditions. The hydrology used in the calibration relied on actual, measured monthly rainfall and temperature data from various climate stations throughout the Westside Groundwater Basin and included conditions ranging from wet periods to droughts of different magnitude and duration."

The Westside Basin Groundwater Model is a well-established, validated, and accepted tool for assessing groundwater conditions in the Westside Groundwater Basin. Because of this, the Draft

EIR appropriately applied the existing model for evaluating potential future conditions for the Project.

Comment Letter Item 37

The comment asks if a sensitivity analysis was conducted and requested information about the analysis results. Please refer to the description of the Westside Groundwater Model in *Westside Basin Groundwater-Flow Model (version 2.0), Historical Calibration Run (1959-2005) Results and Sensitivity Analysis* (HydroFocus 2007), which includes a detailed description of the sensitivity analysis conducted for that model. The Draft EIR analysis utilized a pre-existing model developed by the City of Daly City consultant HydroFocus, as explained in Response OV-4, for which HydroFocus previously had conducted a sensitivity analysis. Therefore, a sensitivity analysis was not needed and not conducted as part of the Draft EIR.

Additional information on the sensitivity analysis conducted by HydroFocus is provided below in response to the commenter's request.

HydroFocus conducted the sensitivity analyses by varying a single parameter and evaluating the relative change in the root mean square error (RMSE). The RMSE represents the average difference between the observed and the simulated groundwater elevations. The lower the RMSE, the closer the model simulates measured groundwater levels. HydroFocus performed the sensitivity analysis for each of the following parameters: recharge, pumpage, horizontal hydraulic conductivity, vertical hydraulic conductivity, hydraulic conductivity of faults, specific yield, and specific storage.

The sensitivity analysis information for the other parameters listed in the comment is discussed below:

- The standard practice for evaluation of the basic hydrogeologic conceptual model such as model layer configuration is during the model calibration. This was described in the reports by HydroFocus (2007, 2009, 2011).

- The initial conditions used for the model are taken directly from the Version 3.1 calibrated groundwater model for June 2009, which is the appropriate standard practice when such information is available. This is discussed in more detail in Section 6.4 of Appendix H, *Technical Memorandum 10.1, Groundwater Modeling Analysis for the Regional Groundwater Storage and Recovery Project and San Francisco Groundwater Supply Project*, of the Draft EIR.

- The hypothetical rainfall scenario is a condition of the model scenario. Since any future rainfall scenario is hypothetical, the assumed rainfall for the scenarios is based on historical data that has been rearranged to allow for the implementation of the conservative assumption of the design drought, which does not have historical precedent recorded for San Francisco and northern San Mateo County. This is described in Section 5.1, Overview on page 5.1-7 of the Draft EIR, and discussed in more detail in Section 6.3

of Appendix H, *Technical Memorandum 10.1, Groundwater Modeling Analysis for the Regional Groundwater Storage and Recovery Project and San Francisco Groundwater Supply Project*, of the Draft EIR.

- The time frame for recovering groundwater levels after the take period is a primary assessment of the model analysis. This is discussed in Section 7 of Appendix H, *Technical Memorandum 10.1, Groundwater Modeling Analysis for the Regional Groundwater Storage and Recovery Project and San Francisco Groundwater Supply Project*, of the Draft EIR, and is also addressed in Appendix H, Technical Memoranda 10.2 through 10.6, of the Draft EIR.

- The distribution of facility sites is proposed as part of the Project, so varying the facility sites would not be appropriate in this case. Instead, Chapter 3, Project Description of the Draft EIR includes three alternate sites and Chapter 7, Alternatives of the Draft EIR evaluates the impacts of options for varying pumping.

Comment Letter Item 38

The comment asks how the modeled water levels compare to actual measured current water levels. HydroFocus developed and calibrated the Westside Basin Groundwater Model (2007, 2009, 2011), and those reports do include this comparison of modeled water level conditions to actual water level conditions. HydroFocus well documented these conditions by comparison of hydrographs of modeled water level conditions to actual water level conditions for individual wells. HydroFocus also conducted a statistical evaluation that included several different statistical measures such as root-mean-square-error (RMSE), which compares modeled water level conditions to actual water level conditions on a Westside Groundwater Basin-wide, regional, and subregional basis. The calibration results indicate that, on average, modeled groundwater levels are within about 19 feet of observed water levels (see Appendix H of the Draft EIR, *Technical Memorandum 10.1, Groundwater Modeling Analysis for the Regional Groundwater Storage and Recovery Project and San Francisco Groundwater Supply Project*), which reflects a low RMSE of four percent. The comment also asks for a comparison of modeled and historical potentiometric surfaces. A potentiometric surface is an imaginary surface that defines the level to which water in a confined aquifer would rise were it completely pierced with wells. Potentiometric surfaces are increased by in-lieu recharge and reduced by pumping. As a part of model calibration, HydroFocus compared historical potentiometric surface maps to modeled potentiometric surfaces for appropriate time frames. Therefore, the issues raised in the comment were appropriately addressed in the HydroFocus (2007, 2009, 2011) reports. Also, as noted above in the response to Item 36, the Draft EIR summarized the calibration of the model on page 5.1-7 of the Draft EIR.

9.3.6 Land Use

The comments and corresponding responses in this section cover topics in Section 5.2, Land Use, of the Draft EIR. These include topics related to:

- LU-1, Construction-period Impacts
- LU-2, Land Use Impacts Due to Operations
- LU-3, Cumulative Land Use Impacts
- LU-4, Land Use Decisions
- LU-5, Importance of Irrigation for Cemetery and Golf Club Land Uses
- LU-6, Land Use Designations

Comment LU-1: Comments related to construction-period impacts.

This response addresses comments from the commenter listed below; the comments on this topic are quoted in full below this list:

- G-VA-Madderom

"9. The justification provided on p 5.2-32 for (construction) 'Impact Conclusion: Less than Significant with Mitigation' regarding Land Use for Site 14 is quite faulty. It '[sic] over 1,100 feet of new pipeline construction,' yet the only land use under analyzed regards vehicular traffic internal to the Cemetery. It proposes Mitigation Measure M-LU-1 (Maintain Internal Cemetery Access) as the only necessary Mitigation. It speaks nothing of other types of land use impacts such as: dust, visual, vibration, etc. on National Cemetery operations, including funeral corteges, committal services, interment operations, ceremonies, etc." *(Department of Veterans Affairs, letter, May 25, 2013 [G-VA-Madderom])*

"10. The justification provided on p 5.2-32 for (construction) 'Impact Conclusion: Less than Significant with Mitigation' regarding Land Use for Site 14 is quite faulty. Presented in this same section is an analysis of noise impacts to the adjacent residences – however – it does not present any information, data, or analyses w/r to noise impacts to the National Cemetery operations." *(Department of Veterans Affairs, letter, May 25, 2013 [G-VA-Madderom])*

"11. The justification provided on p 5.2-32 for (construction) 'Impact Conclusion: Less than Significant with Mitigation' regarding Land Use for Site 14 is quite faulty. In the noise analyses (only for residences) it presents, for the first time, the concept of nighttime drilling for installation of wells. No VA National Cemetery nation-wide is allowed to be open after dark. If this nighttime drilling concept is actually proposed, there are no analyses thereof – and regardless, VA would not approve." *(Department of Veterans Affairs, letter, May 25, 2013 [G-VA-Madderom])*

Response LU-1

These comments express concern about the effect of construction activities on land use at the Golden Gate National Cemetery (GGNC) associated with air quality, visual, noise, and nighttime construction impacts.

First, Item 9 in the VA comment letter expresses concern about the Draft EIR's analysis of dust, visual and vibration impacts on GGNC operations. The Draft EIR does, in fact, address dust, visual, and vibration impacts during construction in the appropriate sections of the document, and provides mitigation measures to address each of those issues, as detailed below.

The Draft EIR identifies a potentially significant impact during construction as a result of the Project generating fugitive dust and other construction-related emissions at all sites, including Sites 14 and 15. Estimated emissions of criteria pollutants during construction, including dust (PM_{10} and $PM_{2.5}$) are shown in Table 5.8-5 (Estimated Total Criteria Air Pollutant Construction Emissions [in pounds]) in Section 5.8, Air Quality, of the Draft EIR on pages 5.8-24 and 5.8-25. Mitigation Measure M-AQ-2a (BAAQMD Basic Construction Measures) is presented on page 5.8-26 of the Draft EIR, and is expected to reduce dust impacts during construction to less than significant.

The Draft EIR identifies visual impacts of construction at Sites 14 and 15 starting on page 5.3-69 in Section 5.3, Aesthetics. As noted on page 5.3-70 of the Draft EIR, at Site 14, "the Project would result in *significant* aesthetic impacts due to its strong contrast with the cemetery during construction. However, implementation of Mitigation Measure M-AE-1a (Site Maintenance) would reduce visual impacts to a *less-than-significant* level." Similarly, page 5.3-71 of the Draft EIR identifies construction-period impacts at Site 15 as significant, and notes that "implementation of Mitigation Measure M-AE-1a (Site Maintenance) and Mitigation Measure M-AE-1b (Tree Protection Measures) at this site would reduce this aesthetic impact to a *less-than-significant* level."

The Draft EIR addresses vibration impacts starting in Section 5.7, Noise and Vibration, on page 5.7-48. As noted in the Draft EIR, there are two concerns associated with construction-period vibration; potential annoyance of residential receptors to nighttime vibration, and the potential for damage to buildings. The cemetery is not a residential receptor, and there would be no visitors present at the cemetery at night, so there is no potential for nighttime annoyance due to groundborne vibration. There are no structures close to Site 14, but Site 15 would be constructed in close proximity to a building at the GGNC. The potential vibration impact at Site 15 is identified as potentially significant, and Mitigation Measure M-NO-2 (Reduce Vibration Levels during Construction of Pipelines) would be implemented to ensure that the impact is reduced to less than significant.

As noted in Chapter 3, Project Description on page 3-125 of the Draft EIR, "for construction within or near cemeteries, the SFPUC would temporarily stop construction to accommodate graveside services if requested by the cemetery, and would coordinate with the cemeteries to accomplish this." The SFPUC is committed to minimizing disruption of activities at the cemetery, and this commitment to coordinate with the cemetery, in combination with the mitigation measures discussed above, is expected to reduce any temporary land use impacts associated with construction to less than significant. See also Response OV-1 for a discussion of cumulative land use impacts.

Second, Item 10 in the VA comment letter, expresses concern about the effect of construction noise on operations at the GGNC. The Draft EIR addresses noise impacts during construction, and provides mitigation measures to address construction noise. Section 5.2, Land Use, of the Draft EIR on page 5.2-32, acknowledges that "construction and pipeline installation at Site 14 would affect the land use at the GGNC due to increased levels of noise." A more detailed analysis of construction noise is presented in the Section 5.7, Noise and Vibration, of the Draft EIR. For analysis of impacts to visitors to the GGNC, it is important to recognize (as noted on page 5.7-23 of the Draft EIR) that for construction noise:

> "The duration of exposure at any given noise-sensitive receptor is one consideration in determining an impact's significance. For example, this analysis generally assumes that temporary construction noise that occurs during the day for a relatively short period of time would not be significant. […] For the purposes of this analysis, temporary exposure to construction noise during the daytime would not be considered to result in a substantial temporary increase in ambient noise levels if it is for durations of two weeks or less."

Although construction would occur at the cemetery for longer than two weeks, no individual visitor to the cemetery would be exposed to construction noise for longer than the duration of a single visit.

Table 5.7-19 (Exceedance of Noise Thresholds – Daytime Construction) in Section 5.7, Noise and Vibration, on page 5.7-51 of the Draft EIR presents noise impacts associated with daytime construction. Although it is true that the analysis focuses on noise levels experienced at the nearest residential receptor, the information in the table provides detailed information about noise levels associated with various activities at a distance of 50 feet from the activity. This represents the loudest noise levels that would be experienced within the cemetery. Table 5.7-19 (Exceedance of Noise Thresholds – Daytime Construction), shows that daytime noise levels at 50 feet from the construction activity center (this occurs at Site 5, which is the site with a receptor closest to the construction area) are predicted to be 91 dBA for construction of a well facility and pipeline. Noise levels for the residential receptor at Site 5 would be comparable to noise levels for a visitor to the cemetery within 50 feet of the construction area. Noise levels for pipeline construction within 25 feet of a receptor are estimated to be 88 dBA. Although similar noise levels would be expected to occur within the cemetery during construction, the exposure of individual receptors would be very short, and thus are considered less than significant. As previously noted in Chapter 3, Project Description on page 3-125 of the Draft EIR, "for construction within or near cemeteries, the SFPUC would temporarily stop construction to accommodate graveside services if requested by the cemetery, and would coordinate with the cemeteries to accomplish this."

Third, Item 11 in the VA comment letter expresses objections to nighttime drilling activity and site access restrictions at the GGNC. The comment is not correct that nighttime drilling is discussed for the first time in the noise analysis. Nighttime construction is described in the Draft EIR in Chapter 3, Project Description on page 3-125, which states that "Drilling and other drilling related activities (e.g., equipment and material delivery to support drilling) would extend for about a week both during the day and night." The need for nighttime construction is explained in further detail on page 3-136 of the Draft EIR, which explains that "well installation would require nighttime and weekend activity during the drilling and other drilling-related activities (for up to seven consecutive days and nights) and during pump testing (for one continuous 48-hour period)." While drilling activities could potentially be suspended at night, well construction needs to be completed in one continuous operation that could require working overnight. Pump testing would also need to last for a consecutive period of 24 to 48 hours. These nighttime activities are typical of well drilling and testing.

The SFPUC is not proposing that the U.S. Department of Veterans Affairs (VA) should allow the GGNC to be open to the public after dark. Access to the construction area would be limited to the drillers who would be actively involved in drilling the well, and the SFPUC would coordinate access with cemetery staff. Because nighttime drilling is part of the description of the Project, impacts of nighttime drilling are analyzed throughout the document. For example, nighttime noise impacts at each site are depicted in Table 5.7-20 (Exceedance of Noise Thresholds – Nighttime Construction) beginning in Section 5.7, Noise and Vibration, on page 5.7-55 of the Draft EIR. It is correct that the analysis for Sites 14 and 15 is directed towards the nearest residential receptors, which is deemed appropriate because, as the VA notes, there would be no visitors present at the GGNC at night.

The SFPUC will work with the VA to resolve the VA's construction site access concerns. The Draft EIR has analyzed a worst-case scenario including 24-hour construction for well drilling and testing activities.

Comment LU-2: Comments related to land use impacts due to operations.

This response addresses comments from the commenter listed below; the comments on this topic are quoted in full below this list:

- G-VA-Madderom

"C) SFPUC proposed plan to establish two wells on GGNC cemetery grounds would negatively impact the national cemetery operations and security. Proposed installation of SFPUC operational facilities on the GGNC property carries with it a new level of perpetual non-VA access to the facility. This would lead to non-VA personnel, equipment, and potential SFPUC subcontractors needing to enter upon the cemetery grounds, to perform maintenance and repair on the proposed new facilities." *(Department of Veterans Affairs, letter, May 25, 2013 [G-VA-Madderom])*

"The Summary of Impacts – Land Use Table 5.2-2 presents several errors in analyses:

5. VA is certainly not in agreement with the analysis of LS for Site 14, which alleges that 'Project operations would not result in substantial long-term or permanent impact on the existing character or disrupt of displace land uses.' The well pumps will make substantial noise during operation – not in character with a National Cemetery. More problematic would be the access to the well house for either 'normal' maintenance or 'emergency' repairs. It is presumed that the 'normal' O&M activities, either by

in-house personnel and equipment or by SFPUC contractors, would not take into account the operating requirements of a National Cemetery with respect to funeral corteges, committal services, visitors seeking quiet solitude at gravesites, interment operations, ceremonies, etc.” *(Department of Veterans Affairs, letter, May 25, 2013 [G-VA-Madderom])*

“6. Same comment for Site 15.” *(Department of Veterans Affairs, letter, May 25, 2013 [G-VA-Madderom])*

“12. Section 5.2.3.5 Operation Impact and Mitigation Measures is likewise faulty in its analyses. This section lumps Sites 14 and 15 in with many others as: ‘Less than Significant with Mitigation.’ VA disagrees with the statement concluding: ‘…the cemetery land use would, therefore, not be disrupted or displaced.’ It talks of daily visitation during periods of groundwater pumping. It says nothing regarding scheduling of such visitations, nor their interaction with National Cemetery operations.” *(Department of Veterans Affairs, letter, May 25, 2013 [G-VA-Madderom])*

Response LU-2

These comments refer to the effect SFPUC maintenance activities would have on operations of the GGNC. The comments correctly state that the wells would require routine maintenance. This maintenance activity is described in Chapter 3, Project Description on page 3-142 of the Draft EIR:

> “Each well station would be visited daily when wells are operating for routine equipment checks, lasting approximately 30 minutes each. During normal and wet years (i.e., Put Years), the wells normally would be turned off, but regular exercising would be conducted as described above. At these times, the wells would be visited on a weekly basis or at a frequency determined by on-site conditions. During dry years (i.e., Take Years), the wells would be operational and in production. Longer term maintenance could include removal and repair or replacement of pumps, valves, and other equipment.”

Activities conducted by maintenance personnel would not be expected to be disruptive of cemetery operations, as actual maintenance work would take place within the footprint of each well site, and would typically be quiet and of short duration. Although maintenance vehicles would have to travel along cemetery roads to access the site, these vehicle trips are not expected to disrupt cemetery activities. Well maintenance activities would be similar to many of the activities that are routinely conducted by personnel of the VA to maintain the cemetery, such as mowing grass and general maintenance work. The VA comment letter also notes that the cemetery is open to the public and receives a substantial number of visitors each day, so the addition of a daily or weekly visit by a single SFPUC maintenance worker would not constitute a substantial change in the number of non-VA personnel entering the cemetery grounds.

Section 3.8.3 (Maintenance) of the Draft EIR describes maintenance activities. To address the concerns expressed in the comment the SFPUC has committed to coordinating maintenance operations with GGNC. Coordination with GGNC would include consideration of cemetery operating requirements, services, ceremonies, and other cemetery activities. Text in Chapter 3, Project Description is revised to clarify the SFPUC's commitment to coordinate maintenance activities with cemetery management and operational staff.

Chapter 3, Project Description, pages 3-141 and 3-142 of the Draft EIR, Section 3.8.3 (Maintenance) are revised as follows. Additional revisions are made in response to Comment HY-5. All of the changes to the Draft EIR are presented in Section 9.5, Draft EIR Revisions.

3.8.3 Maintenance

Project wells would require exercising to ensure that the facilities remain operational during normal and wet years. Well exercising would occur either weekly or monthly. Wells would be exercised for one hour per week or for a single, four-hour period monthly. Flow rates for exercising are anticipated to be between 300 to 600 gpm. Operators may fine-tune the exercise schedule according to the characteristics of individual wells. A possible maintenance issue is bio-fouling,[17] which may require periodic disinfection as part of the exercise program. Groundwater pumped during exercising would be discharged to a local storm drain. In the event there is still chlorine residual in the groundwater, the water would be discharged to a sanitary sewer or dechlorinated prior to discharging to a storm drain. Partner Agencies would continue pumping their existing wells during Put Years as needed to maintain operability.

All well stations would be unmanned. Each well station would be visited daily when wells are operating for routine equipment checks, lasting approximately 30 minutes each. During normal and wet years (i.e., Put Years), the wells normally would be turned off, but regular exercising would be conducted as described above. At these times, the wells would be visited on a weekly basis or at a frequency determined by on-site conditions. During dry years (i.e., Take Years), the wells would be operational and in production. Longer term maintenance could include removal and repair or replacement of pumps, valves, and other equipment.

Production wells may require redevelopment and/or rehabilitation on an infrequent basis. The life of production wells is estimated to be at least 50 years, although pumps may need to be replaced every 15 to 20 years.

<u>For GGNC well sites (Sites 14 and 15), the SFPUC would coordinate with the GGNC to schedule maintenance activities taking into account the operational requirements of a National Cemetery. Scheduling of maintenance activities will include consideration of cemetery operating requirements, services, ceremonies, and other cemetery activities.</u>

[17] Bio-fouling is the undesirable accumulation of microorganisms in the well. Well screen fouling can occur due to microorganisms which clog the pores of the screen, which in turn reduce flow from the well.

This revision does not change the analysis or conclusions presented in the Draft EIR.

Operational noise impacts are evaluated in the Draft EIR. Specific to the wells within the GGNC, and as noted in Table 5.7-24 (Exceedance of Noise Thresholds – Operation) in Section 5.7, Noise and Vibration, on page 5.7-89 of the Draft EIR, the wells at Sites 14 and 15 would not exceed operational noise thresholds because the submersible pump would not increase ambient noise levels. The noise from the pumps would not, thus, affect the character of nor disrupt the land use of the cemetery.

Comment LU-3: Comments related to cumulative land use impacts.

This response addresses comments from the commenter listed below; the comments on this topic are quoted in full below this list:

- G-VA-Madderom

"7. With respect to Site 14 – one cannot conclude that a 'Cumulative Impact' can be 'Less than Significant' if there is a Direct Impact (see comment #5 above)." *(Department of Veterans Affairs, letter, May 25, 2013 [G-VA-Madderom])*

"8. Same comment for Site 15." *(Department of Veterans Affairs, letter, May 25, 2013 [G-VA-Madderom])*

Response LU-3

These comments express the opinion that if there is a Project impact, there must also be a significant cumulative impact. This is not correct, as there can only be a cumulative impact if there is an impact to which both the GSR Project and other identified projects contribute. Section 15130 of the CEQA Guidelines discusses cumulative impacts and notes that "a cumulative impact consists of an impact which is created as a result of the combination of the project evaluated in the EIR together with other projects causing related impacts." Projects that were considered for cumulative impacts are shown on Figure 5.1-3 (Location of Projects Considered in the Cumulative Analysis), in Section 5.1, Overview, on page 5.1-24 of the Draft EIR and described in Table 5.1-3 (Projects Considered for Cumulative Impacts), which begins on page 5.1-26 of the Draft EIR. At the time the Draft EIR was prepared, the VA had not informed the SFPUC that the VA was considering re-establishing wells at the GGNC. It now appears that there is a possibility that the VA could construct well facilities in the vicinity of Sites 14 and 15. An evaluation of cumulative impacts related to the possibility of such a VA project occurring in the same area as these two sites is included in Response OV-1. The analysis concludes that the addition of this potential VA project to the list of cumulative projects to which the Project could contribute impacts would not change the conclusions reached in the Draft EIR regarding the Project's cumulative impacts. Please refer to Response OV-1 for a more detailed discussion.

Comment LU-4: Comment related to land use decisions.

This response addresses a comment from the commenter listed below; the comment on this topic is quoted in full below this list:

- I-Robert

"One of the proposed sites is outside the window from where I write this message to you. Unless you live near one of these proposed sites as well, and are ok with another city deciding land use near your home without possible good reason, perhaps this helps explain why it is difficult to readily accept this project." *(Robert, letter, May 2, 2013 [I-Robert])*

Response LU-4

This comment expresses concern about another city (i.e., San Francisco) making land use decisions in the City of San Bruno. The City of San Bruno is partnering with the SFPUC to implement the Project. As noted on page 1-1 of the Draft EIR, the proposed Project is "sponsored by the SFPUC in coordination with its partner agencies, the cities of Daly City and San Bruno and the California Water Service Company." Further, the purpose of the Project is to benefit all users of the regional water system, which serves the Peninsula, parts of the South and East Bay, and the City of San Francisco, so Peninsula cities are among the beneficiaries of the Project. Although the City of San Francisco is the lead agency for environmental review of the proposed Project, the City of San Bruno is a responsible agency, and, as such, is listed as a permitting agency in Table 3-11 (Regulatory/Permitting Agencies/Utility) in Chapter 3, Project Description on page 3-144 of the Draft EIR. The City of San Bruno will need to approve the Operating Agreement for the Project. Thus, the City of San Bruno is fully aware of and coordinating with the SFPUC in implementing the Project.

The proposed Project well facility sites in San Bruno would be located within the existing SFPUC right-of-way within the GGNC. The SFPUC is required under Government Code Section 65402(b) to inform local governments of its plans to construct buildings or structures or to acquire or dispose of real property in their jurisdictions. The local governments have a 40-day review period to determine project consistency with their general plans. Under this requirement, the cities' or counties' determinations of consistency are advisory to the SFPUC rather than binding. However, the SFPUC seeks to work cooperatively with local jurisdictions where SFPUC-owned facilities are sited outside of San Francisco to avoid conflicts with local land use plans and building and zoning codes.

Comment LU-5: Comments related to the importance of irrigation for cemetery and golf club land uses.

This response addresses comments from the commenter listed below; the comments on this topic are quoted in full below this list:

- O-CLMP-Quick

"Green lawns and other irrigated landscapes are critically important to both cemeteries and golf courses. For cemeteries, the well-kept appearance of the grounds is an important source of comfort to the bereaved. Those who choose to bury their loved ones at a cemetery do so with the expectation that the grounds will be well-maintained in perpetuity. Cypress Lawn takes this solemn responsibility very seriously. The GSR Project's potential to interfere with the cemeteries' beneficial use of groundwater threatens to undermine the ongoing viability of these land uses. These are not merely economic or social impacts – reductions or loss of the cemeteries' critically important groundwater supplies could cause a form of blight or urban decay that the DEIR must also consider.

The importance of a well-watered and manicured lawn for golf courses is obvious. The DEIR fails to fully disclose the ramifications of the GSR Project's potential to interfere with the critical water supply of numerous golf courses." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

"The GSR Project will deepen groundwater levels in the Westside Groundwater Basin near existing irrigation wells, resulting in unavoidable adverse effects from well interference. This interference will cause deeper water levels and irrigation water currently supplied by existing irrigation wells could be decreased to the extent that existing irrigation uses would not be fully supported. The quality of turf grass at cemeteries and golf clubs is an important and vital component of the attractiveness of these facilities and hence the long-term economic viability of these land uses. Insufficient irrigation water would result in a deterioration of existing turf grass and landscaping, affecting operating conditions at both golf clubs and cemeteries." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

Response LU-5

These comments express the importance of irrigation for golf club and cemetery land uses. The Draft EIR contains an extensive evaluation of the Project's effect on existing irrigation wells and the ability of those irrigation wells to support overlying land uses. The well interference analysis in Section 5.16, Hydrology and Water Quality, beginning on page 5.16-73 of the Draft EIR under Impact HY-6, evaluates the impacts of Project operation on irrigation wells such that existing or planned land uses may not be fully supported. Therefore, the analysis in Section 5.16 considers impacts on land use associated with a reduction in the availability of irrigation water due to well interference.

To clarify this, the following text has been added to the Draft EIR after the first full paragraph on page 5.2-18:

> Impacts on land use associated with the inability to irrigate turf at golf clubs and cemeteries due to well interference resulting from Project pumping are evaluated in Section 5.16, Hydrology and Water Quality.

The well interference analysis in Section 5.16, Hydrology and Water Quality, beginning on page 5.16-73 of the Draft EIR under Impact HY-6, evaluates the impacts of Project operation on irrigation wells such that existing or planned land uses may not be fully supported, and provides the analysis of impacts that well interference would have on potentially affected cemeteries and golf clubs. The impact evaluation recognizes the importance of water supply to both golf clubs and cemeteries. The evaluation of well interference acknowledges that brown grass resulting from reduced irrigation water caused by well interference resulting from the Project may potentially disrupt overlying land uses. Poor turf quality could disrupt the land use at golf clubs as patrons may not utilize the facility if the grass on the greens and fairways is brown.

In addition to hydrology and water quality impacts, potential land use, aesthetic, and cultural resource impacts associated with well interference would be mitigated through implementation of revised Mitigation Measure M-HY-6 (Ensure Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation) (see Response HY-15), which establishes a Performance Standard that requires the SFPUC to ensure that the Project does not damage irrigators' wells or cause the wells not to meet existing production capacity or peak irrigation demand, whichever is less. As a result, impacts related to well interference caused by the Project would be avoided, or reduced to less-than-significant levels. Also see Responses AE-6 and CR-2 for discussion of well interference impacts related to visual quality and historic resources.

Objective criteria for determining whether loss of pumping capacity at existing irrigation wells is due to the Project are described on page 5.16-97 of the Draft EIR and revised in Response HY-15. The actions included in the revised mitigation measure (as described in Response HY-15) would avoid an impact on the ability of overlying land uses to irrigate their lands. The mitigation measure contains a clear commitment to maintaining water supplies for existing irrigators, and this commitment would be enforced as part of the Mitigation Monitoring and Reporting Program for the Project. The San Francisco Planning Department's Environmental Review Officer (ERO) enforces the Project's mitigation and monitoring requirements. Well interference impacts caused by the Project would be less than significant following implementation of revised Mitigation Measure M-HY-6 (Ensure Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Uses Due to Project Operation) as discussed in Response HY-15.

The Approach to Analysis section on pages 5.16-82 and 5.16-83 of the Draft EIR is revised as shown below. The same revisions are made in response to Comments AE-6 and CR-2. All changes to the Draft EIR are presented in Section 9.5, Draft EIR Revisions.

> ***Approach to Analysis***
>
> Well interference could occur due to Project-related pumping in a manner that would result in a lowering of the local groundwater to a level where the production rate of preexisting nearby wells would drop to a level that would not fully support existing or planned land uses. For purposes of this analysis, a significant impact would result if the Project were to cause groundwater levels to decrease such that (1) the pump discharge rates of existing irrigators' wells decrease substantially enough that existing or planned land uses would not be fully supported, or (2) groundwater levels fall below the top of the well screen of existing irrigators' wells, resulting in decreased pump discharge rates and potential damage to the well that are substantial enough that existing or planned land uses would not be fully supported. The former cause of well interference is analyzed quantitatively and the latter cause is analyzed qualitatively, as described below.
>
> <u>The well interference analysis presented in this section also applies to impacts to land use (Section 5.2, Land Use), aesthetics (Section 5.3, Aesthetics) and cultural resources (Section 5.5, Cultural Resources) that could result from insufficient water to support existing or planned land uses due to well interference caused by the Project.</u>

Comment LU-6: Comment related to land use designations.

This response addresses a comment from the commenter listed below; the comment on this topic is quoted in full below this list:

- G-VA-Madderom

"2. With respect to Proposed Well 14 - the analysis presented in Table 5.2-1 similarly incorrectly notes the easement status – it is noted under the column heading: 'On SFPUC Land?' as 'Yes, SFPUC Right of Way'.

3. With respect to Proposed Well 14 - in this same table – it notes that the construction is 'adjacent' to the land use of 'Cemetery' – when in fact, it is in the middle of a Veterans National Cemetery.

4. With respect to Proposed Well 14 page 5.2-13 repeats this assertion of 'existing SGPUC easement'." *(Department of Veterans Affairs, letter, May 25, 2013 [G-VA-Madderom])*

Response LU-6

These comments are related to the Draft EIR's description of land use designations as it relates to Site 14. In Section 5.2, Land Use, on page 5.2-7 of the Draft EIR, Table 5.2-1 (Land Uses in the Vicinity of Facility Sites) has been revised as follows for Site 14:

TABLE 5.2-1
Land Uses in the Vicinity of Facility Sites

Site	Jurisdiction	On SFPUC Land?	Land Uses in the Vicinity of the Construction Area (including Pipelines)	Minimum Distance from Construction Area to Land Use
Site 14	San Bruno	~~Yes,~~ No, owned by U.S. Department of Veterans Affairs with SFPUC easement for pipeline ~~Right of Way~~	Cemetery (Golden Gate National Cemetery)	~~Adjacent~~ Site is within Cemetery

The second sentence under the sub-heading **Site 14** on page 5.2-13 of the Draft EIR has been revised as follows:

> The construction area at Site 14 would be located on an existing SFPUC pipeline easement near the northern boundary of the cemetery, in proximity to gravesites.

These minor clarifications do not change any of the conclusions of the EIR analysis. The more detailed description of Site 14 on pages 5.2-13 and 5.2-14 recognizes that the site is within the cemetery, and the analysis is based on that fact.

9.3.7 Aesthetics

The comments and corresponding responses in this section cover topics in Section 5.3, Aesthetics of the Draft EIR. These include topics related to:

- AE-1, Visual Impact of Tree Removal and Replanting at Site 7
- AE-2, Visual Quality at Site 8
- AE-3, Visual Impacts at Site 9
- AE-4, Design of Well Facility Sites in Colma
- AE-5, Aesthetic Impacts at Sites 14 and 15
- AE-6, Project's Effects on the Aesthetic Quality of Cypress Lawn Memorial Park and Other Cemeteries
- AE-7, Project's Effects on Water Quality Aesthetics

Comment AE-1: Comment related to the visual impact of tree removal and replanting at Site 7.

This response addresses a comment from the commenter listed below; the comment on this topic is quoted in full below this list:

- G-Colma-Laughlin

"*Tree Removal and Replacement, Mitigation Measure M-AE-1e*: The project includes the removal of trees within a tree mass recognized in the General Plan. While the General Plan does not preclude modification of tree masses or tree removal, it is the Town's expectation and desire that replacement trees and landscaping be provided in strategic locations along Colma Boulevard to maintain and even enhance its scenic quality and to visually screen proposed improvements. Specifically, the Town would like to see a slightly bermed planting in the island currently occupied by dirt and weeds directly behind the sidewalk along Colma Boulevard, and in additional locations along and surrounding site, with a majority of the improvements close to Colma Boulevard. With this additional clarification, we concur with the Mitigation Measure as written." *(Colma Planning Department, letter, May 28, 2013 [G-Colma-Laughlin])*

Response AE-1

This comment relates to views of GSR Site 7 and the use of restorative plantings to mitigate the visual impacts at this site. The comment requests greater specificity as to the location of these plantings. The second paragraph of Mitigation Measure M-AE-1e (Tree Removal and Replacement) states that restorative planting shall occur on-site as a first option and, if on-site plantings are found not to be feasible, off-site planting shall be conducted in substantial compliance with the Town of Colma's Tree Cutting and Removal ordinance (i.e., tree ordinance). This is consistent with Section 5.06.050(f) in the Town's tree ordinance.

Mitigation Measure M-AE-1e (Tree Removal and Replacement) provides the opportunity for the SFPUC to consult and work with the Town in locating sites for restorative plantings. It is expected that this level of detailed discussion would occur after completion of the Final EIR. Restorative planting will also take into account SFPUC vegetation management policies as Mitigation Measure M-AE-1e states. One site suggested in the comment, the "island" along Colma Boulevard, may not be suitable as a location for off-site planting as it appears to lie directly over the SFPUC pipeline. Pursuant to the SFPUC's Integrated Vegetation Management Policy, trees cannot be over such facilities to avoid potential damage caused by tree roots. Nonetheless, as the mitigation measure states, the SFPUC would find suitable replacement locations that comply with Colma's tree ordinance.

Comment AE-2: Comments related to the visual quality at Site 8.

This response addresses comments from the commenter listed below; the comments on this topic are quoted in full below this list:

- G-Colma-Laughlin

"*Site 8, Aesthetics, pg. 5.3-24*. The Town is in strong disagreement with the statements regarding the characteristics of Site 8. The site is visible from the Town's highly successful and visually pleasing auto row, behind a successful renovated retail building (Kohl's) and across the street from the historic Town Hall. Visual quality of the area is not moderately low – it would be moderate to moderately high. Site 8 also has high (not low) viewer concern, especially from our auto dealer community and the Town. Over the past year, the Town has had numerous meetings with SFPUC staff only to be disappointed with their reluctance to make any substantive changes to the structure proposed on Site 8 that would make it more attractive than a concrete bunker that will serve to substantially degrade the visual character of our auto row. The site is in close proximity to auto dealerships which have invested millions of dollars in facilities and upgrades to existing facilities. The new 28 million dollar Lexus dealership is just northwest of the site. The Final EIR must address compliance with Town of Colma design requirements. Based on the Table 5.3-3, the Town finds that the proposed building on Site 8 would have a significant impact based on moderate to moderately high visual contrast/change and moderate to moderately high visual sensitivity." *(Colma Planning Department, letter, May 28, 2013 [G-Colma-Laughlin])*

"*Site Maintenance, Mitigation Measure M-AE-1a*: We agree that construction will have a temporary visual impact on the visual character of the site or its surroundings. However, we believe that there is also a visual impact at Site 8, which is along one of our primary commercial thoroughfares (Serramonte Boulevard) and should be included as one of the sites requiring mitigation. Once applied (for site 8), there would be a less than significant impact. We agree with the conclusion of this Mitigation Measure as applied to Site 7." *(Colma Planning Department, letter, May 28, 2013 [G-Colma-Laughlin])*

"*Landscape Screening, Mitigation Measure M-AE-3a*: We concur with this Mitigation Measure as applied to Site 7. We believe that the addition of a building at Site 8 will create a significant visual impact that will require landscape screening and this impact should be discussed in the Final EIR. Over the past year we have had meetings with the SFPUC concerning the aesthetics of the building proposed at Site 8, expressing strong concerns about the visual impact of the proposed structure to our surrounding commercial businesses and our historic Town Hall to the north. During one of the meetings, we concluded that 2-3 trees could be planted to the north of the building to screen views of the building as viewed from Serramonte Boulevard without conflict to the Integrated Vegetation Management Policy. In addition, we have requested planting of approved vegetation on the slope directly adjacent to Serramonte Boulevard to resolve a long-standing property maintenance issue with overgrown weeds. We request that this Mitigation Measure, with the provisions stated above, be applied to Site 8." *(Colma Planning Department, letter, May 28, 2013 [G-Colma-Laughlin])*

Response AE-2

This group of comments relates to the visual impact assessment specific to Site 8. The comment takes issue with the visual characterization of Site 8 and the impact findings based on that characterization. The comment notes in particular such existing adjacent visual components as the renovated Kohl's department store, neighboring automobile dealerships, and Town Hall. The comment also suggests that the level of visual impact at Site 8 would require implementation of Mitigation Measure M-AE-3a (Implement Landscape Screening).

Section 5.3.1.1 (Concepts and Terminology) of the Draft EIR presents and defines the concepts used in the Project's analysis of visual impacts. Section 5.3.3.1 (Significance Criteria) presents the criteria that were used to determine the potential for visual impact and the significance of that impact, which includes the visual character or quality of a GSR well facility site. All of these concepts and criteria are related to the visual context at and surrounding a GSR well facility site and experience of the viewer. Finally, Section 5.3.3.2 (Approach to Analysis) explains how these concepts and criteria were used in the evaluation of visual impacts.

While the area surrounding Site 8 encompasses a number of newly refurbished commercial establishments, the viewers in the area typically are transitory and do not permanently reside there. Whether the viewer is a motorist or a pedestrian, the majority of publically-accessible views of Site 8 would be passing (i.e., temporary). As noted in the analysis, the visual character of the area is commercial. The well facility structure at Site 8 would be adjacent to the rear of the Kohl's department store (east), a concrete retaining wall (west), and an automobile dealership (west, at a higher elevation). All of these structures have hard-line, angular architectural features with little or no special visual treatments. While acknowledging the substantial financial investment by surrounding businesses, the area around Site 8 is not considered in this EIR to be a scenic resource or scenic vista point. There is not a straight-line view of the well facility from Town Hall, with the possible exception of the furthest western side of its parking lot. For these reasons, consistent with the significance criteria, the visual analysis identified Site 8 as having moderately low visual quality, and the potential for impact was less than significant.

Regardless of the existing visual character of the site, the SFPUC intends to continue to work with the Town of Colma on planning for Site 8. The SFPUC is working with the Town of Colma to modify the architectural design of the Site 8 structure to meet the Town's Spanish/Mediterranean design requirements, and will work with the Town to identify appropriate species and locations for planting two to three trees on Site 8.

The following text has been added to the end of the Site 8 description on page 3-73 of the Draft EIR:

> <u>A landscape screening plan would be prepared for Site 8 to screen views from Serramonte Blvd. The plan would be prepared in cooperation with the Town of Colma.</u>

The Draft EIR's conclusion that visual impacts would be less than significant is considered appropriate. Also, as noted above, in Response AE-1, Mitigation Measure M-AE-1e (Tree Removal and Replacement) provides the opportunity for the SFPUC to consult and work with the Town in locating sites for restorative plantings that are required to mitigate impacts at Site 7. This could include plantings in the vicinity of Site 8, as long as they are in compliance with the SFPUC Integrated Vegetation Management Policy.

Comment AE-3: Comment related to the visual impacts at Site 9.

This response addresses a comment from the commenter listed below; the comment on this topic is quoted in full below this list:

- G-Colma-Laughlin

"*Site 9 Visual Impacts*. Figure 3-23 shows that a chemical treatment and filtration building will be highly visible from the back windows of 4-5 historic residences to the east within Colma, in addition to residences at the Verano neighborhood. The Final EIR must address this visual impact and mitigation."
(Colma Planning Department, letter, May 28, 2013 [G-Colma-Laughlin])

Response AE-3

This comment relates to the visual impact of Site 9. As noted throughout Section 5.3.3.2 (Approach to Analysis), visual resource impacts were assessed from publicly accessible areas. However, it is acknowledged that Site 9 is visible from the back of private residences that comprise the Lagomarsino Farm District and the Verano neighborhood, even though these are not publicly accessible areas. As noted on page 5.3-27 of the Draft EIR, visual elements surrounding Site 9, such as the Costco store, Treasure Island Trailer Court, the Colma Creek Diversion Channel, and San Mateo County Flood Control Channel, provide definition of the visual quality of the area, which is considered low according to the visual analysis in the Draft EIR.

The residential buildings on Mission Road that are referenced in the comment are separated from Site 9 by the Colma Creek Diversion Channel. Views from the top floor of those residences whose backyards and windows face directly toward Site 9 are substantially blocked by a berm and fence on the northeast side of the channel. Residences further to the southeast, including the Verano

Condominiums, face toward the Costco parking lot, and have only indirect views of Site 9. Also, as noted on page 5.3-85 of the Draft EIR, "The gray or stone architectural finish described in Chapter 3, Project Description, Section 3.4.2.2 (Well Facility Types) would soften the utilitarian appearance of the structure." Based on these considerations, the Project would not result in a significant visual impact due to construction of a new facility at Site 9.

Comment AE-4: Comment related to the design of well facility sites in Colma.

This response addresses a comment from the commenter listed below; the comment on this topic is quoted in full below this list:

- G-Colma-Laughlin

"The Town has worked very hard to create a cohesive design style, and we consider any variation for the proposed structures to be a significant impact, requiring mitigation. This must be addressed in the Final EIR with the inclusion of compliance with Town of Colma design requirements. In addition, the general discussion about the Town of Colma in the Aesthetics section should be updated to include this information." *(Colma Planning Department, letter, May 28, 2013 [G-Colma-Laughlin])*

Response AE-4

This comment relates to the design of well facility sites located in the Town of Colma. The SFPUC is working with the Town of Colma to modify the architectural design of well facility structures in Colma to meet the Town's Spanish/Mediterranean design requirements. The Town's design requirements are acknowledged in the discussion of Plans and Policies in Chapter 4, Plans and Policies, of the Draft EIR, which includes a section on the *Town of Colma General Plan*. Text on page 4-10 of the Draft EIR recognizes the Town of Colma's policy regarding "incorporating a Spanish/Mediterranean architectural theme into facility designs." No revisions to the Draft EIR are thus deemed necessary.

Comment AE-5: Comments related to aesthetic impacts at Sites 14 or 15.

This response addresses comments from the commenter listed below; the comments on this topic are quoted in full below this list:

- G-VA-Madderom

"B) SFPUC's proposed plan to establish two wells on GGNC cemetery grounds would have negative impact to the aesthetic environment and operation of the national cemetery." *(Department of Veterans Affairs, letter, May 25, 2013 [G-VA-Madderom])*

"13. With respect to Site 14 - Table 5.3-4 presents a 'Less than Significant' conclusion regarding night-time light during construction - how can this conclusion be correct when P5.2-32 speaks of night-time well drilling? There is minimal lighting in any National Cemetery – primarily honor flag and security lighting only – any night-time construction lighting would stand out tremendously.

14. Same comment for Site 15." *(Department of Veterans Affairs, letter, May 25, 2013 [G-VA-Madderom])*

"15. Page 5.3-70 notes that '... relatively few visitors would be affected by the construction activities over the 16-month duration at this location.' This conclusion is quite incorrect. GGNC typically performs approximately 500 burials per year and typically receives hundreds of visitors throughout the cemetery grounds on a daily basis for activities such as gravesite visitation, funeral corteges, committal services, and ceremonial activities.

16. Page 5.3-70 also notes that '... less-than-significant level... and inconspicuous construction area during the entire construction period and for all phases of construction in the GGNC.' How does SFPUC plan to construct an 1,100' trenching operation for installation of water and storm water pipelines and an electrical feed 'inconspicuously? How does SFPUC intend to require this in their Statement of Work? How does SFPUC intend to enforce said conditions of 'inconspicuousness'? VA does not believe inconspicuous construction would be feasible in this scenario.

17. Similar comments for Site 15 as #15 and #16 above." *(Department of Veterans Affairs, letter, May 25, 2013 [G-VA-Madderom])*

"18. Page 5.3-94 presents a statement regarding to access to the proposed well pump house during construction, which is in contradiction to that of operation. 'The mitigation measure requires that the well facility be located as close to the north GGNC fence... It also requires the use of plywood temporarily placed on the ground to access the well facility, thereby eliminated the need for permanent grass pavers…' M-CR-5a states there will be grass pavers. Which is it?" *(Department of Veterans Affairs, letter, May 25, 2013 [G-VA-Madderom])*

Response AE-5

These comments generally take issue with the parameters with which aesthetic impacts at Sites 14 and 15 were assessed and mitigation measures developed. The SFPUC consulted with local Golden Gate National Cemetery (GGNC) staff during the EIR process and considered the input of this local staff in developing the mitigation measures for Sites 14 and 15. The SFPUC would continue to work with GGNC staff on details related to the design of structures at these sites. While it is acknowledged that the Project would introduce structures into the GGNC, the designs proposed for the structures would be compatible with existing structures.

With regard to nighttime construction activities, nighttime drilling would be limited to the actual well-drilling operation, which is described in Section 3.5.1 (Construction Sequencing and Scheduling) on page 3-125 as requiring 24-hour drilling for "about a week." Well pumping tests would also require "continuous pumping for 12 to 48 hours," which might also require nighttime activity, depending on the total duration of the test. As shown in Table 3-7 (Facility Construction Clusters and Construction Sequencing), well-drilling is proposed to occur in August and September, 2014. Section 3.5.1.5 (Temporary Lighting) also describes the construction lighting plan that the SFPUC or contractor would prepare to minimize light spillover. Pages 5.3-77 through 5.3-78 state, "the amount of nighttime lighting necessary for 24-hour drilling and pump testing operations would not be substantial, in that such lighting would be directed downward, covering only the area occupied by the drill rig and its immediate surroundings as would be required in the Project lighting plan." The comment letter notes that "No VA [Department of Veterans Affairs] National Cemetery nation-wide is allowed to be open after dark." The Project would not require the cemetery to be open to visitors; the SFPUC work at night would be performed under an agreement with GGNC and not for the purpose of visiting the cemetery. Further, as there would be no visitors present at the cemetery during nighttime drilling activities, visitors would not be exposed to the visual impacts of the limited nighttime lighting required for drilling.

Regarding visual impacts of other construction activities, the Draft EIR determined that Project Impact AE-1 (adverse impact on visual character of a site or its surrounding during construction) was significant as a result of construction activities at Sites 14 and 15. Table 5.3-4 (Summary of Impacts – Aesthetics) found that construction at Sites 14 and 15 would have a substantial adverse impact on visual character of the site and its surroundings. To address these significant visual impacts, the Project includes implementation of Mitigation Measure M-AE-1a (Site Maintenance), Mitigation Measure M-AE-1b (Tree Protection Measures), Mitigation Measure M-CR-1a (Minimize Construction-related Impacts on Elements of the Historical Resource at Site 14), and Mitigation Measure M-AE-1d (Construction Area Screening). Extensive mitigation is proposed and was determined to reduce impacts to less-than-significant levels, based on the temporary nature of construction activities and the estimated frequency of visitor usage in the vicinity of Sites 14 and 15.

As shown in the photographs in Figure 5.3-9 (Views of Sites 14 and 15), Site 14 is within an existing grass-covered SFPUC right-of-way area adjacent to an existing unused pump station at the northern boundary of the cemetery. As noted on page 5.3-39 of the Draft EIR, the site is not visible from the monument at the main entrance to the cemetery or from the entrance at Sneath Lane. Construction would only be visible to visitors in the immediate vicinity of the site.

As shown in Figure 5.3-9 (Views of Sites 14 and 15), Site 15 is located adjacent to the cemetery operation and maintenance facility. The site is on the southeast side of the existing maintenance facility. While Site 15 is visible from Sneath Lane, as noted on page 5.3-43 of the Draft EIR, the operations and maintenance building screens the site from views from within the cemetery. Site 15 is thus only visible from a small number of gravesites.

Although there may be many visitors to the cemetery as a whole, the two areas that would be affected by construction of the Project would be limited, would not be in areas occupied by visitors, and are not highly visible except to visitors to the immediate area surrounding Sites 14 and 15. Each individual visitor would likely be present for only a relatively short time. Given the large size of the cemetery (161 acres), only a small portion of gravesite visitations, or any subsequent interments would be expected to occur in the vicinity of Sites 14 and 15. Construction activities would be inconspicuous from the majority of the cemetery due to its overall size. These factors would all limit the potential exposure of any particular individual visitor to visual impacts.

The SFPUC would work with GGNC to reach agreement on use of GGNC property for these well facilities. The Draft EIR identifies mitigation measures for CEQA purposes that the SFPUC would expect to be part of any such agreement. To ensure that the pipeline is constructed inconspicuously, the SFPUC would enforce Mitigation Measure M-AE-1a (Site Maintenance), which requires contractors to keep construction sites "as clean and inconspicuous as practical". This would be enforced by incorporating this measure in Project specifications and monitoring construction activity to ensure compliance with the required good housekeeping practices. As described on page 5.3-65 of the Draft EIR, this measure requires construction practices such as storing construction materials and equipment in areas away from public view, and removing construction debris promptly at regular intervals. Timing of construction would also be adjusted to ensure that construction at GGNC is not intrusive. As noted on page 3-125 of the Draft EIR, "the SFPUC would temporarily stop construction to accommodate graveside services if requested by the cemetery, and would coordinate with the cemeteries to accomplish this." The relatively short duration of construction would reduce the number of visitors who would be exposed to construction activity. As noted on page 3-125 of the Draft EIR, "Pipeline installation would generally proceed at a rate of 300 to 600 feet per week." For unpaved areas within the GGNC, the rate would likely be faster, at about 600 feet per week, so pipeline construction could likely be completed in about two weeks.

To access the well facility at Site 14, the discussion presented on page 5.3-94 presents two alternatives to provide flexibility in minimizing the potential visual impact of the facility. The alternatives are offered as it is premature to assume which option would meet with the State Historic Preservation Officer (SHPO) approval. Mitigation Measure M-CR-5a (Minimize Facilities Siting Impacts on Elements of the Historical Resource at Site 14) states that "The SFPUC shall lay plywood or other material down temporarily for access between the cemetery access road and construction area during construction, unless the type and use of grass pavers proposed are determined by SHPO to be compatible with the historical resource." The SFPUC would use whichever option is acceptable to SHPO, so it is not believed that there is any contradiction.

The findings of the visual analysis of Sites 14 and 15 are thus deemed to be appropriate.

Comment AE-6: Comments related to the Project's effects on the aesthetic quality of Cypress Lawn Memorial Park and other cemeteries.

This response addresses comments from the commenter listed below; the comments on this topic are quoted in full below this list:

- O-CLMP-Quick

"The general risks to the aquifer posed by the GSR Project, and the specific risks posed by the proximity of five GSR Project wells, have potentially significant impacts on Cypress Lawn's ability to continue to use its existing irrigation infrastructure and maintain its landscaping (including historically significant landscaping). The GSR Project poses risks of significant impacts to the aesthetic and historic resources of Cypress Lawn's and other cemeteries." (*Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

"The aesthetic impacts of such interruptions or reductions in irrigation supplies on the visual character of the cemeteries would be swiftly felt and significant. The significance of these impacts would be heightened because the DEIR includes cemetery visitors in the category of '[*s*]*ensitive viewers*.' As 'sensitive viewers' cemetery visitors have 'a strong stake or interest in the quality of the landscape and have a greater level of concern towards changes that degrade or detract from the visual character of an area.'[73]

In this context, and given the acknowledged dominance of cemetery landscapes within Colma,[74] the DEIR's aesthetics analysis is patently inadequate, as it completely fails to analyze the aesthetic effects of such reasonably foreseeable irrigation reductions and/or interruptions on cemeteries, including Cypress Lawn. The DEIR defines the visual study area analyzed as consisting solely of each 'facility' (i.e., GSR Project well and related infrastructure). This overly narrow definition is clearly inadequate. While interruptions or reductions in groundwater supplies for overlying irrigators may not be the intended purpose of the GSR Project, they are clearly reasonably foreseeable consequences of the Project. CEQA requires that EIRs analyze both direct and indirect impacts of projects.[75]

Turf landscapes are particularly sensitive to even brief interruptions in irrigation. Particularly in light of Mitigation Measure M-HY-6's failure to include objective criteria for determining whether an interruption or reduction in an overlying irrigator's supplies is attributable to the GSR Project, and the lack of a clear commitment to preventing any such interruption or reduction, there is a reasonably foreseeable probability that overlying irrigators of cemeteries, including Cypress Lawn, will experience interruptions and reductions in irrigation supplies, leading to significant impacts to Colma's visual quality, and significant impacts on sensitive viewers. The DEIR must be revised to include an analysis of the GSR Project's direct and indirect aesthetic impacts on cemetery uses, including an analysis of cumulative aesthetic impacts across a visual study that is not overly narrowly defined, so that it captures all reasonably foreseeable effects of the GSR Project, including the aesthetic impacts that could result from interference with the existing irrigators groundwater wells.

[73] DEIR, p. 5.3-2.

[74] "Colma is a community dominated by cemeteries surrounding a commercial core .... The aesthetic component of the community's character is largely a function of the cemeteries and associated open space and landscaping. Well groomed lawns, rolling hills, manicured landscaping and natural vegetation, quiet scenic areas for meditation, and tranquil paths for strolling are common and essential features of Colma's memorial park uses.' DEIR, p. 5.3-4 - 3.4-5.

[75] Guidelines § 15126.2 (a). Indirect effects are defined as 'a physical change in the environment which is not immediately related to the project, but which is caused indirectly by the project.' Guidelines 15064 (d) (2). Effects of a project that must be analyzed in an EIR include '[i]ndirect or secondary effects which are caused by the project and are later in time or farther removed in distance, but are still reasonably foreseeable.' Guidelines § 15358 (a) (2). *See El Dorado Union High School District v. City of Placerville* (1983) 144 Cal.App.3d 123, 133. " *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

Response AE-6

This group of comments relates to potential Project impacts on Cypress Lawn Memorial Park (and other cemeteries) irrigation, and the resulting effects on the visual quality of the cemeteries. It is agreed that the green turf areas at cemeteries in the Project area form an integral part of each facility and are an important aspect of their visual character. Effects of the Project on the ability of golf clubs and cemeteries to irrigate their turf, and thus support existing land uses (and maintain their visual character) are addressed in the Draft EIR Section 5.16, Hydrology and Water Quality, under Impact HY-6.

To clarify this in the Draft EIR, the text at the end of the first paragraph on page 5.3-1 is revised to add the following:

> Impacts on visual character associated with the inability to irrigate turf at golf clubs and cemeteries due to well interference resulting from Project pumping are evaluated in Section 5.16, Hydrology and Water Quality.

The well interference analysis in Section 5.16, Hydrology and Water Quality beginning on page 5.16-73 of the Draft EIR under Impact HY-6 evaluates the impacts of Project operation on irrigation wells such that existing or planned land uses may not be fully supported, and provides the analysis of impacts that well interference would have on visual character of the potentially affected cemeteries and golf clubs. The impact evaluation recognizes the importance of water supply to both golf clubs and cemeteries. The evaluation of well interference acknowledges that brown grass resulting from reduced irrigation water caused by well interference may impact the visual character of the cemeteries and golf clubs.

Potential impacts to the visual character of affected cemeteries and golf clubs would be mitigated through implementation of revised Mitigation Measure M-HY-6 (Ensure Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation) (see Response HY-15), which establishes a Performance Standard that requires the SFPUC to ensure that the Project does not damage irrigators' wells or cause the wells not to meet existing production capacity or peak irrigation demand, whichever is less. As a result, impacts related to well interference caused by the Project would be avoided, or reduced to less-than-significant levels.

Section 5.16, Hydrology and Water Quality of the Draft EIR, on page 5.16-73 has been revised as shown below. The same revisions are made in response to Comment CR-2. All of changes to the Draft EIR are presented in Section 9.5, Draft EIR Revisions.

> If well interference were great enough, irrigation water currently supplied by existing irrigation wells could be decreased to the extent that existing land uses ~~irrigation uses,~~ such as ~~for~~ irrigated turf at cemeteries and at golf clubs, would not be fully supported. The quality of turf grass at cemeteries and golf clubs is an important component of the attractiveness of these facilities and hence for the economic viability and visual character

of these land uses. In addition, failure to maintain landscapes at Cypress Lawn Memorial Park, Woodlawn Memorial Park, Greenlawn Memorial Park, Greek Orthodox Memorial Park, and the Golden Gate National Cemetery, could adversely affect the historic character of these identified cultural resources. Finally, ~~I~~insufficient irrigation water would result in a deterioration of existing turf grass and landscaping, affecting operating conditions at both golf clubs and cemeteries.

Objective criteria for determining whether loss of pumping capacity at existing irrigation wells is due to the Project are described on page 5.16-97 of the Draft EIR and revised in Response HY-15. The actions included in the revised mitigation measure (as described in Response HY-15) would ensure that the Project does not reduce well water supply so as to harm the aesthetic quality of golf clubs and cemeteries. The mitigation measure contains a clear commitment to maintaining water supplies for existing irrigators, and this commitment would be enforced as part of the Mitigation and Monitoring and Reporting Program for the Project, which would be enforced by the San Francisco Planning Department's Environmental Review Officer (ERO). Well interference impacts caused by the Project would be less than significant following implementation of revised Mitigation Measure M-HY-6 (Ensure Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation) as discussed in Response HY-15.

The Approach to Analysis section on pages 5.16-82 and 5.16-83 of the Draft EIR is revised as shown below. The same revisions are made in response to Comments LU-5 and CR-2. A summary of all changes to the Draft EIR is presented in Section 9.5, Draft EIR Revisions.

Approach to Analysis

Well interference could occur due to Project-related pumping in a manner that would result in a lowering of the local groundwater to a level where the production rate of preexisting nearby wells would drop to a level that would not fully support existing or planned land uses. For purposes of this analysis, a significant impact would result if the Project were to cause groundwater levels to decrease such that (1) the pump discharge rates of existing irrigators' wells decrease substantially enough that existing or planned land uses would not be fully supported, or (2) groundwater levels fall below the top of the well screen of existing irrigators' wells, resulting in decreased pump discharge rates and potential damage to the well that are substantial enough that existing or planned land uses would not be fully supported. The former cause of well interference is analyzed quantitatively and the latter cause is analyzed qualitatively, as described below.

The well interference analysis presented in this section also applies to impacts to land use (Section 5.2, Land Use), aesthetics (Section 5.3, Aesthetics), and cultural resources (Section 5.5, Cultural Resources) that could result from insufficient water to support existing or planned land uses due to well interference caused by the Project.

Comment AE-7: Comments related to the Project's effects on water quality aesthetics.

This response addresses comments from the commenter listed below; the comments on this topic are quoted in full below this list:

- O-CLMP-Quick

"Although the GSR Project DEIR did not address water quality considerations other than water quality violations of federal and state law, other CEQA EIRs have analyzed the comparative taste attributes of groundwater and surface water drinking water supplies. For example, in December 2011 the City of Roseville prepared a DEIR for its Aquifer Storage and Recovery Program. That DEIR notes the potential for 'customer sensitivity to switching between surface water and groundwater' and continues: 'Even though the groundwater delivered to the customers meets all applicable drinking water standards, during the [pilot] test the City received complaints regarding the water's taste and odor, referred to as aesthetic qualities in this EIR.'[67] The DEIR then explains:

> 'Groundwater is typically harder than surface water because, as water moves through soil and rocks, it dissolves small amounts of naturally occurring minerals such as calcium and magnesium and carries them into the groundwater aquifer. Hard water does not pose a health risk but can be aesthetically unpleasing due to the mineral buildup or spotting on plumbing fixtures, shower doors, dishes and glasses. It can also have undesirable odor and taste...'[68]

The DEIR determined that 'water customers may perceive a decrease in the aesthetic water qualities of potable water during ASR [Aquifer Storage and Recovery] recovery operations when compared with surface water.' [69]

The inclusion of information and analysis in the GSR Project DEIR concerning the comparative taste/odor attributes (as drinking water supplies) of Hetch Hetchy Reservoir water and Westside Groundwater Basin water is consistent with CEQA requirements relating not only to water quality but also aesthetics. Section 21001(b) of the CEQA statute confirms that it is the state's policy to protect and preserve 'aesthetic, natural, scenic, and historic environmental qualities.' Similarly, Public Resources Code Section 21060.5 and CEQA Guideline Section 15350 include resources of 'aesthetic significance' in the definition of the term 'environment.'

> [67] City of Roseville Aquifer Storage and Recovery Program DEIR, p. 2-10, available at: http://www.roseville.ea.us/eu/water utility/aquifer storage n recovery.asp.
>
> [68] *Id*. at p. 4-24.
>
> [69] *Id*. at p. 4-26." (*Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick]*)

"Item 20 – Will the general public accept the water quality changes that result from drinking water that is a blend of Hetch Hetchy surface water and Westside Basin groundwater? Will the switch to groundwater affect water conveyance infrastructure or inside household fixtures?

Typically, groundwater has greater TDS concentrations than surface water. The higher TDS concentrations in groundwater result from the close and long-term contact to aquifer materials. The DEIR does not disclose or address the difference in drinking water quality that the SFPUC will provide as a consequence of the GSR Project, or its implications to water distribution infrastructure and to customers." (*Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

Response AE-7

The comments express concern about potential changes in the taste and odor of water, and characterize this potential change as an aesthetic impact; however, the City and County of San Francisco (CCSF) and CEQA do not define the change in the taste of water as an aesthetic impact. The significance criteria used to evaluate aesthetic impacts resulting from the Project are presented on page 5.3-50 of the Draft EIR. CEQA Section 21060.5 refers to "objects of historic or aesthetic significance." This seems quite clearly to refer to visual impacts of projects, rather than the taste of drinking water. The definition of environment in CEQA and the CEQA Guidelines cited in the comment also refers to "objects of historic or aesthetic significance." Environment, as defined in CEQA means "the physical conditions that exist within the area which will be affected by a proposed project, including land, air, water, minerals, flora, fauna, noise, or objects of historic or aesthetic significance." While the quality of water that makes it suitable for drinking is addressed in Chapter 3, Project Description, Section 3.4.2 (Production Wells and Associated Facilities) and Hydrology and Section 5.16, Hydrology and Water Quality, Section 5.16.1.3 (Regional Groundwater Hydrology), neither the definition of environment nor CEQA Guidelines that guide the analysis of impacts would appear to encompass the taste of drinking water, apart from identifying a water quality concern. The taste of drinking water as it relates to water quality is regulated through establishment of secondary Maximum Contaminant Levels (MCLs), which are established for contaminants that may cause the water to appear colored or taste or smell bad, causing people to stop using water from their public water system even though the water is safe to drink (U.S. EPA 2012).

Please also refer to Response HY-38 in the hydrology section, which provides additional information regarding the current use and quality of the groundwater supply, which the Project would not affect.

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9.3.8 Cultural and Paleontological Resources

The comments and corresponding responses in this section cover topics in Section 5.5, Cultural and Paleontological Resources of the Draft EIR. These include topics related to:

- CR-1, Impacts to Historical Resources Near Site 9
- CR-2, Historic Value of Resources at Cypress Lawn and Other Cemeteries
- CR-3, Impacts on Cultural and Historical Resources at the Golden Gate National Cemetery
- CR-4, Addition of Interpretive Signage at the Golden Gate National Cemetery
- CR-5, Visual Simulation to Demonstrate the Feasibility of Mitigation Measure M-CR-5a

Comment CR-1: Comment related to the Project's impacts on historical resources near Site 9.

This response addresses a comment from the commenter listed below; the comment on this topic is quoted in full below this list:

- G-Colma-Laughlin

"*Site 9 Visual Impacts.* Figure 3-23 shows that a chemical treatment and filtration building will be highly visible from the back windows of 4-5 historic residences to the east within Colma […] This impact should also be addressed in a discussion to Cultural Resources in the Final EIR. The reviewer should view the Historic Resources Element of the Colma General Plan." *(Colma Planning Department, letter, May 28, 2013 [G-Colma-Laughlin])*

Response CR-1

This comment relates to the Draft EIR's analysis of the visual impacts of Site 9. Please refer to Response AE-3 regarding visual impacts. Impacts to cultural resources are discussed in Section 5.5, Cultural and Paleontological Resources of the Draft EIR, and the Historical Resources Element of the *Town of Colma General Plan* was reviewed in preparation of the analysis of the Draft EIR. The Historical Resources Element is included in the reference list at the end of Draft EIR Section 5.5, Cultural and Paleontological Resources, and is listed in Chapter 4, Plans and Policies, on page 4-10 as containing policies relevant to the Project. The policies in the Historic Resources Element were considered in the identification of impacts in the Draft EIR. To ensure that effects of the Project on surrounding areas are considered in the evaluation of historic resources, the Draft EIR has defined an Architectural CEQA Area of Potential Effects (C-APE), as prepared by a qualified architectural historian. The *Historic Architectural Resources Technical Report* prepared for the Project identified the homes referenced in the comment as The Lagomarsino Farm District, which consists of six buildings constructed between 1908 and 1918 at 1431-1457 Mission Road in Colma (Carey & Co Inc. 2011). The report acknowledges that the homes form a National Register of Historic Places (NRHP) eligible historic district.

As noted on page 5.5-1 of the Draft EIR, "The C-APE for architectural resources takes into consideration the proposed Project effects on the built environment, including the potential for directly or indirectly altering the setting, character, or use of historical resources. Architectural C-APEs for each well facility site are presented in Table 5.5-1 (Architectural C-APEs), which includes a Notes column that summarizes the assumptions that guided the creation of the C-APEs." Because visual impacts of Project facility sites can affect the historic character of adjacent areas, the C-APE includes an area broader than the direct Project footprint. For Site 9, as noted in Table 5.5-1, the C-APE includes the entire Treasure Island Trailer Court, because of the "potential indirect impacts to trailer park due to size of buildings in relation to proposed construction." The Architectural C-APE does not include the buildings on Mission Road that are referenced in the comment, which are separated from the Project well facility site by the Colma Creek Diversion Channel. The GSR chemical treatment and filtration building would be about 180 feet from the closest building on Mission Road, and as noted in Response AE-3, views from the top floor of those residences whose backyards and back windows face directly toward Site 9 are substantially blocked by a berm and fence on the northeast side of the channel. Because of this separation and distance, the well facility at Site 9 is considered too far away from the historic residences on Mission Road to cause significant impacts to the eligibility of the houses either as historic resources or as part of a historic district.

Comment CR-2: Comments related to the Project's effects on the aesthetic quality of Cypress Lawn and other cemeteries, as it relates to their historic value.

This response addresses comments from the commenter listed below; the comments on this topic are quoted in full below this list:

- O-CLMP-Quick

"The GSR Project poses risks of significant impacts to the aesthetic and historic resources of Cypress Lawn's and other cemeteries." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

"D. **The DEIR Fails To Analyze the GSR Project's Reasonably Foreseeable Significant Impact on Historic Resources, Including Cypress Lawn, A National-Register Eligible Historic District**.

Similar and related to the failure of the DEIR to properly define the visual study area in order to capture the full range of the GSR Project's aesthetic impacts, the DEIR also fails to analyze the Project's impacts on the integrity of historically significant cemetery landscapes, such as Cypress Lawn, and other cemeteries in Colma with historic resource values.

The DEIR describes the historic significance of Colma's cemeteries, and in particular that of Cypress Lawn, which is both a historically significant example of the 'memorial park' style of cemetery, with '[l]awns as the main natural feature,' and also includes among Colma's cemeteries 'the greatest concentration of San Francisco's elite.'[76] The DEIR also documents that Cypress Lawn and other cemeteries in Colma are eligible for inclusion on the National Register.[77]

The DEIR does not acknowledge, however, that Cypress Lawn's historic importance is inextricably linked to its lawn-dominated, irrigated landscape. As identified in the Historical Resources Element of the General Plan of the Town of Colma, Cypress Lawn is eligible for listing on the National Register as a historic district with distinctive design features, representing an 'Elite Garden Cemetery, Memorial Park,' not just an isolated landmark or building.[78] [The comment references Exhibit E, which is the Town of Colma General Plan, p. 5.08.14. The Historical Resources Element of the Town of Coma's General Plan, which is attached to the comment letter] Cypress Lawn, as described in the Historical Resources Element, combines on its east side 'one of the last rural grand cemeteries built in the west. ... In the 19th century rural cemeteries were considered pleasure gardens and not just a place for the dead' with, on its 'west side ... the design period of memorial parks.'[79] Clearly, Cypress Lawn's ability to maintain the turf-dominated landscape that comprises the historically significant setting for the 21 separately identified resources in this historic district is critical to preventing significant impacts to these historic resources. And yet, as with the aesthetics analysis, the DEIR narrowly confines it analysis to the impacts of isolated GSR Project facilities. The reasonably foreseeable impacts of an interruption or reduction in Cypress Lawn's groundwater supplies for overlying irrigation on Cypress Lawn's significance as a historical district must be analyzed in the DEIR.[80] In particular, the effects of irrigation interruptions and/or reductions on Cypress Lawn's significance as a historical resource with distinctive design features representing a 19th century rural garden cemetery and memorial park must be analyzed pursuant to Guidelines Section 15064.5.

[76] DEIR, pp. 5.5-15-5.5-16.

[77] DEIR, p. 5.5-29.

[78] Town of Colma General Plan, p. 5.08.14. The Historic Resources Element of the Town of Colma's General Plan is attached hereto as **Exhibit E** and incorporated herein by this reference.

[79] *Id.*, p. 5.8.15.

[80] Guidelines § 15126.2 (a). Indirect effects are defined as 'a physical change in the environment which is not immediately related to the project, but which is caused indirectly by the project.' Guidelines 15064 (d) (2). Effects of a project that must be analyzed in an EIR include '[i]ndirect or secondary effects which are caused by the project and are later in time or farther removed in distance, but are still reasonably foreseeable.' Guidelines § 15358 (a) (2). *See El Dorado Union High School District v. City of Placerville* (1983) 144 Cal.App.3d 123, 133." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

"[Exhibit E – See Attachment RTC-A of this Final EIR]" *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

Response CR-2

These comments express concern that the Project would affect the historic value of Cypress Lawn Memorial Park and other cemeteries due to potential irrigation impacts. It is agreed that the green turf areas at cemeteries in the Project area form an important part of each facility and contribute to their historic value. Effects of the Project on the ability of golf clubs and cemeteries to irrigate their turf, and thus support existing land uses (and maintain their historic value) are addressed in the Section 5.16, Hydrology and Water Quality, under Impact HY-6.

To clarify this in the Draft EIR, the text at the end of the first paragraph on page 5.5-1 has been revised to add the following:

> Impacts on historic character associated with the inability to irrigate turf at golf clubs and cemeteries due to well interference resulting from Project pumping are evaluated in Section 5.16, Hydrology and Water Quality.

The Draft EIR evaluates the Project's effect on existing land uses that are supported by irrigation wells, and provides mitigation to ensure that existing cemeteries and golf clubs would have sufficient water to maintain their facilities. Please refer to the discussion beginning on page 5.16-73 of the Draft EIR; Impact HY-6: Project operation would decrease the production rate of existing nearby irrigation wells due to localized groundwater drawdown within the Westside Groundwater Basin such that existing or planned land use(s) may not be fully supported. The impact evaluation recognizes the importance of water supply to both golf clubs and cemeteries and acknowledges that insufficient irrigation water would result in a deterioration of existing turf grass and landscaping, affecting operating conditions at golf clubs and cemeteries. Poor turf quality resulting from insufficient irrigation water could result in brown grass which could affect the visual character of the cemeteries and golf clubs, and potentially the historic character of the area. Potential impacts to the eligibility of historic resources would be mitigated through implementation of revised Mitigation Measure M-HY-6 (Ensure Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation) (see Response HY-15), which establishes a Performance Standard that requires the SFPUC to ensure that the Project does not damage irrigators' wells or cause the wells not to meet existing production capacity or peak irrigation demand, whichever is less. As a result, impacts related to well interference caused by the Project would be avoided, or reduced to less-than-significant levels. The Draft EIR has been revised to clarify the relationship between water supply and historic landscapes.

Section 5.16, Hydrology and Water Quality of the Draft EIR, on page 5.16-73 has been revised as shown below. The same revisions are made in response to Comment LU-5 and AE-6. All changes to the Draft EIR are presented in Section 9.5, Draft EIR Revisions.

> If well interference were great enough, irrigation water currently supplied by existing irrigation wells could be decreased to the extent that existing land uses ~~irrigation uses,~~ such as ~~for~~ irrigated turf at cemeteries and at golf clubs, would not be fully supported. The quality of turf grass at cemeteries and golf clubs is an important component of the attractiveness of these facilities, and hence for the economic viability and visual character of these land uses. In addition, failure to maintain landscapes at Cypress Lawn Memorial Park, Woodlawn Memorial Park, Greenlawn Memorial Park, Greek Orthodox Memorial Park, and the Golden Gate National Cemetery, could adversely affect the historic character of these identified cultural resources. Finally, ~~I~~insufficient irrigation water

would result in a deterioration of existing turf grass and landscaping, affecting operating conditions at both golf clubs and cemeteries.

Objective criteria for determining whether loss of pumping capacity at existing irrigation wells is due to the Project are described on page 5.16-97 of the Draft EIR and revised in Response HY-15. The actions included in revised Mitigation Measure M-HY-6 (see Response HY-15) would ensure that the Project does not reduce well water supply so as to harm the historic resource value of Cypress Lawn and other cemeteries. The mitigation measure contains a clear commitment to maintaining water supplies for existing irrigators, and this commitment would be enforced as part of the Mitigation and Monitoring and Reporting Program for the Project, which would be enforced by the San Francisco Planning Department's Environmental Review Officer (ERO). Well interference impacts caused by the Project would be less than significant following implementation of revised Mitigation Measure M-HY-6 (Ensure Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation). Therefore, effects of the Project on the historic resource value of cemeteries, if any, from reductions in irrigation water supply would be less than significant with mitigation.

The Approach to Analysis section on pages 5.16-82 and 5.16-83 of the Draft EIR is revised as shown below. The same revisions are made in response to Comments LU-5 and AE-6. All changes to the Draft EIR are presented in Section 9.5, Draft EIR Revisions.

Approach to Analysis

Well interference could occur due to Project-related pumping in a manner that would result in a lowering of the local groundwater to a level where the production rate of preexisting nearby wells would drop to a level that would not fully support existing or planned land uses. For purposes of this analysis, a significant impact would result if the Project were to cause groundwater levels to decrease such that (1) the pump discharge rates of existing irrigators' wells decrease substantially enough that existing or planned land uses would not be fully supported, or (2) groundwater levels fall below the top of the well screen of existing irrigators' wells, resulting in decreased pump discharge rates and potential damage to the well that are substantial enough that existing or planned land uses would not be fully supported. The former cause of well interference is analyzed quantitatively and the latter cause is analyzed qualitatively, as described below.

<u>The well interference analysis presented in this section also applies to impacts to land use (Section 5.2, Land Use), aesthetics (Section 5.3, Aesthetics), and cultural resources (Section 5.5, Cultural Resources) that could result from insufficient water to support existing or planned land uses due to well interference caused by the Project.</u>

Comment CR-3: Comments related to the adequacy of the Draft EIR's evaluation of Project impacts on cultural and historical resources at the Golden Gate National Cemetery.

This response addresses comments from the commenter listed below; the comments on this topic are quoted in full below this list:

- G-VA-Madderom

"As demonstrated by preliminary plans that have been sent to VA, SFPUC's plan reflects definite adverse impacts to the architectural, historical, and aesthetics of these historic national cemetery grounds." *(Department of Veterans Affairs, letter, May 25, 2013 [G-VA-Madderom])*

"19. Page 5.3-94 regarding Mitigation Measure M-CR-5a – this MM fails to recognize and address the fact that the National Cemetery itself is nationally listed as a historic landmark listed, nor presents any discussion with respect to impact of the proposed SFPUC well structures on the National Cemetery itself." *(Department of Veterans Affairs, letter, May 25, 2013 [G-VA-Madderom])*

"Under this SFPUC proposal, there would be a great need for SFPUC to satisfactorily address the cultural, historical, and environmental impacts relative to the Golden Gate National Cemetery. In that regard, of considerable concern is that the Draft EIR fails to identify with any specificity impacts to this national shrine as required under Section 106 of the National Historic Preservation Act (NHPA) (16 U.S.C. § 470f)." *(Department of Veterans Affairs, letter, May 25, 2013 [G-VA-Madderom])*

Response CR-3

These comments express concern about the adequacy of the Draft EIR's analysis of historical impacts on the Golden Gate National Cemetery (GGNC) due to construction and operation of Sites 14 and 15. Please refer to the discussion of the GGNC as a historical resource, which starts on page 5.5-35 of the Draft EIR. The Draft EIR states, on page 5.5-36, that "The Keeper of the National Register previously deemed the Golden Gate National Cemetery eligible for listing in the National Register of Historic Places." Requirements for evaluation pursuant to Section 106 of the National Historic Preservation Act (NHPA) are discussed starting on page 5.5-38 of the Draft EIR. The Draft EIR discusses potential historic resource impacts of facilities at Sites 14 and 15 in Section 5.5.3.4 (Construction Impacts and Mitigation Measures). The Draft EIR finds that the Project would have potentially significant historic resource impacts associated with placing facilities at Sites 14 and 15, and includes detailed mitigation to ensure that facilities would be not affect the eligibility of the cemetery for listing on the National Register of Historic Places and would not otherwise affect its historic significance.

Please refer to Mitigation Measure M-CR-5a (Minimize Facilities Siting Impacts on Elements of the Historical Resource at Site 14), and Mitigation Measure M-CR-5b (Minimize Facilities Siting Impacts on Elements of the Historical Resource at Site 15). Because the Draft EIR recognizes that the GGNC is eligible for the National Register, the mitigation measure specifies that design of all new facilities "shall be reviewed and approved by appropriate U.S. Department of Veterans Affairs (VA) officials and a historic architect meeting the Secretary of the Interior's Professional Qualification Standards. The proposed building and associated outside areas shall be constructed in compliance with the Secretary of the Interior's Standards for Rehabilitation and be compatible with the existing maintenance buildings."

In addition, please refer to Response AE-5, which addresses comments regarding aesthetic impacts to the GGNC at Sites 14 and 15.

Comment CR-4: Comment suggesting addition of interpretive signage at the Golden Gate National Cemetery.

This response addresses a comment from the commenter listed below; the comment on this topic is quoted in full below this list:

- PH-HPC-Hasz

"• The HPC asked whether the SFPUC might want to consider adding interpretive signage on historical resources at the well sites proposed at the Golden Gate National Cemetery." *(San Francisco Planning Department Historic Preservation Commission, letter, January 15, 2014 [PH-HPC-Hasz])*

Response CR-4

This comment relates to historical resources at the GGNC. The SFPUC would consider interpretive signage about historical resources at the GGNC if such signage were acceptable to the Veterans Administration and State Historic Preservation Officer.

Comment CR-5: Comment suggesting use of a visual simulation to demonstrate the feasibility of Mitigation Measure M-CR-5a.

This response addresses a comment from the commenter listed below; the comment on this topic is quoted in full below this list:

- PH-HPC-Hasz

"•The HPC suggested that a requirement for a diagram or visual simulation be required as part of Mitigation Measure M-CR-5a (Minimize Facilities Siting Impacts on Elements of the Historical Resource at Site 14), in order to demonstrate the feasibility of this measure for reducing potential impacts on historical resources at the Golden Gate National Cemetery to less-than-significant levels." *(San Francisco Planning Department Historic Preservation Commission, letter, January 15, 2014 [PH-HPC-Hasz])*

Response CR-5

This comment relates to Mitigation Measure M-CR-5a (Minimize Facilities Siting Impacts on Elements of the Historical Resource at Site 14). Figure 5.3-12 (Visual Simulation of Site 14) on page 5.3-95 of the Draft EIR does show a visual simulation of Site 14 with application of Mitigation Measure M-CR-5a. Figure 5.3-12 includes three views: existing, Site 14 without mitigation and Site 14 with mitigation. The figure demonstrates that the well facility can be made less obtrusive with implementation of mitigation.

9.3.9 Transportation and Circulation

The comments and corresponding responses in this section cover topics in Section 5.6, Transportation and Circulation of the Draft EIR. This includes topics related to:

- TR-1, Traffic Control Plan

Comment TR-1: Comments related to Mitigation Measure M-TR-1: Traffic Control Plan.

This response addresses comments from the commenters listed below; each comment on this topic is quoted in full below this list:

- G-San Mateo RS-LoCoco
- G-Colma-Laughlin

"2) Because of the proximity of this facility [Site 4] to the Park Plaza Drive/87th Street intersection, it'll be important that traffic controls be set up well in advance of the intersection to advise motorists when the work is actively occurring and lane or parking restrictions apply." *(San Mateo County Road Services, email, June 11, 2013 [G-San Mateo RS-LoCoco])*

"*Traffic Control Plan, Mitigation Measure M-TR-1*: The Town looks forward to receiving and reviewing the Traffic Control plan, and working with the SFPUC on traffic control measures that will lessen the extent of traffic impacts in Colma. Colma is a regional shopping destination for automobiles (along Serramonte Boulevard) and other retail establishments. From Thanksgiving weekend through New Year's, traffic increases for holiday shopping – especially on weekends. While construction of the project could take place during this timeframe, additional provisions would need to be made to manage the project so as not to impact businesses during this time." *(Colma Planning Department, letter, May 28, 2013 [G-Colma-Laughlin])*

Response TR-1

This comment relates to the Project's traffic control plan as required by Mitigation Measure M-TR-1 (Traffic Control Plan). Mitigation Measure M-TR-1 requires the SFPUC and its contractor(s) to prepare and implement traffic control plans for each local jurisdiction in which construction would occur within local roadway rights-of-way.

As described on pages 5.6-31 and 5.6-32 in Section 5.6, Transportation and Circulation of the Draft EIR, construction associated with Site 4 would involve work within the Park Plaza Drive and 87th Street intersection in Daly City. Mitigation Measure M-TR-1 (Traffic Control Plan) would require that a traffic control plan be submitted to the County of San Mateo for review as part of the encroachment permit process. As described beginning on page 5.6-32 of the Draft EIR, the traffic control plan would be required to comply with local jurisdiction requirements and be tailored to reflect site-specific traffic and safety concerns, including such measures as the use of tailored to reflect site-specific traffic and safety concerns, including such measures as the use of flaggers and/or signage to guide vehicles through and/or around the construction zone, a public information program to advise motorists of impending construction activities, and roadside safety protocols such as advance "Road Work Ahead" warning signs and speed controls.

As identified in Table 5.6-3 (Local Roadway Existing Level of Service Conditions) in the Draft EIR, Serramonte Boulevard from Collins Avenue to the Shopping Center currently operates at level of service (LOS) A during the A.M. and P.M. peak periods, and the addition of construction vehicles would not substantially affect the peak-hour conditions or degrade the roadway segments to a lower LOS. As described on page 5.6-29 of the Draft EIR, construction activities at Site 8, which is located off of Serramonte Boulevard, would not extend into Serramonte Boulevard and would not require temporary lane closures. As described on page 5.6-44 of the Draft EIR, construction at Site 8 would temporarily limit access to the back of the Kohl's Department Store from Serramonte Boulevard during installation of an electrical conduit for up to two days; however, customers, delivery vehicles, and emergency vehicles would continue to access the store through the front entrance, and circulation around either side of the store would remain available during trenching for installation of the underground electrical connection. Typical daily construction would occur Monday through Friday, with work only occasionally occurring on Saturdays. For these reasons, the Project would not substantially interfere with the operation of Serramonte Boulevard, even during the holiday shopping season.

For construction associated with Sites 7 and 17 (Alternate), which would include construction work within the right-of-way of Colma Boulevard and Collins Avenue, a traffic control plan would be submitted to the Town of Colma for review as part of the encroachment permit process.

9.3.10 Noise

The comment and corresponding response in this section covers topics in Section 5.7, Noise and Vibration of the Draft EIR. This includes topics related to:

- NO-1, Mitigation Measures M-NO-1 and M-NO-3

Comment NO-1: Comment related to Mitigation Measures M-NO-1 and M-NO-3.

This response addresses a comment from the commenter listed below; the comment on this topic is quoted in full below this list:

- G-Colma-Laughlin

"*Noise Control and Expanded Noise Control Plans, Mitigation Measures M-NO-1, M-NO-3*: The Town looks forward to receiving and reviewing the Noise Control plans, and working with the SFPUC on noise control measures that will lessen noise impacts to our existing cemeteries and sensitive receptors in close proximity to the sites (especially Cypress Lawn at Alternate Site 17 in Colma)." *(Colma Planning Department, letter, May 28, 2013 [G-Colma-Laughlin])*

Response NO-1

The comment requests copies of the noise control plans that will be prepared as required by Mitigation Measures M-NO-1 (Noise Control Plan) and M-NO-3 (Expanded Noise Control Plan). Mitigation Measures M-NO-1 and M-NO-3 do not specify review of Noise Control plans by local jurisdictions. The SFPUC agrees to provide a copy of the completed noise control plans to the Town of Colma and other jurisdictions that submit a request. The second paragraph of Mitigation Measure M-NO-1, in Section 5.7, Noise and Vibration on page 5.7-45 of the Draft EIR, has been revised as follows:

> The SFPUC will retain a qualified noise consultant to prepare a Noise Control Plan and the SFPUC will approve the Noise Control Plan and ensure that it is implemented to reduce construction noise levels at nearby noise-sensitive land uses to meet the ~~following~~ performance standards described below. Upon request, the SFPUC will provide a copy of the completed Noise Control Plan to the jurisdictions listed below~~:~~

The first paragraph of Mitigation M-NO-3 (Expanded Noise Control Plan), on page 5.7-78 of the Draft EIR, has also been revised as follows:

> In addition to the requirements of Mitigation Measure M-NO-1 (Noise Control Plan) under Impact NO-1, the SFPUC will require that its construction contractor prepare and implement an Expanded Noise Control Plan to further reduce construction noise levels at nearby noise-sensitive land uses. The SFPUC will provide a copy of the completed Expanded Noise Control Plan to jurisdictions upon request. Construction noise shall not

Expanded Noise Control Plan to jurisdictions upon request. Construction noise shall not exceed the following performance standards as measured at the exterior of the closest sensitive receptor: If noise measurements are not permitted at the exterior of the sensitive receptor's location, the SFPUC shall take noise measurements and then estimate the noise level at the sensitive receptor by adjusting for the attenuation across the additional distance. If there is any conflict between Mitigation Measure M-NO-1 (Noise Control Plan) and Mitigation Measure M-NO-3 (Expanded Noise Control Plan), the most stringent requirement would be applicable.

These revisions do not change the analysis or conclusions presented in the Draft EIR.

9.3.11 Greenhouse Gas Emissions

The comments and corresponding responses in this section cover topics in Section 5.9, Greenhouse Gas Emissions of the Draft EIR. These include topics related to:

- GG-1, Operational Greenhouse Gas Emissions
- GG-2, Electricity Use

Comment GG-1: Comment related to greenhouse gas emissions generated from Project operation.

This response addresses a comment from the commenter listed below; the comment on this topic is quoted in full below this list:

- O-CLMP-Quick

"E. **The Conclusion of No Significant Greenhouse Gas Impacts Form GSR Project Operation Is Not Supported By Substantial Evidence.**

The DEIR's description of '[i]ndirect operation-related [greenhouse gas, or GHG] emissions includ[ing] the use of electricity for operation of Project' facilities does not include the increased electricity needed to operate overlying irrigators' wells due to the lowering of the groundwater level caused by the GSR Project.[81] This despite the fact that Mitigation Measure M-HY-6 expressly contemplates that pumps in the wells of existing irrigators may be lowered as a 'mitigation action.'[82] The DEIR must be revised to include this additional electricity demand directly resulting from operation of the GSR Project.

[81] DEIR, p. 5.9-10.

[82] DEIR, p. 5-16-96." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

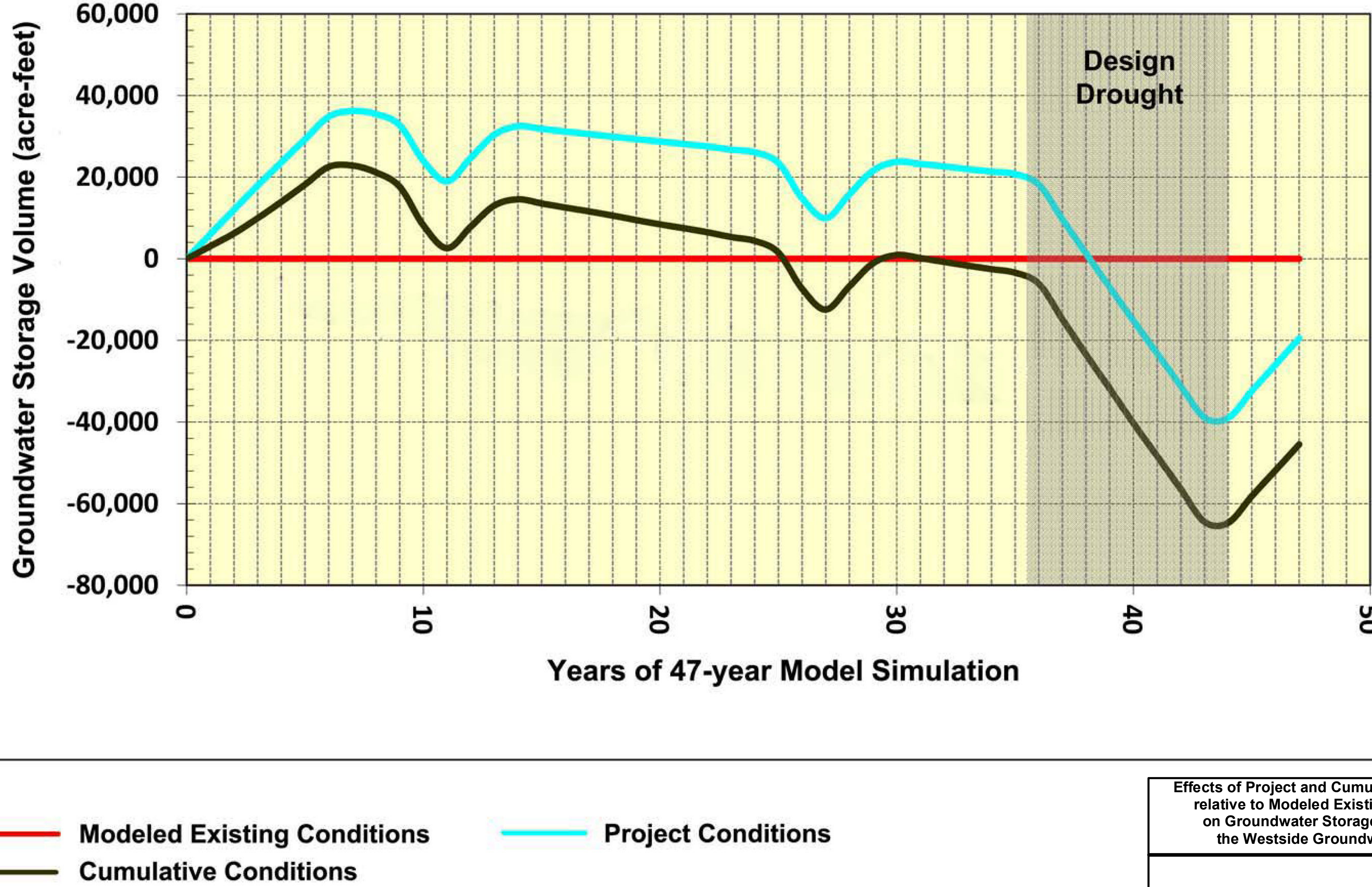
Response GG-1

The comment requests that the Draft EIR include an evaluation of impacts on greenhouse gas (GHG) emissions due to Mitigation Measure M-HY-6 (Ensure Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation), which lists an example mitigation action of lowering pumps in existing irrigators' wells. Impacts associated with implementation of Mitigation Measure M-HY-6 are discussed beginning on page 5.16-162 of the Draft EIR and in Response HY-15. As noted on page 5.16-169 of the Draft EIR, if Mitigation Action #5 (now Action #6), Lower pump in irrigation well, or Mitigation Action #6 (now Action #7), Lower and change pump in irrigation well, were selected to implement Mitigation Measure M-HY-6, GHG emissions from electricity required to operate the pump would be the same as with the Project. Refer to Response HY-15 for additional information.

One of the benefits of the Project is that it would tend to reduce energy usage of existing irrigators, because, on average, groundwater levels would increase. The amount of electricity required to pump water from a well is related primarily to the depth of groundwater from which pumping is occurring, not the depth of the pump. Groundwater levels would, on average, be higher due to the Project, as explained in Section 5.16, Hydrology and Water Quality, on page 5.16-73 of the Draft EIR.

Figure 5.1-2 (Effects of Project and Cumulative Conditions relative to Modeled Existing Conditions on Groundwater Storage Volumes in the Westside Groundwater Basin) from Section 5.1.6 (Groundwater Modeling Overview) in the Draft EIR is presented again in this Response to Comments document to illustrate that groundwater storage (and therefore groundwater levels in general) is predicted to be higher with the Project than under modeled existing conditions for approximately 80 percent of the time over the 47-year modeling period, and that groundwater storage (and therefore groundwater levels in general) is predicted to be less with the Project for approximately 20 percent of the time as compared to modeled existing conditions. In addition, Figure 5.1-2 shows that the volume of higher groundwater storage due to the Project is predicted to be substantially greater (in fact, approximately four times greater) over the first 37 to 38 years than the extent of lower groundwater storage over the last 9-10 years of the simulation during and after the design drought. Thus groundwater levels would be increased for a far longer time than they would be decreased, and the relative increase in groundwater levels during storage periods would be substantially higher than the relative decrease during the design drought. Therefore, in general, it is predicted that irrigators would use less electricity for pumping with the Project than under modeled existing conditions.

While impacts would vary depending on the location and depth of specific irrigation wells, over the long-term, the Project would result in a substantial decrease in electricity demand at irrigators' wells taken as a whole. Therefore, on average, GHG emissions that result from electricity use at irrigators' wells due to the Project would be less than existing GHG emissions from electricity use. Because future rainfall patterns and droughts are not predictable relative to specific years, it is appropriate to use long-term averages for evaluation of such impacts.



Effects of Project and Cumulative Conditions relative to Modeled Existing Conditions on Groundwater Storage Volumes in the Westside Groundwater Basin

Regional Groundwater Storage and Recovery Project

Figure 5.1-2

Source: Kennedy/Jenks 2012b

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Comment GG-2: Comments related to electricity use.

This response addresses the comments from the commenter listed below; the comments on this topic are quoted in full below this list:

- O-CLMP-Quick

"In addition, the following statement appears to assert that the SFPUC has a dedicated electricity transmission system to serve all of the GSR Project facilities:

> Furthermore, the electricity required to supply the new well facilities would be supplied by the SFPUC Power Enterprise from facilities at Hetch Hetchy. Generation of this electricity does not cause GHG emissions because the power is generated by hydroelectric facilities.[83]

However, nowhere does the DEIR analyze the construction of this dedicated transmission system to supply electricity to the GSR Project wells. A diagram of the SFPUC Power Enterprise facilities available at the SFPUC website states that 'Hetch Hetchy energy enters the electricity grid at the Newark Substation.'[84] Thus, it appears that the GSR Project facilities will draw from the existing transmission system, and therefore the electricity supplying the GSR Project (as well as the electricity necessary to supply increased pumping by overlying irrigators impacted by the Project) will come from sources including those that create GHG emissions. The DEIR must be revised to quantify these emissions.

[83] DEIR, p. 5.9-10.

[84] http://sfwater.org/modules/showdocument.aspx?documentid=3152, a copy of this diagram is attached hereto as **Exhibit F** and incorporated by this reference." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

"[Exhibit F – See Attachment RTC-A of this Final EIR]" *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

Response GG-2

These comments relate to the Project's electricity use and GHG emissions therefrom.

The Draft EIR concludes on page 5.9-10 that electricity demand would not increase due to Project operation, and therefore GHG emissions due to electricity use would not increase due to Project operation. This conclusion is based on all electricity use of the Project, independent of whether some portion of such electricity use is generated by Hetch Hetchy hydroelectric facilities. In addition, as explained in response to Comment GG-1 above, irrigators would not experience increased electricity requirements, taken as a whole over the long-term, and therefore Project operation would not increase either electricity use or GHG emissions.

As an added benefit, electricity for the Project well facilities and pump station upgrade would be wheeled through Pacific Gas and Electric (PG&E) facilities from the Hetch Hetchy hydroelectric power generation facilities, which produce green electricity substantially free from GHG production. The SFPUC Power Enterprise does not have a dedicated electricity transmission system to serve the Project facilities or meet Project operational electricity needs. At the Newark substation, Hetch Hetchy power transfers from the SFPUC-owned transmission facilities to PG&E-owned transmission facilities. The SFPUC Power Enterprise has a wheeling agreement[1] with PG&E to transmit Hetch Hetchy power. Therefore, the Project would be served by existing transmission systems and existing power supply. The Project would not require the construction of new transmission systems.

[1] Wheeling agreement means a contract providing for the use of the electric transmission facilities of one electric utility to transmit power and energy of another electric utility or other entity to a third party.

9.3.12 Recreation

The comment and corresponding response in this section covers topics in Section 5.11, Recreation of the Draft EIR. This includes topics related to:

- RE-1, Sea Level Elevations

Comment RE-1: Comment related to sea level elevations.

This response addresses a comment from the commenter listed below; the comment on this topic is quoted in full below this list:

- G-San Bruno-Fabry

"8. DEIR, page 5.11-3, footnote. Elevations are not correct in the footnote. Mean sea level is 0.52 ft NGVD 29 and 3.23 ft NAVD 88. Information on tidal datums can be found at http://www.ngs.noaa.gov/Tidal_Elevation/diagram.jsp?PID=HT0027&EPOCH=1983-2001." *(City of San Bruno, letter, June 13, 2013 [G-San Bruno-Fabry])*

Response RE-1

The comment expresses concern about the accuracy of mean sea level elevations presented in the Draft EIR. According to Luhdorff and Scalmanini Consulting Engineers' 2002 report entitled *Conceptualization of the Lake-Aquifer System, Westside Ground-water Basin, San Francisco and San Mateo Counties*, City Datum is 8.62 feet higher than NGVD 29 mean sea level and 11.37 feet higher than NAVD 88 mean sea level (LSCE 2002). Additionally, the 1990 U.S. Geological Survey report entitled *Geohydrology, Water Quality, and Water Budgets of Golden Gate Park and the Lake Merced Area in the Western Part of San Francisco, California*, uses NGVD 29 to define sea level (i.e., mean sea level is equivalent to 0 feet NGVD 29) and confirms that City Datum is equal to 8.616 feet (rounded to 8.62 feet) above sea level (USGS 1990). Therefore, no changes have been made regarding mean sea level. However, the Draft EIR provided an incorrect conversion of 0 feet City Datum to NGVD 29 Datum. Therefore, footnote 1 on page 5.11-3 in Section 5.11, Recreation of the Draft EIR is revised as follows:

> [1] City Datum is a measurement system that has been used at Lake Merced since at least 1926 and is used throughout this document for Lake Merced water levels. The City Datum does not represent the depth of the lake. An elevation of 0 feet City Datum is equal to 11.37 feet above mean sea level (NAVD 88) and ~~8.57~~ 8.62 NGVD 29. Since mean sea level is equivalent to 0 feet NGVD 29, a lake level of ~~8.57~~ -8.62 City Datum is equal to mean sea level, and negative lake elevations above this level are not below mean sea level.

Additionally, footnote 8 on page 5.16-30 in Section 5.16, Hydrology and Water Quality of the Draft EIR is revised as follows:

> [8] City Datum is a measurement system that has been used at Lake Merced since at least 1926 and is used throughout this document for Lake Merced water levels. The City Datum does not represent the depth of the lake. An elevation of 0 feet City Datum is equal to 11.37 feet above mean sea level (NAVD 88) and ~~8.57~~ 8.62 NGVD 29. Since mean sea level is equivalent to 0 feet NGVD 29, a lake level of ~~8.57~~ -8.62 City Datum is equal to mean sea level, and negative lake elevations above this level are not below mean sea level.

These revisions do not change the analysis or conclusions presented in the Draft EIR.

9.3.13 Utilities and Service Systems

The comments and corresponding responses in this section cover topics in Section 5.12, Utilities and Service Systems, of the Draft EIR. These include topics related to:

- UT-1, Water Supply Sources
- UT-2, Wastewater System Capacity

Comment UT-1: Comment related to the Project's effects on water supply sources during construction and operation.

This response addresses a comment from the commenter listed below; the comment on this topic is quoted in full below this list:

- O-CLMP-Quick

"B. **The Analysis of Impacts to Utilities and Service Systems Fails to Consider Impacts to Existing Irrigators.**

At the outset of the Chapter 12 of the DEIR, there is a brief discussion concerning the criteria considered for determining whether the GSR Project would cause significant impacts to utilities and service systems.[70] This discussion improperly eliminates a critical significance criterion based on a conclusory and unsupported statement that '[us]e of the groundwater during construction and operations is so small that it would have a negligible effect on the ability of the Project to supply water and would not have any effect on existing water supply sources.'[71] The discussion does not quantify the amount of water that would be used during construction, so there is no evidentiary basis for concluding that construction-period water demand would have only a negligible effect. Further, the discussion does not address the operational demand for native (non-banked) groundwater resources. If the GSR Project will draw down the Aquifer during take periods to levels below existing conditions, and thereby interfere with the overlying rights of the existing irrigators, then this chapter of the DEIR must be revised to determine whether the GSR Project would require new or expanded water supply resources or entitlements.

> [70] DEIR, p. 5.12-7 – 5.12-8 [eliminating criteria that would require the DEIR to evaluate whether the GSR Project would 'Have insufficient water supply available to serve the Project from existing entitlements and resources, or require new or expanded water supply resources or entitlements'].
>
> [71] DEIR, p. 5.12-8." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

Response UT-1

This comment expresses concern about the Project's impacts on groundwater resources during construction and operation of the Project. During the construction of groundwater wells for the Project, temporary pumping of groundwater would be necessary. The anticipated quantity of groundwater to be pumped during construction is discussed in Section 5.12, Utilities and Service groundwater to be pumped during construction is discussed in Section 5.12, Utilities and Service Systems, on page 5.12-16 of the Draft EIR. Well development and pump testing would require pumping of up to 3 million gallons of groundwater per well, for a Project total of approximately 39 million gallons of groundwater[70], as presented on page 3-126 of the Draft EIR.

The pumping of groundwater during well development, including well testing, and flushing of treatment facilities, would be a temporary, one-time occurrence conducted in localized areas of a much larger underlying groundwater basin. Use of groundwater for well development, well testing, and flushing of treatment facilities is a common practice during construction of any groundwater well, and the City is not aware of any adverse effects on groundwater supply within the basin due to past well development, testing, or flushing. The City does not expect adverse effects to occur due to the temporary and localized nature of well development, as described above. Groundwater levels within the underlying basin have been stable and rising since 2002 (San Bruno et al. 2012) and would not be substantially affected from localized pumping for such minimal periods of time.

Other uses of water (groundwater or potable water) during construction may include, for example, the cleaning of drilling equipment and dust suppression. Such uses of water would be similar to other construction projects throughout the region and would not be substantial, given the small area proposed for each well site. In addition, the use of groundwater during construction would not affect the availability of groundwater as a water supply source for Partner Agencies or irrigation well owners because the amount used would be small in comparison to the estimated existing groundwater use in the Westside Groundwater Basin. As described in Chapter 3, Project Description, Table 3-1 (Estimated Existing Groundwater Use in the Westside Groundwater Basin) of the Draft EIR, the total estimated use in the South Westside Groundwater Basin is approximately 8.23 mgd, or approximately 3 billion gallons per year. Therefore, the total groundwater required for Project-related well development (i.e., approximately 39 million gallons) is 1.3 percent of the total annual groundwater use in the basin. Therefore, construction activities would not require new or expanded water supply resources or entitlements, and Section 5.12, Utilities and Service Systems, of the Draft EIR does not warrant further evaluation of this significance criterion.

An evaluation of whether operation of the Project, which is designed to supply groundwater for drinking water purposes during dry periods, would interfere with existing irrigation wells was provided in Impact HY-6 in Section 5.16, Hydrology and Water Quality of the Draft EIR beginning on page 5.16-73. The analysis of the well interference impact was revised in Response HY-15 which includes revisions to Mitigation Measure M-HY-6 (Ensure Irrigators' Wells Are Not

[70] As shown in Table 3-7 (Facility Construction Clusters and Construction Sequencing) of the Draft EIR, the Project would require well drilling at only 13 of the 19 well facility sites. At 3 million gallons per well, drilling of 13 wells would require 39 million gallons of water for well development.

Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation) to include Performance Standards and a monitoring program to ensure that any well interference impacts caused by the Project during pumping periods would be avoided or reduced to less-than-significant levels. The proposed mitigation actions included in the revised Mitigation Measure M-HY-6 would not by nature or design require new or expanded water supply resources or entitlements, and therefore Section 5.12, Utilities and Service Systems, of the Draft EIR does not warrant further evaluation of this significance criterion. Please refer to Response HY-9 for additional discussion on the groundwater rights of existing irrigators.

Please also refer to Response PD-16, which addresses comments that suggest that the Project would pump water in excess of the amount in the SFPUC Storage Account. As explained there, the Project would only pump water that had been stored through in-lieu recharge, and would not draw down the aquifer during take periods to levels below existing conditions.

Comment UT-2: Comment related to wastewater system capacity.

This response addresses a comment from the commenter listed below; the comment on this topic is quoted in full below this list:

- O-CLMP-Quick

"The analysis of operational impacts to wastewater systems does not specify the current and projected volume of wastewater the treatment plants handle,[72] so it is impossible to confirm that the volume of wastewater that would be produced by the GSR Project's wells will exceed the treatment plants' capacity. The DEIR must be revised to address this issue.

[72]*Id.* at p. 5.12-19 [stating that the treatment plants are 'currently functioning at below their permitted capacity,' but not identifying the amount of capacity that remains or addressing any competing future demands for that capacity]." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

Response UT-2

This comment expresses concern about the Draft EIR's analysis of operational wastewater impacts. The average annual volume of wastewater handled by local wastewater treatment plants is discussed in Section 5.12, Utilities and Service Systems, on page 5.12-3 of the Draft EIR. The reported average annual flow is higher than an associated average dry weather flow, because the average annual flow includes flows collected over the course of a year, including the wet weather months when flows are higher due to inflow and infiltration of stormwater into the wastewater system.

As discussed in Impact UT-5 in Section 5.12, Utilities and Service Systems, on page 5.12-19 of the Draft EIR, well facilities requiring filtration would be equipped with well filters that would be backwashed, on average, once a day for five minutes at approximately 350 gpm per filter. The backwash water would be discharged to the sanitary sewer and be treated at the North San

Mateo County Sanitation District (NSMCSD) (for Sites 5, 6, 7, and 8 totaling 0.08 mgd) and the South San Francisco-San Bruno Water Quality Control Plant (SSF-SB WQCP) (for Sites 9, 10, 11, 13, 14, and 15 totaling 0.06 mgd). The Project would also generate small sanitary sewer flows (less than 100 gallons per year) from sinks at up to 14 of the well facilities.

As described in Section 5.12, Utilities and Service Systems, on page 5.12-3 of the Draft EIR, the NSMCSD has an annual average flow of 6.85 mgd, a dry weather peak capacity flow design of 8 mgd, and a wet weather peak capacity of 25 mgd. The SSF-SB-WQCP has an annual average flow of 9 mgd, a dry weather peak capacity flow design of 13 mgd, and a wet weather peak capacity of 62 mgd. The 0.06 to 0.08 mgd of wastewater generated from backwashing the filters, and the small addition of wastewater flow from operation of 14 sinks, would not cause the NSMCSD or the SSF-SB-WQCP to exceed their dry weather or wet weather flow capacities. Therefore, Project operation would not exceed the capacity of these wastewater treatment facilities or require the construction or expansion of facilities, and Section 5.12, Utilities and Service Systems, of the Draft EIR does not warrant revision. Given the negligible amount of operational wastewater flows associated with the Project, the Project's contribution to a potential cumulative impact on wastewater treatment capacity would not be cumulatively considerable, and no revision to the Draft EIR cumulative analysis for utilities and service systems is required.

9.3.14 Hydrology and Water Quality

The comments and corresponding responses in this section cover topics in Section 5.16, Hydrology and Water Quality of the Draft EIR. These include topics related to:

- HY-1, North and South Westside Groundwater Basins
- HY-2, Hydrologic Setting
- HY-3, Storm Water Pollution Prevention Plan and Site-specific Discharge Plan
- HY-4, San Mateo County Flood Control District Policy
- HY-5, Operational Well Maintenance Discharges to Storm Drains
- HY-6, Duration and Frequency of Monitoring
- HY-7, Pumping Costs
- HY-8, Significance Criterion for Project Impacts on the Aquifer
- HY-9, Groundwater Rights
- HY-10, Well Interference Thresholds
- HY-11, Significance Thresholds for Groundwater Levels Falling below the Well Screen
- HY-12, Well Interference Monitoring
- HY-13, Methods for Determining if Well Interference Impacts are Due to the Project
- HY-14, Reduction of Well Interference Impacts to Less than Significant
- HY-15, Well Interference and Mitigation Measure M-HY-6
- HY-16, Well Interference Mitigation Measure Performance Standards
- HY-17, Participation of Irrigators for Mitigation Measure M-HY-6
- HY-18, Representation of Existing Irrigators
- HY-19, Effects of Climate Change on Irrigation Demand
- HY-20, Operation of Multiple Wells Simultaneously
- HY-21, Cypress Lawn Discharge Capacity
- HY-22, Barrier Boundaries relative to Well Interference Estimates
- HY-23, Subsidence
- HY-24, Compressibility Values and Subsidence Monitoring
- HY-25, Significance Thresholds for Subsidence
- HY-26, Inclusion of a Subsidence Map in the Draft EIR
- HY-27, Adequacy of Seawater Intrusion Analysis
- HY-28, Saltwater/Freshwater Interface and Upconing
- HY-29, Cumulative Seawater Intrusion Impacts
- HY-30, Use of Averages in the Draft EIR Seawater Intrusion Analysis
- HY-31, Sea Level Rise for Seawater Intrusion
- HY-32, Project's Effects on Lake Merced
- HY-33, Hydraulic Connectivity
- HY-34, Nitrate in Irrigation Water
- HY-35, Vertical Stratification of Constituents
- HY-36, Contamination Limited to the First 50 Feet

- HY-37, Time-averaged Water Levels in the Draft EIR Water Quality Evaluation
- HY-38, Drinking Water Quality
- HY-39, Irrigation Water Quality
- HY-40, Groundwater Contamination in Areas not Near GSR or Partner Agency Wells
- HY-41, Potential Water Quality Impacts from the Hillside Disposal Site
- HY-42, Safe Yield or Sustainable Yield of the Westside Groundwater Basin
- HY-43, System Losses
- HY-44, Amount of Overdraft
- HY-45, Groundwater Budget
- HY-46, Local and Regional Impacts of Pumping
- HY-47, Groundwater Depletion Analysis
- HY-48, Mitigation of Groundwater Depletion Impacts
- HY-49, Cumulative Impacts of Groundwater Depletion
- HY-50, Diversions from the Tuolumne River
- HY-51, Raker Act
- HY-52, Data After Publication of the WSIP PEIR, including the Kirkwood Agreement
- HY-53, Need for More Details on Monitoring and Mitigation Measures
- HY-54, Rising Groundwater Levels and Land Use Impacts Therefrom

Comment HY-1: Comments related to the hydrologic connection between North and South Westside Groundwater Basin.

This response addresses comments from the commenter listed below; the comments on this topic are quoted in full below this list:

- O-CLMP-Quick

"1. **The DEIR fails to accurately and consistently explain the relationship between the North and South Westside Groundwater Basins.**

The DEIR provides inconsistent environmental setting descriptions and impact analysis of the hydrological relationship between what is referred to as the 'North' Westside Groundwater Basin and what is referred to as the 'South' Westside Groundwater Basin. According to the 'Project Location' section of the DEIR's Executive Summary, the

> The proposed Project would be located in Northern San Mateo overlying the southern portion of the Westside Groundwater Basin.... For purposes of discussion in this EIR, the Westside Groundwater Basin has been administratively divided at the San Francisco-San Mateo County line. Although this is **not a physical boundary**, there are differences in conditions between the northern and the southern portion of the Basin.[20]

The DEIR then states (in the next section) that the GSR Project 'proposes to increase water supply reliability during the dry year or in emergencies, by increasing water storage in the South Westside

Groundwater Basin during wet and normal years for subsequent recapture during dry years.'[21] However, the section concerning water supply impacts states:

> There is **no** geologic feature that restricts groundwater flow between the northern and southern parts of the [Westside] groundwater basin. However, groundwater development in the two parts of the Basin are different from each other, as groundwater has been more heavily developed as a water supply in the South Westside Groundwater Basin.[22]

These inconsistent descriptions are confusing. After noting in Section 1.4.1 and 5.16.1.3 of the DEIR that there is not physically boundary or geological feature separating the North (or 'northern portion) and South (or 'southern portion') of the Westside Groundwater Basin, other parts of the DEIR then go on to describe and analyze the North Westside Groundwater Basin and the South Groundwater Basin as if they were in fact hydrologically distinct. The DEIR suggests that there are two basins that would be affected in very different ways by the GSR Project.[23]

Because the DEIR provides little or no information that explains the underlying hydrologic connection (or perhaps the lack thereof) between the North (or 'northern portion') and South (or 'southern portion') of the Westside Groundwater Basin, it is not possible to coherently evaluate the adequacy of the DEIR's analysis of GSR Project impacts on the North and South Westside Groundwater Basins. If there in fact is no physical boundary or geological feature separating the North and South Groundwater Basins, it is unclear why the drop in the water table or the intrusion of seawater into one portion of the Westside Groundwater Basin would not have impacts through the entire basin. Without a discussion of the hydrological relationship between the North and South Basins, much of the DEIR groundwater impact analysis that follows is impossible for readers to follow.

In failing to explain the hydrologic relationship between the North and South Westside Groundwater Basins, the GSR Project DEIR has not satisfied either the environmental setting description requirements of CEQA Guideline Section 15125 or the environmental effects analysis requirements of CEQA Guideline Section 15126.

> [20] DEIR, p. 1-8, emphasis added.
>
> [21] *Ibid*.
>
> [22] *Id*. at p. 5.16-6, emphasis added.
>
> [23] For instance, the remainder of the impact analysis in Section 5.16.1.3 includes separate analysis of GSR Project impacts on groundwater levels and potential seawater intrusion in the North Westside Groundwater Basin and the South Groundwater Basin, concluding that these project impacts would be quite different in the North and South Basins." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

"*Item 25 – North Westside Basin and South Westside Basin are discussed inconsistently.*

There appears to be a hydrological boundary (groundwater divide) between the North Westside and South Westside Basins, but this was not clearly discussed in the DEIR. We realize that discussion of the entire groundwater basin is needed to put the GSR Project into context. However, once the groundwater divide between the North Westside and South Westside Basins is defined, the South Westside Basin can be discussed separately. There is a significant amount of emphasis and discussion on the North Westside Basin, while most of the GSR Project operations and impacts are in the South Westside Basin. For example, the DEIR has a lengthy discussion on salt water intrusion in the North Westside Basin and significantly less discussion on the potential for bayside salt water intrusion; this may be because the freshwater/salt water interface on the Pacific Ocean side is much better defined than on the bayside of the Westside Groundwater Basin. That, however, is not a valid reason for failing to include the appropriate level of information and analysis with respect to the South Westside Basin." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

Response HY-1

The comment alleges that the EIR does not explain the hydrologic connection or lack of hydrologic connection between the North and South Westside Groundwater Basins, and is inconsistent because it reports results for both the South and North Westside Groundwater Basin, while stating that the "South" and "North" are not geologically separate. It also alleges the EIR is inconsistent, because the same level of information and analysis is not reported for both the South and North Westside Groundwater Basin. For example, the commenter says that more discussion is included of salt water intrusion potential in the North Westside Groundwater Basin than on the bayside of the South Westside Groundwater Basin.

The Westside Basin Groundwater Model, which is described in Section 5.1.6 (Groundwater Modeling Overview) on pages 5.1-6 to 5.1-19 of the Draft EIR, is a detailed, robust model which computes modeling results for geographic subsections of the Westside Groundwater Basin. Because the Westside Groundwater Basin as a whole is large (45 square miles), it is appropriate and informative to report results for geographic subsections where distinct results for geographic subsections are found. This does not imply that the North and South Westside Groundwater Basins are separated geologically or that they are not hydraulically connected. In fact, the U.S. Geological Survey (USGS) considers the Westside Groundwater Basin to have no defined sub-basins, and the geologic and hydrologic data collected about the Westside Groundwater Basin (and reported in Section 5.16.1.3 [Regional Groundwater Hydrology] on pages 5.16-6 through 5.16-30 of the Draft EIR) clearly show that the southern and northern portions of the Basin are hydraulically connected. Chapter 3, Physical Setting, of Technical Memorandum 10.1, *Groundwater Modeling Analysis for the Regional Groundwater Storage and Recovery Project and San Francisco Groundwater Supply Project*, provided in Attachment H to the Draft EIR, also provides valuable information on this subject.

The statement by the commenter's hydrogeologist that there appears to be a "hydrological boundary" between the South and North Westside Groundwater Basin is not factually supported and not correct. Reporting of results in the South and North Westside Groundwater Basin in the Draft EIR is done for the purpose of providing specific geographic information regarding model results. Evaluation of hydrologic impacts in these two portions of the Westside Groundwater Basin does not in any way diminish the identification of impacts in the Westside Groundwater

Basin as a whole, and in fact provides more detailed analysis where differences in Westside Groundwater Basin conditions or management warrant such examination.

The geologic bedrock formations which allow the South and North Westside Groundwater Basins to be hydraulically connected are described in the Draft EIR on pages 5.16-6 and 5.16-7 under the heading, “Regional Geology.”

> “Exposed in the low hills east and northeast of Lake Merced, the Franciscan Complex forms the basement rock for the aquifer system, which defines the lateral and vertical limits of the primary groundwater-bearing formations in the Westside Groundwater Basin. To the north of Lake Merced, the bedrock slopes gently westward towards the Pacific Ocean; beneath Golden Gate Park there is an apparent buried stream valley that results in a thicker accumulation of sediment in that area. South of Lake Merced to the Daly City area, the surface of the bedrock slopes southwestward to Daly City, occurring at depths of almost 600 feet near the center of Lake Merced and nearly 1,000 feet beneath the southern portion of Daly City.”

More specific information can be found in Chapter 3, Physical Setting, of *Task 10.1 Technical Memorandum, Groundwater Modeling Analysis for the Regional Groundwater Storage and Recovery Project and San Francisco Groundwater Supply Project*, in Appendix H to the Draft EIR, and the Final Task 8B Technical Memorandum No. 1, Hydrologic Setting of the Westside Basin (LSCE 2010).

Some studies of the Westside Groundwater Basin conducted over the past several decades have analyzed the North Westside Groundwater Basin and South Westside Groundwater Basin separately. The Draft EIR maintains the geographic distinctions in reporting on the previous literature. Further, it has historically been useful – and continues in the Draft EIR to be useful – to examine the North Westside Groundwater Basin and South Westside Groundwater Basin separately because: (1) the northern portion of the Westside Groundwater Basin is hydrologically connected primarily to the Pacific Ocean while the southern portion of the Westside Groundwater Basin is connected primarily to the San Francisco Bay (Bay); (2) the northern portion of the Westside Groundwater Basin has not historically been developed as a municipal groundwater supply while the southern portion of the Westside Groundwater Basin has been substantially developed as a municipal supply for decades; and (3) the northern portion of the Westside Groundwater Basin interacts with several major surface water bodies including Lake Merced, while the southern portion of the Westside Groundwater Basin has no surface water bodies.

The analysis in the Draft EIR supports the conclusion that for some hydrologic issues, such as seawater intrusion, impacts would be different in the northern and southern portion of the Westside Groundwater Basin, due to the differing physical conditions between the North and South Westside Groundwater Basins, and differing historical groundwater development between the North and South Westside Groundwater Basins. Reporting of impacts is necessarily specific to the geographic area where those impacts may occur. Seawater intrusion impacts of the Project are discussed on pages 5.16-110 through 5.16-113 of the Draft EIR. Seawater intrusion could affect both the North Westside Groundwater Basin and the South Westside Groundwater Basin and the

Draft EIR discusses impacts in both portions of the Westside Groundwater Basin, using similar types of analysis methods. As stated on Draft EIR page 5.16-109, three methods are used to estimate the potential for seawater intrusion at any location in the Westside Groundwater Basin:

- Comparing simulated groundwater elevations to calculated exclusion heads;
- Analyzing the changes in the simulated flux of groundwater flowing to the ocean, and;
- Analyzing simulated groundwater contours.

More monitoring well data are available for evaluation along the Pacific coast than along the San Francisco Bay, and therefore fewer locations are evaluated in the South Westside Groundwater Basin on the bayside than along the Pacific coast. However, using the methodology detailed above, the Draft EIR fully analyzed the potential for seawater intrusion in both the shallow water-bearing zone and the primary production and deep aquifers in the South Westside Groundwater Basin, just as it did for the North Westside Groundwater Basin. For the reasons explained on Draft EIR pages 5.16-110 through 5.16-113, seawater intrusion impacts were found to be less than significant at all locations in the Westside Groundwater Basin. Conclusions regarding significance need not be limited to the same number of evaluation points in each geographic area to be valid. For specific concerns regarding the analysis of seawater intrusion, refer to Responses HY-27 through HY-31.

Comment HY-2: Comments related to the hydrologic setting.

This response addresses comments from the commenter listed below; the comments on this topic are quoted in full below this list:

- O-CLMP-Quick

"B. **The Description Of The Project Setting Is Inadequate.**

CEQA Guideline Section 15125 provides that an EIR include a description of the existing environment in the vicinity of the proposed project, and this description of the environmental setting should be sufficient to allow the project's significant impacts 'to be considered in the full environmental context. The accurate description of hydrologic condition of an aquifer is essential for an EIR that involves the extraction of groundwater.[19] CEQA Guideline Section 15126 provides that an EIR's discussion of a project's environmental effects should include relevant specifics of the area affected, the resources that will be involved, and the physical changes to such resources that will result.

[19] *Cadiz Land Company v. Rail Cycle* (2000) 83 Cal.App.4th 74, 94." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

"**Summary**

As further explained below, the Regional Groundwater Storage and Recovery Project (GSR Project) DEIR prepared by the San Francisco Public Utilities Commission (SFPUC) is incomplete in several areas. For example, the DEIR lacks:

• A fundamental physical characterization of the Westside Basin, including the definition of basin characteristics that would allow an accurate and verifiable analysis of the potential for salt water intrusion along the bayside of the aquifer, regional and localized subsidence impacts caused by planned water level drawdowns during take years, and potential interference with third-party wells.

• A full description of baseline conditions for the Westside Basin – necessary baseline potentiometric or water table maps for the Westside Basin are missing." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

"*Item 31 – Why does the DEIR not include additional cross sections that are perpendicular to the single one included in the DEIR to better depict the geology? Is the single cross section an accurate depiction of the variability that is present in the Westside Basin?*

The DEIR includes one cross section that runs the length of the Westside Basin. The Westside basin covers an extensive area and includes several faults that are significant hydrologic barriers. Cross sections perpendicular to the axial cross section will demonstrate the subsurface barrier boundaries along the northeast and southwest sides of the South Westside Basin." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

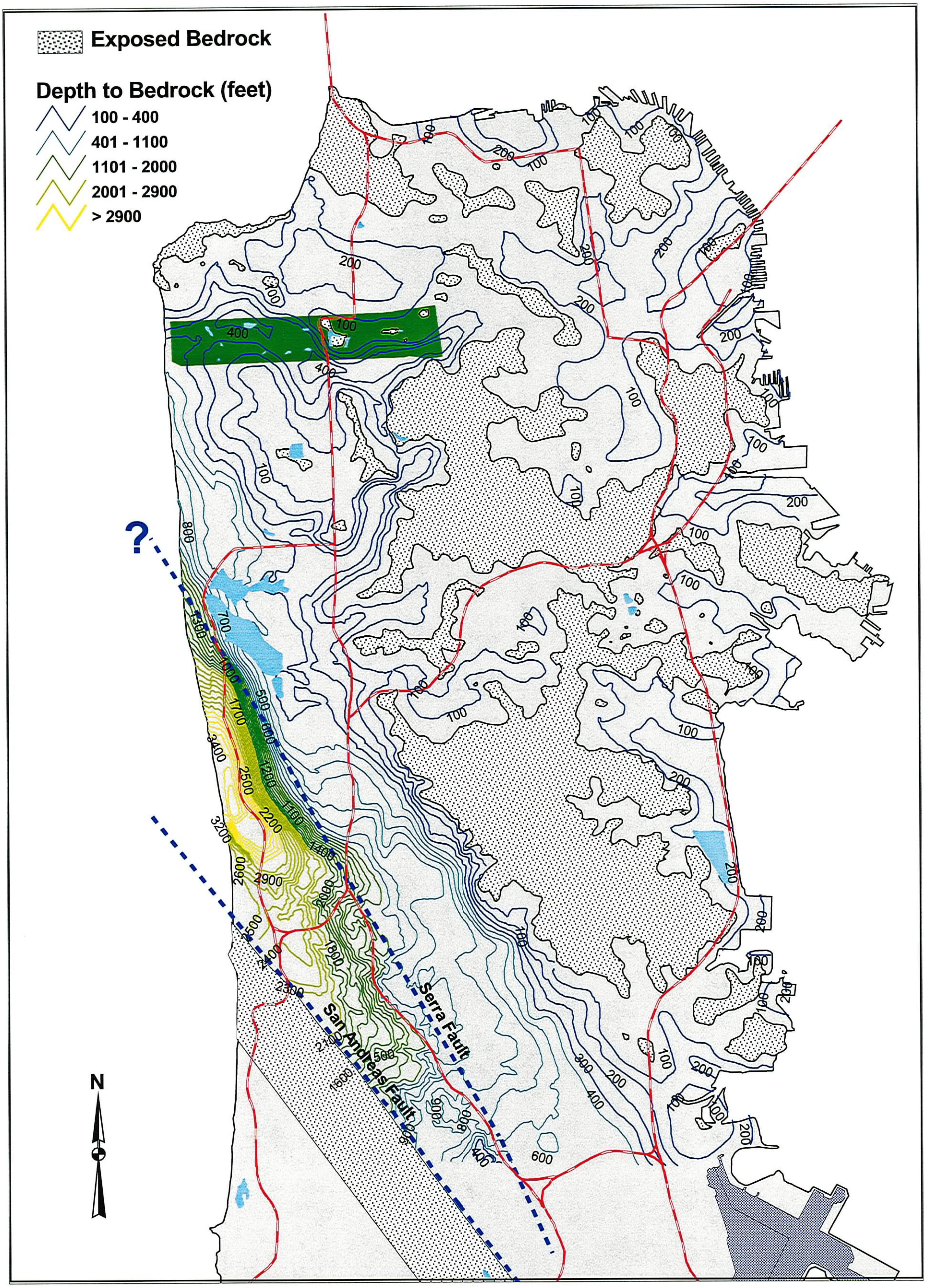
"*Item 32 – Why were water levels not included on the cross section?*

The DEIR discusses the water level variability across the Westside Basin and between the various aquifers. It would be very useful to see how measured water levels do in fact vary across the basin and between the aquifers." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

Response HY-2

The comments in this grouping express the commenter's perspective that the hydrologic setting information for the groundwater basin is inadequate or missing certain types of data. The Draft EIR provides an extensive discussion of the existing setting of the Westside Groundwater Basin on pages 5.16-1 through 5.16-44. In addition, Appendix H to the Draft EIR provides additional, more detailed information regarding the existing setting, including maps and hydrographs, in *Task 10.1 Technical Memorandum, Groundwater Modeling Analysis for the Regional Groundwater Storage and Recovery Project and San Francisco Groundwater Supply Project* and *Task 10.4 Technical Memorandum, Changes in Groundwater Levels and Storage for the Regional Groundwater Storage and Recovery Project and San Francisco Groundwater Supply Project*. More specific existing setting information for seawater intrusion is included in Draft EIR Appendix H throughout *Task 10.3 Technical Memorandum, Assessment of Potential Seawater Intrusion for the Regional Groundwater Storage and Recovery Project and San Francisco Groundwater Supply Project*; for subsidence throughout *Subsidence Analysis for the Regional Groundwater Storage and Recovery Project and San Francisco Groundwater Supply Project* and particularly on pages 5 through 10; and for well interference throughout *Technical Memorandum 10-7 Supplement SFPUC Regional Groundwater Storage and Recovery Project; South Westside Basin Third-party Well Survey and Well Interference Analysis* and particularly on pages 3 through 8. Information from those technical memoranda was summarized and referenced in the Draft EIR in Section 5.16.1.3 (Regional Groundwater Hydrology).

The cross-section, Figure 5.16-2 (North-South Geologic Cross Section, Westside Groundwater Basin), included in the Draft EIR, was selected as being most representative of the characteristics of the groundwater basin that are important to understanding the impact analysis. Additional north-south cross-sections of the basin are included in Appendix H, *Task 10.1 Technical Memorandum, Groundwater Modeling Analysis for the Regional Groundwater Storage and Recovery Project and San Francisco Groundwater Supply Project*, Figure 10.1-3 and the TM's Attachment 10.1-H Figure 7. A reference cited in Draft EIR Section 5.16, Hydrology and Water Quality, *TM 1 Hydrologic Setting of the Westside Basin* (LSCE 2010), provides additional existing setting information relative to seawater intrusion. A figure from the 2010 LSCE report shows the relationship of bedrock to the Serra Fault and other geologic features, and several figures from the report include east-west cross-sections which show the relationship of groundwater basin features in the Westside Groundwater Basin both east and west of the Serra Fault. These figures address the information requested by the comment and are included with this response for reference as Figures RTC-1 (Depth to Bedrock) and RTC-2 through RTC-19 (Cross Section Location Map and cross-sections), respectively.



after Phillips et. al. 1993

CAD FILE: G:/Projects/Ellison & Schneider/01-6-021/Figure 5 (Paste-up).dwg CFG FILE: LSCE2500.PCP_MRG DATE: 02-19-04 3:29pm

LUHDORFF & SCALMANINI CONSULTING ENGINEERS

Source: LSCE 2010

Depth to Bedrock

Regional Groundwater Storage and Recovery Project

Figure RTC-1

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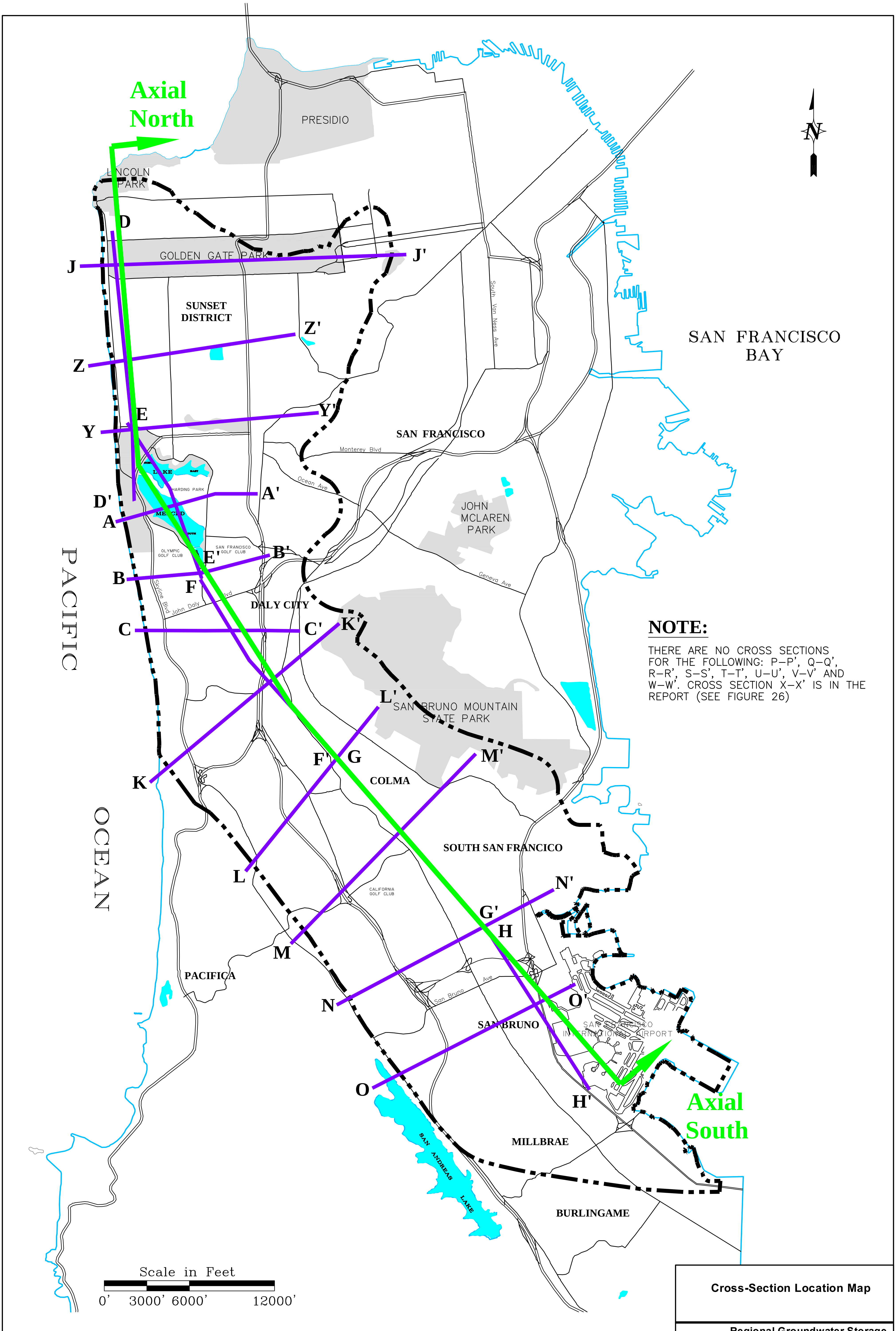

LUHDORFF & SCALMANINI CONSULTING ENGINEERS

Source: LSCE 2010

Cross-Section Location Map

Regional Groundwater Storage and Recovery Project

Figure RTC-2

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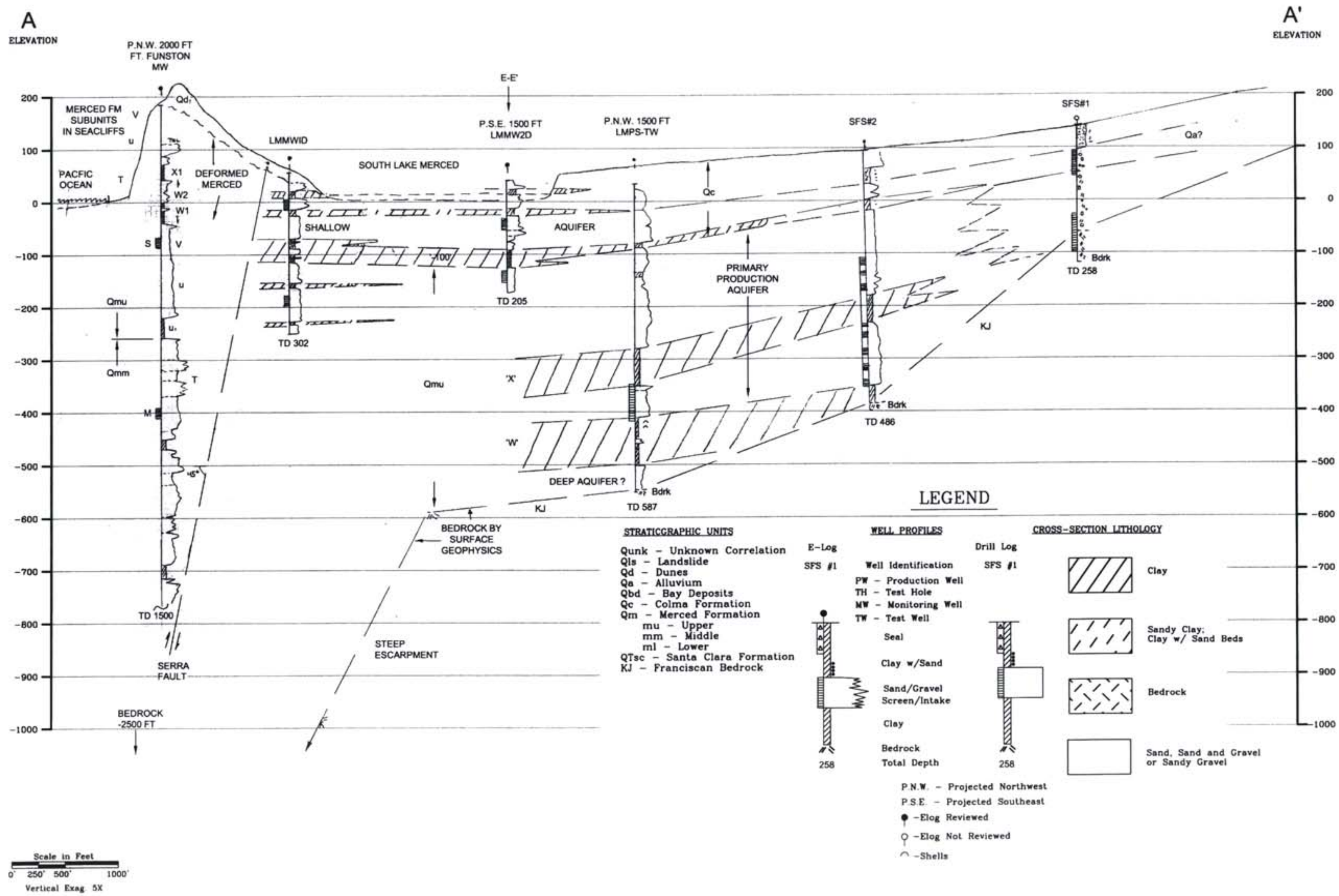

Source: Luhdorff & Scalmanini Consulting Engineers, 2010

Geologic Cross Section A-A'
Westside Basin

Regional Groundwater Storage
and Recovery Project

Figure RTC-3

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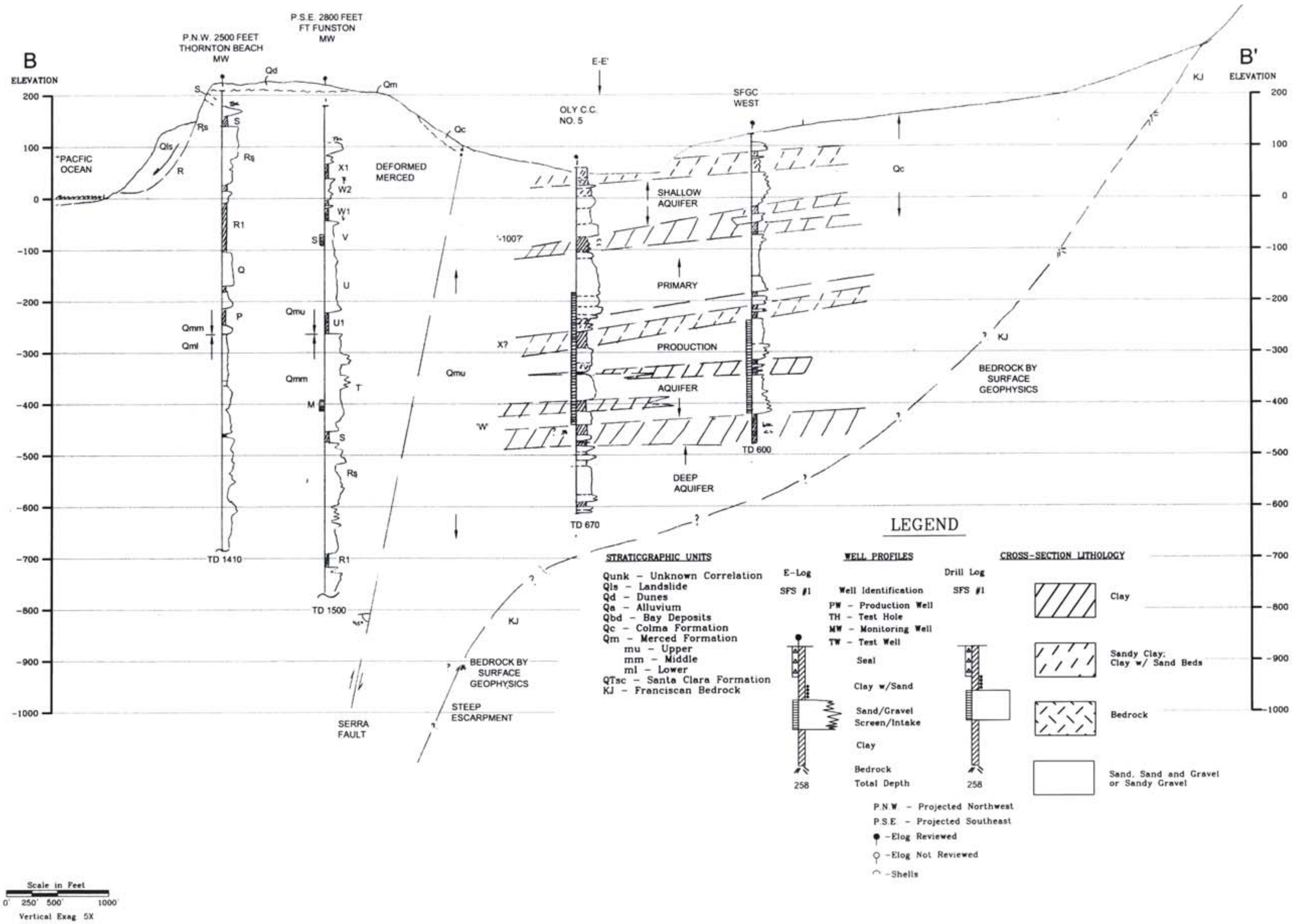

Geologic Cross Section B-B'
Westside Basin

Regional Groundwater Storage
and Recovery Project

Figure RTC-4

Source: Luhdorff & Scalmanini Consulting Engineers, 2010

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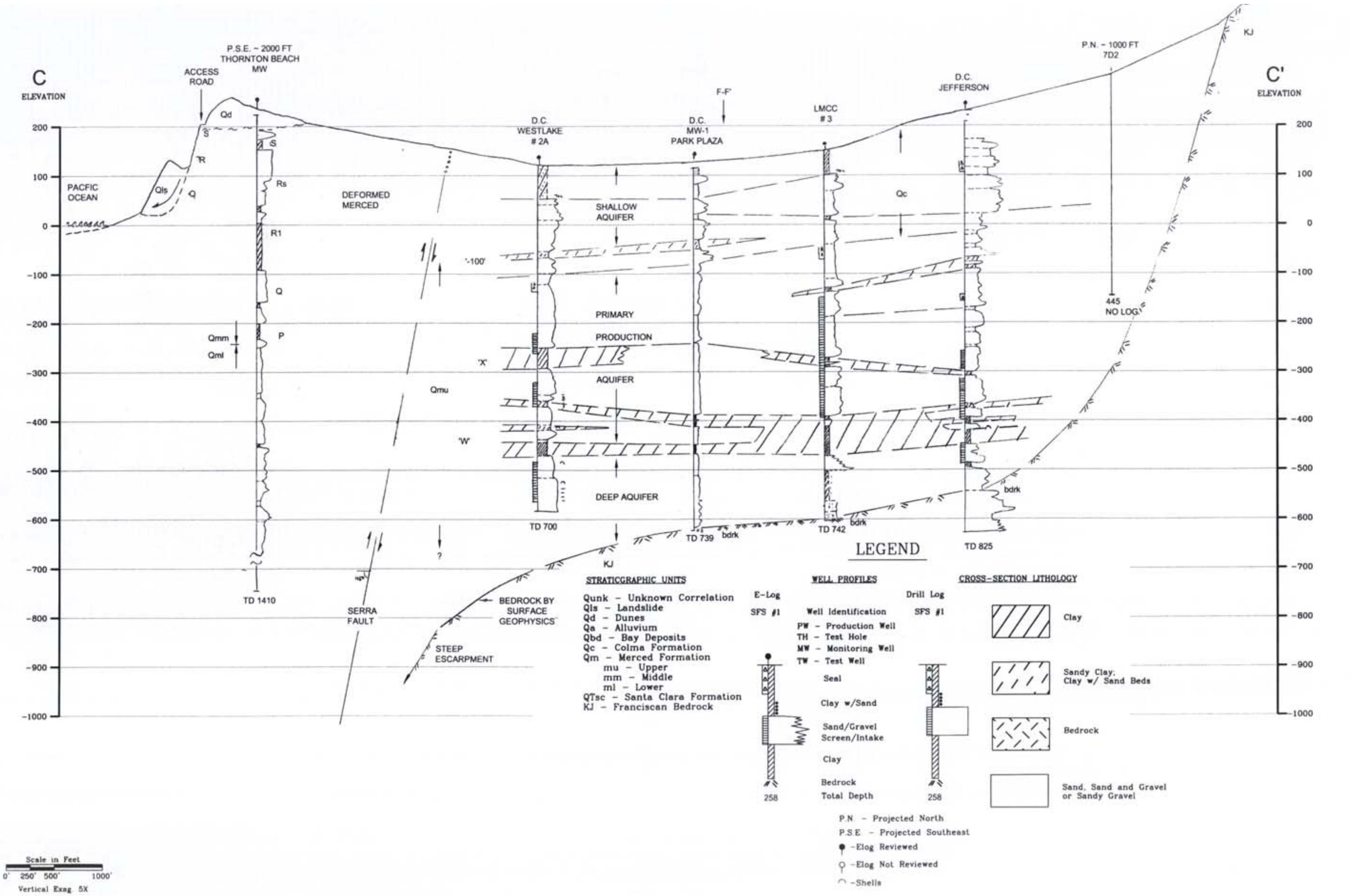

Geologic Cross Section C-C'
Westside Basin

Regional Groundwater Storage and Recovery Project

Figure RTC-5

Source: LSCE 2010

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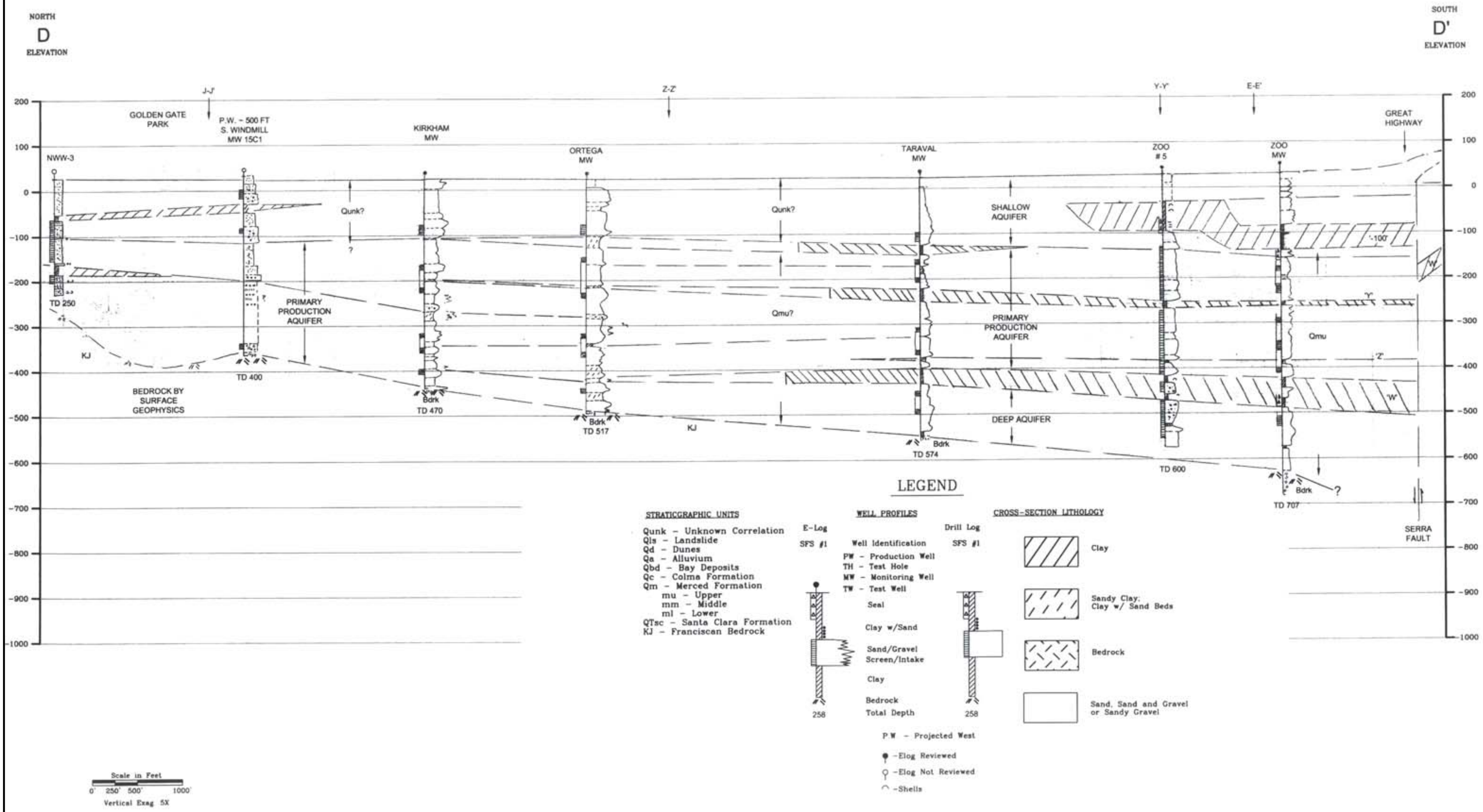

Source: LSCE 2010

Geologic Cross Section D-D'
Westside Basin

Regional Groundwater Storage and Recovery Project

Figure RTC-6

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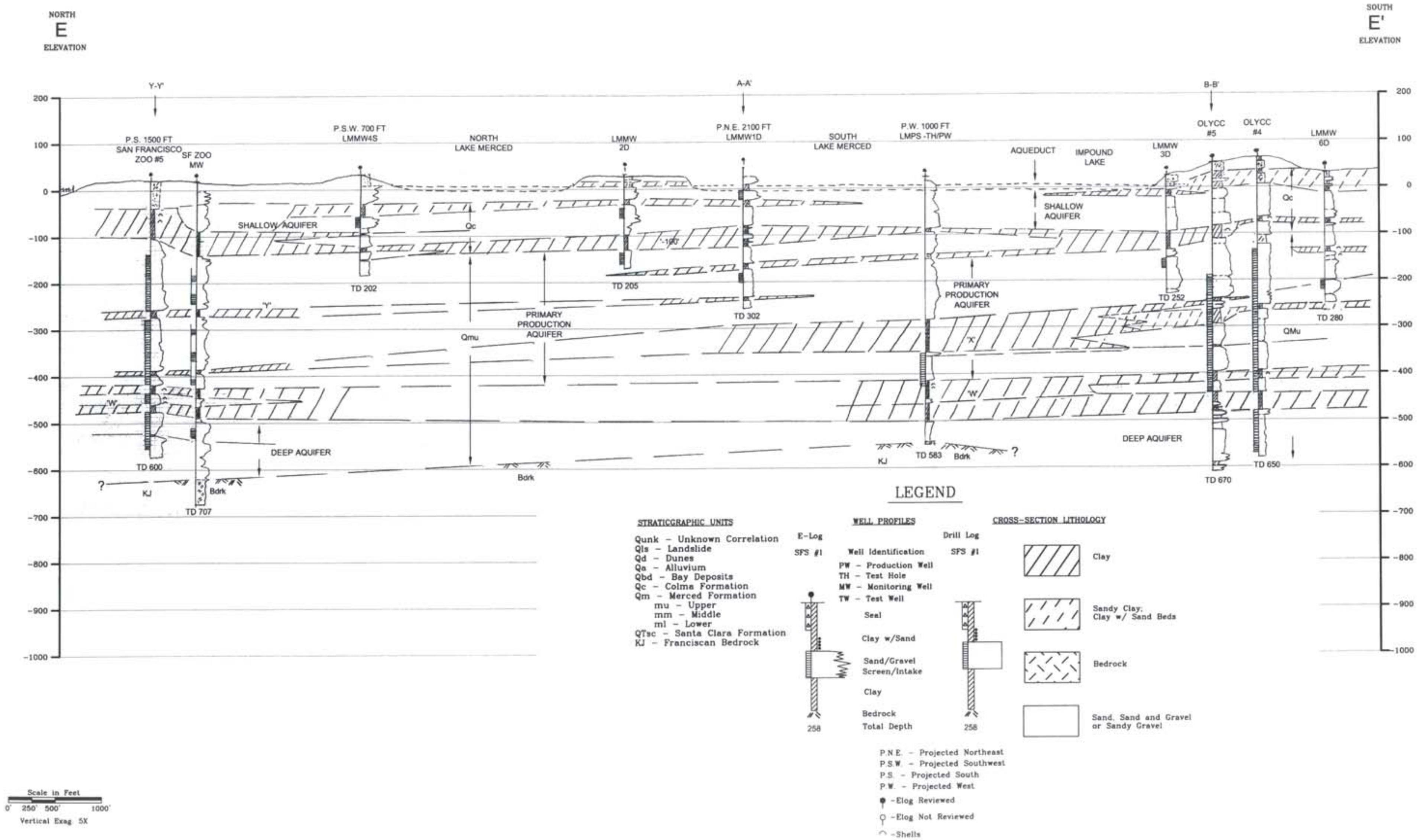

Source: LSCE 2010

Geologic Cross Section E-E'
Westside Basin

Regional Groundwater Storage and Recovery Project

Figure RTC-7

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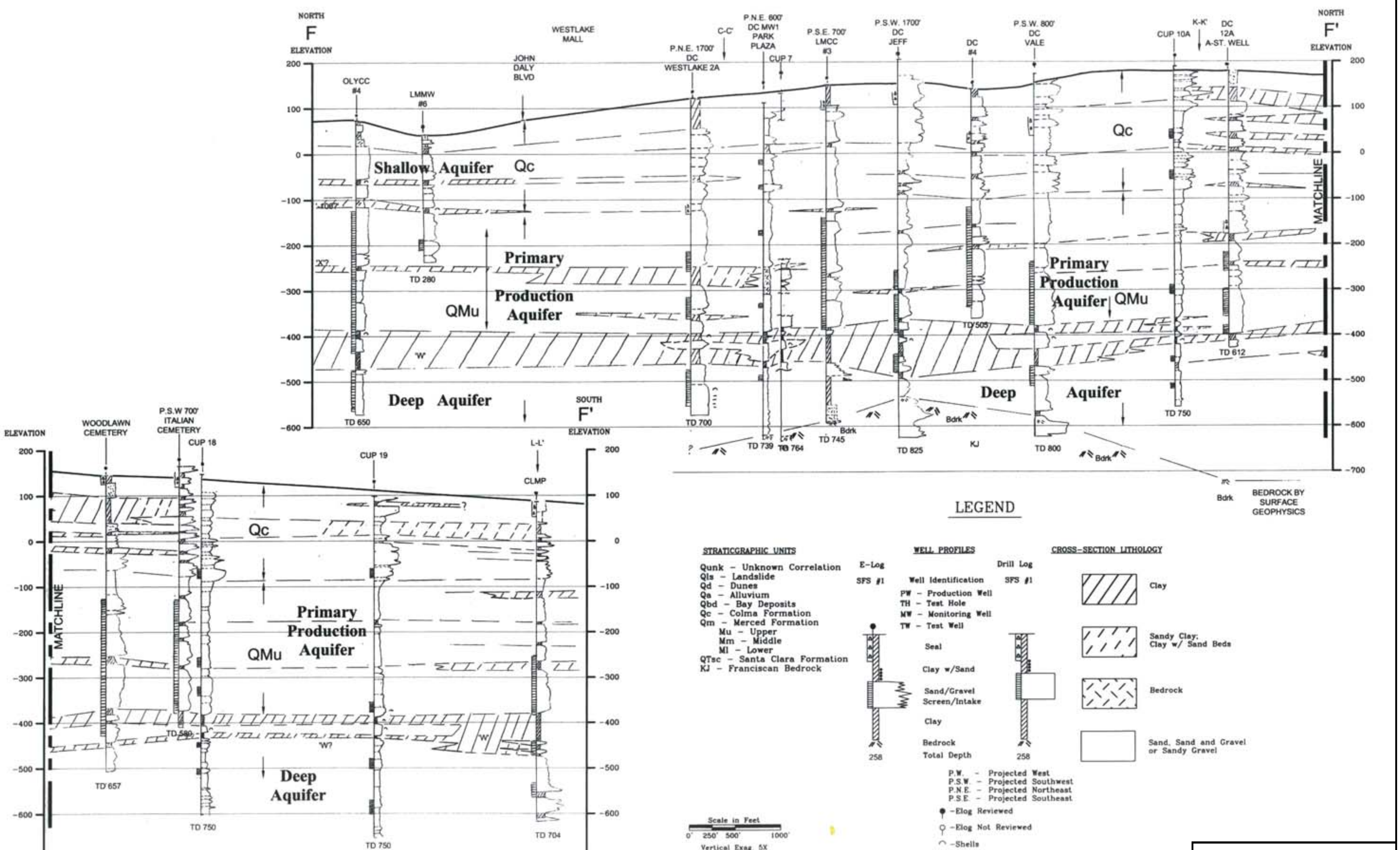

Geologic Cross Section F-F'
Westside Basin

Regional Groundwater Storage and Recovery Project

Figure RTC-8

Source: LSCE 2010

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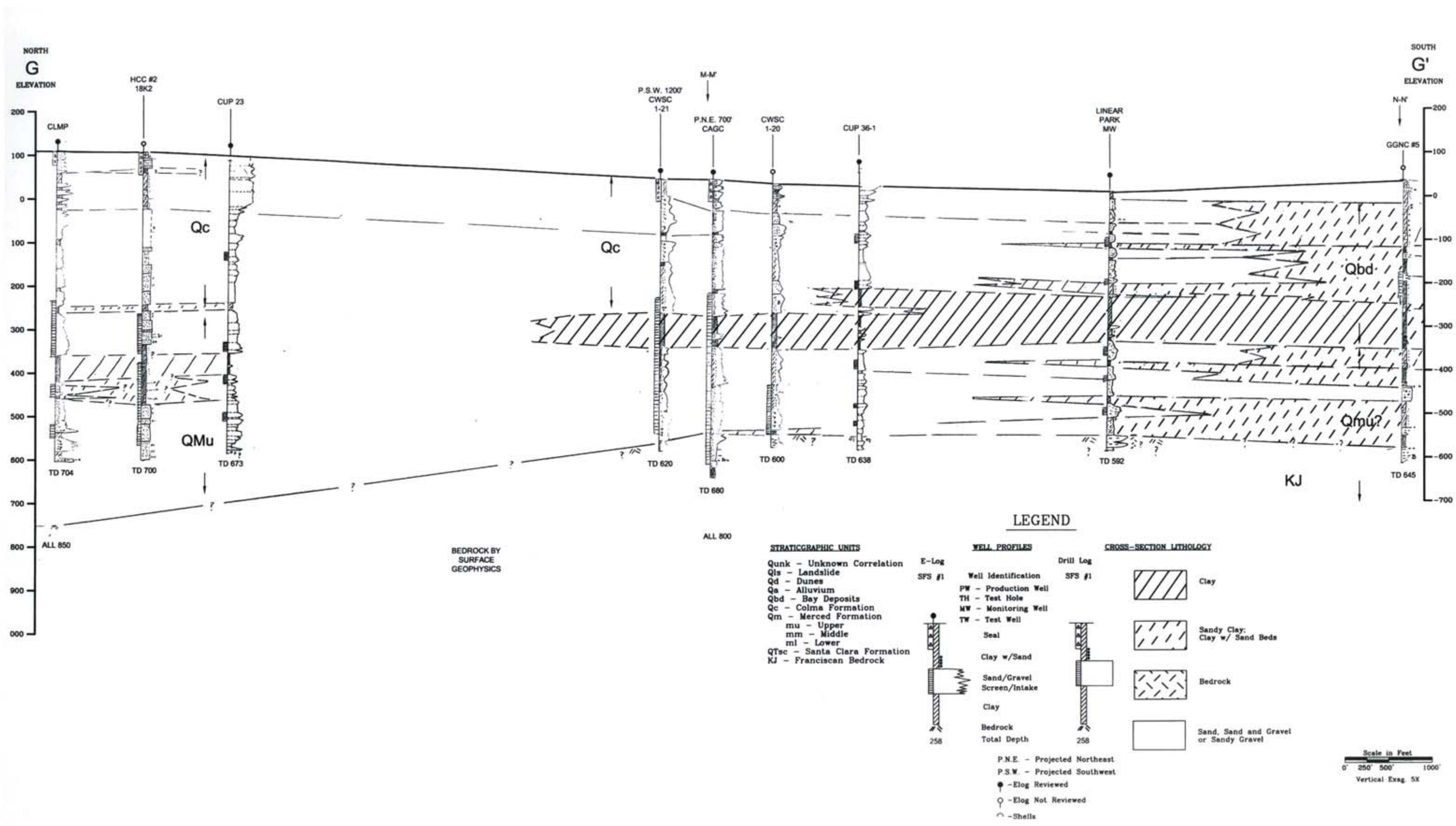

Geologic Cross Section G-G'
Westside Basin

Regional Groundwater Storage
and Recovery Project

Figure RTC-9

Source: LSCE 2010

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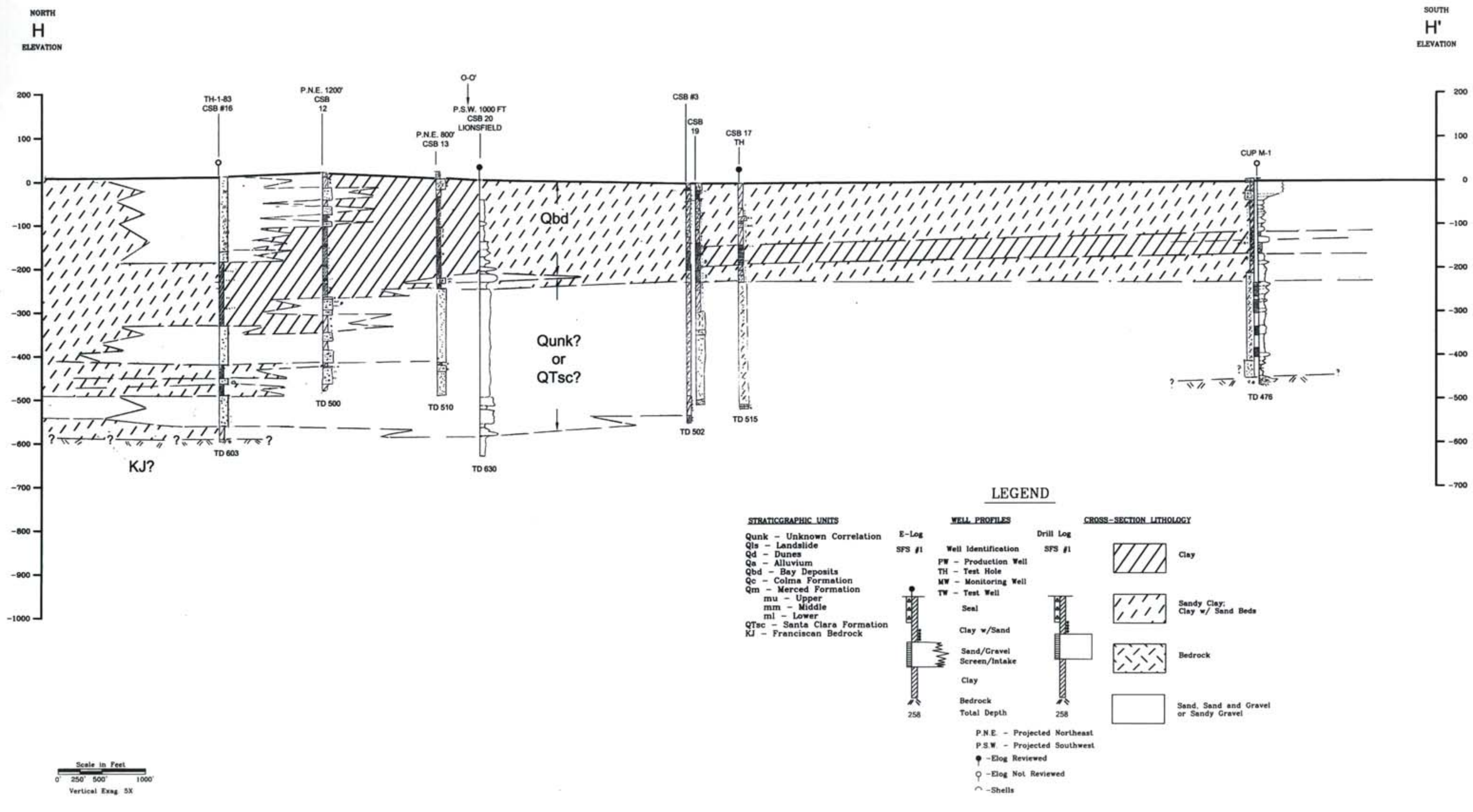

Geologic Cross Section H-H'
Westside Basin

Regional Groundwater Storage
and Recovery Project

Figure RTC-10

Source: LSCE 2010

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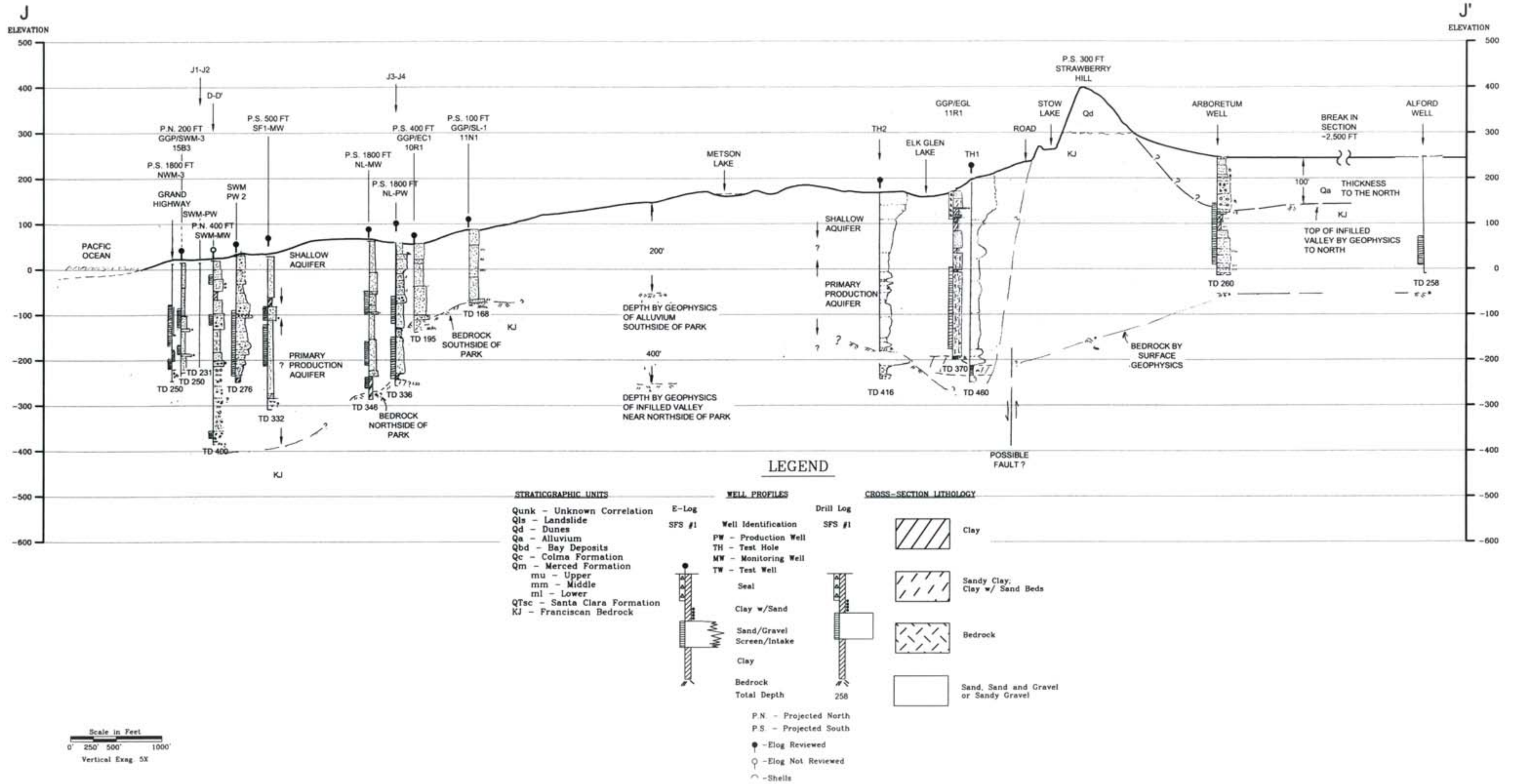

Source: LSCE 2010

Geologic Cross Section J-J'
Sheet 1 of 2
Westside Basin

Regional Groundwater Storage and Recovery Project

Figure RTC-11

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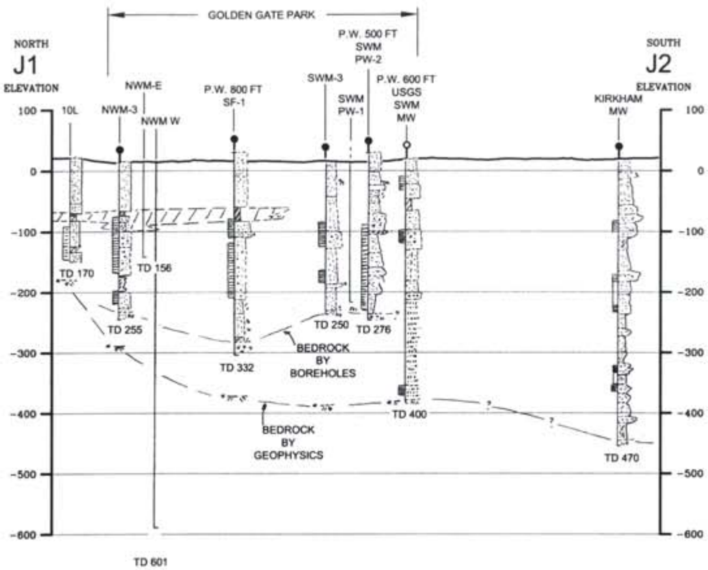

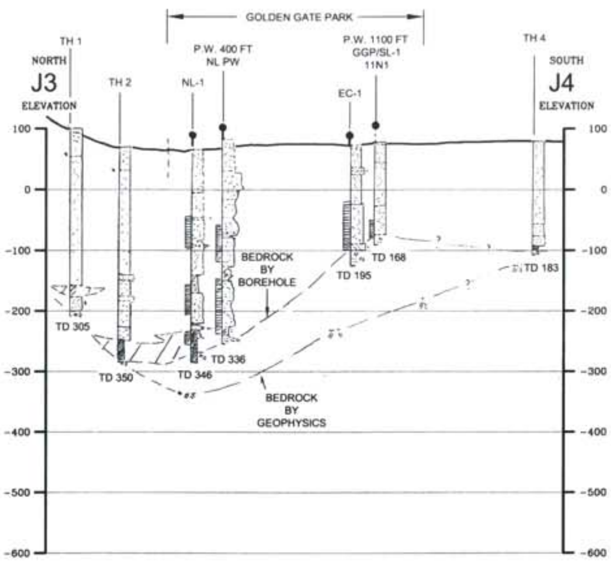

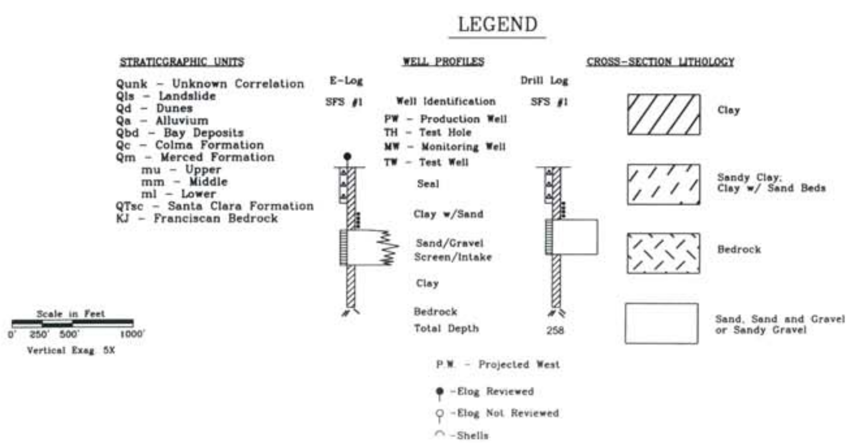

Source: LSCE 2010

Geologic Cross Section J-J'
Sheet 2 of 2
Westside Basin

Regional Groundwater Storage and Recovery Project

Figure RTC-12

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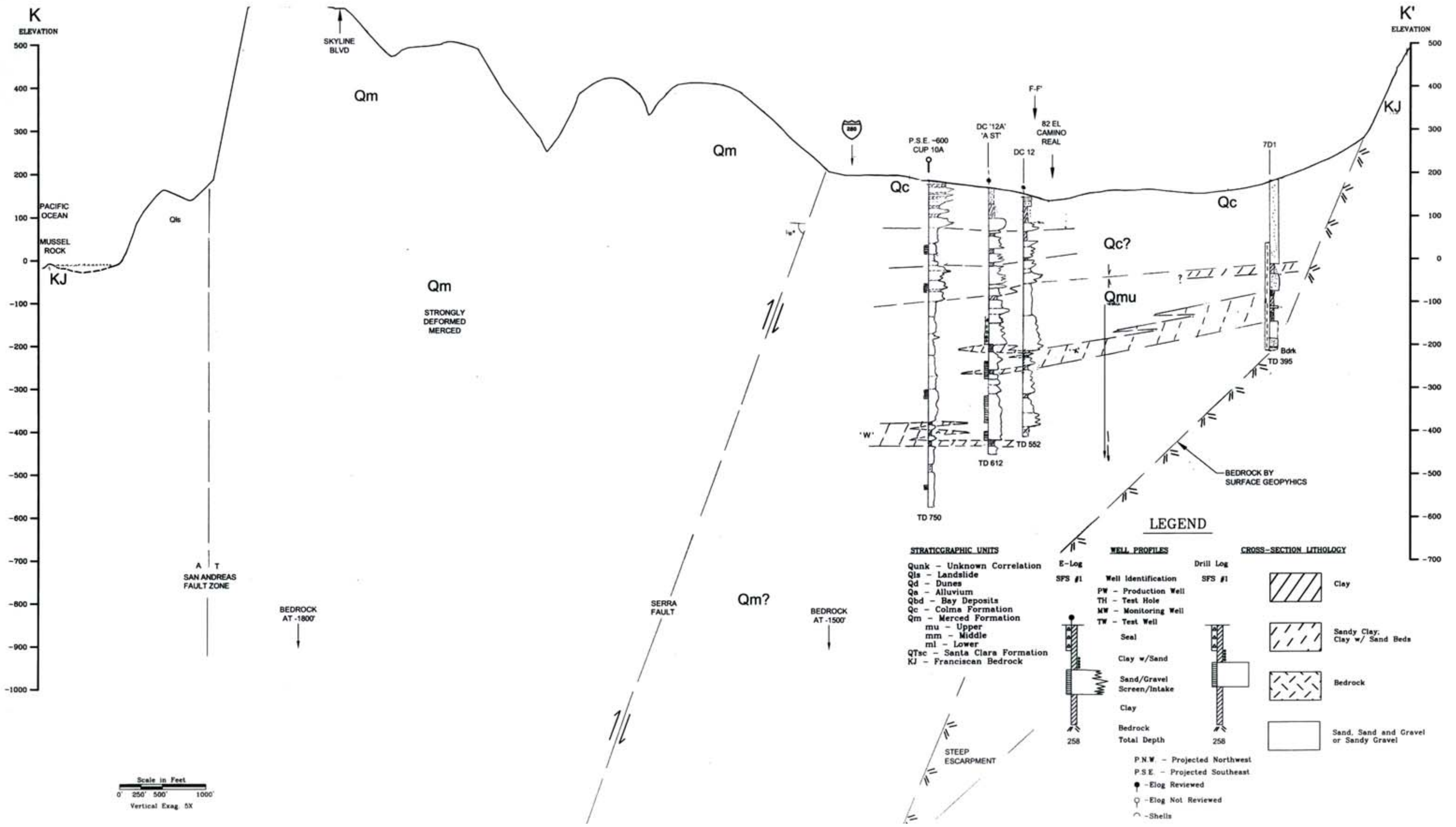

Geologic Cross Section K-K'
Westside Basin

Regional Groundwater Storage and Recovery Project

Figure RTC-13

Source: LSCE 2010

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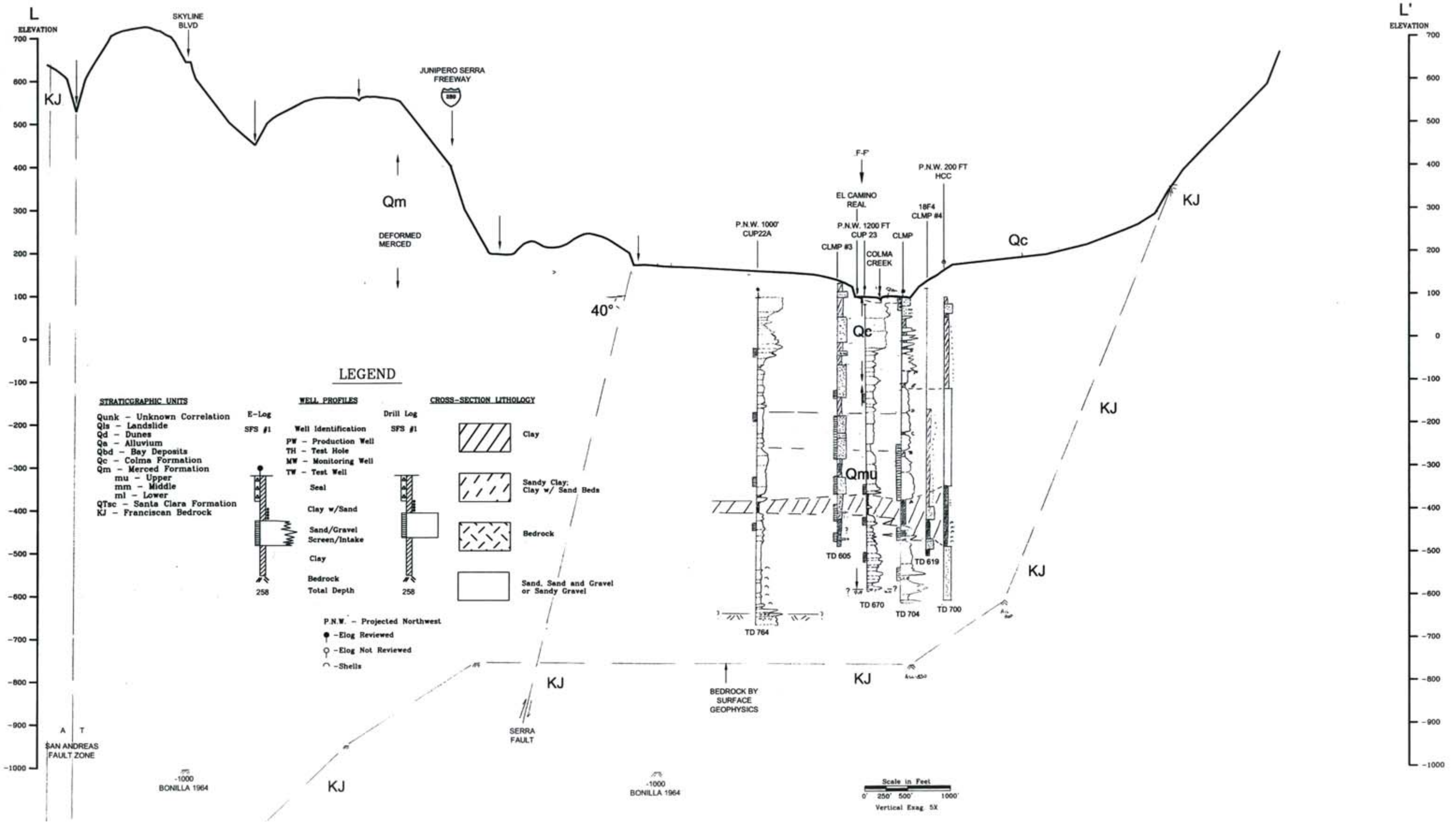

Source: LSCE 2010

Geologic Cross Section L-L'
Westside Basin

Regional Groundwater Storage and Recovery Project

Figure RTC-14

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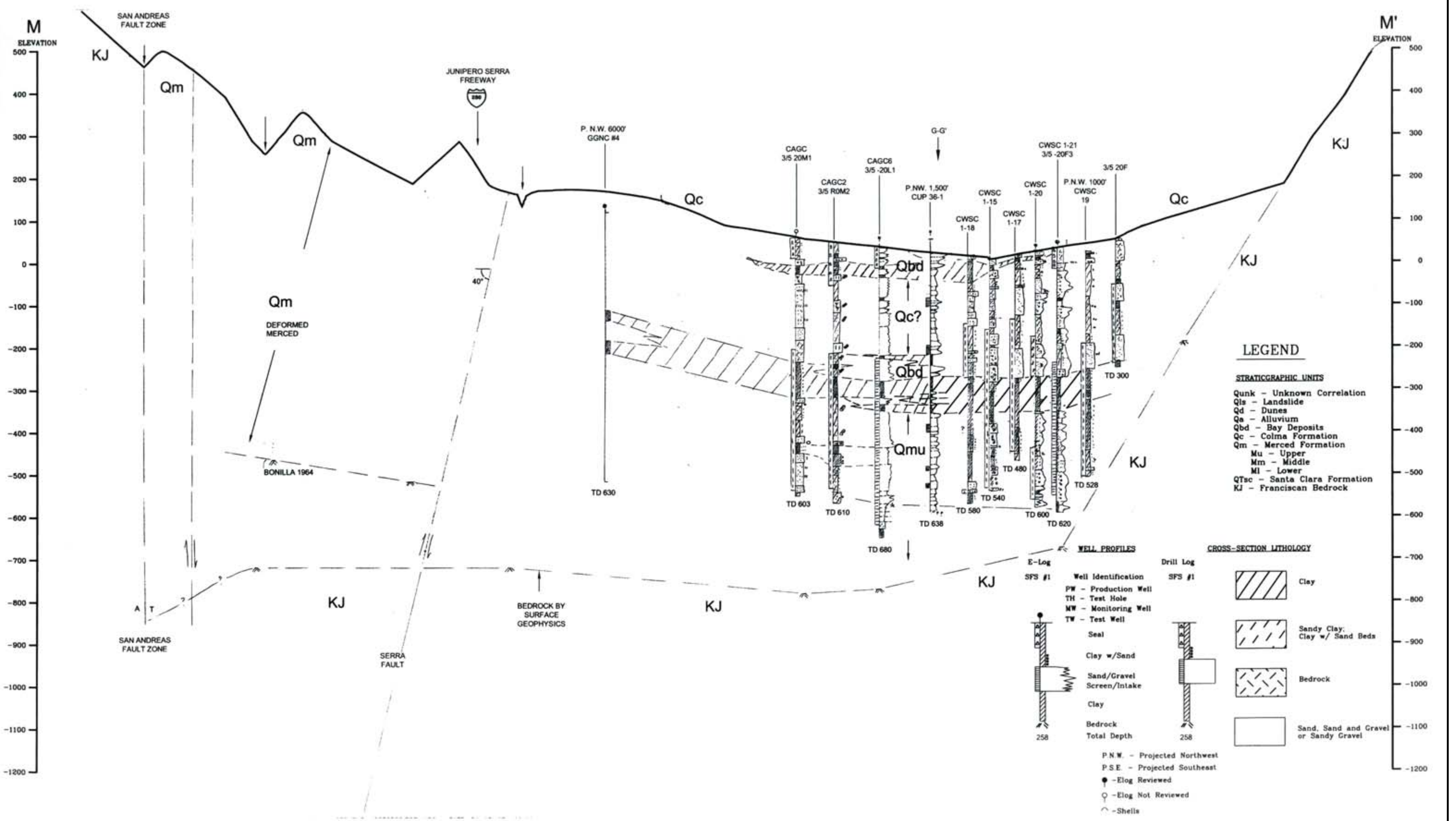

Geologic Cross Section M-M' Westside Basin

Regional Groundwater Storage and Recovery Project

Figure RTC-15

Source: LSCE 2010

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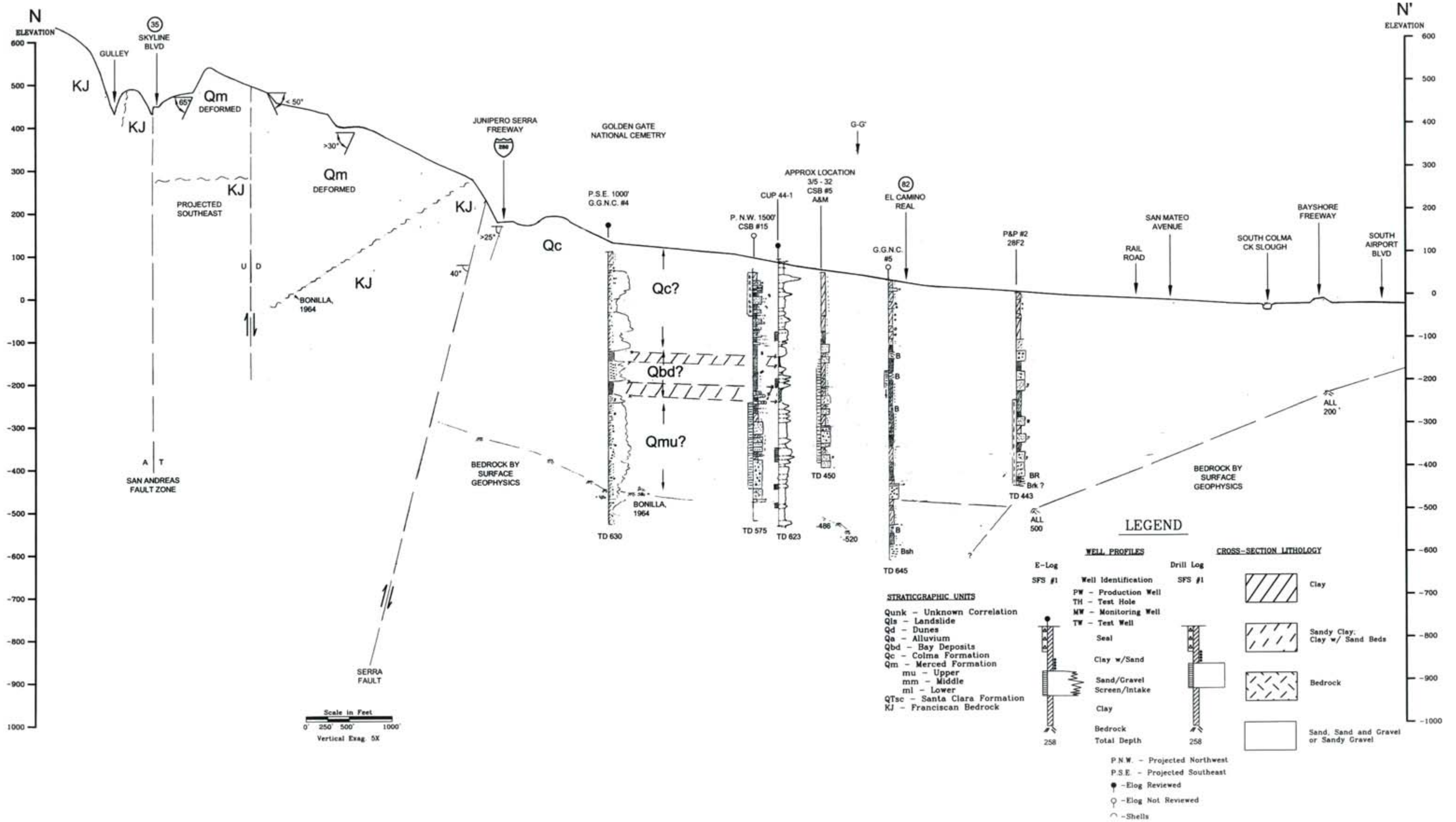

Geologic Cross Section N-N' Westside Basin

Regional Groundwater Storage and Recovery Project

Figure RTC-16

Source: LSCE 2010

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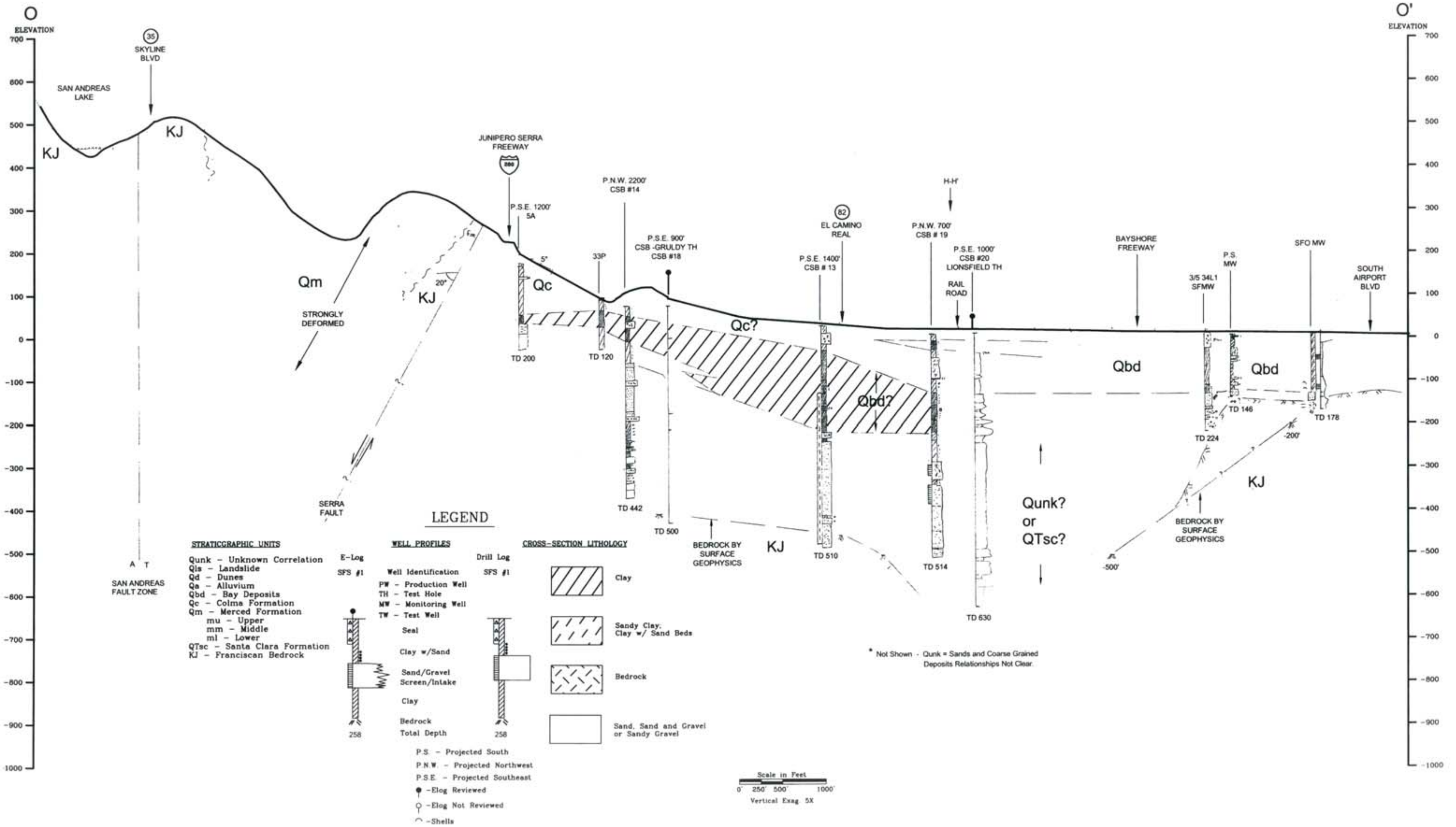

Geologic Cross Section O-O'
Westside Basin

Regional Groundwater Storage and Recovery Project

Figure RTC-17

Source: LSCE 2010

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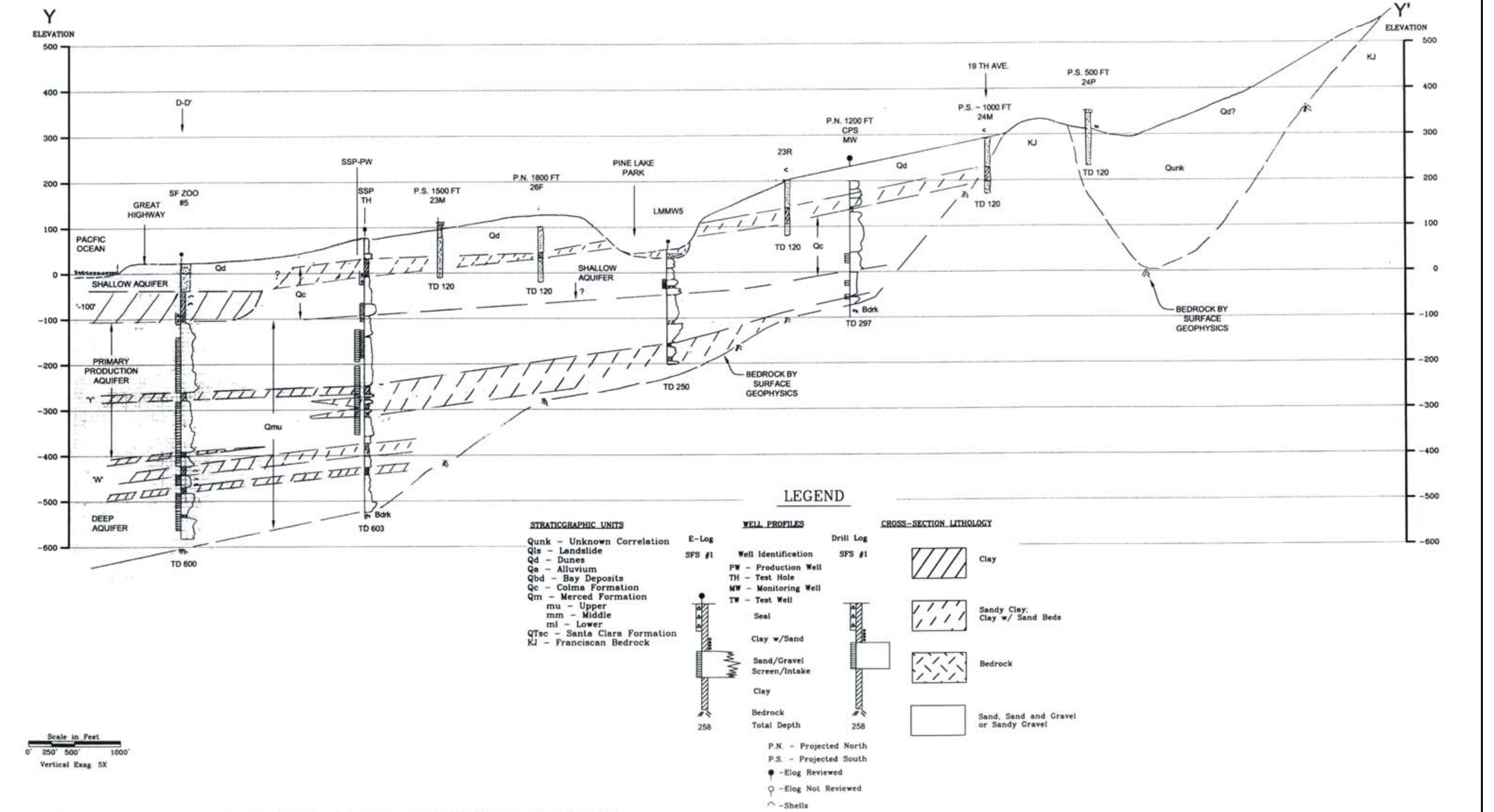

Source: LSCE 2010

Geologic Cross Section Y-Y'
Westside Basin

Regional Groundwater Storage and Recovery Project

Figure RTC-18

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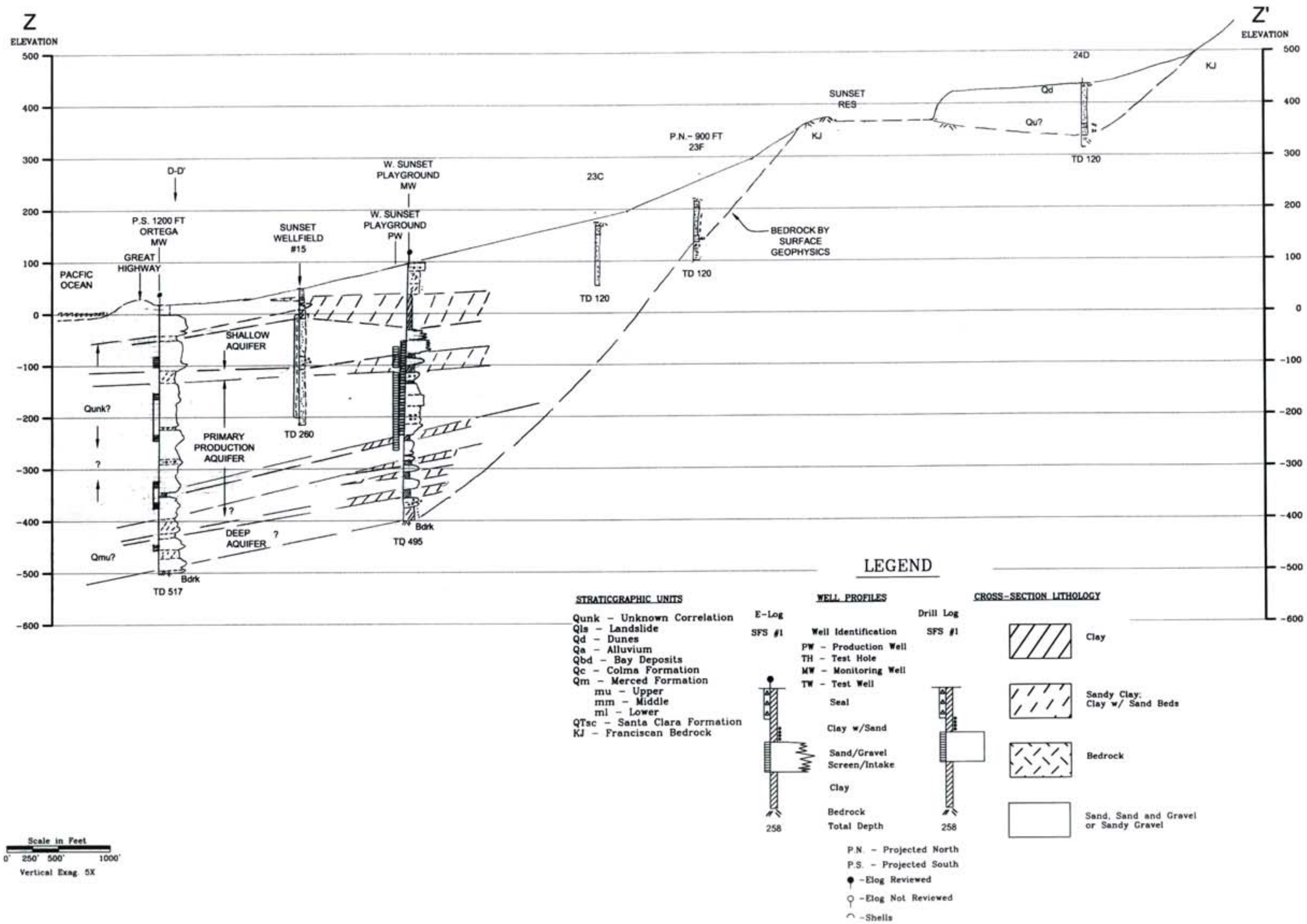

Geologic Cross Section Z-Z'
Westside Basin

Regional Groundwater Storage and Recovery Project

Figure RTC-19

Source: LSCE 2010

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The comment also suggests that measured groundwater levels would be useful if added to the geologic cross-sections. The geologic cross-sections already provide a great deal of information graphically, and the addition of groundwater levels to the cross-sections would add a level of detail that could make the figures more confusing to the reader. Therefore, instead of including this information on those figures, the Draft EIR provides a series of hydrographs which indicate not only the measured groundwater levels at 11 specific locations throughout the Westside Groundwater Basin, but also the groundwater levels under modeled existing conditions (the levels predicted by the model to occur over a variety of rainfall years consistent with the 47 years of historic hydrology). See Appendix H, *Task 10.4 Technical Memorandum, Changes in Groundwater Levels and Storage for the Regional Groundwater Storage and Recovery Project and San Francisco Groundwater Supply Project*, Figures 10.4-3a through 10.4-13b.

Generalized groundwater levels in the South Westside Groundwater Basin for the Primary Production Aquifer are shown in Figure RTC-20 (Groundwater Elevation, Contours Primary Production Aquifer, Fall 2010). Please also see Draft EIR, Appendix H, *Task 10.1 Technical Memorandum, Groundwater Modeling Analysis for the Regional Groundwater Storage and Recovery Project and San Francisco Groundwater Supply Project*, Attachment 10.1-F Model Scenario Groundwater Elevation Contour Map for selected time periods and *Task 10.6 Technical Memorandum, Assessment of Groundwater Quality for the Regional Groundwater Storage and Recovery Project and the San Francisco Groundwater Supply Project*, Attachment 10.6-A, Model Scenario Hydrographs for Selected Locations, which includes groundwater contour maps in Figures 10.6-7 through 5.16-11. The SFPUC's Annual Westside Basin Groundwater Monitoring Reports also include actual measured maps (SFPUC 2013).

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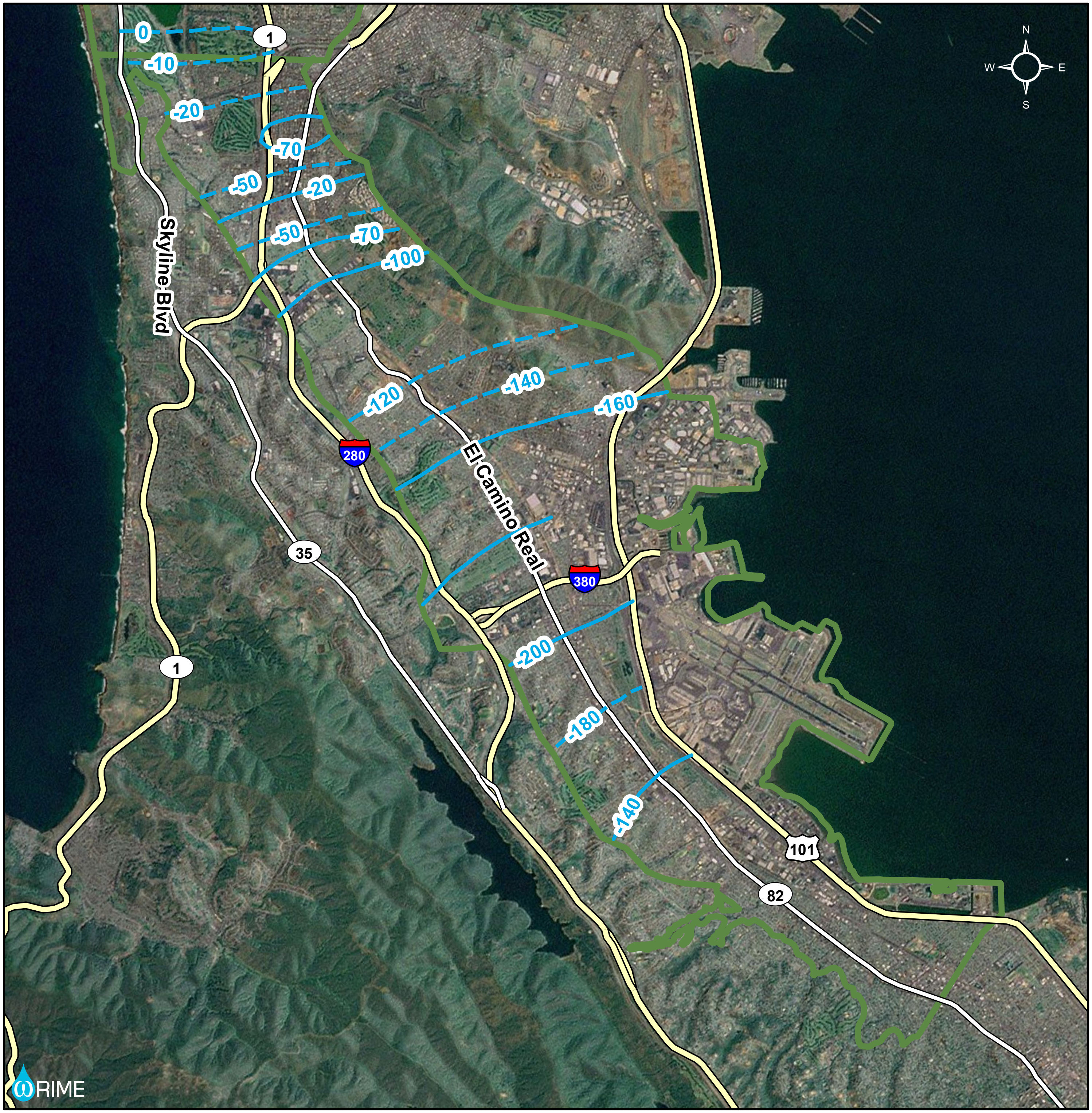

Contours Primary Production Aquifer, Fall 2010

Legend

- Groundwater Elevation Contour (ft) (dashed where inferred)
- Highways
- Groundwater Basin

CITY OF SAN BRUNO
CALIFORNIA WATER SERVICE CO.
DALY CITY CALIFORNIA

0 0.5 1 2 Miles

Source: Groundwater Levels: SFPUC, 2011

Groundwater Elevation Contours Primary Production Aquifer, Fall 2010

Regional Groundwater Storage and Recovery Project

Figure RTC-20

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Maps and hydrographs are provided in each of the Technical Memoranda in Appendix H of the Draft EIR relative to the specific evaluation needs of each impact. These hydrographs and maps in the Draft EIR provide the data regarding groundwater levels needed to understand the setting of the Westside Groundwater Basin as a basis for the analysis of impacts.

Comment HY-3: Comments related to Storm Water Pollution Prevention Plan and Site-specific Discharge Plan.

This response addresses comments from the commenters listed below; each comment on this topic is quoted in full below this list:

- G-San Mateo PW-Chow
- G-Colma-Laughlin

"The Storm Water Pollution Prevention Plan and/or the Erosion and Sediment Control Plan to be prepared in accordance with Mitigation Measure M-HY-1, on Page 5.16-63, shall be submitted to the District for review. Tracking of dirt/mud will not be allowed onto the access road to Site 9. No trash and debris shall be allowed to be discarded along the access road and flood control channel." *(San Mateo Department of Public Works, letter, May 17, 2013 [G-San Mateo PW-Chow])*

"Discharge plans prepared in accordance with Mitigation Measure M-HY-2, on Page 5.16-67, shall be submitted to the District for review. Sediment laden and contaminated water shall not be discharged into the District's flood control channels without prior treatment to remove sediment and other contaminants." *(San Mateo Department of Public Works, letter, May 17, 2013 [G-San Mateo PW-Chow])*

"*Implementation of a Storm Water Pollution Prevention Plan, Mitigation Measure M-HY-1*: The Town welcomes the opportunity to review and comment on the plan to assure that illicit discharges are not made into any Town storm drain facilities. Town and the sewer district approval for any discharges to the storm drain or sanitary sewer system are required." *(Colma Planning Department, letter, May 28, 2013 [G-Colma-Laughlin])*

Response HY-3

These comments all refer to the Storm Water Pollution Prevention Plan (SWPPP) that is required to be implemented for Project construction activities. Mitigation Measure M-HY-1 (Develop and Implement a Storm Water Pollution Prevention Plan [SWPPP] or an Erosion and Sediment Control Plan) requires the SFPUC and its contractor(s) to prepare and implement plans that include sufficient measures to address the overall construction of the Project to minimize effects on water quality. As described in Section 5.16, Hydrology and Water Quality beginning on page

5.16-63 of the Draft EIR, the SWPPPs or Erosion and Sediment Control Plans (ESCPs) would be required to include sediment tracking controls and waste management controls to prevent transport of dirt/mud offsite, or discarding of trash and debris.

In response to the comment, Mitigation Measure M-HY-1 (Develop and Implement a Storm Water Pollution Prevention Plan [SWPPP] or an Erosion and Sediment Control Plan), beginning on page 5.16-63 of the Draft EIR, is revised as follows to ensure that applicable agencies and jurisdictions are afforded the opportunity to review the SWPPS and ESCPs:

Mitigation Measure M-HY-1: Develop and Implement a Storm Water Pollution Prevention Plan (SWPPP) or an Erosion and Sediment Control Plan (All Sites)

Consistent with the requirements of the NPDES General Permit for Storm Water Discharges Associated with Construction Activity, at sites where more than one acre of land disturbance would occur (Sites 3, 4, 5, 6, 7, 12, 13, and 14), the SFPUC or its contractor(s) shall develop a Storm Water Pollution Prevention Plan (SWPPP), submit a notice of intent to the SWRCB's Division of Water Quality and implement site-specific BMPs to prevent discharges of nonpoint-source pollutants in construction-related stormwater runoff into downstream water bodies.

At sites where less than one acre of land disturbance would occur (Sites 1, 2, 8, 9, 10, 11, 15, 16, 17 Alternate, 18 Alternate, 19 Alternate, and the Westlake Pump Station), the SFPUC or its contractor(s) shall prepare and implement Erosion and Sediment Control Plans (ESCPs).

Based on the location of the sites, the SFPUC shall provide the SWPPPs and ESCPs to applicable jurisdictions, including the County of San Mateo, San Mateo County Flood Control District, City of Daly City, Town of Colma, City of South San Francisco, City of San Bruno, and City of Millbrae.

Mitigation Measure M-HY-2 (Management of Well Development and Pump Testing Discharges) requires the construction contractor to prepare and implement a Project-specific discharge plan that specifies how discharges to the storm drain system during well development and pumping tests would be managed to protect water quality. Mitigation Measure M-HY-2, beginning on page 5.16-67 of the Draft EIR, is revised to ensure that applicable agencies and jurisdictions are afforded the opportunity to review the discharge plans:

Mitigation Measure M-HY-2: Management of Well Development and Pump Testing Discharges (All Sites, Except Westlake Pump Station)

To address potential impacts on receiving water quality that could result during the construction period related to well development and pump testing, the SFPUC and its contractor shall: 1) prepare and implement a site-specific discharge plan; and 2) fully comply with NPDES requirements.

The discharge plan shall specify how the water will be collected, contained, treated, monitored, and discharged to the vicinity storm drainage system or sanitary sewer system. Discharges to storm drains are subject to review and approval by the RWQCB. Based on the location of the sites, the SFPUC shall provide the discharge plans to applicable jurisdictions, including the County of San Mateo, San Mateo County Flood Control District, City of Daly City, Town of Colma, City of South San Francisco, City of San Bruno, and City of Millbrae.

Comment HY-4: Comments related to San Mateo County Flood Control District policy.

This response addresses comments from the commenter listed below; the comments on this topic are quoted in full below this list:

- G-San Mateo PW-Chow

"Our records confirmed that proposed project sites 5 through 14 and alternate sites 17, 18, and 19 are located within the Colma Creek Flood Control Zone and project site 15 is located within the San Bruno Creek Flood Control Zone. The District requires that the discharge rates from the various sites not exceed the existing rates prior to development, and drainage calculations showing existing and future discharge rates must be submitted to the District for review." *(San Mateo Department of Public Works, letter, May 17, 2013 [G-San Mateo PW-Chow])*

"The DEIR states on Page 5.16-70, 'The building and parking areas at all sites would result in limited amounts of new impervious surfaces. Therefore, project-related increases in stormwater runoff resulting from increases in impervious surfaces would not increase the potential for on- or off-site flooding and the impact would be less than significant.' The District's policy described above of requiring that project proponent demonstrate that the post development discharge rate from the site not exceed the existing rate prior to development would still apply. Therefore, drainage calculations showing existing and future discharge rates must be submitted for review. If it is determined that the future discharge rate exceeds the existing rate, an on-site storm water detention system which would release surface runoff at a rate comparable to the existing flow rate of the site must be designed and incorporated into the project." *(San Mateo Department of Public Works, letter, May 17, 2013 [G-San Mateo PW-Chow])*

Response HY-4

This comment is related to Project facilities that would be located within the San Mateo County Flood Control District. The SFPUC agrees that post-construction stormwater runoff rates shall not exceed pre-construction runoff rates. In response to this comment, page 3-28 of the Draft EIR is revised as follows:

All facilities would include permanent outdoor lighting. Lights would either be mounted on the building or pole-mounted within the well facility site. All lighting would meet

Title 24 of the California Code of Regulations standards including shielding, manual switch operation with automatic shut-off, and energy requirements. Lighting would be added near the main entrance of the well facility for security purposes and adjacent to the parking and service area at the rear of the building, if needed. Lighting would be used only when nighttime access is required. All lights would be switch operated with automatic shut-off.

Low impact design measures, such as bioswales, would be implemented to store, infiltrate, evaporate, or detain storm water runoff to maintain the predevelopment hydrology of the site as needed. Low impact design measures would be sized in accordance with applicable guidelines and regulations, including, but not limited to, the State Water Resources Control Board, the San Mateo County Flood Control District's requirements for sites within the Colma Creek and San Bruno Creek Flood Control Zones, and would be designed to prevent mosquito breeding or other vector habitat. Based on the location of the sites, the SFPUC will provide the drainage calculations showing existing and future discharge rates to applicable jurisdictions for review, including the San Mateo County Flood Control District and the State Water Resources Control Board.

The low impact design measures would be constructed within the construction area boundaries evaluated in the Draft EIR. Therefore, construction of low impact design measures would not result in the disturbance of land that was not previously evaluated in the Draft EIR. Construction and operation of storm water low impact design measures would generally be located underground or at-grade, and, therefore, would not be visually prominent. Construction of such measures would not quantifiably increase construction related air quality emissions or noise levels, and, following construction, would not result in operational air emissions or increases in operational ambient noise levels. Construction and operation of such storm water measures would not increase construction or operation related traffic, and, in general, would not result in any additional impacts to the environment. Therefore, this change to Chapter 3, Project Description would not result in additional impacts beyond those identified in the Draft EIR.

Comment HY-5: Comment related to operational well maintenance discharges to storm drains.

This response addresses a comment from the commenter listed below; the comment on this topic is quoted in full below this list:

- G-San Mateo PW-Chow

"The DEIR, on pages 5.16-71 and 5.16-72, states that Impact HY-5 would be less than significant, therefore requiring no mitigation measures. Discharges as a result of the weekly or monthly exercising of the production wells must still comply with the San Francisco Bay Region Municipal Regional Stormwater NPDES Permit (Order R2-2009-0074, NPDES Permit No. CAS612008). Therefore, the District requests that

Impact HY-5 comply with the same conditions to be set by the RWQCB for Impact HY-2, which is discussed on page 5.16-68 of the DEIR. At a minimum, the District would like to be notified at least 14 days in advance of any planned discharge. Additionally, no discharges shall occur during storm events. It should also be noted that the Permit Order cited on page 5.16-68 (listed as Order No. 99-059, NPDES No. CAS002992) is not the permit currently in effect and should be corrected." *(San Mateo Department of Public Works, letter, May 17, 2013 [G-San Mateo PW-Chow])*

Response HY-5

This comment is regarding well maintenance discharges to storm drains. The SFPUC agrees that planned discharges to the storm drain system shall not occur during storm events. In response to this comment, page 3-141 of the Draft EIR is revised as follows. Additional revisions are made in response to Comment LU-2. All of the changes to the Draft EIR are presented in Section 9.5, Draft EIR Revisions.

> **3.8.3 Maintenance**
>
> Project wells would require exercising to ensure that the facilities remain operational during normal and wet years. Well exercising would occur either weekly or monthly. Wells would be exercised for one hour per week or for a single, four-hour period monthly. Flow rates for exercising are anticipated to be between 300 to 600 gpm. Operators may fine-tune the exercise schedule according to the characteristics of individual wells. A possible maintenance issue is bio-fouling,[17] which may require periodic disinfection as part of the exercise program. Groundwater pumped during exercising would be discharged to a local storm drain. Planned discharges to the storm drain system would not occur during storm events. In the event there is still chlorine residual in the groundwater, the water would be discharged to a sanitary sewer or dechlorinated prior to discharging to a storm drain. Partner Agencies would continue pumping their existing wells during Put Years as needed to maintain operability.

The comment suggests that the exercising of wells must comply with the same conditions to be set by the San Francisco Bay Region Municipal Regional Stormwater NPDES Permit (Order R2-2009-0074, NPDES Permit No. CAS6 1 2008). However, the NPDES permit includes a list of exempted and conditionally exempted discharges in Provision C.15. Unpolluted groundwater pumped from drinking water aquifers is a specifically-listed exemption under Provision C.15.a.i(7). Therefore, drinking water discharges are not subject to the requirements and conditions for construction stormwater discharges as set by the Regional Water Quality Control Board, and so no change is warranted to Impact HY-5. Nonetheless, as discussed above, the SFPUC would not conduct planned discharged to the storm drain system during storm events, regardless of the local jurisdiction.

Additionally, Mitigation Measure M-HY-2 (Management of Well Development and Pump Testing Discharges) is revised on page 5.16-68 of the Draft EIR to correct the permit reference number:

The proposed discharge is anticipated to be conditionally covered under San Mateo County's municipal stormwater permit (Order No. ~~99-059~~ R2-2009-0074, NPDES Permit No. ~~CAS002992~~ CAS612008), contingent upon compliance with certain conditions (RWQCB 2009b, 2012). Prior to any discharge to a storm drainage system, the SFPUC and its contractor shall request a determination from the RWQCB as to the type of permit under which the Project effluent discharges will be regulated.

Comment HY-6: Comments related to duration and frequency of monitoring.

This response addresses comments from the commenter listed below; the comments on this topic are quoted in full below this list:

- O-CLMP-Quick

The following comments are quoted from O-CLMP-Quick, Exhibits C and D, which present Cypress Lawn Memorial Park's proposed changes to Mitigation Measure M-HY-6 (Ensure Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation). Exhibit C provides the proposed final (i.e., clean) version of the changes, and Exhibit D provides the same revisions in tracked changes.

> "Voluntary monitoring of all irrigators' wells would be required during the period that is the longer of: (i) 17 years (or, twice the 8.5 year cycle analyzed in this DEIR); or (2) the period including the first 5 Take Years of the Project from the initiation of Project operation. After this initial period of monitoring, the SFCUP and the ERO, in consultation with irrigation well owners, shall jointly evaluate the effectiveness of the Monitoring and Reporting Program and determine if data collection, monitoring and reporting frequencies and other procedures should be revised or eliminated." *(Cypress Lawn Memorial Park, letter, Exhibit C, June 11, 2013 [O-CLMP-Quick])*

> "**Voluntary monitoring of all irrigators' wells would be required during the period that is the longer of: (i) 17 years (or, twice the 8.5 year cycle analyzed in this DEIR); or (2) the period including the first 5 Take Years of the Project from the initiation of Project operation. After this initial period of monitoring, the SFCUP and the ERO, in consultation with irrigation well owners, shall jointly evaluate the effectiveness of the Monitoring and Reporting Program and determine if data collection, monitoring and reporting frequencies and other procedures should be revised or eliminated.**" *(Cypress Lawn Memorial Park, letter, Exhibit D, June 11, 2013 [O-CLMP-Quick])*

Response HY-6

This comment recommends that monitoring timeframes be added to Mitigation Measure M-HY-6 (Ensure Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation). The comment recommends a timeframe of 17 years or a period that covers the first five Take Years. Mitigation Measure M-HY-6 is revised to include the timeframes recommended in the comment, after which the SFPUC, in consultation with the irrigators, will evaluate the effectiveness of the Irrigation Well Monitoring and Reporting Program, and determine if it should be extended. Proposed changes to the Program, including a reduction in the frequency of monitoring, will be subject to concurrence from the San Francisco Planning Department's Environmental Review Officer (ERO). See Response HY-15 for revisions to Mitigation Measure M-HY-6.

Comment HY-7: Comments related to pumping costs.

This response addresses comments from the commenter listed below; the comments on this topic are quoted in full below this list:

- O-CLMP-Quick

"The DEIR also completely ignores the issue of increased pumping costs when Aquifer is drawn down during drought years. It also does not address the damage to existing wells that could occur if Aquifer water levels are depressed below the screened intervals of the well casings." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

The following comments are quoted from O-CLMP-Quick, Exhibits C and D, which present Cypress Lawn Memorial Park's proposed changes to Mitigation Measure M-HY-6 (Ensure Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation). Exhibit C provides the proposed final (i.e., clean) version of the changes, and Exhibit D provides the same revisions in tracked changes.

> "**Mitigation action #10, Compensate irrigation well owner(s) for increased pumping costs and/or decreased pumping capacity**: If mitigation actions #1 through 9 are not effective in reducing impacts to irrigators' well(s) to less-than-significant levels, or SFPUC and the owner(s) or irrigation well(s) cannot reach an agreement regarding mitigation actions to implement to reduce Project impacts to irrigation wells, SFPUC would compensate the well owner in proportion to the reduction in pumping capacity of any well(s) below the performance standard and for any increased irrigation well operation and maintenance costs. SFPUC will make a reasonable good faith effort to negotiate the amount of such compensation with each affected irrigators' well owner, and will offer to subject any disagreements concerning this amount to mediation or to resolution by the San Mateo Superior Court." *(Cypress Lawn Memorial Park, letter, Exhibit C, June 11, 2013 [O-CLMP-Quick])*

> "10. *Compensate existing irrigation well owner(s) for reduced pumping capacity and/or increased pumping costs.* In the event that SFPUC cannot reach an agreement with the owner(s) of significantly impacted irrigation wells concerning implementation of the preceding options, the SFPUC shall compensate such owners in proportion to the reduction in well pumping capacity below the performance standard and shall compensate the well owner for any increase in pumping operation and maintenance costs caused by the Project operations." *(Cypress Lawn Memorial Park, letter, Exhibit C, June 11, 2013 [O-CLMP-Quick])*

> "**Mitigation action #10, Compensate irrigation well owner(s) for increased pumping costs and/or decreased pumping capacity: If mitigation actions #1 through 9 are not effective in reducing**

impacts to irrigators' well(s) to less-than-significant levels, or SFPUC and the owner(s) or irrigation well(s) cannot reach an agreement regarding mitigation actions to implement to reduce Project impacts to irrigation wells, SFPUC would compensate the well owner in proportion to the reduction in pumping capacity of any well(s) below the performance standard and for any increased irrigation well operation and maintenance costs. SFPUC will make a reasonable good faith effort to negotiate the amount of such compensation with each affected irrigators' well owner, and will offer to subject any disagreements concerning this amount to mediation or to resolution by the San Mateo Superior Court." *(Cypress Lawn Memorial Park, letter, Exhibit D, June 11, 2013 [O-CLMP-Quick])*

"**10.** ***Compensate existing irrigation well owner(s) for reduced pumping capacity and/or increased pumping costs.*** **In the event that SFPUC cannot reach an agreement with the owner(s) of significantly impacted irrigation wells concerning implementation of the preceding options, the SFPUC shall compensate such owners in proportion to the reduction in well pumping capacity below the performance standard and shall compensate the well owner for any increase in pumping operation and maintenance costs caused by the Project operations.**" *(Cypress Lawn Memorial Park, letter, Exhibit D, June 11, 2013 [O-CLMP-Quick])*

Response HY-7

This comment expresses concern that the Project would increase the cost of pumping for irrigation purposes. The comment is correct that the Draft EIR does not evaluate increased pumping costs as an environmental impact in the Draft EIR. The CEQA Guidelines state in Section 15131(a) that "Economic or social effects of a project shall not be treated as significant effects on the environment." Increased pumping costs by themselves, if they were to occur due to the Project, would be considered economic impacts, not direct or indirect physical effects on the environment. Therefore, the Draft EIR does not identify increased pumping costs as an environmental impact.

In general, irrigators may experience higher pumping costs when Project operations would cause groundwater levels to be lower than modeled existing conditions (predicted to be approximately 20 percent of the time) and lower pumping costs when Project operations would cause groundwater levels to be higher than modeled existing conditions (predicted to be approximately 80 percent of the time). These general results for the South Westside Groundwater Basin are presented under the heading "Summary of Groundwater Modeling Results" on page 5.16-55 of the Draft EIR; results would vary depending on the location and depth of each irrigation well.

The Draft EIR does evaluate whether the Project would cause potential damage to wells if aquifer water levels are depressed below the screened intervals of the well casings. In Section 5.16, Hydrology and Water Quality, on pages 5.16-84 and 5.16-85 of the Draft EIR, the approach to analysis states:

> *"Well Screen Elevations at Existing Irrigators' Wells*
>
> The purpose of this analysis is to determine whether groundwater levels would drop below the top of the well screen of existing irrigators' wells, thereby resulting in decreased pump discharge rates and potential damage to the well substantial enough that existing or planned land uses would not be fully supported. Groundwater levels that drop below the top of well screens result in decreases in pump discharge rates and can potentially lead to well or pump damage…… If predicted groundwater levels fall substantially below the top of the well screen due to the Project at the end of the design drought – and those levels are predicted to remain above the top of the well screen under modeled existing conditions – then the risk of damage to the well or pump due to the Project may eventually prevent the well from meeting demand, and well interference would be significant."

On page 5.16-88, the Draft EIR states:

> "If water levels were to fall below the top of screen, there could be decreases to discharge capacities in addition to those estimated in Table 5.16-13 and an increase in risk of damage to the well. Table 5.16-14 (Estimated Static and Pumping Depth to Water Levels at the End of the Design Drought) compares the estimated depth to water at the end of the drought with the top of the well screen."

On page 5.16-89, Table 5.16-14 (Estimated Static and Pumping Depth to Water Levels at the End of the Design Drought), identifies the static and pumping depth to water relative to the top of well screen for both existing conditions and Project conditions. Table 5.16-13 (Estimated Peak Demand and 12-Hour Production Capacities) identifies nine irrigators (some of whom have more than one well) where significant impacts relative to the well screens may occur. Impacts due to water levels falling below the top of the well screen are also identified under cumulative impacts on page 5.16-151 under Impact C-HY-2. The Draft EIR identifies that operation of the Project would result in a cumulatively considerable contribution to cumulative impacts related to well interference. Refer also to Response HY-11.

Please refer to Response HY-15, which discusses revisions to Mitigation Measure M-HY-6 (Ensure Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation) that would result in less-than-significant impacts to irrigators due to well interference. By reducing these impacts to a less-than-significant level, the concerns expressed by the commenter regarding costs associated with damage to wells or increased pumping costs due to a failure to meet the Performance Standard established in Mitigation Measure M-HY-6 would be addressed and impacts would not occur.

Comment HY-8: Comment related to the significance criterion for Project impacts on the aquifer.

This response addresses a comment from the commenter listed below; the comment on this topic is quoted in full below this list:

- O-CLMP-Quick

"III. **Inadequacies In The DEIR's Resources Analyses**

A. **The DEIR's Analysis of Impacts to Water Supply, Subsidence and Water Quality Fails to Satisfy CEQA's Requirements.**

1. **Inadequate Analysis of Impacts to Water Supply and Insufficient Mitigation for Impacts to Existing Irrigators**.

The DEIR Uses an Incorrect Significance Criterion: the DEIR modifies the significance criterion found in Appendix G to the CEQA Guidelines so as to eliminate the consideration of the GSR Project's impacts to the Aquifer. Appendix G's significance criterion states that an impact to water supply is significant if it would:

> b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of preexisting nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)[.][32]

The DEIR modifies this criterion so that it only considers whether the GSR Project would:

> Deplete groundwater supplies in a manner that would result in a lowering of the local groundwater to a level where the production rate of preexisting nearby wells would drop to a level that would not support existing or planned land uses.

This change results in a criterion that completely disregards the GSR Project's potential to 'deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level.' The omitted portion of the standard Appendix G language is the very heart of this criterion, the portion of the criterion that the DEIR included is just an example of one of the types of impacts that can occur when a project causes 'a net deficit in aquifer volume' or 'a lowering of the local groundwater table level.' By eliminating the heart of the standard significance criterion, the DEIR in effect games the analysis so that it does not have to consider a reduction in the aquifer's volume - clearly a physical change in the environment - as a significant impact of the GSR Project.

The DEIR's modified significance criterion for impacts to groundwater differs markedly from the significance criterion identified in the WSIP PEIR:

The CCSF has not formally adopted significance standards for impacts related to groundwater, but generally considers that implementation of the proposed program would have a significant groundwater impact if it were to:

Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of preexisting nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted)….[33]

Unlike the criterion identified in the DEIR, the criterion in the PEIR closely follows Appendix G's significance criterion. The DEIR does not explain this discrepancy, nor does it explain why the DEIR's preparers appear to have purposefully modified the criterion in order to disregard a GSR Project impact that would cause 'a net deficit in aquifer volume or a lowering of the local groundwater table level.' The DEIR's exclusion of this important consideration is conspicuous.

[32] *See* Appendix G to CEQA Guidelines § IX(b). Appendix G provides sample questions and is intended to be used by a lead agency in conducting an initial study to determine whether a project may have a significant effect on the environment. (Guidelines § 15063, subds.(a) & (f); *See also Madera Oversight Coalition, Inc. v. County of Madera* (2011) 199 Cal.App.4th 48, 94, fn. 24 (*Madera Oversight*).) The initial study is then used by the lead agency in deciding whether to prepare an EIR. (Guidelines § 15063, subd. (c).)

[33] WSIP PEIR, pp. 4.5-20, 5.5.4-1, 5.6-22, emphasis added." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

Response HY-8

This comment expresses concern that the Draft EIR modified the significance criterion related to a deficit in aquifer volume. For the purposes of this EIR, the Appendix G Checklist question (b) under IX., Hydrology and Water Quality, that is referenced in the comment, was analyzed in the Draft EIR under two separate significance criteria, as indicated in the first and last bullets on page 5.16-51 (italics added to identify these criteria):

"***Groundwater***

- *Deplete groundwater supplies in a manner that would result in a lowering of the local groundwater to a level where the production rate of preexisting nearby wells would drop to a level that would not support existing or planned land uses.*
- Lower groundwater levels in a manner that would result in onsite or offsite land subsidence that would cause substantial structural damage, increased flooding, or altered drainage patterns.
- Lower groundwater levels in a manner that would result in seawater intrusion such that loss of beneficial uses of groundwater would occur.

- Change groundwater levels in a manner that would affect beneficial uses of surface water bodies.
- Violate any water quality standards or waste discharge requirements.
- Otherwise substantially degrade water quality.
- *Deplete groundwater supplies or interfere with groundwater recharge in a manner that would result in a substantial regional deficit in aquifer storage that would not support existing or planned land uses."*

The Draft EIR has not ignored the phrase "such that there would be a net deficit in aquifer storage," as the comment suggests; rather, the Lead Agency decided that this portion of the Checklist question *is* important and, therefore, the issue of aquifer storage was captured and evaluated under a separate significance criterion. The criterion was moved to the end of the list because, in many ways, it encompasses or rolls up the impacts that are inherent in the earlier criteria. The Draft EIR analyzed the effect of the Project on aquifer storage under Impact HY-14. The Draft EIR explains the relationship of the last criterion to the earlier criteria on page 5.16-143 as follows: "Groundwater depletion may have negative effects on the specific uses of groundwater to support existing or planned land uses; therefore, this EIR evaluates impacts separately on groundwater resources relative to well interference, subsidence, seawater intrusion, groundwater-surface water interactions, and water quality. Refer to Impacts HY-7 through HY-13 for specific evaluations of these other potential impacts."

The approach used to analyze the effect of the Project on aquifer storage is explained in the Draft EIR on page 5.16-143. The analytical approach compared the existing groundwater storage volume to the predicted groundwater storage volume at the end of the 47-year simulation period with Project operations. The analytical approach does not separately analyze the effect of the Project on groundwater recharge because the Project would not have any effect on groundwater recharge in that the Project consists of pumping at the Project wells with a commensurate reduction of pumping at the Partner Agency wells. Groundwater recharge on the other hand is a hydrologic process where water moves downward from surface water to groundwater via percolation either naturally or through recharge basins; the Project would have no effect on groundwater recharge in the Westside Groundwater Basin.

The Draft EIR is revised to include a new footnote on page 5.16-51. The new footnote has been numbered 15a to indicate that it occurs sequentially after footnote 15 and before footnote 16:

- Deplete groundwater supplies or interfere with groundwater recharge in a manner that would result in a substantial regional deficit in aquifer storage that would not support existing or planned land uses[15a].

  [15a] The phrase in the CEQA Guidelines Checklist question (b) from IX. Hydrology and Water Quality, "or interfere substantially with groundwater recharge" was not included in the significance criterion, because, given the small size of the proposed facilities, their proposed locations in urban areas, the proposed use of pervious paving for some access

> driveways and parking areas, and the existing stormwater runoff regulatory requirements, it is not reasonable to assume that the Project would result in a substantial regional deficit in aquifer storage due to substantial interference with groundwater recharge.

The two significance criteria related to aquifer volume listed on Draft EIR page 5.16-51 did modify the Appendix G Checklist question (b) under IX, Hydrology and Water Quality, by deleting the phrase: "for which permits have been granted." This phrase was deleted to provide a more conservative evaluation, that is, so that impacts to future land uses -- even where no permits have been granted – would be evaluated to determine if significant impacts of the Project would occur.

The statement provided by the commenter that the wording of the criterion in the Program Environmental Impact Report (PEIR) is somewhat modified in this EIR is not relevant to the analysis of impacts in this project-level EIR. The description of the Project has been developed to a greater level of detail than it was at the time the PEIR was prepared, and the Draft EIR analysis of groundwater impacts reflects this greater level of understanding of the Project and was specifically developed to analyze the Project as defined at this time.

Comment HY-9: Comments related to groundwater rights.

This response addresses comments from the commenters listed below; each comment on this topic is quoted in full below this list:

- O-CGC-Maddow
- O-CLMP-Quick

"The Club is located in South San Francisco, where it has been in continuous operation since 1924. Unlike a number of other private golf clubs located in San Francisco and San Mateo Counties, this Club did not purchase the property upon which it is located from either the Spring Valley Water Company or from the City and County of San Francisco, and it is not subject to any deed reservation or other restriction on its use of groundwater which in any way limits its ability to exercise the rights and privileges of an overlying owner. Those rights make up an important element of the real property interests held by the Club, and although it hopes that it will never need to utilize them, the Club is aware that it has available to it a wide range of legal and equitable remedies if actions of another entity or person results in intrusion upon or interference with the rights it enjoys.

It is with that background of facts and the fundamentals of California law (and the California Constitution) that the Club has asked us to assist it in reviewing the DEIR for the proposed Project. In doing so, we have not sought the assistance of groundwater hydrologists or engineers to critique or interpret the data and analyses contained in the DEIR. Instead, we have focused on the narrative analysis, which clearly and unambiguously demonstrates that the proposed Project, if fully implemented, will have a significant adverse impact on the Club – an impact which we believe will deprive the Club of the ability to continue to enjoy and benefit from the reasonable use of the groundwater to which it is legally entitled in order to operate its golf course. The nature and extent of the proposed Project's adverse impacts on the Club and its ability to use its water rights appear to have potential to constitute the type of diminution of an interest in real property that may be characterized as a compensable 'taking' for which redress is available under applicable constitutional and legal doctrines and procedures." *(California Golf Club, letter, June 11, 2013 [O-CGC-Maddow])*

"The Club believes that the groundwater rights that it owns and exercises are superior to the rights of the proponents of the proposed Project who are now seeking to extract water from beneath the Club's property. The Club's right to use of that water on its overlying land is clearly paramount to the right of any of the proposed Project's proponents, who want to extract that water for an appropriative use." *(California Golf Club, letter, June 11, 2013 [O-CGC-Maddow])*

"The Club has looked carefully at the nine types of mitigation contained in the DEIR, and cannot take much comfort from them. To reiterate, the Club has the legal right to use the groundwater that underlies its property for reasonable and beneficial use, and it has been doing so continuously for about 90 years." *(California Golf Club, letter, June 11, 2013 [O-CGC-Maddow])*

"Most fundamentally, however, the DEIR fails to address the GSR Project's incompatibility with the established legal hierarchy of California groundwater rights, an incompatibility flowing from the GSR Project's projected reduction in the net volume of water available to overlying groundwater users during dry, or 'take,' years. This failure is linked to a critical inadequacy in the significance criteria used to determine the GSR Project's impact on the underlying aquifer." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

"A. **The GSR Project Would Unlawfully Interfere With Cypress Lawn's Paramount Overlying Groundwater Rights.**

Although the comments in this letter focus primarily on compliance with the California Environmental Quality Act ('CEQA'),[5] the DEIR raises fundamental legal compliance issues that, while they stem from changes in the physical environment, go beyond CEQA. Specifically, the GSR Project appears to have been formulated with an explicable disregard for (or perhaps non-recognition of) basic California groundwater rights law.

The GSR Project design does not take account of the paramount position of overlying groundwater rights (vis-à-vis parties that store surface waters in an aquifer). The DEIR does not acknowledge that the SFPUC does not have a right (under California water rights law) to interfere with the paramount groundwater rights of overlying landowners such as Cypress Lawn.[6] As explained further below, such interference with the overlying rights of Cypress Lawn and other owners of land above the southern part of the SWG Basin is unlawful under established water rights law. If the GSR Project would cause such interference, SFPUC could be liable for the inverse condemnation of overlying groundwater rights.

Under California groundwater rights law, there are two types of legal entitlements to extract and use groundwater. The first such entitlement is 'overlying' groundwater rights, which provide that landowners whose property overlies a groundwater aquifer have a right to the reasonable and beneficial use of waters in such aquifer on their overlying land.[7] The second such entitlement is 'appropriative' groundwater rights, which provide for the right of non-overlying parties to deliver groundwater for uses on lands that do not overlie the aquifer that is the source of the groundwater.[8]

With respect to the proposed GSR Project, Cypress Lawn (and the other cemeteries and golf courses whose lands overlie the Westside Groundwater Basin) extract and use the groundwater in the Westside Groundwater Basin pursuant to 'overlying' groundwater rights. In contrast, the Partner Agencies that extract and use the groundwater in the Westside Groundwater Basin do so pursuant to 'appropriative' groundwater rights; the SFPUC's groundwater extraction and use through the proposed GSR Project would also be undertaken pursuant to 'appropriative' groundwater rights.

The distinction between 'overlying' and 'appropriative' groundwater rights is of great importance in connection with the GSR Project because, under well established California law, 'overlying' groundwater rights are superior to 'appropriative' groundwater rights.[9] That is, when there is not adequate groundwater in an aquifer to meet the needs of both overlyers and appropriators, the appropriators must cease their pumping to avoid interference with overlyers paramount groundwater rights, and the failure of appropriators to do so constitutes an invasion of overlyers' property interest in the groundwater underneath its lands. Or put another way, it is illegal for an appropriative groundwater user to conduct pumping activities that reduce the groundwater available to overlyers.

> Overlying rights take priority over the needs of appropriators. The cumulative needs of all overlying owners must be satisfied before an appropriator may take any water surplus to the needs of the overlying owners.[10]

Notwithstanding that the superiority of overlying groundwater rights vis-à-vis appropriative groundwater rights is black letter California law, the GSR Project by its very design proposes that the SFPUC engage in groundwater pumping activities that are anticipated in drought/take years to have 'significant and unavoidable' adverse impacts on the Westside Groundwater Basin waters available for use by overlyers such as Cypress Lawn.[11] As such, the GSR Project appears to be premised on SFPUC groundwater pumping activities that are inherently unlawful and violative of the paramount overlying rights of Cypress Lawn (and other overlyers).

[5] Public Resources Code, § 21000, *et seq*.

[6] Chapter 16 is completely silent with respect to overlying groundwater rights. The only references to water rights throughout the entire DEIR are the definition of the term 'water rights' and a discussion of the No Project Alternative that refers solely to the water rights of the City and County of San Francisco. *See* DEIR, pp. TOC xxi, 7-3.

[7] *See, e.g., City of Barstow v. Mojave Water Agency* (2000) 23 Cal.4th 1224, 1240; *California Water Service Company v. Sidebotham* (1964) 224 Cal.App.3d 715, 725; *City of Pasadena v. City of Alhambra* (1949) 33 Cal.2d 908, 925.

[8] *Wright v. Goleta Water District* (1985) 174 Cal.App.3d 74, 83-88; *City of Los Angeles v. City of San Fernando* (1975) 14 Cal.3d 199, 282.

[9] See *City of Barstow*, *supra*, 23 Cal.4th at pp. 1241-1242; See *City of Pasadena, supra*, 33 Cal.2d at p. 926.

[10] Scott S. Slater, California Water Law and Policy (LexisNexis 2009) Chapter 9, §902(3).

[11] *See* GSR Project DEIR, p. 5.16-91. The DEIR acknowledges that the GSR Project would have a 'significant impact relative to well interference at Cypress Lawn Memorial Park' because 'groundwater levels due to Project pumping at the end of the design drought are estimated to be approximately 95 to 98 feet lower than under modeled existing conditions' and because 'the estimated groundwater levels with Project pumping at the end of the design drought would likely dewater a substantial portion of the well screen of Cypress Lawn Memorial Park's well #3.'" *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

"Section 1094.5 of the California Code of Civil Procedure provides for the issuance of a writ to set aside agency approvals and enjoin agency actions when such approvals or actions constitute an 'abuse of discretion.' CCP Section 1094.5 further provides that abuse of discretion is established if the respondent agency 'has not proceeded in a manner required by law.' Cases brought pursuant to CCP Section 1094.5 have confirmed that a landowner's property interest in its water supply involves a 'fundamental vested right' so that reviewing courts should afford little or no deference to agency determinations.[12] For the reasons noted above, in the case of the proposed GSR Project, the SFPUC would be engaging in groundwater pumping activities in a manner disallowed by law, and as such any approvals to engage in these lawful activities would therefore constitute an 'abuse of discretion.' CCP Section 1095.4 provides a means to address this abuse of discretion that is independent of (and in additional to) to other CEQA compliance concerns addressed in this letter.

Beyond the remedy of a writ pursuant to CCP Section 1094.5, overlying groundwater rights holder such as Cypress Lawn can also bring a 'quiet title' action against the SFPUC in connection with their paramount property interests in the waters under their land. The SFPUC's unlawful appropriation of overlying groundwater can also provide the basis for an 'inverse condemnation' claim in which the SFPUC would be liable to Cypress Lawn and other overlying landowners for damages resulting from reduced groundwater availability.

[12] *See, e.g., Gallegos v. California State Board of Forestry* (1978) 76 Cal. App.3d 945, 950." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

"Section 5.16.2 of the GSR Project DEIR is titled 'Regulatory Framework.' It is here, in Section 5.16.2 that one would have expected some recognition and discussion of California groundwater law, to evaluate the extent to which California law permits the SFPUC to lawfully undertake the groundwater pumping proposed in the GSR Project. Yet remarkably, Section 5.16.2 of the DEIR does not contain any mention whatsoever of California groundwater law, and is limited only to discussion of water quality regulation. The DEIR's omission of any analysis of applicable groundwater law is startling, as the viability of the GSR Project hinges on whether or not the SFPUC has the right to conduct the groundwater pumping proposed." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

"Moreover, concerns regarding GSR Project interference with overlying groundwater rights were specifically noted in comment letters submitted to the SFPUC in response to the EIR Notice of Preparation ('NOP') in 2009.[13] The SFPUC appears to have disregarded these concerns.

The NOP comment letter submitted to the SFPUC on behalf of the Green Hills Country Club, Lake Merced Country Club, Olympic Club and San Francisco Golf Club stated:

> As overlying property owners, the Clubs each have the legal right to pump that amount of water reasonably needed for their use for irrigation of their property, and their rights are protected against injury by California law… Protection of Existing Water Rights – The EIR needs to address protection of existing overlying rights… In all aquifer storage and recovery projects, and particularly in the case of an in lieu project such as this, there is always the possibility that the ratio of 'stored' to future extracted water is not actually or even close to 1:1… This issue is fraught with the potential for dispute, as many groundwater users experienced in the long fight over the Santa Maria Basin.

The NOP comment letter submitted by the Town of Colma stated:

> "What rights to the overlying municipalities, including the Town of Colma, and the residents and property owners within such municipalities have to the use of groundwater in the South West Groundwater Basin (SWGB)? Under California law, an overlying landowner has the right to the reasonable use of groundwater located in an underlying basin, subject to the reasonable use by other overlying landowners… If the project has an adverse effect on the Town of Colma, its residents and property owners to use the groundwater in the SWGB, what provisions, if any, does the City of San Francisco… plan to take to avoid or minimize such adverse effects? Does the City of San Francisco plan to design the project in a way that avoids or minimizes such effects, and if so, how? If not, does the City of San Francisco plan to provide compensation to those whose rights have been lost or reduced?"

The DEIR must be revised to address the legal hierarchy of groundwater rights identified in the 2009 comment letters on the NOP and summarized in this letter. The GSR Project will likely need to be modified to avoid interference with the superior groundwater rights of overlying owners.

> [13] *See* Letter from Robert Maddow to Bill Wycko, dated July 28, 2009, p. 2; *see also* Attachment to Letter from Colma City Manager Laura Allen to Bill Wycko, dated July 28, 2009, 2-3." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

"Beyond CEQA, there are also legal implication associated with the 'borrow/payback' approach that underlies the operation of the GSR Project Storage Account. As explained above, under California law the groundwater rights of overlying landowners (such as Cypress Lawn) are superior and paramount to the groundwater rights of appropriators. Under the 'borrow/payback' scenario proposed pursuant to the GSR Project Storage Account, the SFPUC would 'borrow' the groundwater by exercising its 'appropriative' groundwater rights at the expense of the 'overlying' groundwater rights of Cypress Lawn and others. The exercise of appropriative groundwater rights in this manner is violative of California groundwater law, and for the reasons noted above could expose the SFPUC to quiet title and inverse condemnation claims and abuse of discretion actions pursuant to CCP Section 1094.5.

The DEIR's Project Description must be revised to answer fundamental questions regarding the GSR Project's potential reliance on native groundwater (to the determinant of overlying owners with superior groundwater rights)." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

"In addition to the CEQA mitigation deficiencies noted above, the DEIR hydrology mitigation analysis is deficient for the following additional reasons:

- Mitigation Measure M-HY-6 focuses on mitigating impacts on land uses and completely ignores the potentially significant impacts to the groundwater rights of existing irrigators;" *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

"The DEIR should account for currently unknown changes to the land uses supported by the existing irrigators' wells. As it stands, the DEIR only protects the uses that are known now, but the existing irrigators have the right to use groundwater to support their beneficial uses going forward, and the GSR Project must be tailored to account for this right and not interfere with it." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

Response HY-9

This comment requests that groundwater rights be acknowledged and potential impacts to groundwater rights be addressed in this EIR. Cemeteries and golf clubs listed as existing irrigators in this EIR own lands which overlie the Westside Groundwater Basin. Under California Law these land owners have overlying groundwater rights.

Draft EIR Section 5.16.2 (Regulatory Framework), page 5.16-50, is revised with new text as follows:

> *Exercise of Overlying Groundwater Rights by Property Owners*
>
> Under California water rights law, landowners whose lands overlie an aquifer have overlying groundwater rights to pump as much water as is necessary to serve reasonable beneficial uses on their overlying property. Large property owners in the vicinity of Project wells that are currently exercising their overlying groundwater rights to the Westside Groundwater Basin for irrigation and other beneficial uses are listed in Table 5.16-8 (Existing Irrigators' Wells Identified as a Primary, Active, or Secondary Well that May Be Affected by the Project).

The comment requests that the EIR analyze potential impacts to property owners' groundwater rights. Under CEQA, an EIR discloses the potential significant impacts of an action that would result in a direct or indirect physical change to the environment. A separate analysis of Project impacts on overlying groundwater rights is not provided in the EIR, because a Project effect on an overlying groundwater right is not in and of itself a physical change to the environment. Therefore, there is no need under CEQA to change the significance criteria, the Draft EIR Project Description, the impact analysis, or the mitigation in the EIR, as requested in the comment, to address Project impacts to overlying groundwater rights. However, the EIR does analyze potential *environmental* impacts from the direct physical change to the environment resulting from operation of the Project, such as well interference, and where it identifies environmental impacts, the EIR also identifies feasible mitigation to avoid or reduce those environmental impacts to less-than-significant levels. By reducing or avoiding well interference impacts to a less-than-significant level, it is expected that the Project would also avoid any adverse effect on overlying groundwater rights.

The EIR analyzed a lowering of groundwater levels due to the Project and the potential impact that lower groundwater levels would have on irrigators' ability to meet peak irrigation needs. These potential impacts are analyzed in the Draft EIR under the following impacts:

- Impact HY-6, Project operation would decrease the production rate of existing nearby irrigation wells due to localized groundwater drawdown within the Westside Groundwater Basin such that existing or planned land use(s) may not be fully supported (Draft EIR pages 5.16-73 through 5.16-100).

- Impact HY-14, Project operation may have a substantial adverse effect on groundwater depletion in the Westside Groundwater Basin over the very long term (Draft EIR pages 5.16-142 through 5.16-146).

Both of these impacts are identified as significant. Both impacts are identified in this Responses to Comments document as mitigable to a less-than-significant level. For further discussion of Impact HY-6 in this document, see Response HY-15 for the revised impact conclusion for Impact HY-6 and revised Mitigation Measure M-HY-6 (Ensure Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation). Actions included in Mitigation Measure M-HY-6 would ensure that irrigation wells would not be damaged due to Project operations and that water would continue to be available for irrigation use, consistent with the volumes of groundwater that are required in the customary exercise of overlying rights by the property owners listed in Table 5.16-8 (Existing Irrigators' Wells Identified as a Primary, Active, or Secondary Well that May Be Affected by the Project).

Mitigation Measure M-HY-6 includes a Performance Standard to establish a well interference groundwater impact level for each irrigation well, based on the characteristics of the well and the peak irrigation needs, so that mitigation actions can be implemented if groundwater levels begin to approach the well interference groundwater impact level. The mitigation actions would be implemented before groundwater levels reach the well interference groundwater impact level, which would result in avoiding significant well interference due to the Project, consistent with the volumes of groundwater that are required in the customary exercise of overlying rights by the property owners listed in Table 5.16-8 (Existing Irrigators' Wells Identified as a Primary, Active, or Secondary Well that May Be Affected by the Project).

The comment also requests that the Project protect not only the existing use of groundwater by overlying irrigators, but also future uses of groundwater for irrigation on overlying lands. Mitigation Measure M-HY-6 has been revised to address this concern, in that the Performance Standard now includes the following: "If overlying irrigators install new wells to support irrigation needs of existing and planned land uses, at the time any such new wells are installed, the SFPUC shall add the new wells to the Irrigation Well Monitoring and Reporting Program and through the monitoring program and in consultation with the irrigator, establish the baseline production capacity for the new wells and determine peak irrigation demand needed to support the existing and planned land uses. The SFPUC shall then ensure that the new irrigators' wells are not damaged, and that the production capacity at the new irrigators' wells is equivalent to either (1) the baseline production capacity of the wells, or (2) is sufficient to meet peak irrigation demand at the existing and planned land uses, whichever is less, provided that any potential well damage or loss of capacity is determined to be caused by the Project."

See Response HY-15 for the complete revised Mitigation Measure M-HY-6.

See Response HY-43 regarding Impact HY-14 and Mitigation Measure M-HY-14 (Prevent Groundwater Depletion) relative to groundwater depletion in the Westside Groundwater Basin over the long term.

Comment HY-10: Comment related to well interference thresholds.

This response addresses a comment from the commenter listed below; the comment on this topic is quoted in full below this list:

- O-CLMP-Quick

"*Item 9 – The performance Standard is based on existing or planned land use – Planned use is planned by whom? How does this use need to be formulated and documented?*

The DEIR Performance Standard indicates that the SFPUC will ensure that the production capacity at existing irrigators' wells is equivalent to the existing production capacity of the wells or is sufficient to meet existing and planned peak irrigation demand at the land use, whichever is greater, provided that the loss of capacity at the existing irrigators' wells is reasonably expected to have been caused by the GSR Project." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

Response HY-10

This comment questions the meaning of the phrase "planned land uses" used in the Performance Standard in Mitigation Measure M-HY-6 (Ensure Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation). This phrase has been taken from the significance criterion presented on page 5.16-51 of the Draft EIR: "Deplete groundwater supplies in a manner that would result in a lowering of the local groundwater to a level where the production rate of pre-existing nearby wells would drop to a level that would not support existing or planned land uses." The language of the significance criterion was in turn taken from the CEQA Guidelines, Appendix G, Checklist Question IX.b. The meaning of "planned land use" is taken to be a simple phrase indicating additional or expanded land uses planned by the irrigator. See Response HY-15 for revisions to Mitigation Measure M-HY-6.

Comment HY-11: Comments related to significance thresholds for groundwater levels falling below the well screen.

This response addresses comments from the commenter listed below; the comments on this topic are quoted in full below this list:

- O-CLMP-Quick

"Well interference is only considered significant if GW levels fall 'substantially' below well screens as a result of the GSR Project.[35] But any drop below the top of well screens caused by the Project should be considered significant.

[35] *Id.* at pp. 5.17-84 - 5.16-85." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

"Pumping at a well causes groundwater levels to decline in the area around the well. The area of groundwater level decline is known as the cone of depression. Well interference occurs when a well's cone of depression comes into contact with or overlaps the cone of depression from another well (see Figure 5.16-7 [Well Interference Schematic]) (Driscoll, 1986).

Table 5.16-11 of the DEIR shows the projected static and pumping water levels at the end of the design drought at the existing irrigators' wells, when the greatest groundwater level decreases would be expected to occur. The proposed Projects are projected to decrease water level depths at Cypress Lawn Wells 3 and 4 by 95 and 98 feet, respectively. Table 3 in Appendix H7 indicates that the top of the screen in Well 4 is 330 feet and the pumping water level is only 8 feet higher, at 322 feet. Not only would the water table drop below the top of the screen, but a significant portion of the screen would be dry under this scenario. Lowering the water level below the top of the screen will result in cascading water, which will entrain air and promote cavitation of the pump and premature wear of the pump and well. The wear of the pump will result in lower pumping rates and increased costs for operation, including more frequent pump replacements. Premature clogging and wear of the well may occur with the water and air mixture caused by cascading water and by pump cavitation. Deeper pumping water levels will change the operating splash zone between the static water level and the pumping water level and may impact water quality and well longevity." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

"*Item 7 – The alternate scenario considered in the DEIR increases drawdowns in the Colma and South San Francisco Area. Will the SFPUC replace the Cypress Lawn wells if water level elevations are significantly lower? Will SFPUC replace the pumps because of premature wear due to cascading water or because of, other unknown or unanticipated impacts?*

To evaluate the well interference impacts of operating at the three alternate well sites, the DEIR analysis assumed that 16 wells would be operated, including Sites 17 (Alternate), 18 (Alternate), and 19 (Alternate). The DEIR states that the alternate well configuration would reduce drawdowns in the Daly City and San Bruno areas and increase drawdowns in the Colma and South San Francisco area (Fugro, 2012a). Using the alternate well sites, including one on the corner of the Cypress Lawn's property, the SFPUC has acknowledged that drawdown in the wells will be even greater than the 95 and 98 feet presented in Table 5.16-11 of the DEIR. The impact to the Cypress Lawn wells will be even greater than the significant impacts already predicted. A drawdown of 95 or 98 feet will leave nearly half of the screen interval in Cypress Lawn Well 4 above the water table. As the SFPUC has already acknowledged, this not only reduces the production capability of the well, but accelerates well degradation and the need for repairs and/or replacement. In light of these issues and should the need arise, one or more of the following mitigation measures may need to be conducted by SFPUC to correct damages to the Cypress Lawn wells: replace the well, deepen the well, lower the pumps, replace the pumps, conduct well rehabilitation, and treat water quality changes due to the GSR Project." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

Response HY-11

The commenter's descriptions of a cone of depression and well interference are correct and consistent with the Draft EIR.

The commenter asks if the SFPUC will implement mitigation actions if water levels were reduced to a level that may damage well pumps by exposing well screens. See Response HY-15, which includes revisions to Mitigation Measure M-HY-6 (Ensure Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation), for more information on implementing mitigation actions. The revision to Mitigation Measure M-HY-6 includes establishing and meeting a performance standard that would allow irrigators to meet peak irrigation demands and avoid damage to wells. The Performance Standard in the mitigation measure has been revised to clarify that one intent of the Performance Standard is to prevent damage to wells and pumps. The SFPUC, working with irrigators, would establish a well interference groundwater impact level that would meet the Performance Standard for each irrigation well. As water levels approach the established well interference groundwater impact level, the SFPUC would implement mitigation actions so that such actions are in place prior to groundwater levels reaching the identified elevation to assure that the Performance Standard would be met. See also Response HY-15.

The Draft EIR states on pages 5.16-84 and 5.16-85 in the "Approach to Analysis" section that a groundwater level reduction due to the Project that results in groundwater levels dropping below the top of the well screen is considered a significant impact, consistent with the comment's suggestion. On pages 5.16-88 and 5.16-89 of the Draft EIR, in Table 5.16-13 (Estimated Peak Demand and 12-Hour Production Capacities), and Table 5.16-14 (Estimated Static and Pumping Depth to Water Levels at the End of the Design Drought), a significant impact has been identified at several irrigator's wells (including Cypress Lawn Memorial Park wells) where groundwater levels could drop below the top of the well screen due to the Project, consistent with the comment's suggestion.

As described in the revised Mitigation Measure M-HY-6, "Prior to project operation, the SFPUC, working with irrigators, shall identify a well interference groundwater impact level for each existing irrigation well, based on monitoring data from existing irrigation wells and considering well characteristics. The well interference groundwater impact level that the SFPUC identifies shall be the lowest groundwater level that would avoid conflict with the Performance Standard. The well interference groundwater impact levels would be subject to concurrence by the ERO. If monitoring data and extrapolated trends predict that the well interference groundwater impact level would be reached within the ensuing six months due to Project operation, the SFPUC shall initiate mitigation before the groundwater impact level is reached to allow sufficient time to implement the most appropriate mitigation that would result in meeting the Performance Standard."

The commenter is correct that the alternate scenario, wherein Project operation would include pumping at Sites 17 (Alternate), 18 (Alternate), and 19 (Alternate), would have significant well interference impacts as identified on page 5.16-92 of the Draft EIR. Mitigation Measure M-HY-6 would reduce impacts of significant well interference impacts caused by the alternate configuration in the same way that it would reduce impacts caused by the preferred configuration of wells. The mitigation actions listed by the commenter, e.g., replace the well, are included in Mitigation Measure M-HY-6, with the exception of the comment's request to add treatment for water quality changes. The comment does not identify why water quality mitigation is needed. Water quality impacts are evaluated under Impact HY-12 and HY-13. As the analysis for these two impacts explains, the Project operation would not cause a violation of water quality standards due to mobilization of contaminants in groundwater from changing groundwater levels in the Westside Groundwater Basin, and would not result in degradation of drinking water quality or groundwater quality relative to constituents for which standards do not exist. See Draft EIR at pages 5.16-128 through 5.16-142; refer also to water quality issues discussed in Responses HY-34 through -41.

Comment HY-12: Comments related to well interference monitoring.

This response addresses comments from the commenter listed below; the comments on this topic are quoted in full below this list:

- O-CLMP-Quick

"Item 8 – Can well interference impacts caused by the GSR Project be avoided or reduced to less-than-significant levels if the GSR Project wells are at other locations or at reduced well yields?

The planned mitigation measure M-HY-6 requires a monitoring program at the existing irrigators' wells to provide data to determine if the performance standard is being met and proposes requiring analysis of monitoring data twice a year during take periods (i.e., when Project wells are regularly pumping) to determine whether or not reduced pumping capacities at existing irrigation wells are found to occur as a result of the Project. This requires extensive cooperation between irrigators and the SFPUC that includes access to property and records that is not currently required.

Although SFPUC is planning on collecting the information, that data collection will require extensive efforts and cost by the irrigators. Who will pay for that? How can it be assured that this will not interfere with current uses? Water levels should be collected at least every month (even weekly, daily or continuously) rather than twice per year to evaluate dynamic water level changes. The results of monitoring should be reported regularly to the existing irrigators, as well as to the SFPUC, the San Francisco Planning Department's Environmental Review Officer (ERO), and Partner Agencies. This monitoring program frequency should continue for at least two GSR Project operating cycles of 8.5 years, or 17 years, to build up a reliable, meaningful and significant baseline dataset that can be used to predict future responses. Data should be evaluated monthly during take periods to alert SFPUC, the ERO, Partner Agencies and existing irrigators of any unanticipated water level trends and corresponding model predictions that could significantly impact the outcome of the GSR Project. During the course of the GSR Project, if sufficient data are collected to demonstrate the predicted responses from the model then the baseline years could be shortened." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

The following comments are quoted from O-CLMP-Quick, Exhibits C and D, which present Cypress Lawn Memorial Park's proposed changes to Mitigation Measure M-HY-6 (Ensure Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation). Exhibit C provides the proposed final (i.e., clean) version of the changes, and Exhibit D provides the same revisions in tracked changes.

> "In addition, the following Monitoring and Reporting Program will assist the SFPUC and ERO in obtaining the data necessary to support the determination of causation for any groundwater level decreases at an irrigator's well.
>
> ***Irrigation Well Monitoring and Reporting Program.*** The SFPUC will monitor and report short- and long-term changes in groundwater conditions and operations at irrigators' wells. This Irrigator Well Monitoring and Reporting Program applies to existing well owners who choose to participate in the program. The terms for participating in the Monitoring and Reporting Program shall be established through negotiations between SFPUC and irrigation well owners, with input from the ERO. Any disagreements concerning the terms for participation will be resolved through mediation. Participation in this monitoring program is not mandatory, but would aid in the SFPUC's effective implementation of mitigation actions at the affected well." *(Cypress Lawn Memorial Park, letter, Exhibit C, June 11, 2013 [O-CLMP-Quick])*
>
> "The monitoring program will include the installation of a flow meter to allow for daily well production volumes to be recorded and a groundwater level transducer/data logger (a device for automatically detecting and recording groundwater levels) for measuring groundwater levels. Baseline monitoring of flow meter data and groundwater level data in the irrigators' well(s) will be collected and reported to participating well owners for at least one year prior to pumping the Project wells. In addition to baseline monitoring of well production and groundwater levels, pumping tests will be conducted prior to commencement of pumping Project wells to collect baseline data on pump and well performance and report that data to well owners. The pumping tests will collect data on well capacity and drawdown, well specific capacity, pump efficiency and head-capacity characteristics, sand content, and selected water quality parameters." *(Cypress Lawn Memorial Park, letter, Exhibit C, June 11, 2013 [O-CLMP-Quick])*

"The SFPUC shall also collect any existing information and data available regarding the irrigators' well(s) from the well owners, including any estimates or measurements of historical, existing, and planned land and water use (e.g., driller's logs, water level data, pumping records, acres irrigated) to provide information upon which to evaluate the performance of the irrigators' wells over time, to establish baseline operating conditions, and to determine Project impacts on planned water use. When there is an opportunity to open an irrigators' well (such as when a pump is removed by a well owner), the SFPUC may seek to conduct video log surveys in wells to determine the condition of the well structure. The monitoring effort will continue through the life of the Project, unless canceled by the well owner as part of the well owner's decision to remove itself from the Monitoring and Reporting Program. Continued participation in this monitoring program is assumed to be necessary for the mitigation actions to be effectively implemented by the SFPUC. Periodic re-testing of a well may occur as prompted by the need to evaluate performance throughout the life of the Project. If there is uncertainty or disagreement about whether the Project is responsible for a loss in production capacity at an irrigators' well, the SFPUC shall undertake more frequent monitoring and/or testing, shall timely provide the well owner with all data, reports, and information collected concerning well production capacity, and provide an opportunity for peer review and comment, to help resolve the disagreement." *(Cypress Lawn Memorial Park, letter, Exhibit C, June 11, 2013 [O-CLMP-Quick])*

"Data from the water level transducers/data loggers and flow meters shall be recorded daily during the first year. Following the first year of data collection, the frequency may be modified (e.g., as prompted by a need to evaluate pump and/or well performance to determine effects of the Project), but in no case data collection and recording take place less frequently than once per month.

The SFPUC shall provide participants with 14-day advance notice for the site visit(s) that would be scheduled within a 48-hour window." *(Cypress Lawn Memorial Park, letter, Exhibit C, June 11, 2013 [O-CLMP-Quick])*

"The first data analysis period shall end March 31st when production capacity can be compared to peak demand prior to the peak demand period. The second data analysis period shall end June 30th, when pumping is underway during the beginning of the irrigation season. The third data analysis period shall end September 30th, when groundwater levels will likely be lowest at the end of the peak irrigation season. The fourth and final data analysis period shall end December 31, when and production capacity of the well would be at its lowest." *(Cypress Lawn Memorial Park, letter, Exhibit C, June 11, 2013 [O-CLMP-Quick])*

"The quarterly well monitoring reports shall be furnished by April 30th, July 31st, October 31st and January 31st for the four data analysis periods. In Put Years, the SFPUC shall monitor the irrigators' wells for pressurization and/or overflow for the first three months of injection and report analyzed data to irrigation well owners no later than July 31st. In Hold Years, data shall be analyzed once per year for the data collected through October with analysis and reporting to irrigation well owners completed by January 15th." *(Cypress Lawn Memorial Park, letter, Exhibit C, June 11, 2013 [O-CLMP-Quick])*

"Existing baseline conditions. Existing baseline conditions is the verified seasonal pre-Project water levels at an irrigator's well, measured over a one-year period." *(Cypress Lawn Memorial Park, letter, Exhibit C, June 11, 2013 [O-CLMP-Quick])*

"Peak irrigation demand. Peak irrigation demand is defined either as the actual peak irrigation demand determined from well production records obtained by the Monitoring and Reporting Program described herein or as identified in Table M-HY-6 (developed from Table 5.16-14 [Estimated Static and Pumping Depth to Water Levels at the End of the Design Drought] of the EIR), whichever is agreed to by the parties.

Production capacity. Production capacity of a well is the quantity of water that can be produced by a well in a 12-hour period. Production capacity will be calculated based on daily production, as measured by the flow meter, divided by pumping duration, as measured by the flow meter, multiplied by 12 hours." *(Cypress Lawn Memorial Park, letter, Exhibit C, June 11, 2013 [O-CLMP-Quick])*

"In addition, the following Monitoring **and Reporting** Program will assist the SFPUC **and ERO** in obtaining the data necessary to support the determination of [~~probable cause~~]**causation** for any groundwater level decreases at an [~~existing~~]irrigator's well.

[~~Existing~~]Irrigation Well Monitoring and Reporting Program. The SFPUC will monitor **and report** short- and long-term changes in groundwater conditions and operations at [~~existing~~] irrigators' wells. This [~~Existing~~] Irrigator Well Monitoring **and Reporting** Program applies to existing well owners who choose to participate in the program. **The terms for participating in the Monitoring and Reporting Program shall be established through negotiations between SFPUC and irrigation well owners, with input from the ERO. Any disagreements concerning the terms for participation will be resolved through mediation.** Participation in this monitoring program is [~~assumed to be necessary for the~~]**not mandatory, but would aid in the SFPUC's effective implementation of** mitigation actions [~~to be effectively implemented by the SFPUC~~] at the affected well." *(Cypress Lawn Memorial Park, letter, Exhibit D, June 11, 2013 [O-CLMP-Quick])*

"The monitoring program will include the installation of a flow meter to allow for daily well production volumes to be recorded and a groundwater level transducer/data logger (a device for automatically detecting and recording groundwater levels) for measuring groundwater levels. Baseline monitoring of flow meter data and groundwater level data in the [~~existing~~] irrigators' well [~~will occur among willing participants~~]**(s) will be collected and reported to participating well owners** for at least one year prior to pumping the Project wells. In addition to baseline monitoring of well production and groundwater levels, pumping tests will be conducted prior to commencement of pumping Project wells to collect baseline data on pump and well performance **and report that data to well owners**. The pumping tests will collect data on well capacity and drawdown, well specific capacity, pump efficiency and head-capacity characteristics, sand content, and selected water quality parameters." *(Cypress Lawn Memorial Park, letter, Exhibit D, June 11, 2013 [O-CLMP-Quick])*

"The SFPUC shall also collect any existing information and data available regarding the [~~existing irrigator's~~]**irrigators**' well**(s)** from the well [~~owner~~]**owners**, including any estimates or measurements of historical, existing, and planned land and water use (e.g., driller's logs, water level data, pumping records, acres irrigated) to provide information upon which to evaluate the performance of the [~~existing irrigator's well~~]**irrigators' wells** over time [~~-and~~]**,** to establish baseline operating conditions**, and to determine Project impacts on planned water use.** When there is an opportunity to open an [~~existing irrigator's~~]**irrigators'** well (such as when a pump is removed by a well owner), the SFPUC may seek to conduct video log surveys in wells to determine the condition of the well structure. The monitoring effort will continue through the life of the Project, unless canceled by the well owner as part of the well owner's decision to remove itself from the [~~monitoring program~~]**Monitoring and Reporting Program**. Continued participation in this monitoring program is assumed to be necessary for the mitigation actions to be effectively implemented by the SFPUC [~~-at the affected well~~]. Periodic re-testing of a well may occur as prompted by the need to evaluate performance throughout the life of the Project. If there is uncertainty or disagreement about whether the Project is responsible for a loss in production capacity at an [~~existing irrigator's~~]**irrigators'** well, the SFPUC shall undertake more frequent monitoring and/or testing**, shall timely provide the well owner with all data, reports, and information collected concerning well production capacity, and provide an opportunity for peer review and comment,** to help resolve the disagreement." *(Cypress Lawn Memorial Park, letter, Exhibit D, June 11, 2013 [O-CLMP-Quick])*

"Data from the water level transducers/data loggers and flow meters shall be recorded daily during the first year. Following the first year of data collection, the frequency may be modified (e.g., as prompted by a need to evaluate pump and/or well performance to determine effects of the Project)**, but in no case data collection and recording take place less frequently than once per month.**

The SFPUC shall provide participants with 14-day advance notice for the site visit(s) that would be scheduled within a 48-hour window." *(Cypress Lawn Memorial Park, letter, Exhibit D, June 11, 2013 [O-CLMP-Quick])*

"The first data analysis period shall end [~~April 30th~~]**March 31st** when production capacity can be compared to peak demand prior to the peak demand period. The second data [~~collection~~]**analysis** period shall end [~~October 30th~~]**June 30th, when pumping is underway during the beginning of the irrigation season. The third data analysis period shall end September 30th**, when groundwater levels will likely be lowest at the end of the peak irrigation season**. The fourth and final data analysis period shall end December 31, when** and production capacity of the well would be at its lowest." *(Cypress Lawn Memorial Park, letter, Exhibit D, June 11, 2013 [O-CLMP-Quick])*

"**The quarterly well monitoring reports shall be furnished by April** 30th**, July 31st, October 31st** and January [~~15th~~]**31st** for the [~~two data analysis periods. The data collected from each existing irrigator's well shall also be shared with the well owner upon request. In Project Put and Hold Periods~~]**four data analysis periods. In Put Years, the SFPUC shall monitor the irrigators' wells for pressurization and/or overflow for the first three months of injection and report analyzed data to irrigation well owners no later than July 31st. In Hold Years,** data shall be analyzed once per year for the data collected through October with analysis **and reporting to irrigation well owners** completed by January 15th." *(Cypress Lawn Memorial Park, letter, Exhibit D, June 11, 2013 [O-CLMP-Quick])*

"**Existing baseline conditions. Existing baseline conditions is the verified seasonal pre-Project water levels at an irrigator's well, measured over a one-year period.**" *(Cypress Lawn Memorial Park, letter, Exhibit D, June 11, 2013 [O-CLMP-Quick])*

"Peak irrigation demand. Peak irrigation demand is defined either as the actual peak irrigation demand determined from well production records obtained by the Monitoring **and Reporting** Program described herein or as identified in Table M-HY-6 (developed from Table 5.16-14 [Estimated Static and Pumping Depth to Water Levels at the End of the Design Drought] of the EIR), whichever is agreed to by the parties.

Production capacity. Production capacity of a well is the quantity of water that can be produced by a well in a 12-hour period. Production capacity will be calculated based on daily production, as measured by the flow meter, divided by pumping duration, as measured by the flow meter, multiplied by 12 hours." *(Cypress Lawn Memorial Park, letter, Exhibit D, June 11, 2013 [O-CLMP-Quick])*

Response HY-12

The commenter asks if well interference impacts can be avoided or reduced to a less-than-significant level, if Project wells were sited at different locations or at reduced well yields. Please see Response HY-15 for revisions to Mitigation Measure M-HY-6 (Ensure Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation) and the revised impact conclusion. The well interference impact is determined to be less-than-significant with implementation of mitigation actions described in Mitigation Measure M-HY-6.

The commenter asks whether relocation of Project wells would reduce well interference impacts. The Draft EIR on page 5.16-78 describes that the study area for potential well interference includes areas within 1.5 miles of a Project well. Relocating Project wells to reduce well interference impacts on some existing irrigators would necessarily result in increased well interference impacts at other existing irrigators, because each Project well (except at Site 16 in San Bruno) is within 1.5 miles of more than one irrigation well. Refer to Table 5.16-11 (Estimated Static and Pumping Depth to Water Levels at the End of the Design Drought), on pages 5.16-85 and 5.16-86, which lists the Project wells that were evaluated for well interference effects on each irrigation well, i.e., those Project wells within 1.5 miles of an irrigation well. Refer also to Section 7.3.3 (GSR Development and Site Screening), in Chapter 7, Alternatives on pages 7-6 and 7-7 of the Draft EIR. This section discusses Project development by the SFPUC, which selected well locations using a variety of site selection criteria, one of which was avoidance of well interference.

The commenter asks whether reduced well yields would reduce well interference impacts. If the overall Project yield is reduced so that the Project provides less than 7.2 million gallons a day (mgd) of water during a drought, impacts associated with well interference would also be reduced. Mitigation Measure M-HY-6 includes mitigation actions to reduce or cease pumping as well as providing replacement water on a temporary basis until a permanent mitigation action is implemented. If the yield at specific well sites is reduced (without reduction of overall Project yield), impacts associated with well interference would also be reduced. Implementing these mitigation actions as part of Mitigation Measure M-HY-6 would reduce well interference impacts to a less than significant level. Refer also to Sections 7.3.4 (Alternative 3A, Reduce Impacts on Colma-area Existing Irrigation Wells and Maintain Project Yield), and 7.3.4.5 (Alternative 3B, Reduce Impacts on Colma-area Existing Irrigation Wells and Reduce Project Yield), in Chapter 7, Alternatives on pages 7-23 through 7-34 on the Draft EIR. The well interference impacts of these two alternatives were compared to the Project in Table 7.2 (Environmental Impacts of the CEQA Alternatives as Compared to the Proposed Project), as follows (as revised in Response HY-15):

> "Alternative 3A, Reduce Impacts on Colma-area Existing Irrigation Wells and Maintain Project Yield: Similar but slightly less than the proposed Project (LSM). Alternative 3A would decrease well interference at 10 existing irrigation wells and increase well interference at seven existing irrigation wells. The level of significance for well interference at existing irrigation wells would not change compared to the Project, except that significant impacts would not occur at the Home of Peace Cemetery well. Mitigation Measure M-HY-6 would reduce impacts to less-than-significant levels.
>
> Alternative 3B, Reduce Impacts on Colma-area Existing Irrigation Wells and Reduce Project Yield: Similar but slightly less than the proposed Project (LSM). Alternative 3B would decrease well interference at five existing irrigation wells. The level of significance for well interference at existing irrigation wells would not change compared to the Project, except that significant impacts would not occur at the Home of Peace Cemetery well and the Holy Cross Cemetery well #1. Mitigation Measure M-HY-6 would reduce impacts to less-than–significant levels."

The Irrigation Well Monitoring and Reporting Program is an important part of Mitigation Measure M-HY-6. The mitigation measure requires that the SFPUC fully fund and implement the Irrigation Well Monitoring and Reporting Program. The Irrigation Well Monitoring and Reporting Program would not be funded by the irrigators.

As described in Mitigation Measure M-HY-6 (see Draft EIR page 5.16-98 and Response HY-15), data from water level transducers and flow meters would be recorded daily during the first year. Following the first year, the frequency of data recording may be modified; data collection would take place at a frequency identified in the Irrigation Well Monitoring and Reporting Program. The commenter's suggested monitoring timeframe of 17 years has been added to Mitigation Measure M-HY-6. The Irrigation Well Monitoring and Reporting Program would identify the frequency for analysis and reporting. Please see Response HY-15 for the full text of Mitigation Measure M-HY-6, as revised.

The commenter suggested revisions to Mitigation Measure M-HY-6. The majority of the commenter's suggestions are accepted and incorporated into Mitigation Measure M-HY-6. See Response HY-15 for revisions to Mitigation Measure M-HY-6.

The commenter's suggestions listed below are not included in revisions to Mitigation Measure M-HY-6:

- Text revision to the third paragraph under "Irrigation Well Monitoring and Reporting Program" to add "and to determine Project impacts on planned water use." This suggestion has not been incorporated into the mitigation measure because the purpose of the Irrigation Well Monitoring and Reporting Program is to gather baseline and other information to help determine when mitigation is required to meet the Performance Standard in the mitigation measure to avoid impacts on water use and not to determine whether the Project impacts planned water use. The Draft EIR evaluated impacts on planned water use, which resulted in Mitigation Measure M-HY-6.

- Some of the text revisions to sixth and seventh paragraphs under "Irrigation Well Monitoring and Reporting Program" to add timeframes for analysis and reporting of monitoring data. The revisions to Mitigation Measure M-HY-6 specify minimum timeframes for analysis and reporting of monitoring data. Some of the commenter's suggestions have not been incorporated into the mitigation measure, because detailed timelines for analysis and reporting of monitoring data do not need to be established in the mitigation measure to ensure the complete implementation of the measure, and, as required in the revised Mitigation Measure M-HY-6, would be established at a later time after consulting with irrigators at the time the Irrigation Well Monitoring and Reporting Program is prepared.

- Suggested text revisions, including references to injection components of Project operations, have not been incorporated into the mitigation measure, because the proposed Project is a passive in-lieu recharge project and does not include injection components.

- Text revisions to "Definition of Terms." These suggestions have not been incorporated, because the section on Definition of Terms has been deleted from the mitigation measure, as it is not needed to ensure full implementation of the measure.

Comment HY-13: Comments related to methods for determining if well interference impacts are due to the Project.

This response addresses comments from the commenter listed below; the comments on this topic are quoted in full below this list:

- O-CLMP-Quick

The following comments are quoted from O-CLMP-Quick, Exhibits C and D, which present Cypress Lawn Memorial Park's proposed changes to Mitigation Measure M-HY-6 (Ensure Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation). Exhibit C provides the proposed final (i.e., clean) version of the changes, and Exhibit D provides the same revisions in tracked changes.

*“**Methods for Determining Whether Loss of Pumping Capacity or Increased Pumping Costs at an Irrigators’ Well(s) Is Due to the Project.*** Any loss in production capacity of an irrigators' well(s), increased pumping costs at such wells, interference with overlying water rights, or well water level draw down of five (5) feet or more is assumed to be caused by the Project if: 1) it is temporally correlated with the onset of increased Project pumping; 2) it occurs in an area predicted to be affected by well interference; 3) static groundwater levels have dropped; 4) pumping groundwater levels have not dropped more than static groundwater levels (if pumping groundwater levels drop more than static groundwater levels it could indicate the drop in production capacity is due to increased well inefficiency and not due to the Project); or 5) no other obvious and substantiated reason exists for the these effects. If another reason for these effects is identified by the SFPUC, another agency, or by a third-party (such as an owner of an irrigation well or an owner's agent), it will be based on the written professional opinion of a certified hydrogeologist or professional engineer with expertise in groundwater hydrology that will be submitted to the San Francisco Planning Department's Environmental Review Officer (ERO), or designee, the SFPUC, and the affected irrigation well owner for review and concurrence. The ERO may require the SFPUC to hire an independent expert to advise the ERO.

To support this determination, the SFPUC will develop and share with irrigation well owners at least the following information:

- *Item 1. It is temporally correlated with the onset of increased Project pumping.* The SFPUC will develop a graph that shows the pumping of Project and Partner Agency wells within 1.5 miles of the irrigator's well over time, compared to the production capacity of the irrigator's well over the same period.

- *Item 2. It occurs in an area predicted to be affected by well interference.* The SFPUC will calculate the cone of depression, using a methodology agreed upon in consultation with existing irrigation well owners, at Project and Partner Agency wells within 1.5 miles of the irrigators' well(s), as well as at the irrigators' well(s).

- *Items 3 and 4. Static water levels have dropped and pumping water levels have not dropped more than static water levels.* The SFPUC will develop a graph showing the difference between static and pumping water levels at the irrigators' well(s) over time.

- *Item 5. Another substantiated reason exists for the drop in production capacity.* If the SFPUC concludes, based on verifiable evidence, that the drop in production capacity of the irrigators' well(s) is caused by factors other than the Project- and the owner of the irrigators' well(s) disagrees- then the SFPUC will have a certified hydrogeologist or professional engineer with expertise in groundwater hydrology prepare documentation regarding the reasons for the drop in production capacity and submit this documentation to the owner of the irrigators' well(s) for an opportunity for peer review. This documentation shall also be submitted to the San Francisco Planning Department's ERO, or designee. The ERO may require the SFPUC to hire an independent expert to advise the ERO.” *(Cypress Lawn Memorial Park, letter, Exhibit C, June 11, 2013 [O-CLMP-Quick])*

"*[~~Method~~]Methods for Determining Whether Loss of Pumping Capacity or Increased Pumping Costs at an [~~Existing Irrigation~~]Irrigators' Well(s) Is Due to the Project.*** Any loss in production capacity of an [~~existing irrigation well(s)~~]**irrigators' well(s), increased pumping costs at such wells, interference with overlying water rights, or well water level draw down of five (5) feet or more** is assumed to be caused by the Project if: 1) it is temporally correlated with the onset of increased Project pumping; 2) it occurs in an area predicted [~~in this EIR~~]to be affected by well interference; 3) static groundwater levels have dropped; 4) pumping groundwater levels have not dropped more than static groundwater levels (if pumping groundwater levels drop more than static groundwater levels it could indicate the drop in production capacity is due to increased well inefficiency and not due to the Project); or 5) no other obvious **and substantiated** reason exists for the [~~drop in production capacity~~]**these effects.** If another reason **for these effects** is identified **by the SFPUC, another agency, or by a third-party (such as an owner of an irrigation well or an owner's agent),** it will be based on the written professional opinion of a certified hydrogeologist or professional engineer with expertise in groundwater hydrology that will be submitted to the San Francisco Planning Department's Environmental Review Officer (ERO), or designee, **the SFPUC, and the affected irrigation well owner** for review and concurrence. The ERO may require the SFPUC to hire an independent expert to advise the ERO.

To support this determination, the SFPUC will develop **and share with irrigation well owners** at least the following information:

- *Item 1. It is temporally correlated with the onset of increased Project pumping.* The SFPUC will develop a graph that shows the pumping of Project and Partner Agency wells within 1.5 miles of the [~~ existing~~] irrigator's well over time, compared to the production capacity of the [~~existing~~] irrigator's well over the same period.

- *Item 2. It occurs in an area predicted to be affected by well interference.* The SFPUC will calculate the cone of depression, using [~~the same~~]**a** methodology [~~as used in evaluating the impact in the EIR~~]**agreed upon in consultation with existing irrigation well owners,** at Project and Partner Agency wells within 1.5 miles of the [~~existing irrigator's~~]**irrigators'** well**(s)**, as well as at the [~~existing irrigator's~~]**irrigators'** well**(s)**.

- *Items 3 and 4. Static water levels have dropped and pumping water levels have not dropped more than static water levels.* The SFPUC will develop a graph showing the difference between static and pumping water levels at the [~~existing irrigator's~~]**irrigators**' well**(s)** over time.

- *Item 5. Another **substantiated** reason exists for the drop in production capacity.* If the SFPUC [~~believes~~]**concludes, based on verifiable evidence,** that the drop in production capacity of the [~~existing irrigation~~]**irrigators'** well(s) is caused by factors other than the Project – and the owner of the [~~existing irrigation~~]**irrigators'** well(s) disagrees – then the SFPUC will have a certified hydrogeologist or professional engineer with expertise in groundwater hydrology prepare documentation regarding the reasons for the drop in production capacity and submit this documentation to the **owner of the irrigators' well(s) for an opportunity for peer review. This documentation shall also be submitted to the** San Francisco Planning Department's ERO, or designee[~~, with a copy to the existing well owner~~]. The ERO may require the SFPUC to hire an independent expert to advise the ERO." *(Cypress Lawn Memorial Park, letter, Exhibit D, June 11, 2013 [O-CLMP-Quick])*

Response HY-13

The commenter suggested revisions to Mitigation Measure M-HY-6 (Ensure Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation). The suggested revisions have been accepted and incorporated into the revised Mitigation Measure M-HY-6, except for those listed below. See Response HY-15 for a description of the revisions to Mitigation Measure M-HY-6 and the full text of the measure.

The commenter suggested that the mitigation measure be revised to include payment of increased pumping costs that may be incurred by an irrigator. This suggestion is not incorporated into the mitigation measure, as explained in Response HY-7. Nevertheless, the SFPUC, as the Project proponent, may enter into separate agreements with existing irrigators to compensate them for increased pumping costs outside of the CEQA process.

The commenter suggested that the mitigation measure be revised to address interference with overlying groundwater rights. Please see Response HY-9.

The commenter also suggested that text be added to Mitigation Measure M-HY-6 that a water level draw down of five feet or more would be considered significant and that five feet of drawdown should be added to the mitigation measure Performance Standard. The comment does not explain why five feet of drawdown is an appropriate significance threshold or an appropriate part of the Performance Standard. Five feet of drawdown is not incorporated into the Performance Standard for the well interference mitigation measure because it has no relationship to the significance criterion for well interference, as listed on page 5.16-51 of the Draft EIR: "Deplete groundwater supplies in a manner that would result in a lowering of the local groundwater to a level where the production rate of preexisting nearby wells would drop to a level that would not support existing or planned land uses."

Instead, Mitigation Measure M-HY-6 has been revised to include a well interference groundwater impact level in the Performance Standard, as explained in Responses HY-11 and HY-15. The Performance Standard for this measure would ensure that existing irrigators' wells would not be damaged and that the production capacity at irrigators' wells is equivalent to the existing production capacity of the wells or irrigation water supply is sufficient to meet existing and planned peak irrigation demand at the land use. Further, if irrigators install new wells to meet water demand for existing and planned land uses, Mitigation Measure M-HY-6 similarly would ensure that the Project would not damage the new wells and that irrigation water supply would be sufficient to achieve the production capacity of the well or peak irrigation demand, whichever is less.

The commenter suggested a revision to the second bullet under "Method for Determining Whether Loss of Pumping Capacity at an Existing Irrigation Well(s) is Due to the Project." The suggested revision would delete: "The SFPUC will calculate the cone of depression, using the same methodology as used in evaluating the impact in the EIR…" and insert instead: "The SFPUC will calculate the cone of depression, using a methodology agreed upon in consultation with existing irrigation well owners…" The methodology used in the EIR to determine well interference is conservative and appropriate. The methodology used during implementation of the mitigation measure should be the same as the methodology used in the EIR, so that the full mitigation of impacts identified in the EIR can be assured.

Comment HY-14: Comments related to reduction of well interference impacts to less than significant.

This response addresses comments from the commenter listed below; the comments on this topic are quoted in full below this list:

- O-CLMP-Quick

The following comments are quoted from O-CLMP-Quick, Exhibits C and D, which present Cypress Lawn Memorial Park's proposed changes to Mitigation Measure M-HY-6 (Ensure Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation). Exhibit C provides the proposed final (i.e., clean) version of the changes, and Exhibit D provides the same revisions in tracked changes.

> "Mitigation actions 1 and 2 of Mitigation Measure M-HY-6 (Ensure Project Operation Does Not Materially Interfere with Irrigators' Wells and Overlying Water Rights) could fully mitigate the Project's impacts to irrigators' wells, but these mitigation actions would reduce the benefits of the Project. While SFPUC can implement mitigation actions 1 and 2 unilaterally, without requiring any agreements with the owners of the irrigators' wells, implementing mitigation actions 3 through 10 would depend upon reaching agreements with each of the irrigation well owners. With participation in the Monitoring and Reporting Program and concurrence to allow implementation of the mitigation actions by all owners of affected irrigators' wells, the Project benefits would be fully realized while well interference impacts would be less than significant with mitigation. Impact HY-6 with implementation of Mitigation Measure H-HY-6 is deemed to be *less than significant with mitigation.*
>
> ***Mitigation Measure M-HY-6: Ensure Project Operation Does Not Materially Interfere with Irrigators' Wells and Overlying Water Rights***
>
> This mitigation measure is organized into five sections, as follows:
>
> - Performance standard,
> - Mitigation Actions to be Undertaken to Meet the Performance Standard,
> - Method for Determining Whether Loss of Pumping Capacity at an Irrigator's Well Is Due to the Project,

- Irrigator Well Monitoring and Reporting Program, and
- Definitions of terms" *(Cypress Lawn Memorial Park, letter, Exhibit C, June 11, 2013 [O-CLMP-Quick])*

"[~~Implementation~~]<u>**Mitigation actions 1 and 2**</u> of Mitigation Measure M-HY-6 (Ensure [~~Existing Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use Due to Project Operation) would depend upon the willingness of the well owner to participate in the monitoring program and to allow the SFPUC to install a replacement well or take other corrective action as mutually determined necessary to address the impacts from the Project and meet the performance standard. Therefore, while Mitigation Measure MHY – 6 could reduce the impacts of well interference to a level where existing and planned land used would continue to be fully supported, its implementation cannot be assured at this time. Nevertheless, with participation in the monitoring program~~]<u>**Project Operation Does Not Materially Interfere with Irrigators' Wells and Overlying Water Rights) could fully mitigate the Project's impacts to irrigators' wells, but these mitigation actions would reduce the benefits of the Project. While SFPUC can implement mitigation actions 1 and 2 unilaterally, without requiring any agreements with the owners of the irrigators' wells, implementing mitigation actions 3 through 10 would depend upon reaching agreements with each of the irrigation well owners. With participation in the Monitoring and Reporting Program**</u> and concurrence to allow implementation of the mitigation actions by all <u>**owners of**</u> affected [~~existing irrigation well owners, the~~]<u>**irrigators' wells, the Project benefits would be fully realized while**</u> well interference impacts would be less than significant with mitigation.[~~ However, because such assurance cannot be attained prior to Project approval,~~] Impact HY-6 with implementation of Mitigation Measure H-HY-6 is deemed [~~at this time~~] to be <u>***less than***</u> *significant [~~and potentially unavoidable~~] with mitigation.*

Mitigation Measure M-HY-6: Ensure [~~Existing~~]<u>Project Operation Does Not Materially Interfere with</u> Irrigators' Wells [~~Are Not Prevented from Supporting Existing or Planned Land Use Due to Project Operation~~]<u>and Overlying Water Rights</u>

This mitigation measure is organized into five sections, as follows:

- Performance standard,
- Mitigation Actions to be Undertaken to Meet the Performance Standard,
- Method for Determining Whether Loss of Pumping Capacity at an[~~ Existing~~] Irrigator's Well Is Due to the Project,
- [~~Existing~~]Irrigator Well Monitoring <u>**and Reporting**</u> Program, and
- Definitions of terms" *(Cypress Lawn Memorial Park, letter, Exhibit D, June 11, 2013 [O-CLMP-Quick])*

Response HY-14

This comment argues that Impact HY-6 on well interference should be identified as less than significant with mitigation, rather than significant and unavoidable because the SFPUC can avoid the impact through implementation of mitigation actions within SFPUC's control. The comment suggests revisions for Mitigation Measure M-HY-6 (Ensure Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation).

The comment is correct that the SFPUC has control over mitigation actions to redistribute pumping or reduce or cease pumping. The suggested revision to Mitigation Measure M-HY-6 to identify that the SFPUC has control over redistribution of pumping or reduction or ceasing of pumping and that the well interference impact evaluated under Impact HY-6 is less than significant with mitigation is accepted. See Response HY-15 for a discussion of the revised mitigation measure and significance conclusion.

The commenter suggested that the mitigation measure be revised to address interference with overlying groundwater rights. Please see Response HY-9.

Comment HY-15: Comments related to well interference and Mitigation Measure M-HY-6.

This response addresses comments from the commenters listed below; each comment on this topic is quoted in full below this list:

- G-BAWSCA-Sandkulla
- O-CGC-Maddow
- O-CLMP-Quick

"**9. Section 5.16.3. 7 – Operation Impacts and Mitigation Measures – Groundwater (page 5.16-93).** The text describes an ongoing monitoring program and analysis of groundwater data to understand project operation impacts on nearby wells. If the groundwater model is to be used for analysis purposes, the periodic recalibration of the model is important for accurate results. Please clarify the expected interval for model recalibration." *(BAWSCA, letter, May 24, 2013 [G-BAWSCA-Sandkulla])*

"This Club is not just any golf course. According to the Golf Club Atlas, which is widely considered the definitive international authority on golf course architecture, this Club is one of the top five in California, a golf-rich state in terms of the number of premium quality courses." *(California Golf Club, letter, June 11, 2013 [O-CGC-Maddow])*

"In addition to its unique architecture, the golf course is differentiated from all other Bay Area courses in that it utilizes fine fescue grasses in its playing and practice surfaces. Among other things, that means that the source and quality of the water used for Club irrigation is particularly important in terms of being able to reliably control the time and duration of irrigation cycles and especially in regard to avoiding any irrigation water constituent- especially nitrates- that are potentially dangerous to the grasses used by the Club." *(California Golf Club, letter, June 11, 2013 [O-CGC-Maddow])*

"In 2007 and 2008, the Club went through an extensive renovation. Millions of dollars were spent on changes to the course layout, replacement of all drainage, and substantial soil amendments, in order to make it possible to replace the previously used poa anna grasses with a bent grass/fescue mix in fairways, and native fescues in the rough. By their very nature, the new grasses use less water, and the renovation also meant that the amount of irrigated acreage was actually reduced. In conjunction with this renovation work, the Club's irrigation system was modernized and improved in terms of efficiency and the precision with which water is applied to the course. Since the renovation, the Club's annual irrigation water volume has been reduced by 11% to 16% when compared to pre-project levels. As will be discussed further in a subsequent part of this letter, the mitigation measures contained in the DEIR that call for improved irrigation efficiency and modification of irrigation operations would not be applicable for the Club because such measures have already been fully analyzed, designed, and constructed, and placed in operation.

The DEIR estimates that the proposed Project, if approved and implemented, would result in a 41% decrease in the productive capacity of the Club's main well, and a 78% decrease in the capacity of its secondary well. Such dramatic reduction of the Club's ability to irrigate could create an existential threat to the Club, which has worked extremely hard for 9 decades to be a good steward of the land and water resources which the Club owns, and a good neighbor in the community in which it is located." *(California Golf Club, letter, June 11, 2013 [O-CGC-Maddow])*

"The DEIR estimates that the proposed Project, if implemented, would reduce the 12-hour production capacity of the Club's wells from 2.2 acre-feet to 1.1 acre-feet - a 50% reduction in the Club's ability to obtain the water it needs to irrigate in peak periods, and the DEIR also estimates that the reduced production capacity would be about 40% short of the Club's irrigation demand. All irrigation systems have to cope with peak demand periods, but the estimated adverse impact to the Club's ability to irrigate in protracted hot spells would be extremely damaging to the long-standing land uses for which these rights are the foundation. Interference with normal irrigation patterns of as little as three days can be devastating to the type of turf used at the Club.

The DEIR also estimates that by the end of the 'design drought' selected by the proponents, static and pumping water levels will be well below the tops of the screens at the Club's wells. The Club's main well is an excellent and productive well, but since it was constructed, to the Club's knowledge it has never faced circumstances in which water levels were drawn down to levels below the tops of the screens. Although the DEIR mentions the possibility of damage to a well that faces such a draw down, there is no discussion of the nature, magnitude, or potential consequences of such risk, or of what the proponents of the proposed Project would do to avoid or counteract such risks." *(California Golf Club, letter, June 11, 2013 [O-CGC-Maddow])*

"It has made significant and expensive changes to its lands and its irrigation system so as to improve the efficiency with which it uses water, and to reduce its water use. The DEIR clearly states that proposed Project has the potential to severely impact the Club's water production capacity. None of the mitigation measures listed in the DEIR, either individually or collectively, can quantitatively or qualitatively match the dramatic and potentially devastating impact that the proposed Project will have on the Club. An above-ground 20,000 gallon tank cannot mitigate the loss of 40% of peak-period pumping capacity. Lowering or changing pumps in Club wells cannot be expected to solve the reduction in pumping capacity if the water levels in the aquifer have been degraded to the degree estimated in the DEIR. Implementation of a temporary replacement water supply as suggested in the DEIR conjures up visions of 'invasion pipe' or fire hoses being strung across the Club's property. In comparison to the nature and magnitude of the proposed Project's adverse impact, no one or combination of the mitigation measures appears to make the Club whole." *(California Golf Club, letter, June 11, 2013 [O-CGC-Maddow])*

"As a result of these deficiencies, the mitigation measures proposed fail to adequately address the significant impacts of the GSR Project on existing, overlying irrigators such as Cypress Lawn." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

"Yet even this analysis of 'net benefit' is largely illusory, at least in terms of Cypress Lawn. Cypress Lawn relies primarily on a single groundwater well that is at a fixed depth, and Cypress Lawn's cemetery irrigation needs remain constant. Cypress Lawn would not engage in superfluous additional groundwater pumping and irrigation simply because additional water in the Westside aquifer was available. So there is really no benefit (net or otherwise), other than reduced pumping costs, to Cypress Lawn in having the groundwater level in Westside aquifer rebound/rise above its well intake. However, during those '17 to 32%' net injury years when the GSR Project may cause the groundwater table to fall below the intake screen of its current well, the harm to Cypress Lawn will be severe. Without a supply of water for irrigation, grass, plants and trees on Cypress Lawn's cemetery grounds could wither and die in the course of a single season. The eventual long-term rebound of the groundwater table would do nothing to offset this damage - that is, the net benefit years would not mitigate the intensive damage Cypress Lawn (and presumably other overlying irrigators) would suffer during the net injury years." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

"*Mitigation Measure M-HY-6 is Inadequate:* The DEIR identifies and discuss a number of feasible mitigation measures that could reduce the adverse impacts on Cypress Lawn and other overlying irrigators to a less than significant level, including: reduce GSR Project pumping in affected areas; redistribute GSR Project pumping; modify irrigation operations to increase efficiency; lower the pump in irrigation wells or replace irrigation wells; and secure a replacement water source for irrigators (such as above ground storage tanks).[49] Although these mitigation measures are 'identified' and 'discussed' they were not incorporated into the Project and no provisions were made for their funding and implementation. Despite identifying numerous feasible mitigation measures, the DEIR found the adverse impacts 'significant and unavoidable with mitigation.'

Given that the DEIR itself has identified mitigation measures that (collectively) would reduce the impacts on overlying irrigators to a 'less than significant' level, and that there is no evidence showing that these measures are infeasible, there is no support for the DEIR's determination that such significant impacts are 'unavoidable.' Indeed, reduced GSR Project pumping alone would be effective in avoiding the interference impacts to existing irrigators. Thus, the DEIR must identify Impact HY-6 as less than significant with mitigation.

[49] DEIR, pp. 5.16-93 – 5.16-100." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

"In addition to the CEQA mitigation deficiencies noted above, the DEIR hydrology mitigation analysis is deficient for the following additional reasons:

• The measure lacks a commitment to avoid or reduce the impacts to less than significant levels;" *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

"•The measure lacks credible criteria for the determination of whether the GSR Project is causing a decrease in production from existing groundwater wells; and

•The measure fails to describe the process by which the SFPUC and/or the San Francisco Planning Department's Environmental Review Officer ('ERO') will determine whether the GSR Project is causing a decrease in production from existing groundwater wells, and fails to describe a process for a party to challenge a determination that causation is not established.

As drafted, Mitigation Measure M-HY-6 allows only a determination of such causation (which would trigger mitigation) through groundwater well monitoring conducted by SFPUC as opposed to monitoring conducted by the parties impacted. Cypress Lawn has redrafted Mitigation Measure M-HY-6 to correct the above deficiencies, as well as address many other problems with the measure. We submit the revised measure, attached hereto as Appendix 2 and incorporated herein by this reference, for lead agency and the SFPUC's consideration.[50]

[50] See **Exhibit C** to this letter, Proposed Revisions to MM CLEAN and **Exhibit D** to this letter, Proposed Revisions to MM REDLINE, both of which are attached hereto and incorporated herein by this reference." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

"C. **The DEIR** Uses **an Overly Narrow Visual Study Area and Fails to Analyze Reasonably Foreseeable, Significant Impacts of the GSR Project.**

As described above, a reasonably foreseeable consequence of the GSR Project is that during dry, take periods, the net volume of water available for use by overlying irrigators will be reduced. Further, the DEIR as currently written fails to incorporate feasible, effective and binding mitigation measures that would prevent this significant impact or the related significant impact of existing overlying irrigators experiencing interruptions or reductions in irrigation supplies." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

[the DEIR lacks] … "• A clear roadmap of mitigation measures to address significant impacts to the irrigators once trigger mechanisms are observed, especially if the irrigators' wells fail either in quantity or quality." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

"**Questions and Comments Related to Identified Impacts**

The following questions and comments are related to Identified Project Operational Impacts and Operational Cumulative Impacts.

Impact HY-6: Project operation would decrease the production rate of existing nearby irrigation wells due to localized groundwater drawdown within the Westside Groundwater Basin such that existing or planned land use(s) may not be fully supported.

Item I - What is the definition of 'Significant Well Interference' and why are GSR Project water levels at the end of take periods so deep?

Please clarify the definition of 'significant well interference.' Well interference can result from overlapping cones of depression from multiply wells (both from project wells and more than one non-project well) and interception of a barrier or recharge boundaries. This well interference will increase pumping water level depths resulting in deeper pumping water levels and increased pumping costs, and will potentially accelerate premature wear of existing irrigators' wells." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

"During the take periods, the water levels in the vicinity of the GSR Project wells and non-project wells will be significantly below existing and historical elevations. This will impact non-project wells and discharges and may also shorten the lifespan of the wells, even though, according to the DEIR, only banked water is pumped. Please explain why water levels would be drawn down so low at the end of take periods, reconciling the seemingly inconsistent GSR Project restriction of only using banked water. The DEIR should describe and analyze multiple well interferences and barrier boundary impacts." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

"*Item 5 – Please clarify the significant level of impacts caused by interference between multi-wells pumping?*

Existing irrigation wells are wells owned and operated by parties other than the Project Partner Agencies, including Cypress Lawn. During take periods (dry periods), pumping at GSR Project wells could cause groundwater levels to decline below levels that are predicted under modeled existing conditions (i.e., levels predicted to occur without operation of the Project under existing conditions considering the historic range of hydrologic and rainfall conditions)." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

"Item 10 – What is the method for determining whether loss of pumping capacity at an existing irrigation well(s) is due to the GSR Project?

According to the DEIR:

Any loss in production capacity of an existing irrigation well(s) is assumed to be caused by the Project if: 1) it is temporally correlated with the onset of increased GSR Project pumping; 2) it occurs in an area predicted in this DEIR to be affected by well interference; 3) static groundwater levels have dropped; 4) pumping groundwater levels have not dropped more than static groundwater levels (if pumping groundwater levels drop more than static groundwater levels it could indicate the drop in production capacity is due to increased well inefficiency and not due to the Project); or 5) no other obvious reason exists for the drop in production capacity. If another reason is identified, it will be based on the written professional opinion of a certified hydrogeologist or professional engineer with expertise in groundwater hydrology that will be submitted to the ERO, or designee, for review and concurrence. The ERO may require the SFPUC to hire an independent expert to advise the ERO.

This assumes that the model is good and reflects current conditions. However, the model is based on a hypothetical precipitation history, not reality. There are no comparisons of the model predictions for existing conditions and the actual current conditions (i.e., water levels) presented in the DEIR. It is assumed that well inefficiencies would have occurred without the GSR Project; however, as the DEIR pointed out, an exposed screen can lead to accelerated deterioration of the well and resulting well inefficiency. Well efficiency can be accelerated with (1) deeper water levels that reduce the saturated thickness of the aquifer promoting greater screen entrance velocities to maintain the desired discharges, (2) cascading water, and (3) other changes to the dynamics of well." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

"***Impact C-HY-2: Operation of the proposed Project would result in a cumulatively considerable contribution to cumulative impacts related to well interference.***

See comments and questions discussed above under Impact HY-6." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

"*Item 24 – The SFPUC acknowledges significant adverse impacts.*

The DEIR and associated appendices describe the regional hydrogeologic system of the Westside Basin. The potential impacts have been acknowledged but are poorly understood and described. For example, salt water intrusion, subsidence, well interference, and contaminant redistribution and remobilization have been described in general terms, but the discussion presented in the DEIR lacks details on monitoring and mitigation measures." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

The following comments are quoted from O-CLMP-Quick, Exhibits C and D, which present Cypress Lawn Memorial Park's proposed changes to Mitigation Measure M-HY-6 (Ensure Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation). Exhibit C provides the proposed final (i.e., clean) version of the changes, and Exhibit D provides the same revisions in tracked changes.

> "**Mitigation actions #1, Redistribute GSR pumping, and #2, Reduce GSR pumping**: SFPUC would reduce the rate of groundwater level decline in an affected area by redistributing Project pumping to other areas or by reducing or ceasing Project pumping. Redistribution of GSR pumping would not be undertaken where the resulting groundwater levels would then decline more than predicted to be caused by the Project by modeling. Therefore, redistribution likely would be effective at reducing well interference impacts at irrigators' wells, but only if some GSR wells are determined to be capable of producing more water with less drawdown than predicted (SFPUC 2012a, 2012c). Reduction or cessation of GSR pumping likely would be effective at reducing well interference impacts at irrigators' wells to *less-than-significant* impacts, but would reduce the benefits of the Project; therefore, if an alternate measure can be developed and implemented, with the agreement of the owner(s) of impacted irrigators' well(s), that also mitigates the impact to *less-than-significant* levels, then this measure would be implemented on an interim basis." *(Cypress Lawn Memorial Park, letter, Exhibit C, June 11, 2013 [O-CLMP-Quick])*
>
> "**Mitigation actions #3, Improve irrigation efficiency, and #4, Modify irrigation operations**: SFPUC would install or completely fund measures such as more-efficient sprinkler heads or soil-moisture

sensors and would modify operations, for example, through the use of longer irrigation cycles or revised scheduling of irrigation to respond to evapotranspiration data. These actions, which would be subject to the agreement and permission of the owner(s) of impacted irrigators' well(s), likely would not result in substantial reductions in water use at irrigators' wells. Effectiveness of the actions would vary depending on the design of the impacted irrigation system, and would not be expected to be feasible and effective in all cases. (SFPUC 2012c)" *(Cypress Lawn Memorial Park, letter, Exhibit C, June 11, 2013 [O-CLMP-Quick])*

"**Mitigation actions #5, Lower pump in irrigation well, and #6, Lower and change pump in irrigation well**: SFPUC would lower the well pump to accommodate groundwater level fluctuations induced by Project pumping that exceed historic levels, or lower and replace the well pump using a more suitable pump for the conditions that are encountered in order to meet demands, or completely fund these actions. SFPUC would also compensate owners of such wells for any incremental increase in pumping costs associated with deeper well pumps. These actions, which would be subject to the agreement and permission of the owner(s) of impacted irrigators' well(s), likely would mitigate impacts if the irrigation well capacity were moderately less than the performance standard due to Project pumping. Effectiveness of the actions would vary depending on the design of the irrigation well and type of pump used. The actions would also be dependent upon the irrigation well being deep enough to accommodate lowering of the pump. For this reason, these actions would not necessarily be feasible and effective in all cases. (SFPUC 2012c)" *(Cypress Lawn Memorial Park, letter, Exhibit C, June 11, 2013 [O-CLMP-Quick])*

"**Mitigation action #7, Add storage capacity for irrigation supply**: SFPUC would add storage; for example, an above-ground tank of 20,000 gallons, which could be up to 20 feet in height. This action, which would be subject to the agreement and permission of the owner(s) of impacted irrigators' well(s), would also require landscaping around any storage tank(s) to reduce any aesthetic impacts. SFPUC would also be required to acquire any necessary permits and mitigate any other secondary impacts that this mitigation action may cause. Increased storage capacity may provide the ability to meet peak flow rates that would otherwise be less than the performance standard, in that irrigators could store the additional water in the tank to use during the period of peak demand. It appears likely that each of the third-party irrigators could feasibly place a tank on their property, provided they agree to this form of mitigation and SFPUC provides compensation for the use of land necessary for the storage tank(s) and the establishment and maintenance of landscaping required for each tank. However, increased storage may not be sufficient to meet the performance standard if the reduced well capacity due to the Project is large. (SFPUC 2012c)" *(Cypress Lawn Memorial Park, letter, Exhibit C, June 11, 2013 [O-CLMP-Quick])*

"**Mitigation action #8, Replace irrigation well**: SFPUC would replace impacted irrigators' well(s), would remove above-ground pumping equipment for any replaced well(s) and cap such wells, and would compensate owners of such wells for any incremental increase in pumping costs. Possible environmental impacts that may result from the installation of replacement irrigation wells would be the same as those expected for construction of Project wells; therefore all mitigation measures to be applied for the construction of Project wells will also be applied to the construction of replacement irrigation wells. This mitigation action, which would be subject to the agreement and permission of the owner(s) of impacted irrigators' well(s), likely would be effective at any of the affected land uses, because the replacement well could be constructed deep enough at each of the cemeteries or golf clubs to operate under the new conditions and thereby meet peak irrigation demand. This mitigation action, likely would be feasible from the standpoint that each of the existing irrigators' well sites appear to have available area in which a replacement well could be installed, and groundwater resources are deep enough in the area of each irrigator to drill deeper wells (SFPUC2012d). SFPUC may need to obtain well permits from the San Mateo County Department of Environmental Health or City of Daly City, depending on the location of the replacement well. The County's and Daly City's well ordinances provide that granting of a well permit is dependent upon the well meeting the health, safety, and welfare of its citizens. Because wells that would be installed under Mitigation action #6 would replace existing and currently operational irrigation wells, it is expected that the required well permits would be issued by the County and Daly City." *(Cypress Lawn Memorial Park, letter, Exhibit C, June 11, 2013 [O-CLMP-Quick])*

"**Mitigation action #9, Replace irrigation water source**: SFPUC would provide a new temporary source of water only until another mitigation action could be implemented. Water could be provided via temporary aboveground pipes from Partner Agency or SFPUC supply from distribution or transmission pipelines close to the location where additional irrigation supplies are needed. This action, which would be subject to the agreement and permission of the owner(s) of impacted irrigators' well(s), would not be implemented on a permanent basis." *(Cypress Lawn Memorial Park, letter, Exhibit C, June 11, 2013 [O-CLMP-Quick])*

"1. *Redistribute GSR pumping*. Reduce the rate of groundwater level decline in the affected area by redistributing Project pumping to other areas; however, in no case would redistribution be undertaken where the resulting groundwater levels would then decline more than predicted Project modeling. The periodic analyses of data from the Monitoring and Reporting Program would continue while this action is undertaken. The action would cease when the data analysis demonstrates that the performance standard is met without continued redistribution of GSR pumping.

2. *Reduce GSR pumping*. Reduce the rate of groundwater level decline through a reduction in Project pumping (including a cessation in Project pumping at wells in the vicinity of impacted irrigation wells). The periodic analyses of data from the Monitoring and Reporting Program would continue while this action is undertaken. The action would cease when the data analysis demonstrates that the performance standard is met without continued reduction of GSR pumping." *(Cypress Lawn Memorial Park, letter, Exhibit C, June 11, 2013 [O-CLMP-Quick])*

"3. *Improve irrigation efficiency*. Reduce applied water demand through irrigation efficiency measures. For example, sprinkler nozzles can be replaced with more efficient models, sprinklers can be added to achieve more evenly distributed irrigation, and installation of soil-moisture sensors can aid in irrigation scheduling.

4. *Modify irrigation operations*. Modify irrigators' wells operations to accommodate reduced well capacity. For example, use longer irrigation cycles to meet the same irrigation demand or use

evapotranspiration data to modify *irrigation scheduling*." *(Cypress Lawn Memorial Park, letter, Exhibit C, June 11, 2013 [O-CLMP-Quick])*

"5. *Lower pump in irrigation well*. Lower pump in irrigator's well to accommodate water level fluctuations induced by Project pumping that exceed historic levels. SFPUC would compensate the well owner for any increased pumping and maintenance costs.

6. *Replace and lower pump in irrigation well*. Replace pump in irrigator's well and set pump to a lower depth to accommodate new head conditions because of lowered water levels induced by Project pumping. SFPUC would compensate the well owner for any increased pumping and maintenance costs." *(Cypress Lawn Memorial Park, letter, Exhibit C, June 11, 2013 [O-CLMP-Quick])*

"7. *Add storage capacity for irrigation supply*. Under certain conditions, add storage (e.g., an above-ground tank with suitable shielding landscaping) to offset reduced well capacity caused by Project pumping. The availability of storage capacity (or of increased capacity) can provide an ability to meet peak flow rates that are otherwise reduced by lowered water levels. SFPUC would obtain any necessary permits." *(Cypress Lawn Memorial Park, letter, Exhibit C, June 11, 2013 [O-CLMP-Quick])*

"8. *Replace irrigation well*. Replace an existing irrigation well with a new well which may be designed with different screen intervals or depth. The new irrigation well could therefore access additional groundwater resources at new depths in the aquifer. Subject to owner agreement, the replacement irrigation well would be subject to the Monitoring and Reporting Program and, if significantly impacted, to these mitigation measures." *(Cypress Lawn Memorial Park, letter, Exhibit C, June 11, 2013 [O-CLMP-Quick])*

"*9. Replace irrigation water source*. In the event that the preceding options cannot be implemented without causing an interruption in the irrigation supply, provide a temporary replacement water supply source from the regional water system or Partner Agency distribution system via temporary aboveground pipes close to the location where additional irrigation supplies are needed until another mitigation option(s) is implemented." *(Cypress Lawn Memorial Park, letter, Exhibit C, June 11, 2013 [O-CLMP-Quick])*

"Existing well capacity. Existing well capacity is the production capacity of the existing irrigator's well during the 12-month monitoring period prior to operation of the Project. The well capacity will be determined, and confirmed by irrigation well owners, through the Monitoring and Reporting Program described herein." *(Cypress Lawn Memorial Park, letter, Exhibit C, June 11, 2013 [O-CLMP-Quick])*

"Irrigators' wells. The existing and replacement wells that support the following existing and planned land uses are the only wells that meet the definition of 'irrigators' wells' for the purposes of this mitigation measure: Lake Merced Gold Club, Woodlawn Memorial Park, Italian Cemetery, Eternal Home Cemetery, Olivet Memorial Park, Holy Cross Cemetery and the California Gold Club. Existing wells are those wells that are in operation prior to the approval of the Project. Replacement wells are those wells that may replace existing wells (due to Project interference or for some other reason).

‘*Impact Conclusion: Less Than Significant with Mitigation*’” *(Cypress Lawn Memorial Park, letter, Exhibit C, June 11, 2013 [O-CLMP-Quick])*

“**Mitigation actions #1, [~~Improve irrigation efficiency, and #2, Modify irrigation operations,~~** ~~would install measures such as more efficient sprinkler heads or soil moisture sensors and would modify operations, for example, through the use of longer irrigation cycles or revised schedule of irrigation to respond to evapotranspiration data. These actions would tend to mitigate impacts if the irrigation well capacity were only slightly less than the performance standard due to Project pumping. Effectiveness of the actions would vary depending on the design of the existing irrigation system, and would not be expected to be feasible and effective in all cases. (SFPUC 2012c)~~**]**” *(Cypress Lawn Memorial Park, letter, Exhibit D, June 11, 2013 [O-CLMP-Quick])*

“[~~**Mitigation actions #3,**~~]**Redistribute GSR pumping, and #[~~4,~~]2, Reduce GSR pumping[~~,~~]: SFPUC** would reduce the rate of groundwater level decline in an affected area by redistributing Project pumping to other areas or by reducing **or ceasing** Project pumping. Redistribution of GSR pumping would not be undertaken where the resulting groundwater levels would then decline more than [~~what was originally~~]predicted to be caused by the Project by modelling[~~, therefore~~]**. Therefore**, redistribution **likely** would be effective at reducing well interference impacts at [~~existing irrigation~~]**irrigators'** wells**, but** only if some GSR wells are determined to be capable of producing more water with less drawdown than [~~originally~~]predicted (SFPUC 2012a, 2012c). Reduction **or cessation** of GSR pumping **likely** would be effective at reducing well interference impacts at [~~existing irrigation~~]**irrigators'** wells to *less-than-significant* impacts, but [~~this would be an interim measure, implemented until such time as~~]**would reduce the benefits of the Project; therefore, if** an alternate measure can be **developed and** implemented**, with the agreement of the owner(s) of impacted irrigators' well(s),** that also mitigates the impact to *less-than-significant* levels, **then this measure would be implemented on an interim basis**.” *(Cypress Lawn Memorial Park, letter, Exhibit D, June 11, 2013 [O-CLMP-Quick])*

“**Mitigation actions #3, Improve irrigation efficiency, and #4, Modify irrigation operations: SFPUC would install or completely fund measures such as more-efficient sprinkler heads or soil-moisture sensors and would modify operations, for example, through the use of longer irrigation cycles or revised scheduling of irrigation to respond to evapotranspiration data. These actions, which would be subject to the agreement and permission of the owner(s) of impacted irrigators' well(s), likely would not result in substantial reductions in water use at irrigators' wells. Effectiveness of the actions would vary depending on the design of the impacted irrigation system, and would not be expected to be feasible and effective in all cases. (SFPUC 2012c)**” *(Cypress Lawn Memorial Park, letter, Exhibit D, June 11, 2013 [O-CLMP-Quick])*

“**Mitigation actions #5, Lower pump in irrigation well, and #6, Lower and change pump in irrigation well[~~,~~]: SFPUC** would lower the well pump to accommodate groundwater level fluctuations induced by Project pumping that exceed historic levels, or lower and replace the well pump using a more suitable pump for the conditions that are encountered in order to meet demands[~~. These actions~~]**, or completely fund these actions. SFPUC would also compensate owners of such wells for any incremental increase in pumping costs associated with deeper well pumps. These actions, which would be subject to the agreement and permission of the owner(s) of**

impacted irrigators' well(s), likely would mitigate impacts if the irrigation well capacity were moderately less than the performance standard due to Project pumping. Effectiveness of the actions would vary depending on the design of the [~~existing~~] irrigation well and type of pump used. The actions would also be dependent upon the [~~existing~~] irrigation well being deep enough to accommodate lowering of the pump. For this reason, these actions would not necessarily be feasible and effective in all cases. (SFPUC 2012c)" *(Cypress Lawn Memorial Park, letter, Exhibit D, June 11, 2013 [O-CLMP-Quick])*

"**Mitigation action #7, Add storage capacity for irrigation supply**[~~,~~]: **SFPUC** would add storage; for example, an above-ground tank of 20,000 gallons, which could be up to 20 feet in height. **This action, which would be subject to the agreement and permission of the owner(s) of impacted irrigators' well(s), would also require landscaping around any storage tank(s) to reduce any aesthetic impacts. SFPUC would also be required to acquire any necessary permits and mitigate any other secondary impacts that this mitigation action may cause**. Increased storage capacity may provide the ability to meet peak flow rates that would otherwise be less than the performance standard, in that irrigators could store the additional water in the tank to use during the period of peak demand. It appears likely that each of the [~~existing~~]**third-party** irrigators could feasibly place a tank on their property, [~~however~~]**provided they agree to this form of mitigation and SFPUC provides compensation for the use of land necessary for the storage tank(s) and the establishment and maintenance of landscaping required for each tank. However,** increased storage may not be sufficient to meet the performance standard if the reduced well capacity due to the Project is large. (SFPUC 2012c)" *(Cypress Lawn Memorial Park, letter, Exhibit D, June 11, 2013 [O-CLMP-Quick])*

"**Mitigation action #8, Replace irrigation well**[~~,~~]: **SFPUC would replace impacted irrigators' well(s), would remove above-ground pumping equipment for any replaced well(s) and cap such wells, and would compensate owners of such wells for any incremental increase in pumping costs. Possible environmental impacts that may result from the installation of replacement irrigation wells would be the same as those expected for construction of Project wells; therefore all mitigation measures to be applied for the construction of Project wells will also be applied to the construction of replacement irrigation wells. This mitigation action, which would be subject to the agreement and permission of the owner(s) of impacted irrigators' well(s), likely** would be effective at any of the affected land uses, because the replacement well could be constructed deep enough at each of the cemeteries or golf clubs to operate under the new conditions and thereby meet peak irrigation demand. This mitigation action**, likely** would be feasible from the standpoint that each of the existing irrigators' well sites [~~has~~]**appear to have** available [~~areas~~]**area** in which a replacement well could be installed, and groundwater resources are deep enough in the area of each irrigator to drill deeper wells (SFPUC2012d). [~~Well permits would~~]**SFPUC may** need to [~~be obtained~~]**obtain well permits** from the San Mateo County Department of Environmental Health or City of Daly City, depending on the location of the replacement well. The County's and Daly City's well ordinances provide that granting of a well permit is dependent upon the well meeting the health, safety, and welfare of its citizens. Because wells that would be installed under Mitigation action #6 would replace existing and currently operational irrigation wells, it is expected that the required well permits would be issued by the County and Daly City." *(Cypress Lawn Memorial Park, letter, Exhibit D, June 11, 2013 [O-CLMP-Quick])*

"**Mitigation action #9, Replace irrigation water source**[~~,~~]**: SFPUC** would provide a new temporary source of water only until another mitigation action could be implemented. Water [~~would~~]**could** be provided via temporary aboveground pipes from Partner Agency or SFPUC supply from distribution or transmission pipelines close to the location where additional irrigation supplies are needed. This action**, which would be subject to the agreement and permission of the owner(s) of impacted irrigators' well(s),** would not be implemented on a permanent basis." *(Cypress Lawn Memorial Park, letter, Exhibit D, June 11, 2013 [O-CLMP-Quick])*

"[~~1. *Improve irrigation efficiency*. Seek ways to reduce applied water demand through irrigation efficiency measures. For example, sprinkler nozzles can be replaced with more efficient models, sprinklers can be added to achieve more evenly distributed irrigation, and installation of soil moisture sensors can aid in irrigation scheduling.~~]

[~~2. *Modify irrigation operations*. Seek ways to modify operations to accommodate reduced well capacity. For example, use longer irrigation cycles to meet the same irrigation demand or use evapotranspiration data to modify irrigation scheduling.~~]" *(Cypress Lawn Memorial Park, letter, Exhibit D, June 11, 2013 [O-CLMP-Quick])*

"1. *Redistribute GSR pumping*. [~~Seek to reduce~~]**Reduce** the rate of groundwater level decline in the affected area by redistributing Project pumping to other areas; however, in no case would redistribution be undertaken where the resulting groundwater levels would then decline more than [~~what was originally~~]predicted [~~to be caused by the~~]Project [~~by~~]modeling. The [~~bi-annual~~]**periodic** analyses of data from the Monitoring **and Reporting** Program would continue while this action is undertaken. The action would cease when the data analysis [~~shows~~]**demonstrates** that the performance standard is met without continued redistribution of GSR pumping.

2. *Reduce GSR pumping*. [~~Seek to reduce~~]**Reduce** the rate of groundwater level decline through a reduction in Project pumping (including a cessation in Project pumping at wells in the vicinity of [~~existing~~]**impacted** irrigation wells). The [~~bi-annual~~]**periodic** analyses of data from the Monitoring and Reporting Program would continue while this action is undertaken. The action would cease when the data analysis [~~shows~~]**demonstrates** that the performance standard is met without continued reduction of GSR pumping." *(Cypress Lawn Memorial Park, letter, Exhibit D, June 11, 2013 [O-CLMP-Quick])*

"**3. *Improve irrigation efficiency*. Reduce applied water demand through irrigation efficiency measures. For example, sprinkler nozzles can be replaced with more efficient models, sprinklers can be added to achieve more evenly distributed irrigation, and installation of soil-moisture sensors can aid in irrigation scheduling.**

4. *Modify irrigation operations*. Modify irrigators' wells operations to accommodate reduced well capacity. For example, use longer irrigation cycles to meet the same irrigation demand or use evapotranspiration data to modify *irrigation scheduling*." *(Cypress Lawn Memorial Park, letter, Exhibit D, June 11, 2013 [O-CLMP-Quick])*

"5. *Lower pump in irrigation well*. [~~A~~]**Lower** pump [~~may be lowered~~]**in irrigator's well** to accommodate water level fluctuations induced by Project pumping that exceed historic levels. **SFPUC would compensate the well owner for any increased pumping and maintenance costs.**

6. [~~*Lower*~~]***Replace*** *and* [~~*change*~~]***lower*** *pump in irrigation well*. [~~A~~]**Replace** pump [~~may be replaced~~]**in irrigator's well** and set **pump** to a lower depth to accommodate new head conditions because of lowered water levels induced by Project pumping**. SFPUC would compensate the well owner for any increased pumping and maintenance costs**." *(Cypress Lawn Memorial Park, letter, Exhibit D, June 11, 2013 [O-CLMP-Quick])*

"7. *Add storage capacity for irrigation supply*. Under certain conditions, **add** storage[~~ may be added~~] (e.g., an above-ground tank **with suitable shielding landscaping**) to offset reduced well capacity caused by Project pumping. The availability of storage capacity (or of increased capacity) can provide an ability to meet peak flow rates that are otherwise reduced by lowered water levels. **SFPUC would obtain any necessary permits**." *(Cypress Lawn Memorial Park, letter, Exhibit D, June 11, 2013 [O-CLMP-Quick])*

"8. *Replace irrigation well*. [~~An~~]**Replace an** existing irrigation well [~~may be replaced~~]with a new well which may be designed with different screen intervals or depth. The new irrigation well could therefore access additional groundwater resources at new depths in the aquifer. **Subject to owner agreement, the replacement irrigation well would be subject to the Monitoring and Reporting Program and, if significantly impacted, to these mitigation measures**." *(Cypress Lawn Memorial Park, letter, Exhibit D, June 11, 2013 [O-CLMP-Quick])*

"9. *Replace irrigation water source*. In the event that the preceding options cannot be implemented without causing an interruption in the irrigation supply, **provide** a temporary replacement water supply source [~~would be provided~~]from the regional water system or Partner Agency distribution system via temporary aboveground pipes close to the location where additional irrigation supplies are needed until another mitigation option(s) is implemented." *(Cypress Lawn Memorial Park, letter, Exhibit D, June 11, 2013 [O-CLMP-Quick])*

"Existing well capacity. Existing well capacity is the production capacity of the existing irrigator's well during the 12-month monitoring period prior to operation of the Project. The well capacity will be determined[~~by~~]**, and confirmed by irrigation well owners, through** the Monitoring **and Reporting** Program described herein." *(Cypress Lawn Memorial Park, letter, Exhibit D, June 11, 2013 [O-CLMP-Quick])*

"[~~Existing irrigators~~]**Irrigators**' wells. The existing **and replacement** wells that support the following **existing and planned** land uses are the only wells that meet the definition of [~~existing~~] **'**irrigators' wells**'** for the purposes of this mitigation measure: Lake Merced Gold Club, Woodlawn Memorial Park, Italian Cemetery, Eternal Home Cemetery, Olivet Memorial Park, Home of Peace Cemetery, Cypress Lawn Memorial Park, Holy Cross Cemetery and the California Golf Club. Existing wells are those wells that are in operation prior to the approval of the Project. **Replacement wells are those wells that may replace existing wells (due to Project interference or for some other reason)**.

*Impact Conclusion: **<u>Less Than</u>** Significant [~~and Unavoidable~~] with Mitigation" (Cypress Lawn Memorial Park, letter, Exhibit D, June 11, 2013 [O-CLMP-Quick])*

Response HY-15

This grouping of comments explains the importance of irrigation water to cemeteries and golf clubs. The comments express concern with the Draft EIR's well interference impact analysis, the adequacy of Mitigation Measure M-HY-6 (Ensure Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation), and the Draft EIR's well interference impact conclusion of significant and unavoidable with mitigation. This response includes a detailed response to comments regarding suggested revisions to Mitigation Measure M-HY-6. Following the response to Mitigation Measure M-HY-6 comments, detailed responses to other specific comments are provided. In addition, other comment groupings (Comments HY-6, HY-7, HY-9, HY-11, HY-12, HY-13, HY-14, HY-16, H-17, and HY-20) ask specific questions about the well interference analysis and the Performance Standard in Mitigation Measure M-HY-6, and responses to these comments also address some of the specific other comments in HY-15. In particular, see Response HY-11 regarding the Performance Standard for Mitigation Measure M-HY-6, as revised herein, which establishes a water level that is protective of peak irrigation demand and prevents damage to wells.

Summary of Revisions to Mitigation Measure M-HY-6 (Ensure Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation)

In response to comments received, Mitigation Measure M-HY-6 is revised. The revisions to Mitigation Measure M-HY-6 restructure and clarify the mitigation measure. The measure is restructured to place mitigation actions into three categories: 1) mitigation actions under the SFPUC's control; 2) provision of a replacement water supply; and 3) actions requiring agreements with irrigators.

The first category, mitigation actions under the SFPUC's control, includes redistributing pumping and reducing or ceasing pumping. The SFPUC has control over these actions through Project operations and can implement these actions to reduce impacts to less-than-significant levels without depending upon other parties.

The second category, provision of a replacement water supply, was included in Mitigation Measure M-HY-6 in the Draft EIR; however, it was included as the last mitigation action and stated, "In the event that the preceding options cannot be implemented without causing an interruption in the irrigation supply, a temporary replacement water supply source would be provided from the regional water system or Partner Agency distribution system via temporary aboveground pipes close to the location where additional irrigation supplies are needed until another mitigation option(s) is implemented." The mitigation measure is revised to require the SFPUC to construct the components of this mitigation action using underground pipelines in advance of Project operations. The SFPUC would need to install new metered water supply connections from existing transmission or distribution lines in the area. Installing water supply connections in advance of Project operations would allow for the delivery of replacement water supply to the irrigators, if needed. Providing replacement water (at a cost equivalent to the irrigator's cost of groundwater production) would avoid the well interference impacts. While the SFPUC would put in place pipelines and meters required to deliver replacement water before Project operations start, the SFPUC would implement the mitigation action to deliver replacement water only if SFPUC monitoring data shows that the Project would cause the well interference Performance Standard not to be met or if an irrigator provides written notice of an unanticipated well capacity effect believed to be due to the Project.

The third category, mitigation actions requiring agreement with irrigators, remains the same as in the Draft EIR; however, the mitigation measure is restructured so that actions in the first two categories (actions under SFPUC control and provision of a replacement water supply) are implemented first if a well interference impact is predicted while the appropriate mitigation actions in the third category (actions requiring agreement with irrigators) are being developed and implemented. Mitigation actions in the third category are permanent mitigation actions that would, either individually or in combination, reduce well interference impacts to a less-than-significant level as explained on Draft EIR pages 5.16-93 through 5.16-94, as revised herein.

The Performance Standard in the original Mitigation Measure M-HY-6 in the Draft EIR included meeting peak irrigation demands. The Performance Standard is revised to include both meeting peak irrigation demands and avoiding damage to irrigator's wells. The Performance Standard would be achieved by identifying a specific well interference groundwater impact level for each well. The well interference groundwater impact level would be the lowest groundwater level that would meet the Performance Standard. If, as a result of monitoring, groundwater levels are predicted to reach the well interference groundwater impact level, the SFPUC would implement mitigation actions sufficiently in advance of such a predicted effect to ensure that the Performance Standard is met.

The original mitigation measure included a section titled "Method for Determining Whether Loss of Pumping Capacity at an Existing Irrigation Well(s) Is Due to the Project." This section is revised with the title "Method for Determining Whether Inability to Meet the Performance Standard at an Irrigator's Well(s) Is Due to the Project." The revision reflects the fact that the Performance Standard protects peak irrigation demand and avoids damage to wells due to groundwater levels dropping below the top of the well screen because of Project operation. This section of the mitigation measure is also revised to allow an irrigator to obtain temporary replacement water after providing SFPUC with written notice of an unanticipated well capacity effect believed to be due to the Project. If an irrigator experiences an unanticipated reduction in capacity, the SFPUC would implement the delivery of replacement water while determining if the impact was caused by the Project. This section of the mitigation measure is revised to identify a process for determining if the Project is causing the Performance Standard for well interference not to be met. The process includes timelines and identifies a process for an irrigator to challenge a determination of the SFPUC.

The original Mitigation Measure M-HY-6 in the Draft EIR included a section titled "Existing Irrigation Well Monitoring Program." This section is revised to "Irrigation Well Monitoring and Reporting Program." The monitoring effort would include regular reporting by the SFPUC to existing irrigators.

The Draft EIR identified Mitigation Measure M-HY-6 as technically capable of fully mitigating well interference impacts to existing nearby irrigation wells to less-than-significant impacts, but the Draft EIR identified Impact HY-6 as significant and unavoidable with mitigation because at the time the Draft EIR was published, the Planning Department determined that implementation of the mitigation actions could not be assured. The Planning Department made this determination, because the SFPUC had not identified actions under its control (i.e., redistribution and reduction in pumping) as actions that it could implement if other actions were not available, and the mitigation measure had provided for replacement water only after it was determined that other mitigation actions could not be implemented. Also, the SFPUC had indicated uncertainty as to whether irrigators would enter into agreements to allow the monitoring required in the Irrigation Well Monitoring and Reporting Program and, if needed, mitigation agreements.

The impact conclusion is revised from "Significant and Unavoidable with Mitigation" to "Less than Significant with Mitigation," as a result of revisions to the mitigation measure and further information from the SFPUC on the feasibility of agreements with irrigators. Under the revised mitigation measure, the SFPUC is required to modify Project operations as described under mitigation actions #1 and #2. Mitigation actions #1 and #2 are under the SFPUC's control and include redistributing pumping and reducing or ceasing pumping. The SFPUC has control over these actions through Project operations and can implement these actions at the time mitigation is needed. Implementing these actions would avoid or reduce well interference impacts to a less-than-significant level.

Additionally, under the revised mitigation measure, the SFPUC is required to provide a replacement water supply prior to groundwater levels reaching a level at which a significant well interference impact is predicted to occur; further, the SFPUC would deliver replacement water if an irrigator provides written notice of unanticipated well capacity effects believed to be due to the Project. The revised mitigation measure requires the SFPUC to install new metered water supply connections from transmission or distribution lines in the area in advance of Project operations, which would allow for the delivery of a replacement water supply to the irrigator to meet peak irrigation demand. Providing a replacement water supply would ensure that well interference impacts could be reduced to a less-than-significant level during the period that it is being supplied.

Furthermore, the SFPUC is now more confident that existing irrigators would enter into monitoring, reporting and mitigation agreements with the SFPUC. The SFPUC has worked with some of the irrigators since the publication of the Draft EIR to develop draft agreements. The largest irrigator (Holy Cross Cemetery) has entered into a monitoring agreement with the SFPUC, and the next two largest irrigators (Cypress Lawn Cemetery and California Golf Club) have indicated a willingness to enter into agreements with the SFPUC for well monitoring and mitigation. During previous meetings with the other irrigators, none indicated concern about eventually entering into agreements for monitoring, reporting, and implementing mitigation. (SFPUC 2014c)

The mitigation measure includes nine mitigation actions; in the revised mitigation measure, the mitigation actions are renumbered to list the mitigation actions under the SFPUC's control first, as follows:

Table RTC 9.3.14-1

Renumbering of Mitigation Actions in Mitigation Measure M-HY-6 (Ensure Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation)

Mitigation Action	Numbering in Draft EIR	Numbering in Responses to Comments
Improve irrigation efficiency	1	4
Modify irrigation operation	2	5
Redistribute GSR pumping	3	1
Reduce GSR pumping	4	2
Lower pump in irrigation well	5	6
Lower and change pump in irrigation well	6	7
Add storage capacity for irrigation supply	7	8
Replace irrigation well	8	9
Replace irrigation water source	9	3

The following text replaces the "Approach to Mitigation" section and Mitigation Measure M-HY-6: Ensure Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use(s) Due to Project Operations in the Draft EIR on pages 5.16-93 through 5.16-100. Mitigation actions are renumbered as reflected in Table RTC 9.3.14-1 (Renumbering of Mitigation Actions in Mitigation Measure M-HY-6). For better clarity and readability, the replacement text below is not shown in both strikethrough and double underlined text. Instead, the Mitigation Approach and Effectivness section and Mitigation Measure M-HY-6 are only shown in double underline text to indicate that they are completely revised.

Mitigation Approach and Effectiveness

As provided below, Mitigation Measure M-HY-6 (Ensure Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation) establishes a performance standard to ensure that well interference impacts caused by the Project would be avoided or reduced to *less-than-significant* levels. The purpose of the mitigation is to implement mitigation actions[1] in advance of any significant well interference impact.

The mitigation actions fall into three categories:

1. **Mitigation Actions under SFPUC Control.** These actions involve modifying the Project operations to reduce impacts, such as redistributing pumping, or reducing or ceasing pumping. These actions are described below in Mitigation Measure M-HY-6, mitigation actions #1 and #2.
2. **SFPUC Provision of a Replacement Water Supply.** The SFPUC would construct the facilities needed to implement this mitigation action in advance of Project operation so the replacement water would be available to any potentially affected irrigator in the event it is needed. The SFPUC would provide the replacement water to irrigators as needed, on a temporary basis until other mitigation is available, if one or both of the following occur: 1) if the SFPUC monitoring data shows that the Performance Standard will not be met and the SFPUC prefers to provide replacement water in order to meet the Performance Standard; or 2) an irrigator provides a written notice of unanticipated well capacity effects believed to be due to Project operation. This action is described below in Mitigation Measure M-HY-6, mitigation action #3.
3. **Mitigation Actions Requiring Agreement with Irrigators.** These actions require consultation and agreement with irrigators to modify irrigators' wells or irrigation systems. These actions are described below in Mitigation Measure M-HY-6, mitigation actions #4 through #9.

The mitigation measure requires an Irrigation Well Monitoring and Reporting Program to provide reliable and timely data to determine if the Project is predicted to result in reduced pumping capacities at irrigators' wells and whether the Performance Standard is being met. The measure requires the preparation of an Irrigation Well Monitoring and Reporting Program that will identify the frequency of data collection at irrigators' wells during Take, Hold, and Put Periods, data analysis, and reporting. The measure also requires the SFPUC to provide advanced notice to irrigation well owners regarding Project operations during Take Periods. If monitoring and reporting data indicate projected impacts due to the Project, the SFPUC will implement mitigation actions.

The following mitigation actions are described in Mitigation Measure M-HY-6:

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[1] The nine mitigation actions in Mitigation Measure M-HY-6 (Ensure Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation) are renumbered in the Responses to Comments document to list the mitigation actions under the SFPUC's control first, as indicated in Table RTC 9.3.14-1 (Renumbering of Mitigation Actions in Mitigation Measure M-HY-6).

Mitigation actions #1, Redistribute GSR pumping, and #2, Reduce GSR pumping, would reduce the rate of groundwater level decline in an affected area by redistributing Project pumping to other areas or by reducing Project pumping. However, in no case would redistribution be undertaken where the resulting groundwater levels would then decline to a level that would cause a significant well interference impact at another irrigation well. Therefore, redistribution would be effective at reducing well interference impacts at existing irrigation wells only if some Project wells are determined to be capable of producing more water with less drawdown than originally predicted (SFPUC 2012a, 2012c). Reduction or cessation of Project pumping would be effective at reducing well interference impacts at irrigation wells to less-than-significant impacts. Both redistribution and reduction or cessation of Project pumping would be interim measures, implemented until such time as an alternate mitigation action can be implemented that also mitigates the impact to *less-than-significant* levels.

Mitigation action #3, Replace irrigation water source, would provide a new source of water for irrigation on a temporary basis until other mitigation is available that would reduce well interference impacts at an irrigator's well to less-than-significant during the time that the replacement water is supplied. The SFPUC estimates that the replacement water supply would be provided on an interim basis for about one year or less, until an alternate mitigation action is in place (SFPUC 2014b). The SFPUC would terminate the provision of replacement water upon a determination that the Project is not causing the well interference effect or the SFPUC has implemented a permanent mitigation action or groundwater levels rise to a level where significant well interference impacts are no longer likely to occur.

Mitigation actions #4, Improve irrigation efficiency, and #5, Modify irrigation operations, would install measures such as more-efficient sprinkler heads or soil-moisture sensors and would modify operations, for example, through the use of longer irrigation cycles or revised scheduling of irrigation to respond to evapotranspiration data. These actions would tend to mitigate impacts if the irrigation well capacity were only slightly less than the Performance Standard due to Project pumping. Effectiveness of the actions would vary depending on the design of the existing irrigation system, and would not be expected to be feasible and effective in all cases. (SFPUC 2012c)

Mitigation actions #6, Lower pump in irrigation well, and #7, Lower and change pump in irrigation well, would lower the well pump to accommodate groundwater level fluctuations induced by Project pumping that exceed historic levels, or lower and replace the well pump using a more suitable pump for the conditions that are encountered in order to meet demands. These actions would mitigate impacts if the irrigation well capacity were moderately less than the Performance Standard due to Project pumping. Effectiveness of the actions would vary depending on the design of the existing irrigation well and type of pump used. The actions would also be dependent upon the existing irrigation well being deep enough to accommodate lowering of the pump. For this reason, these actions would not necessarily be feasible and effective in all cases. (SFPUC 2012c)

Mitigation action #8, Add storage capacity for irrigation supply, would add storage; for example, an above-ground tank of 20,000 gallons, which could be up to 20 feet in height. Increased storage capacity may provide the ability to meet peak flow rates that would otherwise be less than the Performance Standard, in that irrigators could store the additional water in the tank to use during the period of peak demand. It appears likely that each of the irrigators could feasibly place a tank on their property; however, increased storage may not be sufficient to meet the Performance Standard in the event of a large reduction in well capacity due to the Project. (SFPUC 2012c)

Mitigation action #9, Replace irrigation well, would be effective at any of the affected land uses, because the replacement well could be constructed deep enough at each of the cemeteries or golf clubs to operate under the new conditions and thereby meet peak irrigation demand. This mitigation action likely would be effective at any of the affected land uses, thereby meeting the Performance Standard and reducing well interference impacts to less-than-significant levels. This mitigation action likely would be feasible from the standpoint that each of the existing irrigator's well sites appears to have available areas in which a replacement well could be installed, and groundwater resources are deep enough in the area of each irrigator to drill deeper wells (SFPUC 2012c). The SFPUC or the irrigator would obtain well permits from the San Mateo County Department of Environmental Health, depending on the location of the replacement well. The County's well ordinances provide that granting of a well permit is dependent upon the well meeting the health, safety, and welfare of its citizens. Because wells that would be installed under Mitigation Measure M-HY-6 would replace existing and currently operational irrigation wells, it is expected that the required well permits would be issued by the County.

Mitigation actions that the SFPUC would implement if the Project would not otherwise meet the identified Performance Standard would vary depending on site-specific conditions at the irrigators' wells and a determination of the extent of the decrease in pumping capacity that is occurring due to Project operations. The list of mitigation actions includes actions by the SFPUC at the irrigators' wells and at the Project wells, and action by the SFPUC to make replacement water available on a temporary basis until other mitigation is available. Each mitigation action is intended to be suitable for feasibly addressing impacts on an irrigator's well, either alone or in combination with one or more of the other mitigation actions. Nevertheless, either one or a combination of the mitigation actions identified in Mitigation Measure M-HY-6 would feasibly reduce impacts to a *less-than significant* level.

Mitigation Measure M-HY-6: Ensure Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use(s) Due to Project Operation

This mitigation measure is organized into four sections, as follows:

- Performance Standard
- Method for Determining Whether Inability to Meet the Performance Standard at an Irrigator's Well Is Due to the Project
- Mitigation Actions to be Undertaken to Meet the Performance Standard
- Irrigation Well Monitoring and Reporting Program

Determinations required by this mitigation measure are subject to the concurrence of the San Francisco Planning Department's Environmental Review Officer (ERO) as identified below. The ERO may require the SFPUC to hire an independent expert to advise the ERO.

Performance Standard: The SFPUC shall ensure that existing irrigators' wells are not damaged, and that the production capacity at existing irrigators' wells is equivalent to either (1) the existing production capacity of the wells, or (2) is sufficient to meet peak irrigation demand at the existing and planned land uses, whichever is less, provided that any potential well damage or loss of capacity is determined to be caused by the Project.

If overlying irrigators install new wells to support irrigation needs of existing and planned land uses, at the time any such new wells are installed, the SFPUC shall add the new wells to the Irrigation Well Monitoring and Reporting Program and through the monitoring program and in consultation with the irrigator, establish the baseline production capacity for the new wells and determine peak irrigation demand needed to support the existing and planned land uses. The SFPUC shall then ensure that the new irrigators' wells are not damaged, and that the production capacity at the new irrigators' wells is equivalent to either (1) the baseline production capacity of the wells, or (2) is sufficient to meet peak irrigation demand at the existing and planned land uses, whichever is less, provided that any potential well damage or loss of capacity is determined to be caused by the Project.

The SFPUC shall ensure that the Performance Standard is met by: 1) undertaking actions under SFPUC control, such as redistributing pumping or reducing or ceasing pumping as described below in mitigation actions #1 and #2; or 2) making an SFPUC replacement water supply available to any potentially affected irrigator as described below in mitigation action #3, and 3) undertaking actions requiring agreement with irrigators, such as modifying irrigators' wells or irrigation systems as described below in mitigation actions #4 through #9. The SFPUC shall implement mitigation actions, individually or in combination, so that water supply provided to the land use is not interrupted.

Prior to Project operation, the SFPUC, working with any irrigators willing to be consulted, shall identify a well interference groundwater impact level for each existing irrigation well, based on available monitoring data from existing irrigation wells and considering well characteristics. The well interference groundwater impact level shall be the lowest groundwater level that will avoid conflict with the Performance Standard, and it will be established prior to Project operation. The well interference groundwater impact levels will be subject to concurrence by the ERO. If monitoring data and extrapolated trends predict that the well interference groundwater impact level would be reached within the ensuing six months due to Project operation, the SFPUC shall initiate implementation of one or more of the mitigation actions before the groundwater impact level is reached to allow sufficient time to have the most appropriate mitigation in place that would result in meeting the Performance Standard.

Method for Determining Whether Inability to Meet the Performance Standard at an Irrigators' Well(s) Is Due to the Project: An irrigator may provide written notice, supported by an expert determination, that the Project is causing observed unanticipated well capacity effects; or the SFPUC may anticipate based on monitoring data that the Performance Standard will not be met at a future date based on Project operation. The SFPUC will use best efforts to provide a minimum of six months written notice to irrigators that monitoring shows a trend that the Performance Standard may not be met. The procedure for determining if the effect is due to the Project, and the SFPUC response, is as follows.

A. Presumption of Effect

Any observed inability to meet the Performance Standard at an irrigation well(s) is assumed to be caused by the Project if: 1) it is temporally correlated with the onset of increased Project pumping; 2) it occurs in an area predicted (by this EIR or by the SFPUC's ongoing monitoring) to be affected by well interference; 3) static groundwater levels have dropped; 4) pumping groundwater levels have not dropped more than static groundwater levels (if pumping groundwater levels drop more than static groundwater levels, it could indicate the drop in production capacity is due to increased well inefficiency unrelated to the Project); and 5) no other obvious and substantiated reason exists for these effects.

B. Information Required to Determine Effect

To support the determination as to whether an observed loss of pumping capacity is due to the Project, the SFPUC shall develop, and share with irrigation well owners at least the following information:

- *Item 1. Reduction of pumping capacity is temporally correlated with the onset of increased Project pumping.* The SFPUC shall develop a graph that shows the pumping of Project and Partner Agency wells within 1.5 miles of the irrigator's well over time, compared to the production capacity of the irrigator's well over the same period.

- *Item 2. Reduction of pumping capacity occurs in an area predicted to be affected by well interference.* The SFPUC shall calculate the cone of depression, using the same methodology as used in evaluating the impact in the EIR, at Project and Partner Agency wells within 1.5 miles of the irrigator's well, as well as at the irrigator's well.

- *Items 3 and 4. Static groundwater levels have dropped and pumping groundwater levels have not dropped more than static water levels.* The SFPUC shall develop a graph showing the difference between static and pumping water levels at the irrigator's well over time.

- *Item 5. Another substantiated reason exists for the inability to meet the Performance Standard.* If warranted, the SFPUC shall provide a written conclusion, based on verifiable evidence, that a reason other than the Project is causing the inability to meet the Performance Standard.

C. Process for Responding to Written Notice from Irrigator

1. If an irrigator submits a written notice requesting the SFPUC replacement water supply where they believe that the Project is causing observed unanticipated well capacity effects, the SFPUC shall provide SFPUC replacement water within 24 hours and then determine whether the Project is causing the effect within 30 days of providing the SFPUC replacement water.

2. If the SFPUC determines that the Project is not causing a conflict with the Performance Standard, an irrigator may object to the SFPUC determination within 30 days, and, if such an objection is received, the SFPUC shall make a final conclusion within 30 days of receipt of such objection. The determination whether or

not the inability to meet the Performance Standard is due to the Project is subject to ERO concurrence. If the ERO concurs with the SFPUC's determination that the Project is not the cause of the effect, the SFPUC will provide the irrigator with 30 days' notice of the suspension of delivery of SFPUC replacement water supply, and all water previously delivered would be charged to the irrigator at the SFPUC retail rate. Any remaining dispute between the SFPUC and the irrigator may be resolved through voluntary mediation or arbitration; if the matter is submitted to mediation or arbitration, the SFPUC will continue to provide SFPUC replacement water until otherwise required by the mediation or arbitration.

D. SFPUC Response if Project is Causing Effect

If the SFPUC determines in response to a claim by an irrigator that the Project is causing the effect or the SFPUC predicts the effect, after first considering mitigation actions #1 - 3, the SFPUC shall recommend one or a combination of mitigation actions #4 – 9 to the irrigator. The SFPUC shall work with the irrigator to identify the appropriate mitigation action(s) for the affected irrigation well. The SFPUC shall carry out (or pay the irrigator to carry out) the mitigation action(s). The SFPUC shall continue to provide the SFPUC replacement water supply until the agreed upon mitigation action(s) is completed.

Mitigation Actions to be Undertaken to Meet the Performance Standard: Specific mitigation actions that may be required to ensure that the Performance Standard is met are listed below. In addition, the SFPUC may implement other, similar measures that the affected irrigator and the SFPUC agree will provide equally effective mitigation for well interference impacts. The determination that similar measures will provide equally effective mitigation is subject to ERO concurrence.

Mitigation actions fall into the following three categories:

***A.* Mitigation Actions under SFPUC Control**

Mitigation Action #1: Redistribute GSR pumping. The SFPUC would redistribute Project pumping from affected areas to other areas; however, in no case would redistribution be undertaken where the resulting groundwater levels would then decline to a level that would cause a significant well interference impact at another irrigation well. This mitigation action is expected to be an interim measure, implemented until such time as an alternate measure can be implemented that also mitigates the impact to less-than-significant levels without compromising Project objectives. The periodic analyses of data from the Irrigation Well Monitoring and Reporting Program would continue while this action is undertaken. The action would cease when the data analysis demonstrates that the Performance Standard is met without continued redistribution of GSR pumping, or, if an interim measure, until an alternative measure is in place.

Mitigation Action #2: Reduce GSR pumping. The SFPUC would reduce Project pumping (including a cessation in Project pumping) at wells in the vicinity of affected irrigation wells. This mitigation action is expected to be an interim measure, implemented until such time as an alternate measure can be implemented that also mitigates the impact to less-than-significant levels without compromising Project objectives. The periodic analyses of data from the Irrigation Well Monitoring and Reporting Program would continue while this action is undertaken. The action would cease when the data analysis demonstrates that the Performance Standard is met without continued reduction of GSR pumping, or, if an interim measure, until an alternative measure is in place.

B. SFPUC Provision of a Replacement Water Supply

Mitigation Action #3: Replace irrigation water source. As part of the Project and prior to Project operation, SFPUC will install for irrigators new metered supply connections of SFPUC water from the SFPUC's regional water system or SFPUC will wheel SFPUC replacement water through the Cal Water distribution system to connections Cal Water provides to irrigators. Connections to the regional water system or distribution systems will consist of permanent below-ground connections.

Under this Mitigation Measure M-HY-6, the SFPUC shall provide the SFPUC replacement water to irrigators under two circumstances: 1) if an irrigator provides written notice to the SFPUC supported by an expert determination that the Project is causing observed unanticipated well capacity effects; or 2) if the SFPUC monitoring data show that the Performance Standard will not be met and the SFPUC prefers to provide SFPUC replacement water in order to meet the Performance Standard. The irrigator's expert determination will be a written professional opinion of a certified hydrogeologist or a professional engineer with expertise in groundwater hydrology, water supply wells, and water well technology. Under either of these circumstances, the SFPUC shall open the new standby supply connection to the irrigator to provide SFPUC water for irrigation to the irrigator. In the first instance where the SFPUC replacement water supply is provided in response to notice from an irrigator, the SFPUC shall continue to provide the SFPUC replacement water supply while it makes an initial determination regarding whether Project operation caused the observed effect and if required to do so by the mediation or arbitration in a case where it disputes whether the Project is causing the effect (as explained above under the heading, *Method to Determine Whether Inability to Meet the Performance Standard at an Irrigators' Well[s] Is Due to the Project*). In the event the SFPUC determines that the Project is causing the effect, or if the SFPUC provides the SFPUC replacement water supply because its monitoring predicts an effect, the SFPUC shall continue to provide the SFPUC replacement water supply as needed until it can implement another mitigation action. The SFPUC estimates that the SFPUC replacement water supply would be provided on an interim basis for about one year or less, until an alternative measure is in place.

If the SFPUC provides the replacement water on its own initiative or the irrigator requests the water and the Project is determined to have caused the effect, the SFPUC will charge for the water supply at the rate equivalent to the irrigator's cost of groundwater production, as adjusted annually for inflation using the Consumer Price Index or other agreed-upon index. If the irrigator requests the water and the Project is subsequently determined to have not caused the effect, then the SFPUC will charge for the replacement water supply at a rate equivalent to the regular SFPUC rate.

C. Mitigation Actions Requiring Agreement with Irrigators

Mitigation Action #4: Improve irrigation efficiency. The SFPUC would install or completely fund measures to reduce applied water demand through irrigation efficiency measures, such as installation of more efficient sprinkler heads or soil-moisture sensors.

Mitigation Action #5: Modify irrigation operations. The SFPUC would install or completely fund measures to reduce applied water demand through modification of irrigation operation, such as the use of longer irrigation cycles to meet the same irrigation demand or revised scheduling of irrigation to respond to evapotranspiration data, as appropriate given the affected land use.

Mitigation Action #6: Lower pump in irrigation well. The SFPUC would lower the pump or completely fund lowering the pump in an irrigator's well to accommodate water level fluctuations induced by Project pumping.

Mitigation Action #7: Lower and change pump in irrigation well. The SFPUC would lower and replace or completely fund the lowering and replacement of the well pump using a more suitable pump for the conditions that are encountered in order to meet irrigation demand.

Mitigation Action #8: Add storage capacity for irrigation supply. The SFPUC would add or completely fund storage (e.g., an above-ground tank with suitable shielding landscaping, if necessary) to offset reduced well capacity caused by Project operation. In such cases, the SFPUC shall obtain or pay the irrigator to obtain any necessary permits for the work.

Mitigation Action #9: Replace irrigation well. The SFPUC would replace an irrigators' well(s), remove above-ground pumping equipment for any replaced well(s) and properly close such wells in accordance with State and local law or completely fund the actions. The SFPUC or the irrigator would obtain well permits from the San Mateo County Department of Environmental Health. The replaced irrigation well will be included in the Irrigation Well Monitoring and Reporting Program and covered by the Performance Standard contained in this Mitigation Measure M-HY-6.

Irrigation Well Monitoring and Reporting Program: The SFPUC shall monitor and report short- and long-term changes in groundwater conditions and operations at irrigators' wells. All monitoring and data collection will be conducted as defined in the Irrigation Well Monitoring and Reporting Program. The SFPUC will provide advance notice to irrigation well owners regarding the start of Project operations during Take Periods.

At least 18 months prior to start of Project operation, the SFPUC shall contact existing irrigators with information about the Irrigation Well Monitoring and Reporting Program. The monitoring program shall include the installation of a flow meter to allow for daily well production volumes to be recorded and a groundwater level transducer/data logger (a device for automatically detecting and recording groundwater levels) for measuring groundwater levels at the irrigators' wells. Baseline monitoring of flow meter data and groundwater level data in the irrigators' well shall be collected and reported to participating well owners as defined in the Irrigation Well Monitoring and Reporting Program. In addition to baseline monitoring of well production and groundwater levels, pumping tests at irrigators' wells shall be conducted prior to Project operation to collect baseline data on pump and well performance, and results shall be reported to irrigators. The pumping tests shall collect data on well capacity and drawdown, well specific capacity, pump efficiency and head-capacity characteristics, sand content, and may include selected water quality parameters.

The SFPUC shall also collect any existing information and data available regarding the irrigators' well(s) from the irrigator, including any estimates or measurements of historical, existing, and planned land and water use (e.g., driller's logs, water level data, pumping records, acres irrigated) to provide information upon which to evaluate the performance of the irrigators' well(s) over time and to establish baseline operating conditions. When there is an opportunity to open an existing irrigator's well (such as when a pump is removed by a well owner), the SFPUC may seek to conduct video log surveys in such wells to determine the condition of the well structure. The SFPUC may conduct periodic re-testing of a well as prompted by the need to evaluate performance throughout the life of the Project.

Following the start of Project operations, if there is uncertainty or disagreement about whether the Project is responsible for a loss in production capacity at an irrigator's well, the SFPUC shall undertake more frequent monitoring and/or testing and shall timely provide the well owner with all data, reports, and information collected concerning well production capacity.

Data from the water level transducers/data loggers and flow meters shall be recorded daily during the first year. Following the first year of data collection, the frequency may be modified (e.g., as prompted by a need to evaluate pump and/or well performance to determine effects of the Project), but in no case will data collection and recording take place less frequently than once per month during Take Periods. The SFPUC shall provide participants with 14-day advance notice for site visit(s), which would be scheduled within a 48-hour window.

Data shall be analyzed and reported to irrigators at a frequency identified in the Irrigation Well Monitoring and Reporting Program. Data analysis shall be conducted when production capacity can be compared to peak demand prior to the peak demand period, when pumping is underway during the beginning of the irrigation season, when groundwater levels will likely be lowest at the end of the peak irrigation season, and when production capacity of the well would be at its lowest.

The SFPUC's certified hydrogeologist or professional engineer with expertise in groundwater hydrology shall compile, analyze and report the collected data to participating irrigators within the timeframe identified in the Irrigation Well Monitoring and Reporting Program. In Project Put and Hold Periods, the SFPUC shall compile, analyze, and report the collected data to irrigators and the ERO at least once per year.

Monitoring of all irrigators' wells shall continue during the period that is the longer of: 1) 17 years (twice the 8.5-year design drought cycle analyzed in the EIR); or 2) the period including the first five Take Years of the Project beginning at the initiation of Project operation. After this initial period of monitoring, the SFPUC, in consultation with the irrigators, shall evaluate the effectiveness of the Irrigation Well Monitoring and Reporting Program and determine if data collection, monitoring, and reporting frequencies and other procedures should be revised or eliminated. Proposed changes to the Program, including a reduction in the frequency of monitoring, will be subject to ERO concurrence.

Impact Conclusion: Less than Significant with Mitigation

Revised Cumulative Impact Conclusion

The cumulative analysis in Draft EIR Section 5.16, Hydrology and Water Quality, identified Impact C-HY-2: Operation of the proposed Project, as resulting in a cumulatively considerable contribution to cumulative impacts related to well interference, which would be significant and unavoidable with mitigation. The Draft EIR identified Mitigation Measure M-HY-6 (Ensure Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation) as technically capable of fully mitigating the Project's contribution to cumulative well interference impacts to a less-than-significant impact, but identified Impact C-HY-2 as significant and unavoidable with mitigation, because at the time the Draft EIR was published, the Planning Department determined that implementation of the mitigation actions could not be assured. The Planning Department made this determination because the SFPUC had not identified actions (i.e., redistribution or reduction of pumping) under its control as actions that it could implement if other actions were not available, and the mitigation measure had provided for replacement water only after it was determined that other mitigation actions could not be implemented. Also, the SFPUC had indicated uncertainty as to whether irrigators would enter into agreements to allow the monitoring required in the Irrigation Well Monitoring and Reporting Program and, if needed, mitigation agreements.

The cumulative impact conclusion regarding well interference is revised from "Significant and Unavoidable with Mitigation" to "Less than Significant with Mitigation," as a result of revisions to the mitigation measure and further information from the SFPUC on the feasibility of agreements with irrigators. Under the revised mitigation measure, the SFPUC is required to modify Project operations as described under mitigation actions #1 and #2 to redistribute pumping and reduce or cease pumping to meet the Performance Standard. Implementing these actions would avoid or reduce the Project's contribution to cumulative well interference impacts to a less-than-significant level.

Additionally, under the revised mitigation measure, the SFPUC is required to provide a replacement water supply prior to groundwater levels reaching a level at which a significant well interference impact is predicted to occur; further, the SFPUC would deliver replacement water if an irrigator provides written notice of well capacity effects believed to be due to the Project. Providing a replacement water supply would ensure that the Project's contribution to cumulative well interference impacts could be reduced to a less-than-significant level.

Finally, the SFPUC is now more confident that existing irrigators would enter into monitoring, reporting and mitigation agreements with the SFPUC. The largest irrigator (Holy Cross Cemetery) has entered into a monitoring agreement with the SFPUC, and the next two largest irrigators (Cypress Lawn Cemetery and California Golf Club) have indicated a willingness to enter into agreements with the SFPUC for well monitoring and mitigation. During previous meetings with the other irrigators, none indicated concern about eventually entering into agreements for monitoring, reporting, and implementing mitigation (SFPUC 2014b).

Therefore, Impact C-HY-2 is revised to be less than significant with mitigation.

Impact statement C-HY-2 on page 5.16-149 of the Draft EIR is revised as follows:

> **Impact C-HY-2: Operation of the proposed Project would result in a cumulatively considerable contribution to cumulative impacts related to well interference. (Less than Significant ~~and Unavoidable~~ with Mitigation)**

The following text of Impact C-HY-2 on pages 5.16-151 and 5.16-152 is revised as follows. Additional revisions are made in response to comment HY-15. All of the changes to the Draft EIR are presented in Section 9.5, Draft EIR Revisions.

> With implementation of Mitigation Measure M-HY-6 (Ensure ~~Existing~~ Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation), the *potentially* significant cumulative impact on well interference would be reduced in a similar manner as described above for the Project-specific impacts. Mitigation actions #1 and #2, Redistribute GSR Pumping and Reduce GSR Pumping (which includes ceasing pumping if necessary), would be effective at reducing the Project's contribution to cumulative well interference impacts to less than considerable levels, because these mitigation actions could redistribute or reduce Project pumping sufficiently to avoid a cumulatively considerable contribution to the cumulative impact. Mitigation ~~A~~action #~~6~~2, Replace Irrigation Well, would be effective at reducing the Project's contribution to cumulative impacts to less-than-considerable levels, because the replacement well could be constructed deep enough to access an aquifer with sufficient water to meet peak irrigation demand while simultaneously avoiding any cumulative effects related to well interference (SFPUC 2012c). In addition, Mitigation action #3, Replace irrigation water source, would ensure that there would be no interruption in water supply during the time period it would take to install a new well. Therefore, Mitigation Measure M-HY-6 would reduce the Project's impacts ~~of~~ on well interference to a level ~~where~~ that would allow irrigators' wells to continue to support existing and planned land uses ~~would be supported~~ to the extent that the wells are able to under existing conditions ~~except that the feasibility of the mitigation measure cannot be assured until the existing irrigation well owners have agreed to allow the mitigation to take place on their property. Because such assurance has not yet been provided, Impact C-HY-2, with implementation of Mitigation Measure H-HY-6 is conservatively deemed to be cumulatively considerable (*significant and potentially unavoidable with mitigation*).~~ As a result, with implementation of Mitigation Measure M-HY-6, the Project's contribution to

cumulative well interference impacts would not be cumulatively considerable (*less than significant with mitigation*).

Impacts of Mitigation

Potential impacts associated with implementing mitigation actions in Mitigation Measure M-HY-6 (Ensure Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation) are described in the Draft EIR in Section 5.16.3.9 (Impacts of Mitigation Measures) on pages 5.16-162 through 5.16-174. At the time the Draft EIR was published, the mitigation action to provide replacement water was only implemented if other mitigation actions could not be implemented. The measure in the Draft EIR did not include installing connections to water transmission or distribution lines in the area prior to Project operations and the measure in the Draft EIR included temporary above-ground pipelines for irrigation water. Mitigation Measure M-HY-6 is revised to require installation of a connection to provide replacement water prior to operation of the Project. Permanent underground irrigation lines would be installed from the point of connection to the existing irrigation system. As described earlier, only substantive changes are presented in this Responses to Comments document; changes solely due to renumbering of the mitigation actions are not included. Please refer to Table RTC 9.3.14-1 (Renumbering of Mitigation Actions in Mitigation Measure M-HY-6) for a crosswalk table of the mitigation action numbering.

Text describing the mitigation action of providing replacement water supply on page 5.16-164 of the Draft EIR is revised as follows:

> ***M-HY-6 Mitigation Action #~~9~~3: Replace Irrigation Water Source***
>
> ~~In the event that the preceding options cannot be immediately implemented without causing an interruption in the irrigation supply, a temporary replacement water supply source would be provided until another mitigation option(s) is implemented. Water would be trucked to the site or would be provided via aboveground pipes from Partner Agency or SFPUC supply from distribution or transmission pipelines close to the location where additional irrigation supplies are needed. The SFPUC would verify that the water quality of the new irrigation source is acceptable. (SFPUC 2012c)~~ The SFPUC would provide replacement water from the SFPUC regional water system through the SFPUC regional distribution system or wheel replacement water through the Cal Water distribution system to irrigators. As part of the Project and prior to Project operation, the SFPUC would install for irrigators new metered supply connections, including new below-ground connecting pipelines, if needed.

The first paragraph on page 5.16-165 of the Draft EIR, discussing Land Use, is also revised as follows:

> While M-HY-6 Actions ~~#5, #6, and #9~~ #6, and #7 would require the use of construction equipment and vehicles, the scope of these construction activities would be similar to ongoing maintenance activities at the golf clubs and cemeteries. Therefore, construction impacts for M-HY-6 Actions ~~#5, #6, and #9~~ #6, and #7 would be *less than significant*.

> Depending on the placement of the pipelines, construction ~~operation~~ of M-HY-6 Action #~~9~~3 may result in ~~minor~~ temporary disruption to recreational uses at the golf clubs due to the combination of temporary increases in noise and dust/exhaust emissions levels, traffic delays, and/or access disruption. The ~~temporary placement of aboveground pipelines~~ installation of irrigation lines in golf clubs could result in golf carts needing to maneuver around areas of pipeline~~s~~ construction while traveling within the golf club or temporarily affect the existing visual quality or scenic views of golf clubs or cemeteries.~~;~~ ~~however,~~ Installation of irrigation lines would only require temporary disruption and ~~aboveground pipelines would be placed and operated such that~~ the golf club would remain available and useable to golfers. These temporary impacts could, however, be significant. Implementation of Mitigation Measures M-NO-1 (Noise Control Plan), M-AQ-2a (BAAQMD Basic Construction Measures), M-TR-1 (Traffic Control Plan), and M-AE-1a (Site Maintenance) to reduce Project impacts would reduce impacts from construction activities related to M-HY-6 Action #3 to less-than-significant levels by requiring measures to reduce construction-related noise, dust, emissions, and traffic access-related issues to less-than-significant levels. The ~~temporary~~ operational impacts of M-HY-6 Action #~~9~~3 to golf clubs and cemeteries would not displace the land use and would therefore be *less than significant*.

The second paragraph of the Aesthetics discussion on pages 5.16-165 and 5.16-166 of the Draft EIR is revised as follows:

> The implementation of M-HY-6 Actions ~~#5 through #9~~ #3 and #6 through #9, could result in minor additional aesthetic impacts during construction due to the presence of construction equipment and vehicles; these impacts could be *significant* if construction sites were visible from publicly accessible viewpoints. Implementation of Mitigation Measure M-AE-1a (Site Maintenance) would reduce construction impacts to *less-than-significant* levels by keeping the area clean of debris. Construction-related aesthetic impacts from implementation of M-HY-6 Actions ~~#5 through #9~~ #3 and #6 through #9, would therefore be *less than significant with mitigation*.

The fourth paragraph of the Aesthetics discussion on page 5.16-166 of the Draft EIR is revised as follows:

> M-HY-6 Action ~~#8~~#9 would construct a replacement irrigation well at a golf club or cemetery. However, the aesthetic impact of the well would be minor, because the well would extend approximately three feet above ground, which would not significantly affect viewsheds or the visual quality of the cemetery or golf clubs, as viewed from publicly accessible vantage points. M-HY-6 Action #~~9~~3 would not permanently ~~potentially~~ affect the visual quality of the cemetery or golf club because the pipelines would be located ~~above~~ underground. ~~However, this mitigation action is intended to be temporary in duration.~~ For these reasons, operational impacts on aesthetics from M-HY-6 Actions ~~#8 and #9~~ #3 and #9 would be *less than significant*.

Text under Cultural and Paleontological Resources on pages 5.16-166 and 5.16-167 of the Draft EIR is revised as follows:

> Implementation of M-HY-6 Actions ~~#1, #2, #3, #4, #5, #6, and #9~~, #1, #2, #4, #5, #6, and #7 would not result in additional impacts on cultural or paleontological resources, because these actions would not involve additional excavation, grading, or other ground disturbances. Implementation of these mitigation actions would also not involve new structures or changes to historical resources. As a result, *no impacts* would occur.
>
> There are no historical resources identified at the golf clubs that could be affected by the Project, but several cemeteries within the study area include individual historic resources or the cemeteries are eligible for listing on the National Register. If historic resources are present at a golf club or cemetery where a storage tank, ~~or~~ replacement well, or irrigation line (M-HY-6 Actions ~~#7 and #8~~ #3, #8, and #9) might be needed, the facilities would be sited to avoid impacts on these resources (i.e., sited where the storage tank and well are not visible in proximity to a historic resource), where feasible. Construction of the storage tank, ~~or~~ well, or irrigation line, would be short in duration and impacts on the historic resources during construction would therefore be *less than significant*. Once in place, if a storage tank is within close proximity of a historic resource, the implementation of Mitigation Measures M-AE-3a (Implement Landscape Screening) would reduce impacts on historic resources by providing screening, as also described above to address any potential aesthetics impacts.
>
> It is unknown whether M-HY-6 Actions ~~#7 or #8~~ #3, #8, or #9 would be implemented at a site that contains archaeological or paleontological resources. Damage to an archaeological or paleontological resource would be a *significant* impact. However, implementation of Mitigation Measures M-CR-2 (Discovery of Archaeological Resources), M-CR-3 (Suspend Construction Work if a Paleontological Resource is Identified), and M-CR-4 (Accidental Discovery of Human Remains) would adequately address any potential impacts related to the accidental discovery of these resources during construction by requiring adherence to appropriate procedures and protocols. Impacts on cultural and paleontological resources as a result of implementing M-HY-6 Actions ~~#7 or #8~~ #3, #8 or #9 would therefore be *less than significant with mitigation*.

The second paragraph on page 5.16-167 of the Draft EIR, discussing Transportation and Circulation, is revised as follows:

> Implementation of M-HY-6 Actions ~~#5, #6, #7, #8, and #9~~ #3, #6, #7, #8, and #9 could result in additional impacts on transportation and circulation due to additional construction traffic on regional highways and local roadways. However, construction traffic from these mitigation actions would be minor and temporary (i.e., truck deliveries for well pump, storage tank, or piping). Mitigation Action #3 could result in temporary impacts to local roadway circulation if irrigation pipeline trenching is required within the public right-of-way. Impacts due to temporary road closures and other circulation impacts could be *significant*. However, implementation of Mitigation Measure M-TR-1 (Traffic

> Control Plan) would reduce impacts to *less-than-significant* levels by requiring measures to reduce potential impacts on traffic flows in compliance with local and Caltrans requirements. Because any storage tanks~~,~~ or replacement wells ~~or irrigation piping~~ would be located on existing golf club or cemetery property and connected to onsite irrigation plumbing (rather than periodically filled by delivery truck), and because new irrigation piping would be buried underground, implementation of M-HY-6 Actions ~~#7, #8, or, #9~~ #3, #8, or #9 would not permanently impact the performance of the transportation circulation system or increase traffic hazards. Therefore, operational impacts of M-HY-6 Actions ~~#5, #6, #7, #8, or #9~~ #3, #6, #7, #8, or #9 would be *less than significant*.

The last paragraph on page 5.16-167 of the Draft EIR, discussing Noise and Vibration, is revised as follows:

> Implementation of M-HY-6 Actions ~~#5, #6, and #9~~ #5 and #6 would not generate significant noise impacts during construction. Lowering and/or replacing the pump, or installing aboveground pipelines would be similar in nature to other ongoing maintenance activities and would not substantially increase ambient noise levels at the golf clubs or cemeteries. Any related noise impacts would therefore be *less than significant*. *No operational impacts would occur*, because the changed pump and aboveground pipelines would not generate perceptible changes in ambient noise levels.

The first three full paragraphs on page 5.16-168 of the Draft EIR, discussing Noise and Vibration, are revised as follows:

> Implementation of M-HY-6 Action #~~7~~8 would result in additional noise and vibration impacts during construction due to site grading and clearing, construction of a concrete foundation (if necessary), and the use of construction equipment and vehicles. Implementation of M-HY-6 Actions ~~#8~~ #3 and #9 would also result in additional noise and vibration impacts during construction of the irrigation pipelines and replacement irrigation well. ~~If pipelines are required for the irrigation well, p~~Pipeline trench compaction during construction could cause ground-borne vibration, which would be potentially significant depending on the proximity to structures and sensitive receptors. While golf clubs are not considered sensitive noise receptors, cemeteries and places of residence, schools, and churches are considered sensitive to noise disturbances. Additionally, Daly City, Colma, and San Bruno have specific noise regulations for cemeteries and/or golf clubs. Construction of M-HY-6 Actions ~~#7 or #8~~ #3, #8, or #9 could exceed local noise standards and temporarily increases ambient noise levels, which would be *significant*.

> Mitigation Measures M-NO-1 (Noise Control Plan) would reduce construction-related noise impacts for M-HY-6 Actions ~~#7 and #8~~ #3, #8, and #9. Mitigation Measure M-NO-2 (Reduce Vibration Levels during Construction of Pipelines) would reduce noise and vibration levels generated during well drilling ~~and~~ or pipeline trench compaction. Implementation of M-NO-1 (Noise Control Plan) would reduce noise impacts from Actions ~~#7~~ #3 and #8 to *less-than-significant* levels. However, Action #~~8~~9 includes drilling,

and as discussed in Section 5.7, Noise and Vibration, depending on the proximity of construction to a sensitive noise receptor (e.g., residences or schools), and depending on the local noise regulations for cemeteries and/or golf clubs, it is possible that even with the implementation of these mitigation measures, noise impacts related to noise standards and ambient noise levels from well drilling could be *significant and unavoidable*.

Operation of the storage tank (M-HY-6 Action #~~7~~8) and irrigation pipelines (M-HY-6 Action #3) would not increase ambient noise levels at the golf clubs or cemeteries. Operation of the irrigation well (M-HY-6 Action #~~8~~9) would not increase ambient noise levels because the pump would be located underground. *No operational noise impacts* would therefore occur.

The last paragraph on page 5.16-168 of the Draft EIR, discussing Air Quality, is revised as follows:

Implementation of M-HY-6 Actions ~~#1 through #4~~ #1, #2, #4, and #5 would not require construction, and therefore would not result in the emission of criteria air pollutants or violation of air quality standards. *No impact* would occur. M-HY-6 Actions ~~#5, #6, and #9~~ #6 and #7 would require use of construction equipment and vehicles (but no ground disturbance), and would generate small amounts of exhaust emissions. M-HY-6 Actions ~~#7 and #8~~ #3, #8, and #9 would generate fugitive dust and other criteria air pollutants from construction activities such as grading and excavation, and the use of construction equipment and vehicles. These emissions could be *significant*. However, implementation of M-AQ-2a (BAAQMD Basic Construction Measures) would reduce impacts to *less-than-significant* levels by requiring measures to control dust and reduce idling. Post-construction, these mitigation actions would not emit criteria air pollutants. *No impact* from operations would therefore occur.

The first paragraph on page 5.16-169 of the Draft EIR, discussing Greenhouse Gas (GHG) Emissions, is revised as follows:

Implementation of M-HY-6 Actions ~~#1 through #4~~ #1, #2, #4, and #5 would not require construction, and therefore would not generate greenhouse gases. *No impact* would occur. M-HY-6 Actions ~~#5, 6, #7, #8, and #9~~ #3, #6, #7, #8, and #9 would generate a small additional amount of GHG emissions through the combustion of fossil fuels in mobile construction equipment and vehicles, and from the purchase of electricity to operate any electrical equipment for Project construction. However, due to the small scale of these mitigation actions, GHG emissions generated during construction would be *less than significant*. Operation of the Actions ~~#5, #6, #7, and #9~~ #3, #6, #7, and #8 would be similar in scope to existing maintenance activities. Action #~~8~~9 would replace an existing well, so maintenance activities would be the same as for the existing well, and would not result in additional GHG emissions. Therefore, operational impacts associated with GHG emissions generated from worker trips and energy use would be *less than significant*.

The third paragraph of the Recreation discussion on page 5.16-169 of the Draft EIR is revised as follows:

> Implementation of M-HY-6 Actions ~~#7, #8, and #9~~ #3, #8, and #9 could result in additional impacts on recreation during construction. If M-HY-6 Action #~~7~~8 is implemented at a golf club, the storage tank would likely be located immediately adjacent to the affected existing irrigation well. If M-HY-6 Action #~~8~~9 is implemented at a golf club, the replacement irrigation well would likely be sited at the outer fringes of playing surfaces or in other non-playing areas, to minimize damage to playing surfaces. Implementation of M-HY-6 Action #~~9~~3 could result in temporary impacts at golf clubs. ~~Placement of aboveground~~ Installation of pipelines could temporarily affect golf cart access between holes and may require golfers using golf carts to take alternative access routes ~~if pipelines cross internal golf club roadways~~; otherwise pipeline placement would not prevent golfers from using the golf club or impact playing surfaces. Therefore, it is unlikely that the placement of the storage tank, irrigation well, or ~~aboveground~~ pipelines would substantially damage or displace existing playing surfaces.

The last paragraph on page 5.16-169 carrying over to page 5.16-170 of the Draft EIR, discussing Recreation, is revised as follows:

> Any golf club playing surfaces damaged during construction would be restored to their general pre-construction condition after construction is completed (pursuant to Chapter 3, Project Description, Section 3.5.1.3 [Construction Methods for Water Distribution and Utility Pipeline Installation], which specifies that areas disturbed during construction would be restored to pre-construction conditions). As stated earlier, it is unlikely that the storage tank or irrigation well would substantially displace existing playing surfaces. ~~Depending on the placement of the pipelines, o~~ Operation of M-HY-6 Action ~~#9~~ #3 ~~may result in temporary and minor disruption of~~ would not disrupt recreational uses at the golf clubs because irrigation pipelines would be buried underground. Implementation of these actions would not result in population growth, and therefore would not increase the use, or require the expansion of existing parks or recreational facilities. Therefore, operational recreation impacts of M-HY-6 Actions ~~#7, #8, and #9~~ #3, #8, and #9 would be *less than significant*.

The three paragraphs under Utilities and Service Systems on page 5.16-170 of the Draft EIR is revised as follows:

> Implementation of M-HY-6 Action ~~#1, #2, #3, #4, #5, #6, and #9~~ #1, #2, #4, #5, #6, and #7 would not require trenching or other ground disturbances that could disrupt or damage existing utilities. These mitigation actions would not require additional water entitlements; generate additional solid waste or additional discharges to sanitary sewer or stormwater systems. *No such impacts* would therefore occur.
>
> Implementation of M-HY-6 Actions ~~#7 and #8~~ #3, 8, and #9 would result in additional potentially *significant* impacts on utilities and service systems by contributing small

additions of solid waste generated during construction and potentially damaging or disrupting utilities during construction. However, as discussed in Section 5.12, Utilities and Service Systems, the Ox Mountain Landfill has a remaining capacity that is sufficient to accommodate the amount of solid waste that would be generated by implementation of M-HY-6 Actions ~~#7 and #8~~ #3, 8, and #9. Additionally, Mitigation Measure M-UT-4 (Waste Management Plan) would require compliance with local solid-waste diversion goals and regulations. Implementation of Mitigation Measures M-UT-1a (Confirm Utility Line Information), M-UT-1b (Safeguard Employees from Potential Accidents Related to Underground Utilities), M-UT-1c (Notify Local Fire Departments), M-UT-1d (Emergency Response Plan), M-UT-1e (Advance Notification), M-UT-1f (Protection of Other Utilities during Construction), M-UT-1g (Ensure Prompt Reconnection of Utilities), M-UT-1h (Avoidance of Utilities Constructed or Modified by Other SFPUC Projects), and M-UT-1i (Coordinate Final Construction Plans with Affected Utilities) would adequately address impacts related to the potential disruption and relocation of utility operations or accidental damage to existing utilities by requiring the SFPUC and/or its contractor(s) to identify the potentially affected lines in advance, coordinate with utility service providers to minimize the risk of damage to existing utility lines, protect lines in place to the extent possible or temporarily re-route lines if necessary, and take special precautions when working near high priority utility lines (e.g., gas transmission lines). Construction impacts on utilities and service systems from M-HY-6 Actions ~~#7 and #8~~ #3, 8, and #9 would therefore be *less than significant with mitigation*. Construction of M-HY-6 Action #~~8~~9 would also discharge to the local sanitary sewer or storm drain system during well development pumping tests. However, as described in Section 5.12, Utilities and Service Systems, the sanitary sewer and storm drain systems in the Project area have sufficient capacity to handle the volume and rate of such discharges during well development.

Operation of M-HY-6 Actions ~~#7 and #8~~ #3, 8, and #9 would not result in impacts on utilities or service systems. A new storage tank or irrigation lines would not result in additional discharges to the storm drain or sanitary sewer system. Since Action #~~8~~9 involves replacing an existing well, no additional discharges to the storm drain or sanitary sewer system would occur.

The two paragraphs comprising the Biological Resources discussion on page 5.16-171 are revised as follows:

Implementation of M-HY-6 Actions ~~#1 through #4, and #9~~ #1, #2, #4, and #5, would occur on existing golf club or cemetery property and would not modify existing habitats or require tree removal. Implementation of M-HY-6 Action ~~#5 or #6~~ #6 or #7 would not impact biological resources, because these actions would not require additional construction activities beyond lowering and/or changing the well pump. No trees would be removed and no surface ground disturbance would occur. Construction equipment and workers would be present, but would avoid any waters of the State or of the United States, wetlands, or sensitive habitat near or adjacent to the construction site, as discussed previously in the mitigation action descriptions. As a result, *no impacts* on biological resources from M-HY-6 Actions ~~#1 through #4, and #9~~ #1, #2, #4, and #5, would occur.

Implementation of M-HY-6 Actions ~~#7 and #8~~ #3, #8, and #9 could result in additional potentially *significant* impacts on biological resources. Storage tanks would likely be located adjacent to existing irrigation wells. Storage tanks, irrigation lines, and replacement irrigation wells would be sited to avoid jurisdictional waters, wetlands, or other sensitive habitat. However, implementation of this mitigation action could potentially require the removal of trees to accommodate placement of a new tank, irrigation well or irrigation lines, depending on where these ~~tank~~ features ~~was~~ would be constructed. Implementation of Mitigation Measures M-BR-1a (Protection Measures during Construction for Special-status Birds and Migratory Passerines and Raptors), M-BR-1b (Protection Measures for Special-status Bats during Tree Removal or Trimming), Mitigation Measure BR-1c (Monarch Butterfly Protection Measures), M-HY-1 (Develop and Implement a Stormwater Pollution Prevention Plan [SWPPP] or an Erosion and Sediment Control Plan), M-BR-4a (Identify Protected Trees), and M-BR-4b (Protected Tree Replacement) would reduce any such potential impacts to l*ess-than-significant* levels. These measures would require pre-construction surveys to determine whether special-status or migratory birds or bats (including their nests and roosts), or overwintering monarch butterflies are present at or near construction sites. These also include measures to protect nearby habitat from construction-related runoff and sedimentation, and require trees to be protected, avoided, and replaced in accordance with local tree protection ordinances if removed. Therefore, impacts on biological resources from M-HY-6 Actions ~~#7 and #8~~ #3, #8, and #9 would be *less than significant with mitigation*.

The three paragraphs under the Geology and Soils discussion on pages 5.16-171 and 5.16-172 are revised as follows:

Implementation of M-HY-6 Actions ~~#1 through #6, and #9~~ #1, #2, #4, #5, #6, and #7 would occur on existing golf club or cemetery property and would not include the construction of new structures that could expose people to seismic ground shaking or landslides. Implementation of Actions ~~#1, #2, #5, #6, and #9~~ #4 through #7 would be similar in nature to existing ongoing maintenance activities; Actions ~~#3 and #4~~ #1 and #2 would not result in physical changes, and therefore would not result in new or increased risk for landslides or other soil or geologic instability risks. As a result, *no impacts* would occur.

M-HY-6 Actions #3 and #7 could potentially place irrigation pipelines or a storage tank in or on unstable soil that could be susceptible to ~~landslides,~~ ground shaking~~,~~ or settlement. A storage tank could also be placed on soils susceptible to landslides. The exposure of ~~this~~ the structure or pipelines to potentially adverse seismic effects that could lead to tank or pipeline failure could be *significant*. However, implementation of Mitigation Measure M-GE-3 (Conduct Site-specific Geotechnical Investigations and Implement Recommendations) would require site-specific geotechnical investigations, and implementation of recommendations to protect against property loss, injury, or death from ground shaking or settlement that could result from the damage of a new water tank and irrigation pipelines and would be reduced to *less-than-significant* levels. Installation and operation of a replacement irrigation well identified in M-HY-6 Action ~~#8~~ #9 would not include construction of structures intended for human occupancy; therefore, there would be no exposure of people or structures to the effects of landslides, ground shaking, or settlement.

Given that any irrigation pipelines, storage tanks~~,~~ or replacement irrigation wells would be located within existing cemeteries or golf clubs (or in the case of irrigation pipelines, connecting to existing distribution systems), which are carefully landscaped and highly disturbed, it is unlikely that implementation of these mitigation actions would substantially change existing topography or unique geologic or physical features. If a replacement well were to be sited on the Holy Cross Cemetery property east of Hillside Boulevard, the well would likely be sited to avoid substantial changes to existing topography or unique geologic or physical features. Such potential impacts would be *less than significant*.

The first two paragraphs under the Hydrology and Water Quality discussion on page 5.16-172 are revised as follows:

Implementation of ~~the~~ M-HY-6 Actions #1, #2, #4, #5, #6, and #~~9~~7 would not include ground-disturbing construction activities and therefore these mitigation actions would not result in erosion or runoff that would impact water quality. Irrigation (Actions #3, #~~1~~4, #~~2~~5~~, and #9~~) would follow standards necessary to reduce runoff to surface waters and percolation to groundwater. If a new well is drilled (Action #~~8~~9), SFPUC would ensure that water quality of the new well is appropriate for irrigation use. Actions #~~5~~6 and #~~6~~7 would modify pumping to allow irrigation pumping to continue at existing levels. Action #~~4~~ 2 would reduce Project pumping and not require any other construction or operational changes. Therefore, there would be *no impacts* on hydrology or water quality from these mitigation actions.

Implementation of M-HY-6 Actions ~~#7 and #8~~ #3, #8 and #9 could require vegetation removal, grading, excavation, and soil stockpiling, which could result in erosion and sedimentation and impact water quality. This would be a *significant* impact. However, implementation of Mitigation Measure M-HY-1 (Develop and Implement a Storm Water Pollution Prevention Plan [SWPPP] or an Erosion and Sediment Control Plan), would reduce such potential impacts to *less-than-significant* levels by requiring stabilization and control measures during ground disturbing activities.

The three paragraphs comprising the Hazards and Hazardous Materials discussion on page 5.16-173 are revised as follows:

Implementation of M-HY-6 Actions ~~#1, #2, and #9~~ #4, and #5 would occur on existing golf club or cemetery property and would be similar in scope to ongoing irrigation activities at these facilities. Implementation of these actions would not involve the transport, use, or disposal of hazardous materials. Actions #~~3 and #4~~ #1 and #2 would not involve construction activities and would also not involve the transport, use, or disposal of hazardous materials. As a result, *no impacts* would occur from M-HY-6 Actions ~~#1 through #4, and #9~~ #1, #2, #4, and #5.

Implementation of M-HY-6 Actions ~~#5, #6, #7, and #8~~ #3, #6, #7, #8, and #9 could require the use of hazardous materials during construction. Impacts related to accidental releases of chemicals (including within proximity to a school) could be *significant*. However, any activities involving the use or transport of hazardous materials would require compliance with applicable hazardous materials laws and regulations. Implementation of Mitigation Measure M-HY-1 (Develop and Implement a Stormwater Pollution Prevention Plan [SWPPP] or an Erosion and Sediment Control Plan) would lessen the potential for impacts to *less than significant with mitigation* related to an accidental release of hazardous materials (including within proximity to a school) by requiring specific practices for the safe storage and handling of chemicals.

M-HY-6 Actions ~~#7 and #8~~ #3, #8, and #9 ~~would not include new structures~~ may include ground disturbance. It is unknown whether implementation of M-HY-6 Actions ~~#7 and #8~~ #3, #8, and #9 would result in the siting of irrigation pipelines, a storage tank~~,~~ or a replacement irrigation well near a hazardous materials site identified on the Cortese List (described in Section 5.17, Hazards and Hazardous Materials). Siting the irrigation pipelines or well near a hazardous materials site could result in the potential to encounter hazardous materials in soil or groundwater, which would be a *significant* hazardous materials impact. However, if these facilities were to be located near a hazardous materials site, implementation of Mitigation Measures M-HZ-2a (Preconstruction Hazardous Materials Assessment), M-HZ-2b (Health and Safety Plan), and M-HZ-2c (Hazardous Materials Management Plan) would reduce the potential hazardous materials impact on the environment to *less-than-significant* levels by requiring a soil investigation to determine the presence of chemical residue, as well as a soil and groundwater management plan to ensure appropriate handling and disposal of excavated material containing hazardous materials. No hazardous materials would be required during operation of M-HY-6 Actions ~~#7 and #8~~ #3, #8, and #9. *No ~~such potential~~ impacts* during operation would ~~therefore~~ occur.

The last two paragraphs under Mineral and Energy Resources on pages 5.16-173 and 5.16-174 are revised as follows:

Implementation of M-HY-6 Actions ~~#1 through #6, and #9~~ #1, #2, #4, #5, #6, and #7 would not change existing land uses or otherwise change the availability of a known mineral resource. Therefore, no such impacts would occur. Implementation of M-HY-6 Actions ~~#1, #2, #5, #6, and #9~~ #3 through #7 could result in a small change in the energy use required by the irrigation systems or wells at the golf clubs and cemeteries. However, any such changes would be negligible in the context of the overall energy use at these facilities, and may actually reduce energy use. As a result, *no impacts* on minerals or energy resources would occur.

Construction of irrigation pipelines (M-HY-6 Action #3), storage tanks (M-HY-6 Action #~~7~~8), or replacement irrigation wells (M-HY-6 Action #~~8~~9) would require the use of fossil fuels. However, given the nature and scale of construction, construction of M-HY-6 Actions ~~#7 or #8~~ #3, #8, or #9 would not require a large amount of fuel or energy usage because of the moderate number of construction vehicles and equipment, worker trips, and truck trips that would be required for a project of this scale. Therefore, construction would not encourage activities that would result in the use of large amounts of fuel and energy. The impact would be *less than significant*. ~~A~~ Irrigation pipelines, a storage tank, or a replacement irrigation well could be sited within the Olympic Golf Club area mapped as MRZ-3. However, implementation of these mitigation actions would not result in the loss of a known or locally important mineral resource because the site is not currently mined, and the placement of an aboveground storage tank, irrigation pipelines or small irrigation well would not preclude future access to this resource or result in a change in this site's resource designation. Impacts on mineral and energy resources from M-HY-6 Actions ~~#7 or #8~~ #3, #8, or #9 would therefore be *less than significant ~~with mitigation~~*.

The second and third paragraphs under Agriculture and Forest Resources on page 5.16-174 are revised as follows:

M-HY-6 Actions ~~#1 through #6, and #9~~ #1, #2, #4, #5, #6, and #7 do not involve changes to existing zoning, land use, or other construction that would result in the loss of important farmland or forest land. As a result, *no impacts* on agriculture or forest resources from these mitigation actions would occur.

M-HY-6 Actions ~~#7 or #8~~ #3, #8, or #9 would be implemented on existing golf club and/or cemetery property or adjacent to such property. If irrigation pipelines, a storage tank or replacement irrigation well were constructed in the Holy Cross cemetery area mapped as Unique Farmland or other mapped farmland, land actively used for agriculture would likely be avoided to the extent feasible, but a small portion of land mapped as Unique Farmland or Grazing Land could be displaced. However, the area of impact would be small and would not result in a conversion of land designated as Unique Farmland or Grazing Land to non-agricultural use, given that the overall land use would not change as a result of these mitigation actions. The land is not under a Williamson Act contract, and the implementation of M-HY-6 Actions ~~#7 or #8~~ #3, #8, or #9 would not preclude continued and future use for agriculture, or involve other changes that could result in the conversion of agriculture land to some other use given that this is an irrigation supply action. Therefore, impacts on agriculture resources would be *less than significant*.

Other Required Changes

Below are additional revisions to the Draft EIR that are required to reflect changes to Impact HY-6 and Impact C-HY-2 significance determinations, and the text and title of Mitigation Measure M-HY-6 (Ensure Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation). The revisions are presented in the order in which they appear in the Draft EIR.

Chapter 1, Executive Summary

Table 1-1 (Summary of Impacts and Mitigation Measures) on pages 1-26 and 1-27 of the Draft EIR is revised as follows:

TABLE 1-1
Summary of Impacts and Mitigation Measures

Impact	**Level of Significance Prior to Mitigation**	**Mitigation Measure(s)**	**Level of Significance After Mitigation**
Impact HY-6. Project operation would decrease the production rate of existing nearby irrigation wells due to localized groundwater drawdown within the Westside Groundwater Basin such that existing or planned land use(s) may not be fully supported.	S	**M-HY-6: Ensure ~~Existing~~ Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use(s) Due to Project Operation.** Refer to the discussion of Impact HY-6 in Section 5.16, Hydrology and Water Quality.	~~SUM~~ LSM
Impact C-HY-2. Operation of the proposed Project would result in a cumulatively considerable contribution to cumulative impacts related to well interference.	S	**M-HY-6: Ensure ~~Existing~~ Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use(s) Due to Project Operation.** Refer to the discussion of Impact ~~HY-6~~ C-HY-2 in Section 5.16, Hydrology and Water Quality.	~~SUM~~ LSM

The third paragraph on page 1-33 of the Draft EIR in Section 1.6 (Alternatives to the Proposed Project) is revised as follows to reflect changes to the well interference significance determination. The conclusions of the Draft EIR regarding the environmentally superior alternative have not changed, however the number of significant and unavoidable impacts would decrease. The same revisions are made in response to Comment AL-2. All of the changes to the Draft EIR are presented in Section 9.5, Draft EIR Revisions.

> None of the alternatives would reduce all the significant and unavoidable impacts of the proposed Project. Alternatives 2A, 2B, 3A, and 3B would cause significant and unavoidable impacts related to construction at one or two fewer sites than the Project; however, significant and unavoidable construction-period impacts would still occur at up to eight other facility sites, as they would under the proposed Project. In addition, such impacts, although significant and unavoidable, would be temporary and would only last through the 16-month construction period. Alternatives 3A and 3B would cause significant ~~and potentially unavoidable~~ well interference impacts during operation at one or two fewer existing irrigation wells than the Project; however, significant ~~and unavoidable~~ but mitigable well interference impacts would still occur at 11 or 12 existing irrigation wells, as they would under the proposed Project. Alternative 3A would cause slightly greater impacts to Lake Merced. The No Project Alternative would not cause significant and unavoidable construction impacts (since no construction would occur), but water levels at Lake Merced would continue to fluctuate as they do now under varying hydrologic conditions, and during a drought as severe as the design drought, lake levels would decline to a level that could have adverse water quality effects at Lake Merced.

Section 5.16, Hydrology and Water Quality

Table 5.16-7 (Summary of Hydrology and Water Quality Operational and Cumulative Impacts relative to Proposed Project Pumping and In-lieu Recharge) in Section 5.16.3.4 (Summary of Impacts), on page 5.16-61, is revised as follows to reflect changes to the well interference significance determination:

TABLE 5.16-7
Summary of Hydrology and Water Quality Operational and Cumulative Impacts relative to Proposed Project Pumping and In-lieu Recharge

Impact	Significance Level
Project Operational Impacts	
Impact HY-6: Project operation would decrease the production rate of existing nearby irrigation wells due to localized groundwater drawdown within the Westside Groundwater Basin such that existing or planned land use(s) may not be fully supported.	~~SUM[(a)]~~ LSM
Operational Cumulative Impacts	
Impact C-HY-2: Operation of the proposed Project would result in a cumulatively considerable contribution to cumulative impacts related to well interference.	~~SUM[(a)]~~ LSM

~~Notes:~~

~~(a) Implementation of Mitigation Measure M-HY-6 (Ensure Existing Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use Due to Project Operation) depends in part upon the willingness of the well owner to participate in the monitoring program. Therefore, while Mitigation Measure M-HY-6 could reduce the impacts of well interference to a *less-than-significant* level, its implementation cannot be assured at this time. As a result, Impact HY-6 is conservatively categorized as *significant and unavoidable with mitigation*.~~

LS = Less than Significant Impact, LSM = Less than Significant with Mitigation~~, SUM=Significant and Unavoidable Impacts~~

Impact statement HY-6 on page 5.16-73 of the Draft EIR is revised as follows:

5.16.3.7 Operation Impacts and Mitigation Measures – Groundwater

Impact HY-6: Project operation would decrease the production rate of existing nearby irrigation wells due to localized groundwater drawdown within the Westside Groundwater Basin such that existing or planned land use(s) may not be fully supported. (Less than Significant ~~and Unavoidable~~ with Mitigation)

The title of Mitigation Measure M-HY-6 (Ensure Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation) on page 5.16-162 of the Draft EIR is revised as follows:

Well Interference

This section provides an evaluation of whether there would be any significant impacts in addition to those identified for the Project due to implementation of Mitigation Measure M-HY-6 (Ensure ~~Existing~~ Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation).

Chapter 6, Other CEQA Issues

Section 6.2 (Summary of Cumulative Impacts) on pages 6-7 and 6-8 of the Draft EIR, including Table 6-1 (Summary of Significant Cumulative Impacts), is revised as follows to reflect changes to the well interference significance determination:

Table 6-1 (Summary of Significant Cumulative Impacts), provides a summary of the cumulative impacts associated with the GSR Project that are significant. All significant cumulative impacts could be reduced to less-than-significant levels with implementation of mitigation measures identified in Chapter 5, Environmental Setting, Impacts, and Mitigation Measures, except for unavoidable noise~~, and well interference~~ impacts. See Chapter 5 for a detailed discussion of cumulative impacts by resource topic, and where appropriate, a description of mitigation measures that would avoid or lessen the cumulative impacts.

TABLE 6-1
Summary of Significant Cumulative Impacts

Impact	Significance Determination
Impact C-HY-2: Operation of the proposed Project would result in a cumulative considerable contribution to cumulative impacts related to well interference.	~~SUM~~ LSM

The first paragraph in Section 6.3.1 (Significant and Unavoidable Effects of the Proposed Project) on page 6-9 of the Draft EIR is revised as follows to reflect changes to the well interference significance determination:

> This section identifies Project impacts that, even with the implementation of all identified mitigation measures, would remain significant and are, therefore, considered *unavoidable*. All GSR Project impacts would either be less than significant or reduced to less-than-significant levels with implementation of the identified mitigation measures except for unavoidable land use, aesthetics, ~~well interference,~~ and noise impacts. The analysis presented in Chapter 5, Environmental Setting, Impacts, and Mitigation Measures, of this EIR concludes that implementation of the proposed Project would result in ~~four~~ three significant and unavoidable impacts:

The fourth bullet under Section 6.3.1 (Significant and Unavoidable Effects of the Proposed Project) on pages 6-9 and 6-10 of the Draft EIR is deleted because Impacts HY-6 and C-HY-2 are no longer significant and unavoidable:

> - ~~Operation of the project would decrease the production rate of existing wells due to localized groundwater drawdown within the Westside Groundwater Basin such that existing or planned land uses may not be fully supported. Mitigation could reduce impacts to less than significant. However, feasibility of mitigation would vary depending on the willingness of the well owner to allow the SFPUC to implement mitigation, which would have to take place on the property of existing irrigators. Because such assurance has not yet been provided, the impact is considered significant and potentially unavoidable (see Section 5.16, Hydrology and Water Quality, Impacts HY-7 and C-HY-2).~~

Chapter 7, Alternatives

The third paragraph on page 7-6 of the Draft EIR, discussing operation-related impacts, is revised as follows to reflect changes to the well interference significance determination. The same revisions are made in response to Comment AL-2. All of the changes to the Draft EIR are presented in Section 9.5, Draft EIR Revisions.

> ***Operation-related Impacts:*** ~~With the exception of hydrology and land use impacts during project operations,~~ ~~a~~All operational-related impacts were determined to be *less*

> *than significant* (LS) or *less than significant with mitigation* (LSM). ~~Potential impacts resulting from well interference during Project pumping were determined to be significant and potentially unavoidable because implementation of the identified mitigation would not be totally within the control of the SFPUC, and project operations could adversely impact existing irrigation wells in areas near GSR Project wells. Mitigation measures identified would effectively reduce impacts to existing irrigation wells to a less-than-significant level; however, since the successful implementation of the identified mitigation measure at all affected existing irrigation wells cannot be certain at this time (as it would depend on cooperation from existing irrigation well owners), the mitigation may not reduce all impacts to less-than-significant levels at all locations. Therefore, the potential impacts of well interference were determined to be significant and potentially unavoidable even with all feasible mitigation applied (see Impact HY-6 in Section 5.16, Hydrology and Water Quality). All other significant impacts related to Project operations were determined to be *less than significant with mitigation* (LSM).~~

The discussion of the No Project Alternative on page 7-13 of the Draft EIR is revised as follows to reflect changes to the well interference significance determination:

> The No Project Alternative would avoid all of the construction impacts identified for the GSR Project. The No Project alternative would eliminate the need for construction activities at the GSR facility sites, thereby avoiding all construction impacts identified for the proposed Project, including the significant and unavoidable impacts associated with noise, land use, and aesthetics~~, and hydrology~~, which, in some instances, may be at least partially reduced by mitigation where feasible (in other instances, feasible mitigations may not exist for reducing some of the impacts identified) (See Section 7.3.2 [Impacts of the Proposed Project]).

The discussion of Alternative 2A on page 7-16 of the Draft EIR, second paragraph, is revised as follows to reflect changes to the well interference significance determination. The same revisions are made in response to Comment AL-2. All of the changes to the Draft EIR are presented in Section 9.5, Draft EIR Revisions.

> Mitigation Measure M-HY-6 (Ensure ~~Existing~~ Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation) would reduce the impacts of well interference to *less-than–significant* levels. ~~, except that the implementation of the mitigation measure cannot be assured until the existing irrigation well owners have agreed to allow the mitigation to take place on their property, thereby potentially resulting in a *significant and unavoidable impact with mitigation*.~~ Refer to the discussion of Impact HY-6 in Section 5.16, Hydrology and Water Quality, Section 5.16.3.7 (Operation Impacts and Mitigation Measures – Groundwater) where this impact analysis is presented in greater detail.

The discussion of Alternative 2A in the first paragraph on page 7-19 is revised as follows to reflect changes to the well interference significance determination:

> As a result, well interference impacts would be <u>less than</u> *significant* ~~*and potentially unavoidable*~~ *with mitigation* for both the alternative and the Project, although well interference impacts at some existing wells would be greater under Alternative 2A than the Project.

The discussion of Alternative 2B in the third paragraph on page 7-23 is revised as follows to reflect changes to the well interference significance determination:

> ~~However, t~~ <u>T</u>his alternative, <u>with mitigation,</u> would have <u>less than</u> *significant* ~~*and potentially unavoidable*~~ well interference impacts, which would be the same level of significance for this impact as with the proposed Project.

The discussion of Alternative 3A on page 7-27 is revised as follows to reflect changes to the well interference significance determination. The same revisions are made in response to Comment AL-2. All of the changes to the Draft EIR are presented in Section 9.5, Draft EIR Revisions.

> However, implementation of Mitigation Measure M-HY-6 would reduce these impacts of well interference to *less-than-significant* levels, by either increasing irrigation efficiency, modifying irrigation operations, or undertaking other actions detailed in Mitigation Measure M-HY-6 (Ensure ~~Existing~~ Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use<u>[s]</u> Due to Project Operation). ~~Nevertheless, the implementation of this mitigation measure cannot be assured at this time, until the existing irrigation well owners have agreed to allow the mitigation to take place on their property and, therefore, the impact is determined to be~~ ~~*significant and potentially unavoidable with mitigation*.~~

Table 7-2 (Environmental Impacts of the CEQA Alternatives as Compared to the Proposed Project) on pages 7-49 and 7-51 is revised as follows to reflect changes to the well interference significance determination. The same revisions are made in response to Comment AL-2. All of the changes to the Draft EIR are presented in Section 9.5, Draft EIR Revisions.

TABLE 7-2
Environmental Impacts of the CEQA Alternatives as Compared to the Proposed Project

Impact	Proposed Project	Alternative 1: No Project	Alternative 2A: Reduce Lake Merced Impacts and Maintain Project Yield	Alternative 2B: Reduce Lake Merced Impacts and Reduce Project Yield	Alternative 3A: Reduce Impacts on Colma-area Existing Irrigation Wells and Maintain Project Yield	Alternative 3B: Reduce Impacts on Colma-area Existing Irrigation Wells and Reduce Project Yield
Impact HY-6. Project operation would decrease the production rate of existing nearby irrigation wells due to localized groundwater drawdown within the Westside Groundwater Basin such that existing or planned land use(s) may not be fully supported.	**Less than Significant ~~and Potentially Unavoidable~~ with Mitigation (~~SUM~~ LSM)** Operation of the Project would cause significant well interference at 13 existing irrigation wells. Mitigation Measure M-HY-6 would reduce impacts to less-than–significant levels~~, except that the certainty of the mitigation measure cannot be assured until the existing irrigation well owners have agreed to allow the mitigation to take place on their property; thus, this impact is conservatively deemed significant and potentially unavoidable with mitigation~~.	**Similar but slightly less than the proposed Project (SU)** During a drought equivalent to the design drought, groundwater levels would decline to a point such that the production rate of existing wells may not fully support existing or planned land uses.	**Similar but slightly greater than the proposed Project (~~SUM~~ LSM)** Alternative 2A would decrease well interference at five existing irrigation wells and increase well interference at 12 existing irrigation wells. The level of significance for well interference at existing irrigation wells would not change compared to the Project. Mitigation Measure M-HY-6 would reduce impacts to less-than-significant levels~~, except that the certainty of the mitigation measure cannot be assured until the existing irrigation well owners have agreed to allow the mitigation to take place on their property; thus, this impact is conservatively deemed significant and potentially unavoidable with mitigation~~.	**Similar but slightly less than the proposed Project (~~SUM~~ LSM)** Alternative 2B would decrease well interference at five existing irrigation wells, but the level of significance for well interference at existing irrigation wells would not change compared to the Project. Mitigation Measure M-HY-6 would reduce impacts to less-than-significant levels~~, except that the certainty of the mitigation measure cannot be assured until the existing irrigation well owners have agreed to allow the mitigation to take place on their property; thus, this impact is conservatively deemed significant and potentially unavoidable with mitigation~~.	**Similar but slightly less than the proposed Project (~~SUM~~ LSM)** Alternative 3A would decrease well interference at 10 existing irrigation wells and increase well interference at seven existing irrigation wells. The level of significance for well interference at existing irrigation wells would not change compared to the Project, except that significant impacts would not occur at the Home of Peace Cemetery well. Mitigation Measure M-HY-6 would reduce impacts to less-than-significant levels~~, except that the certainty of the mitigation measure cannot be assured until the existing irrigation well owners have agreed to allow the mitigation to take place on their property; thus, this impact is conservatively deemed significant and potentially unavoidable with mitigation~~.	**Similar but slightly less than the proposed Project (~~SUM~~ LSM)** Alternative 3B would decrease well interference at five existing irrigation wells. The level of significance for well interference at existing irrigation wells would not change compared to the Project, except that significant impacts would not occur at the Home of Peace Cemetery well and the Holy Cross Cemetery well #1. Mitigation Measure M-HY-6 would reduce impacts to less-than–significant levels~~, except that the certainty of the mitigation measure cannot be assured until the existing irrigation well owners have agreed to allow the mitigation to take place on their property; thus, this impact is conservatively deemed significant and potentially unavoidable with mitigation~~.

TABLE 7-2
Environmental Impacts of the CEQA Alternatives as Compared to the Proposed Project

Impact	Proposed Project	Alternative 1: No Project	Alternative 2A: Reduce Lake Merced Impacts and Maintain Project Yield	Alternative 2B: Reduce Lake Merced Impacts and Reduce Project Yield	Alternative 3A: Reduce Impacts on Colma-area Existing Irrigation Wells and Maintain Project Yield	Alternative 3B: Reduce Impacts on Colma-area Existing Irrigation Wells and Reduce Project Yield
Impact C-HY-2. Operation of the proposed Project would result in a cumulatively considerable contribution to cumulative impacts related to well interference.	**Less than Significant ~~and Unavoidable~~ with Mitigation (~~SUM~~ LSM)** Operation of the Project under the cumulative scenario would cause significant well interference at 13 existing irrigation wells. Mitigation Measure M-HY-6 would reduce impacts to less-than-significant levels~~, except that the certainty of the mitigation measure cannot be assured until the existing irrigation well owners have agreed to allow the mitigation to take place on their property; thus, this impact is conservatively deemed significant and potentially unavoidable with mitigation~~.	**Similar but slightly less than the proposed Project (S~~U~~)** During a drought equivalent to the design drought, groundwater levels would decline to a point such that the production rate of existing wells may not fully support existing or planned land uses.	**Similar but slightly greater than the proposed Project (~~SUM~~ LSM)** Under the cumulative scenario, alternative 2A would decrease well interference at five existing irrigation wells and increase well interference at 12 existing irrigation wells. The level of significance for well interference at existing irrigation wells would not change compared to the Project. Mitigation Measure M-HY-6 would reduce impacts to less-than-significant levels~~, except that the certainty of the mitigation measure cannot be assured until the existing irrigation well owners have agreed to allow the mitigation to take place on their property; thus, this impact is conservatively deemed significant and potentially unavoidable with mitigation~~.	**Similar but slightly less than the proposed Project (~~SUM~~ LSM)** Under the cumulative scenario, alternative 2B would decrease well interference at five existing irrigation wells, but the level of significance for well interference at existing irrigation wells would not change compared to the Project. Mitigation Measure M-HY-6 would reduce impacts to less-than-significant levels~~, except that the certainty of the mitigation measure cannot be assured until the existing irrigation well owners have agreed to allow the mitigation to take place on their property; thus, this impact is conservatively deemed significant and potentially unavoidable with mitigation~~.	**Similar but slightly less than the proposed Project (~~SUM~~ LSM)** Under the cumulative scenario, alternative 3A would decrease well interference at 10 existing irrigation wells and increase well interference at seven existing irrigation wells. The level of significance for well interference at existing irrigation wells would not change compared to the Project, except that significant impacts would not occur at the Home of Peace Cemetery well. Mitigation Measure M-HY-6 would reduce impacts to less-than-significant levels~~, except that the certainty of the mitigation measure cannot be assured until the existing irrigation well owners have agreed to allow the mitigation to take place on their property; thus, this impact is conservatively deemed significant and potentially unavoidable with mitigation~~.	**Similar but slightly less than the proposed Project (~~SUM~~ LSM)** Under the cumulative scenario, alternative 3B would decrease well interference at five existing irrigation wells. The level of significance for well interference at existing irrigation wells would not change compared to the Project, except that significant impacts would not occur at the Home of Peace Cemetery well and the Holy Cross Cemetery well #1. Mitigation Measure M-HY-6 would reduce impacts to less-than–significant levels~~, except that the certainty of the mitigation measure cannot be assured until the existing irrigation well owners have agreed to allow the mitigation to take place on their property; thus, this impact is conservatively deemed significant and potentially unavoidable with mitigation~~.

The second paragraph in Section 7.5 (Environmentally Superior Alternative) on page 7-55 of the Draft EIR is revised as follows to reflect changes to the well interference significance determination. See also Response AL-2 regarding selection of a different alternative as the Environmentally Superior Alternative, and additional textual changes to the Draft EIR. All of the revisions to Draft EIR Section 7, Alternatives, are presented in Section 9.5, Draft EIR Revisions, of this Responses to Comments document.

> Operation of the proposed Project would cause significant ~~and potentially unavoidable~~ well interference impacts from pumping during take years at up to 13 existing irrigation wells. Mitigation would reduce these impacts to less than significant~~, except that the implementation of the mitigation measure cannot be assured until the existing irrigation well owners have agreed to allow the mitigation to take place on their property; for this reason, the impact is deemed to be significant and potentially unavoidable with mitigation~~ (see Impact HY-6 in Section 5.16, Hydrology and Water Quality). All other operational impacts would either have no impact, would be less than significant, or would be less than significant with implementation of mitigation measures. The proposed Project would achieve all of the Project objectives.

The first paragraph on page 7-56 of the Draft EIR, the discussion of Alternative 2A is revised as follows to reflect changes to the well interference significance determination:

> Mitigation would reduce the well interference impacts to less-than-significant levels in all cases~~, except that the implementation of the mitigation measure cannot be assured until the existing irrigation well owners have agreed to allow the mitigation to take place on their property; for this reason, the impact is deemed to be significant and potentially unavoidable with mitigation~~.

The second paragraph on page 7-57 of the Draft EIR, the discussion of Alternative 3A is revised as follows to reflect changes to the well interference significance determination:

> Mitigation would reduce the significant well interference impacts to less-than-significant levels~~, except that the implementation of the mitigation measure cannot be assured until the existing irrigation well owners have agreed to allow the mitigation to take place on their property; for this reason, the impact has been deemed significant and potentially unavoidable with mitigation~~.

The first paragraph on page 7-58 of the Draft EIR, the discussion of Alternative 3B, is revised as follows to reflect changes to the well interference significance determination:

> Mitigation would reduce the significant well interference impacts to less-than-significant levels~~, except that the implementation of the mitigation measure cannot be assured until the existing irrigation well owners have agreed to allow the mitigation to take place on their property; for this reason, the impact has been deemed significant and potentially unavoidable with mitigation~~.

The last two paragraphs on page 7-58, continuing to page 7-59, of the Draft EIR related to discussion of all of the potential alternatives is revised to reflect changes to the well interference significance determination. The same revisions are made in response to Comment AL-2. All of the changes to the Draft EIR are presented in Section 9.5, Draft EIR Revisions.

> Alternatives 3A and 3B would cause significant ~~and potentially unavoidable~~ well interference impacts during operation at one or two fewer existing irrigation wells than the Project; however, significant ~~and potentially unavoidable~~ but mitigable well interference impacts would still occur at 11 or 12 existing irrigation wells, as they would under the proposed Project. The No Project Alternative would not cause significant and unavoidable construction impacts (since no construction would occur), but water levels at Lake Merced would continue to fluctuate as they do now under varying hydrologic conditions, and during a drought as severe as the design drought, lake levels would decline to a level that could have adverse water quality effects at Lake Merced. ~~Because permanent operational impacts are considered more severe than temporary construction-period impacts, Alternative 3B (Reduce Impacts on Colma-area Existing Irrigation Wells and Reduce Yield) is the environmentally superior alternative, in that it would have significant and potentially unavoidable well interference impacts at fewer sites than the proposed Project or Alternatives 2A, 2B, or 3A~~. ~~3B (Reduce Impacts on Colma-area Existing Irrigation Wells and Reduce Yield) is therefore identified as the environmentally superior alternative, although, while it would meet most, it would not fully meet all of the Project objectives or WSIP goals.~~
>
> Alternative 2B is the environmentally superior alternative because it would reduce the severity of well interference impacts as compared to the proposed Project and Alternatives 2A and 3A, and it would have fewer sites with significant and unavoidable construction-period noise and land use impacts than Alternatives 3A and 3B. Alternative 2B (Reduce Lake Merced Impacts and Reduce Project Yield) is therefore identified as the environmentally superior alternative, although, while it would meet most, it would not fully meet all of the Project objectives or WSIP goals. In particular, Alternative 2B would not provide the full 7.2-mgd dry-year and emergency pumping capacity needed to meet Project objectives.

Appendix C, Summary of Impacts Table

Appendix C is revised on pages C-6 through C-8 to reflect changes to the significance determination of Impact HY-6 and Impact C-HY-2, as well as revisions to the Impacts of Mitigation Measures discussion. The "—" indicates that no changes were made to the table cell.

Appendix C

Summary of Impacts and Mitigation Measures for the Groundwater Storage and Recovery Project

Impact Statement	**All Sites**	**Mitigation**
Impact HY-6. Project operations would decrease the production rate of existing nearby irrigation wells due to localized groundwater drawdown within the Westside Groundwater Basin such that existing or planned land use(s) may not be fully supported.	~~SUM~~ LSM	M-HY-6: Ensure ~~Existing~~ Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use(s) Due to Project Operation
M-HY-6. Mitigation Action #~~1~~ 4: Improve Irrigation Efficiency, and Mitigation Action #~~2~~ 5: Modify Irrigation Operations	--	None required--
M-HY-6. Mitigation Action #~~3~~ 1: Redistribute GSR Pumping		--
M-HY-6. Mitigation Action #~~4~~ 2: Reduce GSR Pumping		--
M-HY-6. Mitigation Action #~~5~~ 6: Lower Pump in Irrigation Well and Mitigation Action #~~6~~ 7: Lower and Change Pump in Irrigation Well	--	
M-HY-6. Mitigation Action #~~7~~ 8: Add Storage Capacity for Irrigation Supply	LSM = Land Use, Aesthetics, Cultural and Paleontological Resources, Noise and Vibration Air Quality, Utilities and Service Systems, Biological Resources, Geology and Soils, Hydrology and Water Quality, Hazards and Hazardous Materials	M-HZ-2c: Hazardous Materials Management Plan (All Sites)

Appendix C

Summary of Impacts and Mitigation Measures for the Groundwater Storage and Recovery Project

Impact Statement	All Sites	Mitigation
M-HY-6. Mitigation Action #~~8~~ 9: Replace Irrigation Well	SUM = Noise and Vibration	M-HZ-2c: Hazardous Materials Management Plan (All Sites)
M-HY-6. Mitigation Action ~~9~~ 3: Replace Irrigation Water Source	NI = Population and Housing~~, Cultural and Paleontological Resources,~~ Wind and Shadow, ~~Utilities and Service Systems,~~ Public Services, ~~Biological Resources, Geology and Soils, Hydrology and Water Quality, Hazards and Hazardous Materials, Mineral and Energy Resources, Agriculture and Forest Resources~~ LS = ~~Land Use, Transportation and Circulation, Noise and Vibration,~~ Greenhouse Gas Emissions, Recreation, Mineral and Energy Resources, Agriculture and Forest Resources LSM = Land Use, Aesthetics, Cultural and Paleontological Resources, Transportation and Circulation, Noise and Vibration, Air Quality, Utilities and Service Systems, Biological Resources, Geology and Soils, Hydrology and Water Quality, Hazards and Hazardous Materials	M-CR-2: Discovery of Archaeological Resources (All Sites except Westlake Pump Station) M-CR-3: Suspend Construction Work if a Paleontological Resource is Identified (All Sites Except Site 9 and Westlake Pump Station) M-CR-4: Accidental Discovery of Human Remains (All Sites Except Westlake Pump Station) M-TR-1: Traffic Control Plan (Sites 2, 4, 5, 6, 7, 10, 12, 13, 14, 15, 17 [Alternate], 18 [Alternate], and 19 [Alternate]) M-NO-1: Noise Control Plan (1, 3, 4, 5, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17 [Alternate], 18 [Alternate], and 19 [Alternate]) M-NO-2: Reduce Vibration Levels during Construction of Pipelines (Sites 3, 4, 12, 15, and 18 [Alternate])

Appendix C

Summary of Impacts and Mitigation Measures for the Groundwater Storage and Recovery Project

Impact Statement	**All Sites**	**Mitigation**
		M-UT-1a: Confirm Utility Line Information (All Sites) M-UT-1b: Safeguard Employees from Potential Accidents Related to Underground Utilities (All Sites) M-UT-1c: Notify Local Fire Departments (All Sites) M-UT-1d: Emergency Response Plan (All Sites) M-UT-1e: Advance Notification (All Sites) M-UT-1f: Protection of Other Utilities during Construction (All Sites) M-UT-1g: Ensure Prompt Reconnection of Utilities (All Sites) M-UT-1h: Avoidance of Utilities Constructed or Modified by Other SFPUC Projects (All Sites) M-UT-1i: Coordinate Final Construction Plans with Affected Utilities (All Sites)

Appendix C

Summary of Impacts and Mitigation Measures for the Groundwater Storage and Recovery Project

Impact Statement	All Sites	Mitigation
		<u>M-UT-4: Waste Management Plan (All Sites)</u> <u>M-BR-1a: Protection Measures during Construction for Special-status Birds and Migratory Passerines and Raptors (All Sites)</u> <u>M-BR-1b: Protection Measures for Special-status Bats during Tree Removal or Trimming (Sites 1, 3, 4, 7, 10, 11, 12, 15, and 16)</u> <u>M-BR-1d: Monarch Butterfly Protection Measures (Sites 1, 3, 7, 10, and 12)</u> <u>M-BR-4a: Identify Protected Trees (Sites 3, 4, 7, 10, 11, 12, 13, 14, 15, and 17 [Alternate])</u> <u>M-BR-4b: Protected Tree Replacement (Sites 4, 7, 9, 12, 15, and 18 [Alternate])</u> <u>M-GE-3: Conduct Site-Specific Geotechnical Investigations and Implement Recommendations (All Sites)</u> <u>M-HY-1: Develop and Implement a Stormwater Pollution Prevention Plan (SWPPP) or an Erosion and Sediment Control Plan (All Sites)</u>

Appendix C

Summary of Impacts and Mitigation Measures for the Groundwater Storage and Recovery Project

Impact Statement	**All Sites**	**Mitigation**
		M-HZ-2a: Preconstruction Hazardous Materials Assessment (All Sites) M-HZ 2b: Health and Safety Plan (All Sites) M-HZ-2c: Hazardous Materials Management Plan (All Sites)
Impact C-HY-2. Operation of the proposed Project would result in a cumulatively considerable contribution to cumulative impacts related to well interference.	~~SUM~~ LSM	M-HY-6: Ensure Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use(s) Due to Project Operation

Appendix D, WSIP PEIR Water Supply Impact and Mitigation and Consistency Analysis

Appendix D, Table D-2 (WSIP PEIR Impacts Consistency), on page D-45 of the Draft EIR is also revised to reflect changes to the well interference significance determination:

TABLE D-2
WSIP PEIR Impacts Consistency

PEIR Impact	PEIR Significance Determination for San Francisco Region Groundwater Project SF-2	GSR Project-level Significance Determination	Same Rationale for Significance Determination as PEIR? (Y/N)	Notes: (Explain difference in significance determinations and/or rationale for determinations)
Impact 5.7.5-2: Cumulative impacts on the South Westside Groundwater Basin.	LS	~~SUM~~ LSM	N	See Impacts C-HY-2, C-HY-3, C-HY-4, C-HY-5, C-HY-6, C-HY-7, and C-HY-8. The PEIR determined that implementation of the proposed conjunctive-use program should result in higher average groundwater levels in the northern portion of the South Westside Groundwater Basin as a result of the coordinated use of surface water and groundwater. The PEIR determined that implementation of the operating agreement(s) would ensure that impacts related to basin overdraft, saltwater intrusion, and land subsidence would be less than significant, and that because there are no other planned future uses of groundwater in this portion of the basin, cumulative groundwater impacts would be less than significant. The project-level analysis determined implementation of Mitigation Measure M-HY-6 (Ensure ~~Existing~~ Irrigator's Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation) would reduce the GSR Project's contribution to cumulative impacts on well interference and the Project would not have a considerable contribution to the cumulative impact relative to well interference. ~~However, because the feasibility of the mitigation measure cannot be assured until the existing irrigation well owners have agreed to allow mitigation to take place on their property, the Project's impact is conservatively deemed to be cumulatively considerable.~~ Implementation of Mitigation Measure M-HY-14 (Prevent Groundwater Depletion) would reduce the Project's impact on long-term depletion of groundwater storage to less-than-cumulatively considerable levels in the South Westside Groundwater Basin. The Project-level analysis determined that the Project would not have a considerable contribution to the cumulative impact relative to seawater intrusion or subsidence in the South Westside Groundwater Basin.

Detailed Responses to Specific Comments

A commenter asked if the groundwater model would be used to understand potential well interference impacts under the Irrigation Well Monitoring and Reporting Program and what the expected frequency is for model recalibration. The Irrigation Well Monitoring and Reporting Program would use actual measured changes in groundwater levels to determine if the well interference Performance Standard is being met. The groundwater model would not be used for determining well interference impacts. No specific interval has been established for updating the groundwater model; however, the groundwater model is expected to be updated periodically as new information becomes available.

One commenter expressed concern about the need for a steady source of water for its fine fescue grasses and avoiding changes in nitrate levels. Mitigation Measure M-HY-6, as revised, will assure no loss of water. See Response HY-34 for information regarding nitrate levels in irrigation water. The importance of irrigation water for cemeteries and golf clubs is acknowledged. The improvements made by California Golf Club to reduce irrigation water use are acknowledged.

Comments expressed concern that some specific mitigation actions, such as improvements to irrigation efficiency, would not address potential effects of the Project at their facility and that the magnitude of the impact would not be mitigated by any of the proposed mitigation actions. The EIR recognizes that some mitigation actions would only be effective if impacts on well capacity were small (see Draft EIR pages 5.16-93 and 094). For facilities where more substantial reductions in capacity are expected, more substantial measures would need to be implemented and in all cases, mitigation action #9 (replace irrigation well) would be effective as a permanent solution if other mitigation actions of a less substantial nature were not. Mitigation Measure M-HY-6, as revised, also expressly identifies mitigation actions #1, #2, and #3 as measures that are effective to avoid impacts and would be implemented until more permanent mitigation is implemented.

A commenter expressed concern regarding temporary above-ground pipelines to deliver replacement water. The mitigation action to provide replacement water is revised and underground pipelines would be installed to deliver replacement water.

A commenter questioned whether the mitigation measures identified in the Draft EIR have been incorporated into the Project and whether they would be funded by the SFPUC. The mitigation measures for the Project would all be incorporated into a Mitigation Monitoring and Reporting Program (MMRP) as required under CEQA. The MMRP would be adopted by the SFPUC, and the SFPUC, if it approves the Project, would be required to fund and implement the measures in the MMRP.

Many comments stated that the well interference impact conclusion should be revised to less-than-significant with mitigation. This revision was made and the explanation for it is provided above.

Some comments requested a more defined process for determining the circumstances under which the Project is causing a significant well interference impact and a process for challenging a determination. The mitigation measure is revised to include a more detailed process for determining causation and a more detailed process for challenging a determination.

A commenter requested a clear roadmap of mitigation measures to address significant impacts once trigger mechanisms are observed. The mitigation measure was restructured to identify how and when mitigation actions would be implemented.

A commenter asked whether effects from multiple wells were taken into account and why groundwater levels are predicted to be so low if only "booked" water is withdrawn. The analysis of well interference in the Draft EIR included potential effects from multiple Project wells as listed in Draft EIR Table 5.16-11 (Estimated Static and Pumping Depth to Water Levels at the End of the Design Drought) on pages 5.16-85 and 5.16-86. Impact HY-6 on pages 5.16-73 through 5.16-100 of the Draft EIR presents the evaluation of the well interference impact. The analysis of groundwater levels is conservative, and the groundwater levels predicted as a result of the Project in the Draft EIR may be lower than what is actually experienced, because the Westside Basin Groundwater Model assumes less rainfall (i.e., a more severe drought) will occur in the future than indicated by past rainfall records. One reason the groundwater levels are predicted to be reduced to the degree identified in the Draft EIR during Project operations is a result of Project pumping that would potentially cause localized cones of depression in areas near the Project wells. Also see Response PD-16 for more information about Project effects on groundwater levels. Response PD-16 explains why groundwater pumping creates a "cone of depression" in the vicinity of the individual well, which results in localized groundwater levels that are lower than those in the other parts of the South Westside Groundwater Basin.

A commenter is concerned about groundwater levels declining below well screens and damaging the well. The Performance Standard for Mitigation Measure M-HY-6 (Ensure Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation) is revised to require that the irrigators' wells are not damaged due to groundwater levels declining below well screens due to the Project. Refer also to Response HY-11. The well interference groundwater impact level would be identified and revised Mitigation Measure M-HY-6 is structured so that wells are not damaged due to Project operations.

A commenter states that the Draft EIR does not provide comparisons of the model predictions for existing conditions to the actual current conditions. This is incorrect. As noted on page 5.1-7 of the Draft EIR:

> "The Westside Basin Groundwater Model Version 3.1, which was used for the analysis in this EIR, was calibrated to observed groundwater conditions within the Basin for a period of 51 years, from October 1958 through September 2009 (HydroFocus 2011). The calibration used available records of historical hydrologic and pumping data, including more than 2,000 observed monthly water levels in 125 wells representing a broad range of locations, depths, and hydrologic conditions. The hydrology used in the calibration relied on actual, measured monthly rainfall and temperature data from various climate stations throughout the Westside Groundwater Basin and included conditions ranging from wet periods to droughts of different magnitude and duration."

A commenter stated that the impact analysis for salt water intrusion, subsidence, well interference, and contaminant redistribution and remobilization are described in general terms and do not include details on monitoring and mitigation. Seawater intrusion impacts are evaluated in detail on pages 5.16-105 through 5.16-113 and 5.16-153 through 5.16-156 of the Draft EIR; in addition refer to Responses HY-22, HY-27, HY-28, HY-29, HY-30, and HY-31 in this Responses to Comments document. No significant seawater intrusion impacts were identified and therefore no mitigation is recommended. Subsidence impacts are evaluated in detail on pages 5.16-100 through 5.16-105 and 5.16-152 to 5.16-153 of the Draft EIR; in addition refer to Responses HY-23, HY-24, HY-25, and HY-26 in this Responses to Comments document. No significant subsidence impacts were identified and therefore no mitigation is recommended. Water quality impacts are evaluated on pages 5.16-113 through 5.16-142 and 5.16-156 through 5.16-161 of the Draft EIR; in addition refer to Responses HY-32, HY-33, HY-34, and HY-35 through HY-41 in this Responses to Comments document. No significant water quality impacts were identified and therefore no mitigation is recommended. Well interference impacts are evaluated in detail on pages 5.16-73 through 5.16-100 and 5.16-149 through 5.16-152 of the Draft EIR; in addition refer to Reponses HY-6 through HY-21 in this Responses to Comments document. A detailed mitigation measure, Mitigation Measure M-HY-6, has been recommended to reduce significant well interference impacts to less than significant, as revised and discussed in this response to comment.

Comments were received on the "Definition of Terms" in Mitigation Measure M-HY-6. The definition of terms is deleted from Mitigation Measure M-HY-6.

Comment HY-16: Comments related to well interference mitigation measure Performance Standards.

This response addresses comments from the commenter listed below; the comments on this topic are quoted in full below this list:

- O-CLMP-Quick

The following comments are quoted from O-CLMP-Quick, Exhibits C and D, which present Cypress Lawn Memorial Park's proposed changes to Mitigation Measure M-HY-6 (Ensure Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation). Exhibit C provides the proposed final (i.e., clean) version of the changes, and Exhibit D provides the same revisions in tracked changes.

"*Mitigation Approach*

SFPUC commits to implementing mitigation actions to ensure the Project does not materially interfere with the groundwater supplies, irrigation well operation and maintenance costs, or the overlying water rights of the owners of irrigation wells that could be significantly impacted by Project operations.

As provided below, Mitigation Measure M-HY-6 (Ensure Project Operation Does Not Materially Interfere with Irrigators' Wells and Overlying Water Rights) establishes a performance standard to ensure that well interference impacts caused by the Project would be avoided or reduced to *less-than-significant* levels. The mitigation measure also requires a Monitoring and Reporting Program to provide reliable and timely data to determine if the performance standard is being met. The measure requires monthly collection of data at Project wells and irrigators' wells during Take Years (i.e., years when Project Wells are pumping), collection of data over the first three months during Put Years (i.e., years when water is being injected into the aquifer for storage), and advanced notice to third-party well owners, and annual monitoring, during Hold Years (i.e., when Project water is neither injected nor withdrawn from the aquifer). The measure also requires the analysis and reporting of monitoring data on quarterly basis during Take Years, on a semi-annual basis during Put Years, and on an annual basis during Hold Years. The periodic analysis and reporting of data will allow the SFPUC and third-party irrigation well owners to determine whether or not reduced pumping capacities or higher pumping costs during Take Years, pressurization/overflow during Put Years, or other adverse impacts at irrigation wells are found to occur as a result of the Project.

Mitigation actions that the SFPUC must implement if the Project significantly impacts irrigation wells would vary depending on site-specific conditions at the irrigators' wells, agreements with irrigators, and a determination, subject to peer review, that the impacts to irrigation wells or the water rights of irrigation well owners are caused by Project operations. Therefore, the list of mitigation actions includes actions both at the irrigators' wells and at the Project wells. Each action item may be suitable to address impacts on an irrigator's well, either alone or in combination with one or more of the other mitigation actions. Each of the mitigation actions, or a combination of mitigation actions, may be feasible and effective in particular circumstances. However, not every one of the mitigation actions alone are anticipated to be feasible and effective at reducing impacts to *less-than-significant* levels in all circumstances, because the irrigation systems, wells, and parcels where the irrigators' wells are located in all different and may experience a range of impacts due to Project-caused well interference. Either one or a combination of the mitigation actions identified in Mitigation Measure M-HY-6 is anticipated to reduce impacts to a *less-than-significant* level. All feasible mitigation actions shall be implemented to reduce impacts to less than significant levels for all irrigators' wells." *(Cypress Lawn Memorial Park, letter, Exhibit C, June 11, 2013 [O-CLMP-Quick])*

"***Performance Standard:*** The SFPUC will ensure that: (1) the production capacity at irrigators' wells is equivalent to the existing production capacity of the wells and is sufficient to meet existing and planned peak irrigation demand at the land use, (2) the Project does not increase the costs of operating and maintaining irrigators' wells, (3) the Project does not materially interfere with the well owners' overlying water rights, and (4) Project pumping does not cause a water level decline of five feet or more below existing baseline conditions at an irrigator's well.

A violation of any of the prongs of the above performance standard (1 through 4) would trigger SFPUC mitigation obligations, provided that the violation is reasonably determined, based on verifiable data, to have been caused by the Project. Methods for determining causation are described below. When the Project is determined to have caused the violation, the SFPUC will implement the mitigation actions described below, or a combination thereof, to avoid or reduce Project effects.

In order to implement one or more of the mitigation actions, it is necessary to, and the SFPUC shall, (1) conduct monitoring at irrigators' wells to determine whether the performance standard is being met, (2) analyse and periodically report the data collected through well monitoring, and (3) consult with the owner(s) of the impacted irrigation wells to reach agreement(s) concerning appropriate mitigation. The Monitoring and Reporting Program is described in detail below." *(Cypress Lawn Memorial Park, letter, Exhibit C, June 11, 2013 [O-CLMP-Quick])*

"***Mitigation Actions to be Undertaken to Meet the Performance Standard:*** The SFPUC shall, in cooperation with the existing irrigators, implement mitigation actions when the performance standard in this mitigation measure is violated. The following mitigation actions, alone or in combination, will avoid or reduce Project impacts, depending on the circumstance:" *(Cypress Lawn Memorial Park, letter, Exhibit C, June 11, 2013 [O-CLMP-Quick])*

"*Mitigation Approach*

SFPUC commits to implementing mitigation actions to ensure the Project does not materially interfere with the groundwater supplies, irrigation well operation and maintenance costs, or the overlying water rights of the owners of irrigation wells that could be significantly impacted by Project operations.

As provided below, Mitigation Measure M-HY-6 (Ensure [~~Existing~~]**Project Operation Does Not Materially Interfere with** Irrigators' Wells [~~Are Not Prevented from Supporting Existing or Planned Land Use Due to Project Operation~~]**and Overlying Water Rights**) established a performance standard to ensure that well interference impacts caused by the Project would be avoided or reduced to *less-than-significant* levels. The mitigation measure also requires a Monitoring **and Reporting** Program[~~ at the existing irrigators' wells~~] to provide reliable and timely data to determine if the performance standard is being met[~~ and~~]. **The measure** requires [~~the analysis of monitoring data twice a year~~]**monthly collection of data at Project wells and irrigators' wells** during Take Years (i.e., **years** when Project Wells are [~~regularly~~]pumping), **collection of data over the first three months during Put Years (i.e., years when water is being injected into the aquifer for storage), and advanced notice to third-party well owners, and annual monitoring, during Hold Years (i.e., when Project water is neither injected nor withdrawn from the aquifer). The measure also requires the analysis and reporting of monitoring data on a quarterly basis during Take Years, on a semi-annual basis during Put Years, and on an annual basis during Hold Years. The periodic analysis and reporting of data will allow the SFPUC and third-party irrigation well owners** to determine whether or not reduced pumping capacities **or higher pumping costs during Take Years, pressurization/overflow during Put Years, or other adverse impacts** at[~~ existing~~] irrigation wells are found to occur as a result of the Project.

[~~If the results of the Monitoring Program and biannual analyses during Take Years indicate that well interference impacts of the Project would cause the performance standard to be exceeded, then a list of example mitigation actions are provided that would maintain an uninterrupted supply of groundwater to the affected land use. Mitigation actions that may need to be implemented~~]**Mitigation actions that the SFPUC must implement if the Project significantly impacts irrigation wells** would vary depending on [~~sitespecific~~]**site-specific** conditions at the

[~~existing~~]irrigators' wells, **agreements with irrigators**, and a determination[~~ of the extent of the decrease in pumping capacity that is occurring due to Project operations and, therefore~~], **subject to peer review, that the impacts to irrigation wells or the water rights of irrigation well owners are caused by Project operations. Therefore**, the list of mitigation actions includes actions both at the [~~existing~~]irrigators' wells and[~~ also~~] at the Project wells. Each action item may be suitable to address impacts on an[~~ existing~~] irrigator's well, either alone or in combination with one or more of the other mitigation actions. Each of the mitigation actions, or a combination of mitigation actions, may be feasible and effective in particular circumstances. However, not every one of the mitigation actions alone are anticipated to be feasible and effective at reducing impacts to *less-than-significant* levels in all circumstances, because the irrigation systems, wells, and parcels where the[existing] irrigators' wells are located are all different and may experience a range of impacts due to Project-caused well interference. Either one or a combination of the mitigation actions identified in Mitigation Measure M-HY-6 is anticipated to reduce impacts to a *less-than-significant* level. **All feasible mitigation actions shall be implemented to reduce impacts to less than significant levels for all irrigators' wells.**" *(Cypress Lawn Memorial Park, letter, Exhibit D, June 11, 2013 [O-CLMP-Quick])*

"***Performance Standard***: The SFPUC will ensure that**: (1)** the production capacity at[~~ existing~~] irrigators' wells is equivalent to the existing production capacity of the wells [~~or~~]**and** is sufficient to meet existing and planned peak irrigation demand at the land use [~~whichever is less, provided that the loss of capacity at the existing irrigators wells is reasonably expected~~]**(2) the Project does not increase the costs of operating and maintaining irrigators' wells, (3) the Project does not materially interfere with the well owners' overlying water rights, and (4) Project pumping does not cause a water level decline of five feet or more below existing baseline conditions at an irrigator's well.**

A violation of any of the prongs of the above performance standard (1 through 4) would trigger SFPUC mitigation obligations, provided that the violation is reasonably determined, based on verifiable data, to have been caused by the Project.[~~If the production capacity at an existing irrigator's well is shown to drop below this performance standard due to the Project, measures to avoid or reduce Project contributions to the loss of capacity or measures to meet irrigation needs will be implemented by the SFPUC. The SFPUC will implement these measures~~]** Methods for determining causation are described below. When the Project is determined to have caused the violation, the SFPUC will implement the mitigation actions described below**, or a combination thereof, [~~so that water supply provided to the land use by the existing irrigators' well(s) is not interrupted. The method for determining whether the loss of pumping capacity is attributable to the Project is described in detail below~~]**to avoid or reduce Project effects.**

In order to implement one or more of the mitigation actions, it is necessary to, and the SFPUC shall, **(1)** conduct monitoring at [~~existing~~]irrigators' wells to determine whether the performance standard is being met[~~. The monitoring program~~]**, (2) analyze and periodically report the data collected through well monitoring, and (3) consult with the owner(s) of impacted irrigation wells to reach agreement(s) concerning appropriate mitigation. The Monitoring and Reporting Program** is described in detail below." *(Cypress Lawn Memorial Park, letter, Exhibit D, June 11, 2013 [O-CLMP-Quick])*

"***Mitigation Actions to be Undertaken to Meet the Performance Standard***: The SFPUC shall, in cooperation with the existing irrigators, implement **mitigation** actions [~~to meet~~]**when** the performance standard in this mitigation measure [~~when the production capacity of an existing irrigator's well drops below the performance standard~~]**is violated**. The following mitigation actions[~~are examples of the type of actions that~~], alone or in combination, will avoid or reduce Project impacts, depending on the circumstance:" *(Cypress Lawn Memorial Park, letter, Exhibit D, June 11, 2013 [O-CLMP-Quick])*

Response HY-16

This comment suggests revisions to the "Mitigation Approach" section on page 5.16-93 of the Draft EIR and to Mitigation Measure M-HY-6 (Ensure Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation) in two sections: Performance Standard and Mitigation Actions to be Undertaken to Meet the Performance Standard. The suggested revisions are related to irrigators' overlying groundwater rights, irrigators' operation and maintenance costs, timing of collection of monitoring data and analysis, advance notice to well owners regarding Project operation, and revising the conclusion for Impact HY-6 regarding well interference from significant and unavoidable with mitigation to less than significant with mitigation.

The commentor suggested revisions to the mitigation measure including references to injection components of Project operations. These suggested revisions have not been incorporated into the EIR, because the proposed Project is a passive in-lieu recharge project and does not include injection components.

The commenter suggested that the mitigation measure be revised to address interference with overlying groundwater rights. Please see Response HY-9.

The suggested revisions regarding irrigators' operation and maintenance costs, including increased pumping costs due the Project, have not been incorporated into the mitigation approach or the mitigation measure for the reasons stated in Response HY-7.

The suggested revisions regarding the timing of collection and reporting of monitoring data and analysis have been partially incorporated into the Irrigation Well Monitoring and Reporting Program included in the mitigation measure for the reasons stated in Responses HY-12 and HY-15.

The request for advance notice to well owners regarding Project operation has been incorporated into Mitigation Measure M-HY-6 by providing that the SFPUC will provide notice of Project operations during Take Periods.

The commenter's suggestion that the well interference significance conclusion be revised from significant and unavoidable with mitigation to less than significant with mitigation is accepted. See Response HY-15 for modifications made to Mitigation Measure M-HY-6, the revised significance conclusion, and an explanation of the revision.

Comment HY-17: Comments related to participation of irrigators for Mitigation Measure M-HY-6.

This response addresses comments from the commenter listed below; the comments on this topic are quoted in full below this list:

- O-CLMP-Quick

"*Item 11 - The ultimate decision as to whether increased well inefficiency is the result of the GSR Project should be made by a neutral. disinterested party, not the SFPUC*.

The ultimate determination as to whether increased well inefficiency from well interference is the result of the GSR Project is placed in the hands of the SFPUC, not an independent entity. In the event that a conflict arises, the SFPUC would be both in the position of being one of the parties to the conflict and the decision maker, an unfair position relative to any of the irrigators. The requirement that the loss of capacity must be caused by the GSR Project places an immense burden on the existing irrigators to prove that failures are the result of the SFPUC's activities, which are predicted to have a significant impact on water levels and well capacity. This will lead to an ongoing need for costly legal and technical assistance that is not currently required in order to make that showing. Instead, the SFPUC should provide all of its well monitoring data and reports to the existing irrigators, and the determination regarding whether the GSR Project is interfering with existing irrigators' wells should be made by a neutral, disinterested party."
(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])

The following comments are quoted from O-CLMP-Quick, Exhibits C and D, which present Cypress Lawn Memorial Park's proposed changes to Mitigation Measure M-HY-6 (Ensure Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation). Exhibit C provides the proposed final (i.e., clean) version of the changes, and Exhibit D provides the same revisions in tracked changes.

> "Irrigators' well owners shall be afforded at least 30 days to review and comment on the information identified in Items 1 through 5, above, as well as the underlying data and analysis on which the SFPUC is relying, prior to any determination of causation.
>
> After reviewing any comments submitted by owner(s) of an irrigators' well affected by the Project, the SFPUC and ERO may determine that the Project does not cause a loss in production capacity of an irrigators' well(s). Within 30 days of receiving written notice of such a determination, the owner of the potentially affected irrigation well may submit a written objection to the determination. If no timely objections are received, the determination is considered final and conclusive. If the SFPUC and ERO maintain the conclusion of no Project impact after considering any timely objection(s), the verifiable evidence on which this determination is based (including a response to all written comments and, if requested, the underlying data and analysis on which the SFPUC is relying) shall be provided to the owner(s) of the irrigation well(s) at issue within 30 days of the receipt of the

written comments or the date the determination is made, whichever is earlier. Any dispute concerning the determination may be resolved through mediation or legal action.

Alternatively, the owner(s) of any irrigators' well may submit to the SFPUC and ERO substantiated information showing that Project operations have caused violations of the above performance standard. SFPUC would have the opportunity to review and comment on the information provided by irrigation well owner(s) prior to any determination of causation by the ERO." *(Cypress Lawn Memorial Park, letter, Exhibit C, June 11, 2013 [O-CLMP-Quick])*

"At least 18 months prior to the commencement of pumping of Project wells, the SFPUC shall contact existing irrigators with information about the Monitoring and Reporting Program. To participate in the program, existing irrigators will complete a registration form and enter into a mutually acceptable agreement with the SFPUC.

Prior to issuance of construction permits, the SFPUC shall prepare the Monitoring and Reporting Program and shall submit the Program to the ERO for review and approval. The Program shall provide detailed methodology for monitoring background and Project induced groundwater levels, water quality, and flow." *(Cypress Lawn Memorial Park, letter, Exhibit C, June 11, 2013 [O-CLMP-Quick])*

"Data shall be analysed and reported to irrigation well owners on a quarterly bases each year during Take Periods when Project wells are pumping regularly." *(Cypress Lawn Memorial Park, letter, Exhibit C, June 11, 2013 [O-CLMP-Quick])*

"The SFPUC's certified hydrogeologist or professional engineer with expertise in groundwater hydrology shall compile, analyze, and report the collected data for each quarter to irrigation well owners." *(Cypress Lawn Memorial Park, letter, Exhibit C, June 11, 2013 [O-CLMP-Quick])*

"Irrigators' well owners shall be afforded at least 30 days to review and comment on the information identified in Items 1 through 5, above, as well as the underlying data and analysis on which the SFPUC is relying, prior to any determination of causation.

After reviewing any comments submitted by owner(s) of an irrigators' well affected by the Project, the SFPUC and ERO may determine that the Project does not cause a loss in production capacity of an irrigators' well(s). Within 30 days of receiving written notice of such a determination, the owner of the potentially affected irrigation well may submit a written objection to the determination. If no timely objections are received, the determination is considered final and conclusive. If the SFPUC and ERO maintain the conclusion of no Project impact after considering any timely objection(s), the verifiable evidence on which this determination is based (including a response to all written comments and, if requested, the underlying data and analysis on which the SFPUC is relying) shall be provided to the owner(s) of the irrigation well(s) at issue within 30 days of the receipt of the written comments or the date the determination is made, whichever is earlier. Any dispute concerning the determination may be resolved through mediation or legal action.

Alternatively, the owner(s) of any irrigators' well may submit to the SFPUC and ERO substantiated information showing that Project operations have caused violations of the above performance standard. SFPUC would have the opportunity to review and comment on the

information provided by irrigation well owner(s) prior to any determination of causation by the ERO." *(Cypress Lawn Memorial Park, letter, Exhibit D, June 11, 2013 [O-CLMP-Quick])*

"At least 18 months prior to the commencement of pumping of Project wells, the SFPUC shall contact existing irrigators with information about the [~~monitoring program~~]**Monitoring and Reporting Program**. To participate in the program, existing irrigators will complete a registration form and [~~an~~]**enter into a mutually acceptable** agreement with the SFPUC.

Prior to issuance of construction permits, the SFPUC shall prepare the Monitoring and Reporting Program and shall submit the Program to the ERO for review and approval. The Program shall provide detailed methodology for monitoring background and Project induced groundwater levels, water quality, and flow." *(Cypress Lawn Memorial Park, letter, Exhibit D, June 11, 2013 [O-CLMP-Quick])*

"Data shall be analysed [~~two times~~]**and reported to irrigation well owners on a quarterly bases** each year during Take Periods when Project wells are pumping regularly." *(Cypress Lawn Memorial Park, letter, Exhibit D, June 11, 2013 [O-CLMP-Quick])*

"The[~~ data shall be compiled and analyzed by~~] SFPUC's certified hydrogeologist or professional engineer with expertise in groundwater hydrology [~~by June~~]**shall compile, analyze, and report the collected data for each quarter to irrigation well owners**." *(Cypress Lawn Memorial Park, letter, Exhibit D, June 11, 2013 [O-CLMP-Quick])*

Response HY-17

This comment requests that an independent entity determine if potential well interference impacts are a result of Project operations and suggests revisions to Mitigation Measure M-HY-6 (Ensure Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation) to provide a process and timeline for such a determination to be made.

Under Mitigation Measure M-HY-6, as revised, the San Francisco Planning Department's ERO will have to concur with determinations required by Mitigation Measure M-HY-6. As per the City's Administrative Code, Section 31.05(c), the ERO is the City official charged with responsibility for assuring that the City is carrying out its responsibilities and duties under CEQA. As such, the ERO's principal duty is to ensure that the City is in compliance with State CEQA law. That duty is separate from and independent of the missions and responsibilities of all other City agencies.

Under the revised Mitigation Measure M-HY-6, determinations that require concurrence by the ERO include: 1) for each well, the groundwater level at which a well interference impact would be expected to occur; 2) whether the Project is causing a well not to meet the established Performance Standard; 3) use of equally effective but different mitigation actions, and 4) changing the Irrigation Well Monitoring and Reporting Program. The ERO may require that the SFPUC hire an independent expert to advise the ERO.

Data collected and analysis performed through the Well Interference Monitoring and Reporting Program would be reported regularly to existing irrigators. The frequency of reporting would be identified in the Irrigation Well Monitoring and Reporting Program. Mitigation Measure M-HY-6 requires that monitoring, data collection, analysis, and reporting be done at no cost to the irrigator.

The commenter suggested revisions to Mitigation Measure M-HY-6 to include a process with timeline to determine causation. Mitigation Measure M-HY-6 is revised to include a process with timeline to determine causation under "Method for Determining Whether Inability to Meet the Performance Standard at an Irrigators' Well(s) Is Due to the Project." See Response HY-15 for the revision to Mitigation Measure M-HY-6.

Comment HY-18: Comment related to representation of existing irrigators.

This response addresses a comment from the commenter listed below; the comment on this topic is quoted in full below this list:

- O-CLMP-Quick

"To give Existing Irrigators a voice in how the GSR Project is operated, and to provide procedural safeguards that will help ensure that GSR Project operations do not unduly impact existing irrigators, the Operating Committee should include at least one position for a representative of the existing irrigators. The existing irrigators can develop their own process for selecting their Operating Committee representative." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

Response HY-18

This comment requests that the GSR Operating Committee include a position for a representative of existing irrigators. The Draft Operating Agreement does not currently provide for appointment of other stakeholders, e.g., irrigators. The SFPUC would be responsible for full implementation of the Project with or without the suggested representation on the GSR Operating Committee, including satisfying the ERO that the SFPUC is complying with the MMRP requirements. The EIR has analyzed the Project for potential environmental impacts and mitigation measures, and the composition of the GSR Operating Committee would not affect the analysis or conclusions of the EIR. Therefore, the representation requested does not need to be included in the EIR or the Project's mitigation for purposes of compliance with CEQA.

However, the SFPUC and its Partner Agencies could revise the Draft Operating Agreement to provide for notification of Operating Committee meetings to existing groundwater irrigators. Such a provision would have no effect on the environmental impact analysis for the Project.

Comment HY-19: Comment related to the effects of climate change on irrigation demand.

This response addresses a comment from the commenter listed below; the comment on this topic is quoted in full below this list:

- O-CLMP-Quick

"One currently unknown factor that will affect future uses is the change that will come with climate change. We know that climate change will have an impact on water availability and demand, but how severe that impact will be in the region is not known with certainty. How will climate change impact peak irrigation demand for existing and planned peak irrigation demand? How are those impacts accounted for in the analysis of what is an existing or planned use?" *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

Response HY-19

The commenter asks how future climate change might affect peak irrigation demand for existing and planned land uses, and how the EIR analysis accounts for such possible changes. The Draft EIR explains how the groundwater analysis takes climate change into account in Section 5.1, Overview, on page 5.1-18, as follows:

> "The Westside Basin Groundwater Model does not explicitly include changes in hydrologic parameters in response to climate change, because the effect of climate change on the groundwater basin is uncertain. However, if climate change were to cause more frequent drought conditions than observed historically, then such conditions would be included in the Model results through the use of the design drought – a drought that is more severe than any observed during the 47 years of historic records used in creating the Model. In addition, it is possible that climate change might have occurred during the period of the observed rainfall and temperature record. If so, then the observed rainfall and temperature data would include the effects of climate change as part of the overall data record. Since the observed rainfall and temperature data are used as inputs to the Westside Basin Groundwater Model then the possible effects of climate change upon the 47 years of historical record would be included implicitly in the simulations. …"
>
> "Even though the Westside Basin Groundwater Model is not intended to predict precise basin or surface water levels in a given year, over the course of the 47-year model period, the model does portray a reasonable range of anticipated basin and surface water levels such that, for EIR purposes, impacts that would be affected by changes in basin and surface water levels (e.g., biology, hydrology, water quality, etc.) can be conservatively evaluated."

Further, implementation of Mitigation Measures M-HY-6 (Ensure Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation) and M-HY-14 (Prevent Groundwater Depletion) are triggered by monitoring of actual groundwater parameters, such as groundwater levels. Further, implementation of Mitigation Measure M-HY-6 can be triggered by a request from an irrigator in response to unanticipated well capacity effects believed to be due to the Project. Therefore, if climate change affects peak irrigation demand such that significant impacts are experienced by an irrigator due to the Project earlier than predicted, such impacts would be subject to mitigation under the Project's MMRP.

Comment HY-20: Comment related to the operation of multiple wells simultaneously.

This response addresses a comment from the commenter listed below; the comment on this topic is quoted in full below this list:

- O-CLMP-Quick

"In addition, the analysis only considers the effects of the GSR Project to be significant if primary, active and secondary wells together cannot supply estimated peak demand.[34] But many irrigators do not operate multiple wells simultaneously. Thus, the effect should be considered significant if the irrigators well(s), as the currently are used, cannot continue satisfy peak demand (among other criteria for significance, such as draw down below existing conditions).

[34] DEIR, p. 5.17-84." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

Response HY-20

This comment references the third paragraph on page 5.16-84 of the Draft EIR. The comment letter incorrectly identifies page 5.17-84 as the text reference. The comment states that the well interference impact should be evaluated based on the irrigator's wells, as they are currently used, instead of relying on concurrent operation of all of the irrigator's wells, including secondary, emergency, or backup wells. In fact, the analysis in the Draft EIR relied only on the active, primary wells located on an irrigator's property and did not include concurrent operation of secondary, emergency, or backup wells. Therefore, the Draft EIR is changed in two places below.

In addition, the term "at the end of the design drought" is deleted from the first sentence in the third paragraph on page 5.16-84 of the Draft EIR. Well interference has been considered a significant impact if caused by Project operations, and not just at the end of the design drought.

The third paragraph on page 5.16-84 of the Draft EIR is revised as follows:

> If ~~primary, active, and secondary~~ existing irrigation wells ~~together~~ as currently used by the irrigator, cannot supply the estimated peak demand for a land use over a 12-hour

period (nighttime irrigation) ~~at the end of the design drought~~, due to well interference from the Project, then well interference impacts would be significant. In the case where the total capacity of existing primary~~,~~ and other active~~, and secondary~~ wells for a land use cannot supply the estimated peak demand under modeled existing conditions, the existing supply is only marginally adequate. Under these conditions, if well interference from the Project would cause any reduction in pumping capacity, the effect would be significant.

The paragraph at the bottom of page 5.16-87 of the Draft EIR is revised as follows:

If ~~primary, active, and secondary~~ existing wells, as currently used by the irrigator, ~~supporting a land use together~~ cannot supply the peak demand for that land use over a 12-hour period (nighttime irrigation) due to reduced pump discharge rates from the Project, then well interference impacts would be significant. For this analysis, Table 5.16-13 (Estimated Peak Demand and 12-Hour Production Capacities) compares the 12-hour production capacity at each golf club and cemetery to the estimated peak demand needed to maintain adequate irrigation for the land use.

Comment HY-21: Comments related to Cypress Lawn discharge capacity.

This response addresses comments from the commenter listed below; the comment on this topic is quoted in full below this list:

- O-CLMP-Quick

"I. **INTRODUCTION**

Cypress Lawn, established in 1892, is both a historically important cemetery and an important provider of cemetery and funeral services for today's San Francisco Bay Area community.[2] As with the other cemeteries in Colma, Cypress Lawn's approximately 209 acres[3] of historically significant grounds are irrigated entirely with groundwater from the underlying south Westside Groundwater Basin ('SWG Basin' or the 'Aquifer'), the same Aquifer proposed to be used for the GSR Project. Cypress Lawn's planned expansion of an additional five acres will also be irrigated with groundwater from the Aquifer. One of Cypress Lawn's wells, described in the DEIR as 'well #3' is within 1.5 miles of proposed GSR Project wells at Sites 7, 8, 9, 10, and 11 (and well 17 (Alternative)). Thus, in addition to the general risks to the underlying aquifer posed by the GSR Project, Cypress Lawn's well is at risk and within the potential cones of depression that may result from simultaneous operation of up to five GSR Project wells (and in addition, potentially an alternative well). The general risks to the aquifer posed by the GSR Project, and the specific risks posed by the proximity of five GSR Project wells, have potentially significant impacts on Cypress Lawn's ability to continue to use its existing irrigation infrastructure and maintain its landscaping (including historically significant landscaping).

[2] Town of Colma General Plan, pp. 5.08.9, 5.08.14-15.

[3] The East and West Gardens are approximately 175 acres and the Hillside Gardens are approximately 34 acres." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

"*The DEIR 's analysis of impacts to irrigators is superficial and incomplete:* The DEIR acknowledges that the GSR Project may have significant adverse impacts on overlying irrigators (such as Cypress Lawn) who currently rely on water pumped from the SWG Basin.[36] For example, the DEIR acknowledges that the GSR s, at the end of the design drought, 'would likely dewater a substantial portion of the well screens of Cypress Lawn Memorial Park's well #3, which could add to the estimated reductions in well yield.'[37] However, it does not go far enough in identifying the range of severity of those impacts. For example, it fails to define or fully describe the extent of potential 'interference' with existing irrigators that the GSR Project may cause. Five GSR Project wells are proposed to surround the Cypress Lawn property, all within 1.5 miles of Cypress Lawn's wells – wells at Sites 7, 8, 9, 10, and 11 all have the potential to cumulatively contribute to localized (cone of depression) and generalized impacts to Cypress Lawn's source of groundwater. If selected, Site 17 (Alternative) also has the potential to contribute to the impacts of the surrounding GSR Project wells.[38]

[36] *See, e.g., id.* at p. 5.16-73 ['If well interference were great enough, irrigation water currently supplied by existing irrigation wells could be decreased to the extent that existing irrigation uses, such as for turf at cemeteries and golf clubs, would not be fully supported.'].

[37] *Id.* at p. 5.16-91.

[38] Notably, the existing Partner Agency wells are nowhere near the cemeteries' wells. Thus, the GSR Project proposes to tap into a section of the Aquifer that previously has only been used by the existing irrigators." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

"*Item 6 – Please provide estimates of the reduction in discharge capacity that will occur at the Cypress Lawn wells?*

The DEIR states that 'Project pumping and resulting groundwater level decreases at the end of the design drought are projected to affect the pump discharge rates of existing irrigators' wells as shown in Table 5.16-12 (Estimated Pump Discharge Rate at the End of the Design Drought).' No information related to reduction in discharge capacity is provided that relates to the Cypress Lawn wells, but based on the decrease of water level depths of approximately 90 feet of screen at Well 4, it can be assumed that reduction in discharge capacity of this well would be significant. Please quantify the reduction in discharge rates with increased drawdowns (lower specific capacity), the increased energy required to operate pumps under these circumstances, the estimated reduction in pump life, and the impacts to well longevity, water quality, and local aquifer stability." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

Response HY-21

The comment alleges that the Draft EIR analysis of well interference impacts, specifically impacts on discharge capacity, on Cypress Lawn Memorial Park wells is inadequate and incomplete. In addition, the comment provides a larger acreage for the Cypress Lawn Memorial Park than is used in the Draft EIR; 209 acres instead of 146 existing acres[2], plus five additional planned acres.

The analysis asked for by the commenter of well interference effects on the discharge capacity of Cypress Lawn Memorial Park's wells cannot be performed without specific information regarding the wells and the wells' pumps. The City asked for and obtained this type of information from most of the irrigators (see Draft EIR Appendix H, Technical Memorandum 10-7 South Westside Basin Third Party Well Survey and Well Interference Analysis, pages 2-6) and for all wells for which irrigators provided such information, the Draft EIR includes analysis of impacts on discharge capacity. However, some irrigators, including Cypress Lawn, did not provide this information on their wells, and, therefore, the analysis of capacity effects for such wells is not included in the Draft EIR (see Draft EIR Appendix H, *Technical Memorandum 10-7 SFPUC Regional Groundwater Storage and Recovery Project; South Westside Basin Third-party Well Survey and Well Interference Analysis*, pages 2-6). Instead, the Draft EIR assumes that the Project will have a significant impact on capacity at the Cypress Lawn wells and proposes mitigation to address such impact.

In its comments on the Draft EIR, Cypress Lawn identified that it currently irrigates 209 acres with groundwater (see Comment HY-21). In a subsequent communication from Cypress Lawn, they indicated that it uses one well (Well #4) and one backup well (Well #2) to irrigate this acreage. Also in a subsequent communication, Cypress Lawn provided well information on its Wells #2 and #4 in February 2014 (Fugro 2014; Daniel P. Stephens & Associates 2014; Morgan, Lewis & Bockius 2014). This well information updates information previously provided in the Draft EIR and the Draft EIR Appendix H, *Technical Memorandum 10-7 SFPUC Regional Groundwater Storage and Recovery Project; South Westside Basin Third-party Well Survey and Well Interference Analysis*. A further analysis of the potential for well interference impacts on Cypress Lawn's Well #4 was conducted using the same methodology used for other Colma cemetery wells (see Approach to Analysis on pages 5.16-82 through 5.16–85 and Appendix H to the Draft EIR), but using the updated information on Well #4 (Fugro 2014). There was insufficient information available on backup Well #2 to complete a similar analysis. The results of this analysis are presented below.

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[2] The Draft EIR estimate of irrigated acreage at Cypress Lawn Memorial Park of 146 acres was taken from the Recycled Water Feasibility Study by Carollo prepared in 2008. In addition, the amount of irrigated acreage at the Memorial Park was corroborated through direct discussions of the SFPUC with the Memorial Park in 2010, and recorded in Draft EIR Appendix H, *Technical Memorandum 10-7 SFPUC Regional Groundwater Storage and Recovery Project; South Westside Basin Third-party Well Survey and Well Interference Analysis*, page 5.

Cypress Lawn Well #4 has a top of well screen of 380 feet below ground surface (bgs) and a rated pump capacity of 800 gallons per minute (gpm). With an irrigated acreage of 209 acres, the estimated peak demand for the peak 12-hour period is estimated to be 3.1 acre-feet (af) or 1,400 gpm.

At Cypress Lawn, the 12-hour pumping capacity of Cypress Lawn Well #4 would not meet peak demand (1,400 gpm) at the end of the design drought under current conditions or under Project operations. The apparent discrepancy between Cypress Lawn's estimated peak demand (1,400 gpm) and rated pump capacity of Well No. 4 (800 gpm) would be evaluated as part of the Irrigation Well Monitoring and Reporting Program. Static groundwater levels at the end of the design drought under both current conditions and Project conditions are estimated to be above the top of the well screen. Pumping groundwater levels at the end of the design drought with Project pumping are estimated to fall below the top of the screen by approximately six feet. Pumping discharge rates at the end of the design drought with Project pumping are estimated to decline by 38 percent. Project operations are predicted to prevent Cypress Lawn's well from fully supporting existing land uses; therefore, the Project would have a significant impact relative to discharge rates and well screen elevations; therefore, the Project would have a significant impact relative to well interference at Cypress Lawn, consistent with the conclusion of the Draft EIR. This significant impact would be reduced to less-than-significant levels by implementation of Mitigation Measure M-HY-6 (Ensure Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation); refer to Response HY-15 for the explanation of mitigation measure effectiveness.

Table 5.16-8 (Existing Irrigators' Wells Identified as a Primary, Active, or Secondary Well that May Be Affected by the Project) on page 5.16-80 of the Draft EIR has been updated to reflect the new well information from Cypress Lawn:

TABLE 5.16-8
Existing Irrigators' Wells Identified as a Primary, Active, or Secondary Well that May Be Affected by the Project

Well Name	Top of Well Screen (feet below ground surface)	Rated Pump Capacity (gpm)
~~Cypress Lawn Memorial Park #3~~	~~191~~	~~INA~~
Cypress Lawn Memorial Park #4	~~330~~ 380	~~INA~~ 800

Table 5.16-9 (Existing Irrigated Acreage and Estimated Peak Demand at Potentially Affected Land Uses) on page 5.16-81 of the Draft EIR has also been updated to reflect the change from 146 to 209 acres and the resulting change in peak demand:

TABLE 5.16-9
Existing Irrigated Acreage and Estimated Peak Demand at Potentially Affected Land Uses

Land Use	Irrigated Acreage (acres) [(a)]	Estimated Peak Demand (af per 12-hour period) [(b)]
Cypress Lawn Memorial Park	~~146~~ 209	~~2.2~~ 3.1

Note:
(a) Acreage from SFPUC 2010b
(b) The apparent discrepancy between Cypress Lawn's Estimated Peak Demand of 3.1 af per 12-hour period and 12-Hour Production Capacity for Existing Conditions of 1.8 af per 12-hour period would be evaluated as part of the Irrigation Well Monitoring and Reporting Program.

Table 5.16-11 (Estimated Static and Pumping Depth to Water Levels at the End of the Design Drought) on pages 5.16-85 and 5.16-86 of the Draft EIR identifies potential decrease of pump discharge rates. Table 5.16-11 for Cypress Lawn is updated as follows:

TABLE 5.16-11
Estimated Static and Pumping Depth to Water Levels at the End of the Design Drought

Existing Irrigators' Wells	Proposed GSR Sites Considered in Analysis at Existing Irrigators' Wells	Estimated Static Depth to Water (feet below ground surface)			Estimated Pumping Depth to Water (feet below ground surface)		
		Existing Conditions	With Project	Decrease from Project	Existing Conditions	With Project	Decrease from Project
~~Cypress Lawn Memorial Park #3~~	~~5-10~~	~~289~~	~~384~~	~~95~~	~~INA~~	~~INA~~	~~INA~~
Cypress Lawn Memorial Park #4	5-11	~~232~~ 257	~~330~~ 355	98	~~INA~~ 307	~~INA~~ 386	~~INA~~ 79

Table 5.16-12 (Estimated Pump Discharge Rate at the End of the Design Drought) on page 5.16-87 of the Draft EIR estimated pump discharge rates at the end of the design drought. Table 5.16-12 for Cypress Lawn is updated as follows:

TABLE 5.16-12
Estimated Pump Discharge Rate at the End of the Design Drought

Existing Irrigators' Wells	Existing Conditions (gpm)	With Project (gpm)	Percent Reduction due to Project
~~Cypress Lawn Memorial Park #3~~	~~INA~~	~~INA~~	~~INA~~
Cypress Lawn Memorial Park #4	~~INA~~ 800	~~INA~~ 500	~~INA~~ 38

Table 5.16-13 (Estimated Peak Demand and 12-Hour Production Capacities) on page 5.16-88 of the Draft EIR is updated for Cypress Lawn as follows:

TABLE 5.16-13

Estimated Peak Demand and 12-Hour Production Capacities [d]

Land Use	Estimated Peak Demand (af per 12-hour period	12-Hour Production Capacity for Primary, Active, and Secondary Wells (af)		Significant Impact relative to Pump Discharge Rates?	Significant Impact relative to Well Screen Elevations? [a]
		Existing Conditions	With Project		
Cypress Lawn Memorial Park	~~2.2~~ 3.1	~~INA~~ 1.8	~~INA~~ 1.1	~~INA~~ Yes	Yes

Note:

(d) The apparent discrepancy between Cypress Lawn's Estimated Peak Demand of 3.1 af per 12-hour period and 12-Hour Production Capacity for Existing Conditions of 1.8 af per 12-hour period would be evaluated as part of the Irrigation Well Monitoring and Reporting Program.

Table 5.16-14 (Estimated Static and Pumping Depth to Water Levels at the End of the Design Drought) on page 5.16-89 of the Draft EIR is updated for Cypress Lawn as follows:

TABLE 5.16-14

Estimated Static and Pumping Depth to Water Levels at the End of the Design Drought

Existing Irrigators' Wells	Top of Well Screen (feet below ground surface)	Static Water Level relative to Top of Well Screen (feet) [a]		Pumping Water Level relative to Top of Well Screen (feet) [a]	
		Existing Conditions	With Project	Existing Conditions	With Project
~~Cypress Lawn Memorial Park #3~~	~~191~~	~~-98~~	~~-193~~	~~INA~~	~~INA~~
Cypress Lawn Memorial Park #4	~~330~~ 380	~~98~~ 123	~~0~~ 25	~~INA~~ 73	~~INA~~ -6

The comment asks how much additional energy would be required to operate irrigation well pumps. On average, groundwater levels at the irrigation wells would be higher due to the Project, and, therefore, energy required to operate irrigation well pumps would be less than under existing conditions; a more detailed explanation of this benefit is provided in Response GG-1.

The comment asks how much reduction in pump life and well longevity would occur. Impacts to pump life and well longevity are, for the most part, economic concerns, not environmental impacts, and therefore not subject to CEQA. However, to the extent that pump or well replacement may have environmental impacts, the Project would increase groundwater levels on average, as explained in Response GG-1, and would therefore not reduce pump life or well longevity.

Regarding the water quality impacts of the Project, refer to Draft EIR Impacts HY-12 and HY-13 on pages 5.16-128 to 5.16-142.

The comment also asks about impacts to local aquifer stability. If by aquifer stability, the commenter is referring to impacts of subsidence, refer to Draft EIR Impact HY-7 on pages 5.16-100 to 5.16-106. If by aquifer stability, the commenter is referring to impacts on groundwater depletion, aquifer sustainability, or sustainable yield, refer to Draft EIR Impact HY-14 on pages 5.16-142-146.

Comment HY-22: Comment related to barrier boundaries relative to well interference estimates.

This response addresses a comment from the commenter listed below; the comment on this topic is quoted in full below this list:

- O-CLMP-Quick

"<u>Item 2 – How will barrier boundaries along the southwest and northeast basin perimeters impact the DEIR estimates of well interference, both for the Partner Agencies' wells and those of the irrigators?</u>

Pumping interference was based on estimates (using the Theis method) that do not recognize the potential for the cone of depression encountering a barrier boundary (impermeable sides of the aquifer). While the DEIR acknowledges that the Theis method used to predict drawdowns does not account for recharge, it asserts that the approach provides a conservative estimate. The approach is not conservative, however, because the DEIR does not acknowledge that when the cone of depression encounters such a barrier boundary, the drawdown accelerates and essentially doubles, producing larger drawdowns and deeper pumping water levels. The closer the well is to a barrier boundary, the sooner the cone of depression encounters it, which results in greater drawdowns during pumping, lower specific capacities, and ultimately lower pumping rates.

Thus, the use of the Theis method for determining pumping interference is inappropriate for a relatively small and narrow aquifer with multiple barrier boundaries, as it tends to underestimate the interference caused by GSR Project pumping." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

Response HY-22

This comment expresses concern that the methodology used for the well interference analysis did not take barrier boundaries in the groundwater basin into account and, therefore, underestimates the well interference impacts. Barrier boundaries are groundwater basin boundaries, such as no-flow boundaries, including faults and bedrock which block groundwater flow. Barrier boundaries are not a relevant concern to the well interference conclusions reached using the Theis equation calculations for the Project wells. This is because basin boundaries are at least 1,500 feet from all proposed Project wells; that is, none of the Project wells sites would lie within 1,500 feet of a basin boundary. Draft EIR Figures 3-3 (Project Location Map – North), 3-4 (Project Location Map – Central), 3-5 (Project Location Map – South), and 5.16-6 (Existing Irrigation Wells in the South Westside Groundwater Basin) show basin boundaries in relation to wells. As reported in Draft EIR Appendix H *Technical Memorandum 10-7 SFPUC Regional Groundwater Storage and Recovery Project; South Westside Basin Third-party Well Survey and Well Interference Analysis*, well interference beyond 1,500 feet of a Project well would be negligible. Since barrier boundaries do not exist within the area affected by the Project wells, they would not cause additional drawdown by a proposed Project well beyond what was calculated using the Theis methodology.

Finally, the commenter says that the Theis methodology is inappropriate for a small and narrow aquifer with multiple barrier boundaries. The Westside Groundwater Basin is not a relatively small and narrow aquifer. As noted in Chapter 3, Project Description, Section 3.3 (Existing Groundwater Use in the Westside Groundwater Basin) of the Draft EIR, the Westside Groundwater Basin has an area of approximately 40 square miles. As shown on Draft EIR Figure 3-4, page 3-13, the width of the aquifer in the Colma area is greater than 8,300 feet; the width of the aquifer increases to the south of Colma. Project well sites would be more than 1,500 feet from any of the basin boundaries. Therefore, the Theis method is appropriate for estimating drawdowns in this setting and does not underestimate interference caused by Project pumping.

Comment HY-23: Comments related to subsidence.

This response addresses comments from the commenters listed below; each comment on this topic is quoted in full below this list:

- O-CLMP-Quick
- I-Lawrence (1)

“2. **Failure to Acknowledge and Address the Adverse Impacts to Pipelines and Structures from Subsidence**.

Much of the SWB Basin is comprised of the Colma Formation, not the Merced Formation that was assumed in the analysis. What is the compressibility of the Colma Formation and how does this compare to the Merced Formation? If the Colma Formation is even slightly more susceptible to compression then even the levels of drawdown assumed in the analysis could cause subsidence exceeding the 6 inch threshold of significance. The DEIR's assumptions concerning the susceptibility for subsidence may be unreasonable and inaccurate." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

"The analysis does not address the impacts of elastic subsidence. Elastic or temporary subsidence ‘results in cycles of very small amounts of compression and expansion that occur normally in response to alternating periods of groundwater drawdown and recovery.'[53] The flexing and movements caused by elastic subsidence can cause damage, even if the total movements are less than 6 inches.

> [53] See DEIR for the East Bay Municipal Utility District Bayside Groundwater Project, pp. 3.1-54." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

"The DEIR must also be revised to analyze the impact of subsidence, discussed *supra*, on the historic resource value of structures at Cypress Lawn and other cemeteries in Colma." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

"***Impact HY-7: Project operation would not result in substantial land subsidence due to decreased groundwater levels in the Westside Groundwater Basin where the historical low water levels are exceeded.***

Item 12 – Has land subsidence been fully evaluated for the Westside Basin?

Land subsidence and the associated negative effects are a serious potential impact in most groundwater basins that pump groundwater. Subsidence impacts can be localized around a well or more regional in nature. Impacts can disrupt ground surface elevations and affect major, costly, and vital infrastructure, including roads, aqueducts, pipelines, subsurface and surface utilities, buildings and house foundations, etc. In general, subsidence occurs when water levels decline, which results in removal of groundwater stored in fine-grained sediments in the units that overlie the saturated zone. The sediments become more consolidated (compacted), disrupting ground surface elevations and eliminating pore space that can be resaturated. The amount of subsidence is related to the total thickness of fine-grained sediments exposed. Hence, the thicker the fine-grained sediments in an area of a groundwater basin, the more likely that significant subsidence will occur.

GSR Project over-pumping the groundwater basin resulting in 100 or 200 feet of drawdown with significant fine-grained sediments will only increase the odds that subsidence will occur. There may be a time-lag of years between when pumping occurs and subsidence is first observed. The state of California is replete with examples of subsidence and its negative impacts (Antelope Valley, Santa Clara Valley, Central Valley, etc.). The best way to avoid these significant subsidence impacts is to prevent subsidence in the first place by restricting pumping so that water levels do not decline below current average levels. Once subsidence occurs there may be few engineering platforms to resolve the impacts." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

"***Impact C-HY-3: Operation of the proposed Project would not result in a cumulatively considerable contribution to cumulative impacts related to subsidence***.

See comments and questions discussed above under Impact HY-7." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

"2. Assume as in 1; will there be ground subsidence?*

> *Footnotes are for my use.

Reference Table 5.16-2; my guess is this is for an average year; my further guess is that estimates are to some level of accuracy, which I do not see (e.g. standard deviation of __ AF).

There is discussion of subsidence beginning on 5.16-27. 5.16 is in volume 2.

Lake Merced: a discussion begins 5.16-30. ” (*Steve Lawrence, e-mail, May 26, 2013 [I-Lawrence (1)]*)

Response HY-23

This grouping of comments expresses questions and concerns regarding the sufficiency of the subsidence analysis in the Draft EIR. As indicated on the geologic cross-section in the Draft EIR (Figure 5.16-2 [North-South Geologic Cross Section, Westside Groundwater Basin]), in addition to the Merced Formation, the Colma Formation is present in portions of the South Westside Groundwater Basin. Colma Formation sediments are relatively old (Pleistocene age) and of lithologic composition similar to the Merced Formation (Appendix H, *Technical Memorandum 10.5, Subsidence Analysis for the Regional Groundwater Storage and Recovery Project and San Francisco Groundwater Supply Project*, pages 13-17). No subsidence has been detected in lands overlying either the Colma or Merced Formations of the Westside Groundwater Basin. The Draft EIR at page 5.16-104, stating that estimations of subsidence used soil compressibility values for the Merced Formation was in error; data on compressibility of the Colma and Merced Formation do not exist. The Draft EIR instead is conservatively based on compressibility of more recent and more compressible sediments in Santa Clara Valley where historic subsidence has occurred (Appendix H, *Technical Memorandum 10.5, Subsidence Analysis for the Regional Groundwater Storage and Recovery Project and San Francisco Groundwater Supply Project*, pages 13-17) (see correction to Draft EIR discussed in Response HY-24). Thus, the subsidence calculations in the Draft EIR are conservative and, therefore, it can reasonably be assumed that no additional subsidence beyond that identified in the Draft EIR would occur due to presence of the Colma Formation.

The comment also states that Draft EIR subsidence calculations did not account for elastic (temporary) subsidence that may occur during pumping. Although it is true that most subsidence studies evaluate only inelastic (permanent) subsidence that may occur in clay layers, the Draft EIR subsidence study did account for both inelastic (clay layer) and elastic (sand layer) subsidence. The total subsidence values presented in the Draft EIR impacts analysis include both the elastic and inelastic components, with the inelastic component representing approximately two-thirds of the total, as indicated in the Draft EIR Appendix H *Subsidence Analysis for the Regional Groundwater Storage and Recovery Project and San Francisco Groundwater Supply Project* on page 15.

With regard to the part of the comment that requests that the Draft EIR be revised to analyze the impact of subsidence on the historic resource value of structures at Cypress Lawn and other cemeteries in Colma, this has been done in the Draft EIR, in that the Draft EIR significance thresholds for subsidence are applicable to all structures, including those of historic resource value. Please also refer to Response HY-25.

One of the comments is that subsidence due to groundwater pumping can result in substantial damage to pipelines and structures. Because the Draft EIR recognizes the potential for such damage, the SFPUC, in preparing the Project design, undertook an extensive subsidence analysis at multiple locations throughout the Westside Groundwater Basin (see Draft EIR Appendix H, *Subsidence Analysis for the Regional Groundwater Storage and Recovery Project and San Francisco Groundwater Supply Project*). The subsidence analysis reports the extent of groundwater level drawdown due to the Project at the end of the design drought when the most severe impact could occur; the extent of sand or clay layers subject to compression; and the resulting potential for subsidence using a compressibility factor from the Santa Clara Valley where subsidence has occurred, even though no known subsidence has been reported in the region of the Westside Groundwater Basin. Subsidence impacts are reported without regard to when they would occur, that is, even if there were a substantial time lag between when groundwater is pumped and when subsidence would appear, the calculation of subsidence results includes the eventual and ultimate subsidence. The results of the subsidence analysis indicate that no significant subsidence impacts would occur due to the Project, and therefore no mitigation, such as restricting Project pumping, is required to avoid significant subsidence impacts.

The comment asks whether the values in Table 5.16-2 (Modeled Annual Average Groundwater Budget for the Westside Groundwater Basin under Modeled Existing Conditions) are for an average year. The answer is yes, the groundwater budget presented in the table is for an average year. Further information on variations in the groundwater budget for a range of rainfall years can be found in the Draft EIR Appendix H, *Task 10.1 Technical Memorandum, Groundwater Modeling Analysis for the Regional Groundwater Storage and Recovery Project and San Francisco Groundwater Supply Project*, Attachment 10.1-D. The values in the groundwater budget table that is referenced here were not used in the subsidence analysis; the analysis of subsidence is based on the maximum extent of groundwater level decreases at the end of the design drought, including some decreases which exceed 100 feet, as compared to historic water levels. Even using calculations based on these maximum groundwater level decreases due the Project, which would occur for only a short time at the end of the design drought, subsidence impacts were found to be less than significant.

Comment HY-24: Comments related to compressibility values and subsidence monitoring.

This response addresses comments from the commenters listed below; each comment on this topic is quoted in full below this list:

- G-Daly City-Sweetland
- G-SB-Fabry

"**HY-7: Project operation would not result in substantial land subsidence due to decreased groundwater levels in the Westside Groundwater Basin where the historical low water levels are exceeded (*Less than Significant*)**. Daly City concurs. The subsidence analysis provides reasonable results given the tools and data available. However, in 'Approach to Analysis,' the DEIR states that 'laboratory test results of the compressibility of clays in the Westside Groundwater Basin were not available and, therefore, typical soil compressibility values of the Merced Formation (which underlies much of the Westside Groundwater Basin) were used in the estimations of subsidence.' The November 19, 2012 memorandum 'Response to Comment on Subsidence TM' provides additional explanation on the consideration of sediment age and burial depth in the selection of assumed compressibility values utilized in the calculations.[1] Nevertheless, the issue remains that the compressibility values used in the subsidence calculations are assumed. Furthermore, the proposed project will significantly increase groundwater extractions from the deepest parts of the aquifer system (the 'deep' aquifer), which is beneath the thickest and most extensive continuous clay bed identified in the basin (the 'W-clay'). It is prudent to establish baseline land surface elevation information from which future data can be compared to reliably conclude whether or not subsidence occurs. The South Westside Basin Groundwater Management Plan specifies actions to collect evidence of active subsidence should basin water levels decrease below historic levels.

[1] Memorandum from Peter Leffler to Greg Bartow, 'Response to Comment on Subsidence TM,' November 19, 2012." (*Daly City Department of Water and Wastewater Resources, letter, June 10, 2013 [G-Daly City-Sweetland])*

"4. DEIR, page 5.16-152. Given the significant proposed change in the groundwater pumping regime and the lack of understanding of historical subsidence and of the compressibility of subsurface materials, land subsidence monitoring should be performed, including development of a baseline of land surface elevation for future comparison." (*City of San Bruno, letter, June 13, 2013 [G-San Bruno-Fabry]*)

Response HY-24

These comments question the compressibility values used and request monitoring for subsidence. The sediment compressibility used in the subsidence calculations is not based on data from the Merced Formation (because no such data exist), but rather is conservatively based on compressibility of more recent (than Pleistocene age) and more compressible sediments in Santa Clara Valley where historic subsidence has occurred (this assumption is discussed in Draft EIR Appendix H, *Subsidence Analysis for the Regional Groundwater Storage and Recovery Project and San Francisco Groundwater Supply Project*, but was incorrectly stated in the Draft EIR on page 5.16-104 (see correction to Draft EIR, below). The Santa Clara Valley sediments are of much more recent age and are much more compressible than either the Merced or Colma Formations; thus, the subsidence calculations presented in the Draft EIR are conservative.

The following change is made to correct the source of the compressibility factor used in the Draft EIR on page 5.16-104:

> The compressibility property of clay particles is one of the parameters required to perform the methodology described above. Knowledge of such values is limited and

often imprecise; hence, so are the predictions of the extent of compaction and resulting subsidence. Site-specific laboratory test results of the compressibility of clays in the Westside Groundwater Basin were not available and, therefore, typical soil compressibility values of Santa Clara Valley sediments, which are more recent (than the Pleistocene age Merced Formation) and where historic subsidence has occurred, ~~Merced Formation (which underlies much of the Westside Groundwater Basin)~~ were used in the estimations of subsidence.

The SFPUC is preparing a Groundwater Management Plan for the North Westside Basin as part of its implementation of the approved San Francisco Groundwater Supply Project. The Plan will address the potential for land surface subsidence in the Westside Basin, in accordance with California Water Code Section 10753.7(a)(1), which requires groundwater management plans to include a component relating to inelastic land surface subsidence.

A discussion of potential land surface subsidence in the North Westside Basin will be included (based largely on the SFGW subsidence evaluation for the SFGW EIR) and monitoring may or may not be required. Land surface subsidence monitoring could include obtaining historic benchmark elevations and resurveying those locations to compare elevation changes over time; resurveying monitoring wells, test wells, and other locations with existing survey data throughout the basin to compare elevation changes; conducting an InSAR (interferometric synthetic aperture radar) survey; and/or performing a subsidence analysis with the results of the surveys.

The South Westside Groundwater Management Plan outlines a process that will be followed if land subsidence is reported within the area, or if water levels drop below the published historical lows:

- Collect evidence, if any, of active inelastic land subsidence and assess the risk.
- Develop a land subsidence monitoring program, if needed, using InSAR or traditional surveying and extensometer methods.
- Partner with the USGS or nearby agencies to implement any needed monitoring.

Comment HY-25: Comments related to significance threshold for subsidence.

This response addresses comments from the commenter listed below; the comments on this topic are quoted in full below this list:

- O-CLMP-Quick

"The DEIR's conclusion that subsidence of less than 6 inches would not cause damage to structures and pipelines is not supported by substantial evidence.[51] The cited e-mail includes only the conclusory statement: 'According to SFPUC's Engineering Management Bureau water pipelines can withstand subsidence of up to 6 inches.'[52] This unsupported opinion does not constitute 'substantial evidence' and does not serve the important function of informing the public and decision makers about the basis for this opinion. The cited reference *Soil Mechanics*, by Lambe and Whitman has not been made available for public review, and the information from the book concerning subsidence has not been summarized or otherwise provided so that the threshold of 6 inches can be verified. Without supporting substantial evidence, the DEIR cannot rule out the possibility that subsidence of less than 6 inches can cause damage to pipelines and structures.

> [51] DEIR, p. 5.16-104, citing Lambe and Whitman 1969; SFPUC 2013d. The DEIR appears to be referring to inelastic (permanent) subsidence rather than elastic (temporary) subsidence, although this is not explained. Even small amounts of elastic subsidence may have impacts not experienced with inelastic subsidence.
>
> [52] SFPUC 2013d." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

"Lambe and Whitman (1969) state that the amount of settlement a structure can tolerate, or the allowable settlement or permissible settlement, depends on many factors including the type, size, location and intended use of the structure, and the pattern, rate, cause, and source of settlement. They point out that there is a wide disparity of observed results and views as allowable subsidence or settlements and that this illustrates the difficulty in establishing an allowable level of subsidence or settlement. According to Lambe and Whitman (1969) masonry, framed structures, structural mats and smokestacks can be damaged by subsidence or settlement of as little as 1 to 3 inches. The DEIR presented estimates of subsidence resulting from GSR Project operations for three locations that range between 1 and 3.4 inches, within the range that Lambe and Whitman indicate could be problematic for various structures. How will this subsidence be mitigated?" *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

Response HY-25

This comment questions the significance threshold used for subsidence. As described on page 5.16-104 of the Draft EIR, "In general, structures, including pipelines, can withstand subsidence or settlement of six inches or less without damage (Lambe and Whitman 1969; SFPUC 2013d); therefore, projected subsidence of six inches or more is considered a significant impact on structures." The comment letter states that, "According to Lambe and Whitman (1969) masonry, framed structures, structural mats and smokestacks can be damaged by subsidence or settlement of as little as 1 to 3 inches." Although not specifically identified, the comment appears to be referring to Table 14.1 in the referenced document in this part of the comment. The one to three inches listed in Table 14.1 are under a subheading titled "Nonuniform Settlement," (i.e., differential settlement), whereas the Draft EIR, in accordance with CEQA Checklist question under VI. Geology and Soils (c) evaluates subsidence. The calculated values presented in the Draft EIR are for subsidence or total settlement (that is uniform settlement over the scale of a building). Potential compaction of deep subsurface clay layers is not expected to result in differential settlement over the scale of a building, because this type of compaction, resulting from a regional lowering of the underlying water table (as could be caused by the Project), would occur over an area much larger than the typical scale of an individual building. The text of Lambe and Whitman cites 6 to 12 inches as the level of total settlement at which structural damage may occur. The subsidence analysis results cited in the Draft EIR should be compared to the total settlement criterion of 6 to 12 inches cited by Lambe and Whitman.

The comment also states that the opinion of the SFPUC's Engineering Management Bureau, that water pipelines can withstand subsidence of up to six inches, is conclusory. The statement from the SFPUC is intended to present professional opinion from the engineering staff at SFPUC who are responsible for the maintenance and reliability of a wide variety of pipelines. The significance threshold of six inches of subsidence is therefore based upon the standard textbook, *Soil Mechanics*, by Lambe and Whitman, with corroboration in the form of the professional opinion of the engineers at the SFPUC Engineering Management Bureau.

Excerpts from *Soil Mechanics* relative to subsidence were made available in hard copy and electronic formats, for public review by the City of San Francisco Planning Department as part of the Administrative Record. It is not necessary to provide the entire book to the public in order to facilitate a thorough review of the portion of the book that is cited.

The Draft EIR analysis on pages 5.16-100 through -105 reports that impacts of subsidence are less than significant, and therefore, no mitigation is required. The Department believes that information to be accurate, and the commenter has not submitted any evidence which contradicts that information.

Comment HY-26: Comments related to inclusion of a subsidence map in the Draft EIR.

This response addresses comments from the commenter listed below; the comments on this topic are quoted in full below this list:

- O-CLMP-Quick

"*Item 13 – Why wasn't a subsidence silt/clay isopach/thickness map included in the DEIR?*

The amount of a subsidence depends largely upon the amount of dewatered fine-grained sediments. A regional isopach map that shows the percent of clay and fine-grained sediments would be used to evaluate potential regional subsidence. We recognize that the potential maximum drawdown and associated exposed fine-grained sediments will be located near the project and irrigator wells. However, other areas of the Westside Groundwater Basin (particularly the bayside area) may observe potentially greater subsidence impacts because of the larger thickness of fine-grained sediments.

Without a regional isopach map that depicts the percent of clay and fine-grained sediments that the DEIR's analysis based its subsidence estimates on, it is not possible to confirm whether the predicted levels of subsidence are reasonably accurate." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

"[Exhibit A, *Soil Mechanics* Excerpt – See Attachment RTC-A of this Final EIR]" *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

Response HY-26

The comment requests that a map showing the thickness of sands and clays be prepared to support the subsidence analysis. The subsidence analysis in the Draft EIR on pages 5.16-100 through 5.16-105 reports that Project operation would not result in substantial land subsidence due to decreased groundwater levels in the Westside Groundwater Basin where the historical low water levels are exceeded. This analysis is based on detailed calculations reported in the Draft EIR Appendix H, *Subsidence Analysis for the Regional Groundwater Storage and Recovery Project and San Francisco Groundwater Supply Project*. The analysis of subsidence does not require a clay/silt isopach map (i.e., a map showing the thickness of clay and/or silt layers) of the entire Westside Groundwater Basin, because the data that go into creating such a map were used directly in the subsidence calculations. This detailed information included geologic cross-sections and well log data. The locations selected for the subsidence analysis had an emphasis on areas with more clay sediments, including the southern portion of the basin where particularly thick clay layers are present. The subsidence analysis also considered and emphasized areas where Project pumping was more prevalent.

In addition to the analysis presented above, and described in the Draft EIR under Impact HY-7 and Appendix H, *Technical Memorandum 10-7 SFPUC Regional Groundwater Storage and Recovery Project; South Westside Basin Third-party Well Survey and Well Interference Analysis*, the conclusion takes into account that no historic subsidence has been known to occur in the Westside Basin, despite substantial historic groundwater pumping and groundwater level declines. This fact strongly suggests that the semi-consolidated Colma and Merced Formations have minimal compressibility, and that future temporary drawdown of groundwater levels that may locally occur due to the Project would likely result in minimal subsidence. However, to account for greater levels of localized drawdowns for temporary periods than have occurred historically, the Draft EIR makes conservative assumptions about the compressibility of soils in the aquifer by using data from Santa Clara Valley, which has unconsolidated sediments that have experienced historic subsidence.

Comment HY-27: Comments related to adequacy of seawater intrusion analysis.

This response addresses comments from the commenter listed below; the comments on this topic are quoted in full below this list:

- O-CLMP-Quick

"3. **Inadequate Analysis of Water Quality Impacts.**

a. **Inadequate Analysis of Seawater Intrusion**

The DEIR's analysis of the risk of seawater intrusion is perfunctory, incomplete, and unsupported.

The 2008 WSIP PEIR, in Chapter 5.6, included separate analysis of seawater intrusion impacts in the North and South Westside Groundwater Basin. According to the 2008 WSIP PEIR, because the North Basin is 'in direct connection with the ocean', seawater intrusion was a potentially significant impact (but rendered less than significant due to groundwater monitoring which would provide early detection). The 2008 WSIP PEIR concluded that 'seawater intrusion into the [South Basin] has not yet been detected...attributed to Merced Foundation.' On this basis, without any further study or evidence, the WSIP PEIR concluded that the risk of seawater intrusion in the South Basin would be less than significant." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

"The GSR Project DEIR acknowledges the prospect of potential seawater intrusion into the South Westside Groundwater Basin, noting this basin's proximity to and hydrologic connection to the saline waters of both San Francisco Bay and the Pacific Ocean. The analysis in Chapter 5.16 explains the dynamics of higher elevation seawater spilling into a lower elevation aquifer, noting:

> Seawater intrusion occurs when the freshwater groundwater gradient declines toward the ocean or bay and the resulting seawater intrusion along the base of the aquifer is termed a 'saltwater wedge'....The extent of seawater intrusion into a freshwater aquifer is affected by the relative difference between water levels in the ocean or bay and the freshwater aquifer with which it is in hydraulic connection.[55]

The DEIR presents these dynamics visually in Figure 5.16-9 (titled *Seawater Intrusion Schematic*).[56] After explaining the gravity-based characteristics of a saltwater wedge, the DEIR then goes on to determine that the prospect for the GSR Project to cause seawater intrusion into the South Westside Groundwater basin did not appear all that likely and therefore could be considered a 'less than significant' impact for CEQA purpose. Because the DEIR characterized seawater intrusion into the South Westside Groundwater Basin as a less than significant impact it did not require identification and implementation of mitigation measures to address this impact.

[55] DEIR, p. 5.16-106.

[56] *Id.* at p. 5.16-107. " *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

[The DEIR lacks…] "• Water quality parameters, typically used to evaluate salt water intrusion." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

"***Impact HY-8: Project operation would not result in seawater intrusion due to decreased groundwater levels in the Westside Groundwater Basin.***

Item 14 – Please provide additional analysis and information on water quality parameters as it relates to seawater intrusion and agricultural use?

The evaluation of water quality parameters is not discussed thoroughly in the DEIR. Elevated total dissolved solids (TDS) concentrations above background can provide information on the location of the freshwater/salt water interface and any impending impacts. Kirker Chapman and Associates (1972) used chloride-bicarbonate ratios to evaluate whether seawater intrusion had occurred in the basin. The water quality discussion in the DEIR focused on drinking water standards; there was no discussion on irrigation water quality requirements. Because irrigation water will not be treated or mixed with surface water before being applied to lawns and landscaped areas, it is critically important that the DEIR evaluate the risk of seawater intrusion into the aquifer." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

"*Item 15 – Why did the DEIR not include an analysis of current and projected changes in salinity? Why was modeling of water quality not included in this analysis? Will future analysis include analysis of actual and modeled water quality impacts? If there is unforeseen seawater intrusion, how will it be mitigated?*

A standard measurement or evaluation of seawater intrusion includes an evaluation of water quality, including but not limited to chloride and TDS concentrations of the groundwater to a standard that is considered to be representative of seawater intrusion. Different studies have used varying concentrations of chloride as an indicator of seawater intrusion. It appears that the DEIR is using the secondary maximum contaminant level (MCL) for chloride (250 milligrams per liter [mg/L]).

The DEIR analysis related to the potential impact of seawater intrusion does not include analysis based on water quality, but is based solely on measurements and modeling of water level changes near the coastline. The Westside Basin is bounded at least in part on the west by the Pacific Ocean and on the east by the San Francisco Bay. Seawater intrusion is a very real and important threat to water quality in the Project area. The description and characterization of the southwest side of the basin (south and west of Lake Merced) was poorly described in relationship to the potential seawater intrusion. The bayside portion is poorly defined and described." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

Response HY-27

This grouping of comments expresses concern regarding the adequacy of the Draft EIR analysis of seawater intrusion impacts.

The comment regarding the Program Environmental Impact Report (PEIR) analysis of seawater intrusion is not relevant because the Draft EIR analysis of seawater intrusion does not rely on the PEIR analysis of seawater intrusion. The description of the Project has been developed to a greater level of detail than it was at the time the PEIR was prepared, and the Draft EIR analysis of groundwater impacts reflects this greater level of understanding of the Project and was specifically developed to analyze the Project as defined at this time.

The comment expresses the opinion that the analysis of the risk of seawater intrusion is perfunctory, incomplete, and unsupported. Three reasons were provided by the commenter for this opinion, each of which is discussed below: 1) lack of water quality modeling; 2) failure to consider the water quality needed for agricultural irrigation; and 3) poor characterization of the groundwater basin. For a description and explanation of the overall approach to analysis for seawater intrusion in the Draft EIR, refer to Response HY-30.

1) Lack of Water Quality Modeling

The comment states that while it appears that the Draft EIR is using the secondary maximum contaminant level (MCL) for chloride (250 milligrams per liter [mg/L]) in assessing water quality, the analysis related to the potential impact of seawater intrusion does not include analysis based on water quality, but is based solely on measurements and modeling of groundwater level changes near the coastline.

The Draft EIR did not include an analysis of changes in salinity, total dissolved solids (TDS), chloride, or other water quality parameters due to Project operation, because the Project is predicted to have a slightly beneficial impact on groundwater levels, and therefore would not increase the risk of seawater intrusion as concluded in the discussion of Impact HY-8 on pages 5.16-110 through 5.16-113 of the Draft EIR. The Draft EIR identified a significance threshold of 250 mg/L of chloride for seawater intrusion, but no analysis of chloride concentrations in the aquifer was required, because the risk of seawater intrusion would not increase due to the Project. The commenter states that water quality modeling is a standard feature of seawater intrusion analyses; however, since there would be no increase in the risk of seawater intrusion due to the Project, there would be no increase in the concentrations of chloride, TDS, salinity or other water constituents due to Project-related seawater intrusion, and therefore no need to conduct an extensive analysis of water quality parameters. The CEQA Guidelines section 15151 makes clear that "An EIR should be prepared with a sufficient degree of analysis to provide decision makers with information which enables them to make a decision which intelligently takes account of environmental consequences." In this case, where Impact HY-8 regarding seawater intrusion has been identified as less than significant, no further analysis of seawater intrusion impacts (either foreseen or unforeseen), such as modeling of water quality parameters, is required. Nevertheless, the SFPUC will continue to conduct its Groundwater Monitoring Network and Program, as explained in the Draft EIR on pages 5.16-12 through 5.16-17.

2) Failure to Consider the Water Quality Needed for Agricultural Irrigation

The comment states that because irrigation water will not be treated or mixed with surface water before being applied to lawns and landscaped areas, the Draft EIR must evaluate the risk of changes in water quality due to seawater intrusion into the aquifer. The Draft EIR evaluates the risk of seawater intrusion into the aquifer using appropriate and sufficient methods (as described under the heading Approach to Analysis on pages 5.16-109 and 5.16–110 and in Response HY-30) and concluded that seawater intrusion impacts would be less than significant. Because the Project would not increase the risk of seawater intrusion, water quality in the Westside Groundwater Basin would not change due to Project-related seawater intrusion, and irrigation water for turf or other agricultural purposes would not be adversely affected.

3) Poor Characterization of the Groundwater Basin

The comment states that the Westside Groundwater Basin south and west of Lake Merced was poorly described in the Draft EIR in relationship to the potential seawater intrusion. The comment also states that the bayside portion of the Westside Groundwater Basin is poorly defined and described. The geology, aquifer system, groundwater monitoring network related to seawater intrusion, current and historical groundwater levels, and current and historical chloride concentrations of the Westside Groundwater Basin, both in the north and the south, are all extensively described in Section 5.16.1.3 (Regional Groundwater Hydrology) of the Draft EIR on pages 5.16-6 through 5.16-25. These descriptions are categorized by both location and aquifer depth. The information included in this section constitutes a sufficient and adequate description of the Westside Groundwater Basin in relation to potential seawater intrusion impacts of the Project.

Comment HY-28: Comments related to saltwater/freshwater interface and upconing.

This response addresses comments from the commenter listed below; the comments on this topic are quoted in full below this list:

- O-CLMP-Quick

"*Item 16 – How does the location and shape of the fresh-salt water interface vary during basin operations?*

'When an aquifer contains an underlying layer of saline water and is pumped by a well penetrating only the upper fresh water portion of the aquifer, a local rise of the interface below the well occurs; this is referred to as up-coning' (Todd, 1980). The description of the position of the toe of the freshwater/salt water interface, rather than water level elevation changes, is needed in order to understand and address up-coning issues. " *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

"Up-coning was not addressed in the DEIR. This gap in the analysis should be corrected." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

"*Item 19 – Will up-coning result in the increase of TDS concentrations in the lower portions of the Westside Basin aquifer? How will increases in TDS concentrations is if it occurs in non-GSR Project wells be mitigated?*

Up-coning can result in contaminating the deeper parts of the aquifer tapped by existing irrigator wells with additional salts, resulting in greater TDS concentrations. Because of the dynamic operation for the groundwater basin by SFPUC, water quality should be analyzed and evaluated annually from non-GSR Project wells. Water quality parameters that should be monitored annually including major cations (magnesium, calcium, sodium, and potassium), major anions (sulfate, chloride, and bicarbonate), minor ions (iron, manganese, fluoride, nitrogen species, and boron), and physical properties (total alkalinity, pH, total hardness, electrical conductivity, TDS, turbidity, color, and odor, and MBAS)." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

Response HY-28

This comment states that upconing is not addressed in relation to seawater intrusion and requests additional information regarding impacts on the saltwater/freshwater interface. Upconing refers to a potential impact from seawater intrusion, in which a pumping well can draw saltwater up from below into the well. Upconing of seawater is not anticipated as a result of the Project for two reasons. First, seawater intrusion that could provide salt water (including high concentrations of chloride or TDS) for upconing would not occur as a result of the Project, as concluded in the evaluation of Impact HY-8 in the Draft EIR on pages 5.16-105 through 5.16-113. Second, upconing would require saltwater to exist directly below the pumping well. As the irrigation wells are located near the interior of the Westside Groundwater Basin, away from the Pacific coast and San Francisco Bay (Bay), salt water does not exist at irrigation wells currently and would not occur at irrigation wells due to the Project, since the Project would not induce seawater intrusion, as concluded in the Draft EIR. Please also refer to Response HY-22.

The shape of the saltwater/freshwater interface is only relevant if there were ongoing seawater intrusion. Because the Project would not increase the risk of seawater intrusion, and the potential impact from seawater intrusion is less than significant, impacts on the shape of the saltwater/freshwater interface are irrelevant and need not be analyzed in the Draft EIR.

The comment lists the water quality parameters that should be monitored. The SFPUC intends to monitor for all of the constituents identified in the comment as part of its Groundwater Monitoring Network and Program described in the Draft EIR on pages 5.16-12 through 5.16-17 (SFPUC 2014e).

Comment HY-29: Comments related to cumulative seawater intrusion impacts.

This response addresses comments from the commenters listed below; each comment on this topic is quoted in full below this list:

- G-Daly City-Sweetland
- O-CLMP-Quick

"**C-HY-4: Operation of the proposed Project would not have a cumulatively considerable contribution to seawater intrusion. *(Less than Significant).*** Daly City concurs. Sea water intrusion is an issue for the San Francisco Groundwater Project, which is located in the North Westside Basin, and less of an issue for the Regional Groundwater Storage and Recovery Project proposed for the South Westside Basin. The DEIR concludes that the San Francisco Groundwater Project could result in a significant cumulative impact on groundwater quality from seawater intrusion in the North Westside Basin, but the GSR Project would not have a considerable contribution to seawater intrusion in the South Westside Basin. The seawater intrusion analysis could benefit from more thorough spatial analysis of modeled groundwater fluxes. However, the Operating Agreement provides for groundwater monitoring, which presumably includes sentinel wells located near the Pacific Ocean in the North Westside Basin and San Francisco Bay in the South Westside Basin. These sentinel wells are located some distance away from portable production wells, and their purpose is to identify early intrusion should it occur and initiate actions to correct and manage it. For example, the San Francisco Groundwater Project proposes to mitigate seawater intrusion in the North Westside Basin, should it occur, by adjusting the distribution and magnitude of pumping rates at proposed project wells, thereby protecting production wells located in the South Westside Basin." *(Daly City Department of Water and Wastewater Resources, letter, June 10, 2013 [G-Daly City-Sweetland])*

"***Impact C-HY-4: Operation of the proposed Project would not have a cumulatively considerable contribution to seawater intrusion.***

See comments and questions discussed above under Impact HY-8." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

Response HY-29

These comments opine that the cumulative seawater intrusion analysis in the Draft EIR would benefit from a more spatial analysis of modeled groundwater fluxes. The analysis was conducted for all locations where existing monitoring wells exist adjacent to the Pacific coast and Bay. The existing monitoring well network provides reasonable and complete coverage of the Pacific coast and Bay, and analysis at these locations effectively estimates expected future conditions throughout the coast and Bay. In particular, the SFO monitoring well cluster lies between the Bay and wells owned by the City of San Bruno. The UAL monitoring well cluster lies between the Bay and the proposed well at Site 16, the Project well facility site located closest to the Bay. Therefore, any seawater intrusion caused by, or threatening these production wells would be monitored by the existing SFO and UAL monitoring well clusters. Because these wells are representative of the conditions in the Westside Groundwater Basin as they relate to seawater intrusion, they are considered by the analysis to be the appropriate wells for evaluating the risk of seawater intrusion.

Please refer to Responses HY-27 and HY-28 regarding other responses on seawater intrusion impacts.

Comment HY-30: Comments related to the use of averages in the Draft EIR seawater intrusion analysis.

This response addresses comments from the commenter listed below; the comments on this topic are quoted in full below this list:

- O-CLMP-Quick

"The DEIR's significance determination in this regard was grounded on a comparison of surrounding San Francisco Bay and Pacific Ocean sea water levels to the '**average** groundwater levels' in the South Westside Groundwater predicted to result from the operations of the GSR Project.[57] By basing its seawater intrusion analysis on the anticipated 'average' groundwater level of the South Westside Groundwater Basin during the GSR Project operational period, the DEIR was able to avoid altogether analysis of seawater intrusion impacts during those 'Design Drought' periods (which the DEIR acknowledges could last as long as 8 years) when the South Westside Groundwater Basis level is expected to drop precipitously more than 100 feet below the 'average' groundwater level during the entire life of the project. The drawdown during these protracted Design Drought periods will lower the South Westside Groundwater Basin level to below the levels of surrounding seawater thereby creating conditions that would likely result in seawater intrusion.[58]

By grounding its seawater intrusion analysis on 'average' GSR Project groundwater levels, the DEIR was able to gloss over and mask the seawater intrusion impacts during those design drought years/periods when the project will dramatically lower the groundwater table.[59] Moreover, the DEIR's attempt to characterize such drawdown periods as 'short-term' and mere 'seasonal fluctuations' is contradicted by the remainder of the DEIR which acknowledges that design drought periods could last as long as 8 years. An 8-year period in which a saltwater wedge is continuously spilling into the South Westside Groundwater Basin cannot be credibly described as a mere 'temporary short-term seasonal fluctuation.' Furthermore, there is no hydrological support for the DEIR's claim that an 8-year period of continuous seawater intrusion into the aquifer will somehow be 'compensated' for in later years when the groundwater level is expected to rise. Once the South Westside Groundwater Basin is damaged and degraded by high salinity levels, a subsequent period of higher groundwater levels and groundwater flow back may push back the saltwater wedge contaminating the aquifer but it would not 'undo' or 'offset' the damage and degradation already done to the Aquifer's water quality from the previous seawater intrusion.

DBS&A's comments questions to propriety of using the 'average' groundwater level methodology to assess seawater intrusion impacts. This approach is fundamentally flawed and not scientifically credible.

DBS&A's comments concerning this issue confirm that, instead of relying on 'average' anticipated groundwater levels, the scientifically credible approach would have been for the DEIR to analyze the impacts to seawater intrusion/salinity impacts related to the anticipated periods of drought when the groundwater table in the South Westside Groundwater Basin will be drawn down substantially below the surrounding sea level. The DEIR must be revised so that the potentially significant impacts associated with seawater intrusion are fully analyzed and mitigated.

[57] *Id.* at pp. 5.16-109 and 5.16-110 ['**Average** groundwater levels were used because **short term** movement of the seawater interface towards lands during periods of low groundwater can be **offset** by movement of seawater interface towards the ocean during periods of high groundwater law ... Seawater intrusion is not likely to occur due to **seasonal fluctuation** of groundwater levels, because **seasonal fluctuations** are **temporary**, and seasonal decrease may be compensated for by seasonal increases'], emphasis added.

[58] The DEIR does not even attempt to analyze the potential for seawater intrusion if a drought lasts longer than the modeled design drought period or if water levels in the Aquifer at the end of such a protracted drought decline to below modeled conditions.

[59] The DEIR's analysis of the GSR Project's contribution to cumulative seawater intrusion impacts suffers from the same fundamental flaw of only considering average water levels. *See* DEIR, p. 5.16-156." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

"Item 17 – Why was the average water level used (DEIR, page 5.16-109, 4th paragraph) to evaluate the movement of the fresh-salt water interface rather than the worst-case scenario?

The average water level change predicted from the model does not provide the maximum potential impact from the proposed GSR Project. The maximum drawdown or minimum water level elevation near the coastline and the duration of this low water level would be more appropriate measures to evaluate the impacts for the project. Water levels that are below sea level and near the coast would produce significant inland movement of the freshwater/salt water interface and potential up-coning impacts resulting from GSR Project well pumping." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

Response HY-30

This grouping of comments expresses concern that the seawater intrusion analysis utilizes average groundwater levels instead of worse case conditions that could occur during a potential eight-year long drought and fails to consider the Project effect and duration of lowered groundwater level elevations. The concerns expressed in the comment grouping are categorized as follows, for the purpose of responding to each concern below: 1) use of groundwater levels averaged over the entire Project operation rather than drought years only; 2) comparison of Project impacts to seasonal fluctuations in groundwater levels; 3) failure to evaluate the effects of groundwater levels dropping more than 100 feet; 4) groundwater levels dropping below sea level; and 5) length of a drought. Concerns regarding upconing are addressed in Response HY-28.

Draft EIR Analytical Methodology

The Draft EIR outlines, in the seawater intrusion Approach to Analysis on pages 5.16-109 and 5.16-110, three methods for evaluation of the Project's potential impacts on seawater intrusion as follows:

- Comparing simulated groundwater elevations to calculated exclusion heads,[3]
- Analyzing the changes in the simulated flux of groundwater flowing to the ocean, and
- Analyzing simulated groundwater contours.

All three methods rely on results from the Westside Basin Groundwater Model, which provides simulations of groundwater level changes both of modeled existing conditions and the Project over 47 years of hydrology, as described in detail in Section 5.1.6 (Groundwater Modeling Overview). All of these methodologies evaluate changes in groundwater level parameters that would be indicative of seawater intrusion. All three methods of evaluation were utilized to provide a more robust assessment using a variety of approaches. These methods are standard approaches to the analysis of seawater intrusion that are acknowledged in standard references and textbooks, namely: *Seawater Intrusion in Coastal Aquifers – Concepts, Methods, and Practices*, J. Bear et al.; *Groundwater Hydrology*, H. Bouwer; *Groundwater*, R.A. Freeze et al.; *Pumping management of coastal aquifers using analytical models of saltwater intrusion*, A. Mantoglou; and others as described in more detail in the Draft EIR, Appendix H, *Task 10.3 Technical Memorandum, Assessment of Potential Seawater Intrusion for the Regional Groundwater Storage and Recovery Project and San Francisco Groundwater Supply Project*.

None of the three methods indicated that the Project would cause a significant seawater intrusion impact.

[3] The theoretical groundwater level that must be maintained at a well location to prevent seawater intrusion from reaching the well.

1) Use of groundwater levels averaged over the entire Project operation rather than drought years only

The concerns expressed in the comment grouping regarding use of groundwater level averages are directed to the first method, which utilizes average groundwater elevations. The Approach to Analysis explains this method, under the heading "Groundwater Elevations and Exclusion Heads" on pages 5.16-109 and 5.16-110, as follows:

> "Average modeled groundwater levels were compared to the average groundwater levels predicted to occur under modeled existing conditions in order to determine the effect of Project-related pumping on the potential for seawater intrusion to occur. Average groundwater levels were used because short-term movement of the seawater interface towards land during periods of low groundwater can be offset by movement of the seawater interface towards the ocean during periods of high groundwater. Average groundwater elevations are appropriate because they address both the magnitude and duration of short term seawater intrusion.
>
> If predicted average groundwater levels with the Project are lower than predicted average groundwater levels under modeled existing conditions, the groundwater levels are further compared to the exclusion head. Groundwater levels higher than the exclusion head indicate that seawater intrusion would not likely reach that well location. Groundwater levels lower than the exclusion head do not necessarily indicate that seawater intrusion would occur, but rather that the hydrologic potential exists for the landward migration of the seawater-freshwater interface. Generally, however, seawater intrusion would occur eventually if groundwater levels remain lower than the exclusion head indefinitely, unless there are other factors, such as physical barriers, that control seawater intrusion (Kennedy/Jenks 2012c)."

The Draft EIR concluded using this method that average groundwater levels are predicted to increase or remain the same due to the Project at all locations, and thus it can reasonably be expected that the Project would not increase the risk of seawater intrusion. Specifically, the Draft EIR concluded on pages 5.16-110 to 5.16-112 in the North Westside Groundwater Basin that groundwater levels in the Shallow Aquifer are predicted to be on average between 0 and 1.6 feet higher than under modeled existing conditions and never be below the exclusion head; for the Primary Production and Deep Aquifers, between 0.1 and 3.3 feet higher and are predicted to be below the exclusion head the same percent of the time as under modeled existing conditions. In the South Westside Groundwater Basin, the Draft EIR on pages 5.16-112 to 5.16-113 concluded from this method that groundwater levels in the shallow water-bearing zone, on average, are predicted to be between 0.8 and 2.0 feet higher and are not predicted to be below the exclusion head more than under modeled existing conditions; in the Primary Production and Deep Aquifers, 1.3 feet higher and are predicted to be below the exclusion head the same percent of the time as under modeled existing conditions.

The Draft EIR analysis of groundwater levels relative to seawater intrusion was based on averaging groundwater levels at specific locations near the Pacific coast and San Francisco Bay taken over the 47 years of hydrology as simulated by the Westside Groundwater Basin Model, including both drought and non-drought years. The specific locations selected for analysis were seven monitoring well sites in the North Westside Groundwater Basin and three monitoring well sites in the South Westside Groundwater Basin where the SFPUC and Partner Agencies have conducted ongoing monitoring as part of their Groundwater Monitoring Network and Program explained on pages 5.16-12 through 5.16-17 of the Draft EIR. These monitoring wells are appropriate locations for the evaluation of seawater intrusion, because they are located a few hundred to a few thousand feet from the Pacific coast or Bay where seawater intrusion would occur first, if it were to occur at all.

It is appropriate to use only groundwater levels near the edge of the Pacific coast or Bay for evaluation of seawater intrusion, rather than groundwater levels in the interior of the Westside Groundwater Basin, because the movement of seawater landward results from the difference in pressure (i.e., head) between the seawater and freshwater at the interface between them. Therefore, only the groundwater levels near the Pacific coast or Bay would affect the risk of seawater intrusion. The Colma cemeteries, for example, are located approximately 4.5 miles from the Pacific coast (measured from the closest location east of the Serra Fault where seawater intrusion is not ruled out for geologic reasons) and 3.5 miles from the Bay; therefore, the cemetery locations in Colma near the center of the South Westside Groundwater Basin would be inappropriate locations to evaluate the risk of seawater intrusion due to the Project.

The 47-year study period used by the Westside Groundwater Basin Model includes Project pumping, on average, in approximately 20 percent of the years, with the longest possible continuous pumping period being 7.5 years during the design drought. Unlike other groundwater impacts, such as well interference or water quality, where impacts could potentially occur in months or a few years, an analysis of the likely rate of seawater intrusion in the Project area indicates that seawater intrusion is expected to occur very slowly over decades, if it were to occur at all (see Appendix H of the Draft EIR, *Task 10.3 Technical Memorandum, Assessment of Potential Seawater Intrusion for the Regional Groundwater Storage and Recovery Project and San Francisco Groundwater Supply Project*). Even if 100 percent of the freshwater that leaves the Westside Groundwater Basin going to the Pacific coast or the Bay under modeled existing conditions were to be withdrawn via pumping on a continuous basis (a case which is far greater than would occur under the Project[4]), the saltwater/freshwater interface would be expected to move landward by only approximately 7 feet after one year, 33 feet after 10 years and 96 feet after

[4] Along the Pacific coast, the Project is estimated, at maximum, at the end of the design drought, to reduce freshwater flux toward the Pacific coast by approximately three percent. Along the Bay, the Project is estimated, at maximum, at the end of the design drought, to reduce the rate of freshwater flux by approximately 13 percent. A reduction in the rate of freshwater flowing to the Pacific coast or the Bay is estimated to occur for a few years during and after the design drought. (Appendix H of the Draft EIR, *Task 10.3 Technical Memorandum, Assessment of Potential Seawater Intrusion for the Regional Groundwater Storage and Recovery Project and San Francisco Groundwater Supply Project*)

50 years[5] (see Appendix H of the Draft EIR, *Task 10.3 Technical Memorandum, Assessment of Potential Seawater Intrusion for the Regional Groundwater Storage and Recovery Project and San Francisco Groundwater Supply Project*). Because the movement of the interface is so slow, a 47-year averaging period, i.e., approximately five decades, is a reasonable and meaningful study period. Use of a reduced averaging period of 7.5 years consisting of drought years only, as recommended by the commenter, is an inappropriate duration of study. Such a short duration of study would not yield results that would be expected to be within the level of accuracy of the model or have significant impacts in the physical environment.

Nonetheless, the Westside Basin Groundwater Model provides estimates of groundwater level changes for the worst 10 years of the 47-year simulation (model years 37 to 47, during and after the design drought), and those results are provided here, as requested by the comment.[6] In the Shallow Aquifer along the Pacific coast, the average groundwater levels with the Project during and after the design drought are predicted to increase slightly compared to modeled existing conditions at all monitoring well locations. The results at shallow water-bearing zones along the San Francisco Bay are predicted to be the same, thus it can reasonably be expected that there would be no increased risk of seawater intrusion in shallow groundwater zones even during model years 37 to 47. In the Primary Production Aquifer along the Pacific coast, the average groundwater levels with the Project during and after the design drought are predicted to decrease slightly compared to modeled existing conditions, but none of the changes are predicted to exceed 1 foot of decrease (averaged over the model years 37 to 47); on the other hand, the results in the Primary Production Aquifer along the Bay predict an increase in groundwater levels. In the Deep Aquifer along the Pacific coast, the average groundwater levels with the Project during and after the design drought are predicted to decrease an average of 2.5 feet at the five monitoring locations where data are available for the Deep Aquifer, compared to modeled existing conditions.

The location where the most change is predicted is at the Zoo monitoring well location, where the average decrease in groundwater levels from the Project are predicted to be 7.5 feet over years 37 to 47 of the model. These results indicate that even during the worst 10 years of the 47-year study period, during and after the design drought (which as described above is an inappropriately short study period)), groundwater level changes in the Deep Aquifer due to the Project can reasonably be expected to be small, and the movement of the saltwater/freshwater interface landward can reasonably be expected to be on the order of a few feet at most (see Appendix H of

[5] The results regarding the rate of movement of the saltwater/freshwater interface under modeled existing conditions should be considered approximate (see Appendix H of the Draft EIR, *Task 10.3 Technical Memorandum, Assessment of Potential Seawater Intrusion for the Regional Groundwater Storage and Recovery Project and San Francisco Groundwater Supply Project*).

[6] The results presented in this paragraph represent groundwater levels averaged over 10 years at multiple monitoring locations, whereas the Draft EIR analysis presented groundwater levels averaged over 47 years at multiple monitoring locations.

the Draft EIR, *Task 10.3 Technical Memorandum, Assessment of Potential Seawater Intrusion for the Regional Groundwater Storage and Recovery Project and San Francisco Groundwater Supply Project*).

For the sake of comparison, the closest irrigation wells to the Pacific coast are the Olympic Club wells (located approximately 1.3 miles east of the Pacific coast at the closest location east of the Serra Fault where seawater intrusion is not ruled out for geologic reasons) and the closest irrigation wells to the Bay are the California Golf Club wells (located approximately 2.2 miles west of the Bay).[7]

2) Comparison of Project impacts to seasonal fluctuations in groundwater levels

The Draft EIR does not refer to seasonal fluctuations in the impacts analysis of seawater intrusion as alleged in the comment, but does refer to seasonal fluctuations in the Approach to Analysis on page 5.16-110, as follows:

> "Seawater intrusion is not likely to occur due to seasonal fluctuation of groundwater levels, because seasonal fluctuations are temporary, and seasonal decreases are compensated for by seasonal increases (Kennedy/Jenks 2012c). Seasonal fluctuations may result in a wider seawater/fresh water transition zone, as mentioned above. This wider transition zone may result in elevated chloride concentrations near the coast. However, such a wider transition zone is not an indicator of ongoing seawater intrusion."

The intent of the foregoing paragraph in the Draft EIR is to explain that the analysis of seawater intrusion does not need to take seasonal fluctuations into account, because seasonal fluctuations are not very large, i.e., 0.2 to 1.2 feet of fluctuation in groundwater levels between May and November at various monitoring locations along the Pacific coast and Bay, and, therefore, they do not substantially affect the occurrence of seawater intrusion (see Appendix H of the Draft EIR, *Task 10.3 Technical Memorandum, Assessment of Potential Seawater Intrusion for the Regional Groundwater Storage and Recovery Project and San Francisco Groundwater Supply Project*).

Seawater intrusion impacts during the design drought are identified in the Draft EIR as less than significant impacts, because the movement of the saltwater/freshwater interface due to the Project would be so slow and small as to not have significant impacts (as discussed above). The detailed technical analyses conducted for the Draft EIR support the conclusions reached that the Project would not result in seawater intrusion, specifically taking into account the Westside Groundwater Basin characteristics such as the extent of seasonal fluctuations.

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[7] Distances are calculated using Google Earth©; locations for irrigation wells are shown on Figure 5.16-6 (Existing Irrigation Wells in the South Westside Groundwater Basin) of the Draft EIR, and the location of the Serra Fault is shown on Figure 10.1-2 (Westside Basin Groundwater-Flow Model Boundary) of *Task 10.1 Technical Memorandum, Groundwater Modeling Analysis for the Regional Groundwater Storage and Recovery Project and San Francisco Groundwater Supply Project* in Appendix H of the Draft EIR.

3) Failure to evaluate the effects of groundwater levels dropping more than 100 feet

The comment requests an "analysis of seawater intrusion impacts during those 'Design Drought' periods (which the Draft EIR acknowledges could last as long as 8 years) when the South Westside Groundwater Basin level is expected to drop precipitously more than 100 feet below the 'average' groundwater level during the entire life of the Project." The commenter is mistaken in that the Project would not reduce average groundwater levels more than 100 feet over the 45-mile square Westside Groundwater Basin during the entire life of the Project. Instead, the Project is estimated to decrease groundwater levels in the Primary Production Aquifer at specific locations for limited periods at the end of the design drought; the maximum impacts would occur in Colma near the center of the Westside Groundwater Basin, where groundwater levels are estimated to drop 100 to 118 feet for approximately two years at the end of the design drought. More importantly, as described earlier in this response, and as expressed in the commenter's letter by their hydrogeologist, the analysis of seawater intrusion should evaluate groundwater levels near the coastline, not in the interior of the groundwater basin, because any movement of seawater towards land would result from the difference in pressure (i.e., head) between the freshwater and seawater at the interface between them; groundwater levels in the interior of the Westside Groundwater Basin are therefore irrelevant for purposes of this particular analysis. The relevant parameters for evaluation of the risk of seawater intrusion are average groundwater levels taken over decades and located near the edges of the Westside Groundwater Basin adjacent to the Pacific coast or Bay, and these are the parameters that have been used in the Draft EIR seawater intrusion evaluation. Refer also to Response HY-29.

4) Groundwater levels dropping below sea level

The Draft EIR's seawater intrusion analysis methods do not examine the relationship of groundwater levels to sea level, because average groundwater levels along the Pacific coast and Bay would either increase or remain the same under the Project as under modeled existing conditions. Nevertheless, the Westside Basin Groundwater Model provides information of groundwater levels relative to sea level, and those results are provided here, as requested by the comment. With one exception, Project operation is not predicted to cause groundwater elevations in the Westside Groundwater Basin to fall below the levels of surrounding seawater any earlier in a drought than would occur under modeled existing conditions (see Appendix H of the Draft EIR, *Task 10.3 Technical Memorandum, Assessment of Potential Seawater Intrusion for the Regional Groundwater Storage and Recovery Project and San Francisco Groundwater Supply Project*). The one exception would be that groundwater levels in the Deep Aquifer at the Ortega well monitoring cluster (along the Pacific coast) are predicted to be approximately 0.5 feet above sea level under modeled existing conditions and are predicted to drop to approximately 0.5 feet below sea level under Project conditions, but only at the end of the design drought (see Appendix H of the Draft EIR, *Task 10.3 Technical Memorandum, Assessment of Potential Seawater Intrusion for the Regional Groundwater Storage and Recovery Project and San Francisco Groundwater Supply Project*). This predicted 1-foot decrease in groundwater levels below sea level at one location, as compared to modeled existing conditions, would be small, geographically limited, and brief. Because average groundwater levels are predicted to increase, including at the Ortega well monitoring location, it can be reasonably expected that the Project would not result in an increased risk of seawater intrusion.

5) Length of a drought

The comment notes that the Draft EIR does not analyze the potential for seawater intrusion under the circumstance when a drought lasts longer than the design drought. The analysis compares modeled existing conditions to conditions with the Project.[8] The inclusion of 7.5 years of pumping during the 8.5-year design drought in the seawater intrusion analysis is a reasonable and conservative worst-case scenario for the conditions under which the Project is evaluated. A design drought of 8.5 years is longer than any recent drought of record, and therefore is potentially a much worse assumption than any likely drought. The average groundwater levels generated from the 47-year record used by the Westside Basin Groundwater Model take the design drought into consideration, and no analysis which uses a further worst-case scenario is warranted. Further, the Project does not provide for pumping longer than 7.5 years irrespective of how long a drought may be in the future, and does not provide for pumping out more groundwater than is shown to be available in the SFPUC Storage Account. Refer also to Response PD-21.

Comment HY-31: Comment related to sea level rise for seawater intrusion.

This response addresses a comment from the commenter listed below; the comment on this topic is quoted in full below this list:

- O-CLMP-Quick

"Notably, the WSIP PEIR's analysis of seawater intrusion did not consider the effects of sea level rise caused by climate change.[54]

[54] [No footnote was included in the letter.]" *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

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[8] As explained in Section 3.2 (Project Goals and Objectives) in Chapter 3, Project Description of the Draft EIR, and as modified by Response PD-15, the Project would normally start pumping in the second year of the design drought. Therefore, the estimated 60,500 acre-feet (af) of new groundwater storage is assumed to be pumped over 7.5 years of the 8.5-year design drought.

Response HY-31

The comment regarding the analysis of seawater intrusion in the PEIR is not relevant, in that the Draft EIR evaluation of seawater intrusion does not rely on the PEIR analysis of seawater intrusion. The Draft EIR analyzes the Project's effects on seawater intrusion by comparing the Project's effect on seawater intrusion relative to existing baseline conditions (see CEQA Guidelines Section 15125[a]; *Neighbors for Smart Rail v. Exposition Metroline Construction Authority* [2013] 57 Cal.4th 439). Taking into account existing conditions, the Draft EIR concludes that the Project would not cause a significant seawater intrusion impact, as indicated on Draft EIR pages 5.16-105 through 5.16-113; that cumulative seawater intrusion impacts would be significant; and that the Project would not have a considerable contribution to the significant cumulative seawater intrusion impact, as indicated on Draft EIR pages 5.16-153 through 5.16-156. The Draft EIR cumulative impact analysis evaluated the Project in combination with other future projects in comparison to existing conditions, as required by CEQA.

The comment implies that the EIR should analyze the impact of future sea level rise on future seawater intrusion conditions that may exist with the Project. However, future sea level rise is not a cumulative project, as it is not a project as defined by CEQA. To the extent that sea level rise has already occurred and was part of the existing conditions at the time of the NOP in 2009, actual sea level rise has been accounted for in the Westside Basin Groundwater Model and the Draft EIR's project and cumulative analysis of seawater intrusion. Further, any future seawater intrusion occurring as a result of future sea level rise would not constitute an impact of the proposed Project; the Project's contribution to a potentially significant cumulative seawater intrusion impact would continue to be less than cumulatively considerable, for the reasons provided in the Draft EIR on pages 5.16-153 through 5.16-156. However, at the request of the commenter, additional information is provided here as to how sea level rise in the future may affect future conditions in the Project area related to seawater intrusion.

The additional information is provided in the following categories: 1) location of Project well facilities relative to future sea level rise inundation areas; 2) the relevance of partial physical barriers along the ocean and San Francisco Bay to seawater intrusion; 3) results of recent scientific studies regarding the effects of sea level rise on seawater intrusion; and 4) relation of groundwater level changes caused by the Project to future ocean and Bay elevations with sea level rise.

1) Location of Project well facilities relative to future sea level rise inundation areas

None of the proposed Project well facilities would be located along the Bay within a sea level rise inundation area, as indicated by an approximate mid-century 16-inch sea level rise or end-of-century 55-inch sea level rise (ABAG 2008). In addition, none of the Project well facilities would be located along the Pacific coast within a sea level rise inundation area, as indicated by the area potentially exposed to an approximate mid-century 24-inch sea level rise or end-of-century 66-inch sea level rise (California 2013). Therefore, no direct impacts of sea level rise on Project facilities would be expected to occur.

2) The relevance of partial physical barriers along the ocean and San Francisco Bay to seawater intrusion

It is unlikely that an increase in sea level would change the existing partial barriers that inhibit the flow of water from the ocean and Bay to the Westside Groundwater Basin. As discussed in the Draft EIR, Appendix H, *Task 10.3 Technical Memorandum, Assessment of Potential Seawater Intrusion for the Regional Groundwater Storage and Recovery Project and San Francisco Groundwater Supply Project*, the Serra Fault makes the Daly City area non-susceptible to seawater intrusion from the ocean, and the San Andreas fault may serve as a barrier to flow from the ocean to the Westside Groundwater Basin north of Lake Merced. In addition, low-permeability Bay Muds and a subsurface bedrock ridge provide partial barriers to seawater intrusion along the Bay. As discussed in Section 2.3.3 of the South Westside Groundwater Management Plan (San Bruno et al. 2012), "[t]he lack of historical seawater intrusion despite historical data of groundwater levels below sea level near both the Pacific Ocean and San Francisco Bay is likely due to natural hydrogeologic conditions that act as partial barriers and inhibit the flow of water from these saltwater bodies." If sea level rise occurs as predicted, the physical barriers currently in place will tend to remain barriers, because sea level rise would not affect the presence of faults or the permeability of the Bay Muds that separate San Francisco Bay from the Westside Groundwater Basin.

3) Results of recent scientific studies regarding the effects of sea level rise on seawater intrusion

A number of recent scientific studies have indicated that the effect of sea level rise on seawater intrusion into nearby freshwater groundwater basins is a complicated phenomenon that is not fully understood and that sea level rise may not cause seawater intrusion as much as previously expected. Two such recent studies are summarized as follows.

A scientific study of the effect of sea level rise on two coastal aquifers in California (the Seaside Area sub-basin near the City of Monterey and the Oxnard Plain sub-basin near the City of Ventura) found that the effect of sea level rise on seawater intrusion would only "contribute an additional 20 to 30 meters [66 to 98 feet] of inland movement of the 10,000 mg/L saline front and this appears minor when compared with historical measurements of seawater intrusion caused primarily by groundwater pumping since the early 1900s" (Loaiciga 2009).

A second scientific study used computer simulations for an idealized rectangular aquifer to study the effects of sea level rise on the movement of the saltwater wedge in confined and unconfined aquifers (Chang 2011). The results show that if groundwater recharge remains constant, the sea-level rise will have no impact on the location of the steady-state saltwater wedge in confined aquifers. The simulations identify an interesting self-reversal mechanism where the saltwater wedge, which initially intrudes into the groundwater formation due to sea level rise, would be naturally driven back to the original position. However, in unconfined-flow systems this self-reversal mechanism would have a lesser effect. Both confined and unconfined simulations show that rising seas would lift the entire aquifer and this lifting process would help alleviate the overall long-term impacts of seawater intrusion. In the Westside Groundwater Basin, both confined and unconfined conditions exist, as indicated in the Draft EIR, Appendix H, *Task 10.3 Technical Memorandum, Assessment of Potential Seawater Intrusion for the Regional Groundwater Storage and Recovery Project and San Francisco Groundwater Supply Project*, and therefore, the self-reversal mechanism described in the study could be expected to occur to some extent. The study notes that while the above results are useful for developing a large-scale conceptual understanding of the impacts of sea level rise, evaluation of true impacts would require detailed site-specific modeling efforts (Chang 2011).

4) Relation of groundwater level changes caused by the Project to future ocean and Bay elevations with sea level rise

The Project is predicted to change groundwater elevations and the flux toward the ocean and Bay in a manner that is similar to or higher than modeled existing conditions (see Draft EIR pages 5.16-105 through 5.16-113 and Response HY-30). Refer to Figure 5.1-2 (Effects of Project and Cumulative Conditions relative to Modeled Existing Conditions on Groundwater Storage Volumes in the Westside Groundwater Basin) from Section 5.1.6 (Groundwater Modeling Overview in the Draft EIR) (which is presented again in this Responses to Comments document in Section 9.11.3 [Greenhouse Gas Emissions]) which illustrates that groundwater storage is predicted to be higher with the Project than under modeled existing conditions for approximately 80 percent of the time. Increased groundwater storage would generally have the effect of reducing the potential for seawater intrusion because of higher freshwater pressure and higher rates of outflow of freshwater toward the ocean and Bay. Therefore, during the times when groundwater storage is higher, the Project would tend to reduce the potential for seawater intrusion and protect the groundwater basin from damage due to seawater intrusion if it were to occur due to sea level rise.

As explained in Response HY-30, during the 20 percent of the time that the Project is predicted to result in decreased groundwater storage, the rate of landward movement of the freshwater/saltwater interface intrusion would be so slow and the duration of the decreased groundwater storage so limited that no significant risk of seawater intrusion would occur due to the Project. During these Project phases, the contribution of the Project to cumulative seawater intrusion impacts would not change due to sea level rise. Therefore, the contribution of the Project to significant cumulative seawater intrusion impacts would be not be cumulatively considerable.

Comment HY-32: Comments related to the Project's effects on Lake Merced.

This response addresses comments from the commenters listed below; each comment on this topic is quoted in full below this list:

- I-Lawrence (1)
- I-Lawrence (2)

"Will Lake Merced be depleted or unacceptably low?*

> *Footnotes are for my use.
>
> Reference Table 5.16-2; my guess is this is for an average year; my further guess is that estimates are to some level of accuracy, which I do not see (e.g. standard deviation of __ AF).
>
> There is discussion of subsidence beginning on 5.16-27. 5.16 is in volume 2.
>
> Lake Merced: a discussion begins 5.16-30." *(Steve Lawrence, e-mail, May 26, 2013 [I-Lawrence (1)])*

"5. There is some outflow of groundwater to the ocean. Especially near Lake Merced (to the ocean side), will the project cause outflow to increase, and if so, will greater outflow accelerate the creation of a pathway for ocean water (at highest tides and westerly storm conditions) to enter into Lake Merced?" *(Steve Lawrence, e-mail, May 26, 2013 [I-Lawrence (1)])*

"Please add this Comment:

At his June 11 presentation concerning projects that will affect Lake Merced, Mr. Ritchie, and the Commission, declined to address how pumping 7.2 mgd from the Westside aquifer during drought years (7.5 years per the design) will affect Lake Merced, except to say it 'would suffer along with the rest of us.'

It is possible, even likely, that when pumping occurs the Lake level drops. Mr. Ritchie's presentation did not deny the connection between Lake and aquifer. (I believe that is new)." *(Steve Lawrence, email, June 13, 2013 [I-Lawrence (2)])*

Response HY-32

The comment asks if Lake Merced would be depleted or unacceptably low or if the lake level were to drop as a result of the Project. The Draft EIR analyzes impacts on the water levels at Lake Merced in Impact HY-9 on pages 5.16-113 through 5.16-127 and Cumulative Impact C-HY-5 on pages 5.16-156 through 5.16-159. Regarding the effect of the Project on water levels at Lake Merced, the Draft EIR states on page 5.16-124:

> "The lowest predicted lake level with operation of the Project, which is expected at the end of the design drought, is approximately -2 feet City Datum (compared to approximately -1.5 feet City Datum under modeled existing conditions; i.e., without the Project), which would leave approximately 4 feet of water in Impound Lake and about 9 feet of water in East Lake. (Kennedy/Jenks 2012d)
>
> The predicted mean monthly lake level with operation of the Project is 9.1 feet City Datum (compared to approximately 6.3 feet City Datum under modeled existing conditions). Lake levels with operation of the Project are predicted to be below 5 feet for 14 percent of the simulation period, whereas lake levels are predicted to be below 5 feet for 33 percent of the simulation period under the modeled existing conditions. Lake levels with operation of the Project are predicted to be below 1 foot for 10 percent of the simulation period, whereas lake levels are predicted to be below 1 foot for four percent of the simulation period under the modeled existing conditions. Overall, lake levels are predicted to be higher under the Project conditions than under the modeled existing conditions for approximately 90 percent of the time during the 47-year simulation, but lake levels are predicted to be lower than modeled existing conditions during and after the design drought for approximately 10 percent of the 47-year simulation. (Kennedy/Jenks 2012d)"

Impact HY-9 and Cumulative Impact C-HY-5 were found to be significant and less than significant with mitigation, respectively.

The comment also asks if the Project would cause outflow to the ocean to increase, and if so, would greater outflow accelerate the creation of a pathway for ocean water (at highest tides and westerly storm conditions) to enter into Lake Merced. The Draft EIR states on page 5.16-124:

> "Relative to the modeled existing conditions, the estimated outflow from Lake Merced to the groundwater under the proposed Project is predicted to be generally lower due to the higher groundwater levels associated with operation of the Project for most of the 47-year simulation period, although groundwater inflows to the lake are predicted to be reduced relative to the modeled existing conditions during and after the design drought. (Kennedy/Jenks 2012d)"

As indicated in the Draft EIR, outflow from Lake Merced to groundwater would generally decrease, and therefore a pathway for ocean water to enter Lake Merced via groundwater would not be accelerated by the Project. Because the Project would not alter above-ground topography, it would have no potential to affect ocean water entering Lake Merced over land, and thus any above-ground pathway would also not be accelerated.

Comment HY-33: Comment related to hydraulic connectivity.

This response addresses a comment from the commenter listed below; the comment on this topic is quoted in full below this list:

- G-Daly City-Sweetland

"**HY-12: <u>Project operation would not cause a violation of water quality standards due to mobilization of contaminants in groundwater from changing groundwater levels in the Westside Groundwater Basin (*Less than Significant*)</u>.** Daly City concurs with the following caveat. The basis for the *Less than Significant* impact seems to depend in part on the DEIR text describing shallow groundwater zones as being isolated, hydraulically separated, and disconnected hydraulically from the Primary Production Aquifer. The following observations indicate the Primary Production Aquifer is not isolated from land surface and percolating groundwater recharge.

• If the Primary Production Aquifer were isolated/hydraulically separated from groundwater recharge, as purported by the DEIR, then water and dissolved constituents in recharge are not expected to migrate downwards into the Primary Production Aquifer. However, monitoring data from Primary Production and deeper Deep Aquifer wells has detected constituents like nitrate (pg. 5-16.28), and VOCs (pg. 5.16-29), which are associated with land surface activities. These constituents conceivably reached these depths by migrating downwards with recharge.

• In-lieu recharge depends on a hydraulic connection between groundwater recharge and the Primary Production Aquifer, although the characteristics of that connection are spatially variable. Conjunctive use pilot projects have shown that in-lieu recharge to the shallow aquifer over large basin areas contribute significant volumes of water that can be extracted by wells constructed in the Primary Production and Deep Aquifers (pg. 5-16.20). An in-lieu recharge project would be infeasible if the Primary Production Aquifer was isolated, hydraulically separated or disconnected from groundwater recharge.

However, changes to vertical gradients primarily influence the potential for constituents near land surface to reach the Primary Production Aquifer in groundwater recharge. On average, the project reduces vertical hydraulic gradients relative to existing conditions, and significant groundwater quality changes due to the project are therefore not expected. We request that the importance of vertical gradients be emphasized in the next EIR document by removing phrases like 'assuming there is a hydraulic connection,' 'disconnected hydraulically,' and 'limited hydraulic connectivity.' We believe this can be easily achieved by incorporating the information as was presented in the January 31, 2013 memorandum 'Clarification of Task 10.6 Technical Memorandum Aquifer Nomenclature and Physical Processes Affecting Water Quality in the South Westside Groundwater Basin.'[2]

Therefore, Daly City concurs that water quality impacts, if any, should be *Less than Significant*. Groundwater monitoring and analyses as part of managing the project under the Operating Agreement as well as water supply monitoring by the Participating Pumpers should identify the presence of constituents of concern, and the extracted groundwater would be treated to ensure all drinking water standards are met.

[2] Memorandum from Greg Bartow to Tim Johnston, '*Clarification of Task 10.6 Technical Memorandum Aquifer Nomenclature and Physical Processes Affecting Water Quality in the South Westside Groundwater Basin*,' January 31, 2013." *(Daly City Department of Water and Wastewater Resources, letter, June 10, 2013 [G-Daly City-Sweetland])*

Response HY-33

This comment requests that the Draft EIR description of the groundwater hydrology be revised to indicate that shallow groundwater zones are not necessarily isolated, hydraulically separated, or disconnected hydraulically from the Primary Production Aquifer. The conclusion of the Draft EIR regarding a less-than-significant impact on water quality is not dependent upon this description, and the following changes are made in the Draft EIR for clarification only. The following revisions are made to the Draft EIR:

On page 5.16-130 and 131:

> Some components of groundwater recharge can transport contaminants from the surface to the underlying regional aquifer system. The primary sources of groundwater recharge are vertical percolation of rainfall, applied irrigation water, subsurface inflow from surrounding areas and leakage from water supply and sewer pipes (HydroFocus 2011). Horizontal and vertical groundwater gradients can transport contaminants laterally between areas and downward to the underlying aquifer systems~~ assuming there is a hydraulic connection~~.

On page 5.16-131, second paragraph:

> Fine-grained, low permeability sediments are present between the shallow water-bearing zones and the ~~The~~ Primary Production Aquifer~~ is generally disconnected hydraulically from most occurrences of shallow groundwater zones~~ in the bulk of the South Westside Groundwater Basin ~~by an unsaturated zone and in most places by the presence of shallow fine-grained material~~.

On page 5.16-131, third paragraph:

> Even though ~~permeability is reduced,~~ the shallow water-bearing zone and the Primary Production Aquifer are separated by low permeability sediments, they are ~~have limited~~ hydraulically connected~~ivity~~, and the GSR Project would therefore affect downward gradients and flow.

On page 5.16-135, third paragraph:

> The existing and potential shallow groundwater zone contamination would need to migrate down to the Primary Production Aquifer to affect the ability of SFPUC and Partner Agency wells to meet drinking water standards. Fine-grained, low permeability sediments are present between ~~T~~the shallow groundwater zone and Primary Production Aquifer ~~are generally disconnected hydraulically~~ in most areas; however, ~~in those areas where there may be some level of connection,~~ the two zones are hydraulically connected, and the Project would therefore affect downward gradients and flow.

Comment HY-34: Comments related to nitrate in irrigation water.

This response addresses comments from the commenter listed below; the comments on this topic are quoted in full below this list:

- O-CGC-Maddow

"In addition to its unique architecture, the golf course is differentiated from all other Bay Area courses in that it utilizes fine fescue grasses in its playing and practice surfaces. Among other things, that means that the source and quality of the water used for Club irrigation is particularly important in terms of being able to reliably control the time and duration of irrigation cycles and especially in regard to avoiding any irrigation water constituent - especially nitrates - that are potentially dangerous to the grasses used by the Club." *(California Golf Club, letter, June 11, 2013 [O-CGC-Maddow])*

"Since the renovation of the Club and the introduction of fine fescue grasses into the turf on playing and practice surfaces, water quality has been a particular concern of the Club. The irrigation water constituent that is of primary concern in this regard is nitrate. The DEIR notes the presence of nitrates generally in the groundwater in the South San Francisco area, perhaps as a result of historic agricultural activities in the area, and suggests the possibility that water at deeper levels in the aquifer will be lower in nitrates. The Club is aware that there has been a short-term test of 'in-lieu recharge' in some portions of the groundwater basin; however, the Club is also aware that at no time has there ever been anything like the proposed full-scale operation that the proposed Project would represent. In addition to not being able to predict with certainty what the impacts of the proposed Project would be on groundwater quantities, pumping capacities, and the water rights of legal users of water from the Basin, the Club is deeply concerned that implementation of the proposed Project might have the potential to mobilize or redistribute nitrates in the Basin, or to otherwise adversely impact water quality. None of the proposed mitigation measures appear to address the potential for adverse water quality impacts." *(California Golf Club, letter, June 11, 2013 [O-CGC-Maddow])*

Response HY-34

This grouping of comments expresses concern regarding the mobilization of nitrates into irrigation water which may be dangerous to turf grasses, such as fine fescues.

The Draft EIR acknowledges the potential for Project-related rising groundwater levels to affect nitrate concentrations on page 5.16-135, as follows:

> "Elevated nitrate concentrations, especially in the Daly City and South San Francisco area where elevated levels occur in the Primary Production Aquifer, could be affected by Project pumping and in-lieu recharge. Nitrates in soils in the Project area are currently percolating towards the shallow groundwater. The Project would neither increase nor decrease the amount of nitrates that reach the shallow groundwater, because the Project would not change the amount of recharge from rainfall or the percolation rate of the soils. However, the Westside Basin Groundwater Model predicts that Project pumping and in-lieu recharge could result in changes in groundwater flow directions in areas where nitrate concentrations are currently elevated, which could transport nitrate in groundwater to production wells (Kennedy/Jenks May 2012e)."

The Draft EIR acknowledges the potential for Project-related fluctuations in groundwater levels to mobilize existing nitrate masses. Such potential mobilization could damage irrigated turf, if nitrate concentrations high enough to harm turf exist in groundwater, and the Project were to cause this groundwater with high concentrations of nitrate (primarily in the Daly City and South San Francisco areas) to be transported horizontally to the aquifer pumped by the irrigation well.

The amount of nitrate that is needed by, and can be tolerated by, plants varies widely. Turf grasses require the addition of nitrogen fertilizers. Among turf grasses, fine fescues require less nitrogen fertilizer than other types of grass. However, fine fescues still require fertilization with two to four pounds of nitrogen per 1,000 square feet per year (Delaware Nutrient Management Commission 2006). For the sake of comparison, irrigation water with a concentration of 82 to 164 mg/L of nitrate[9] would deliver approximately two to four pounds of nitrogen per 1,000 square feet per year, respectively (Bauder et al. 2011; Carollo 2008). It is assumed that nitrate concentrations that are less than the minimum recommended fertilization rates would not be toxic. Therefore, it is expected that nitrate concentrations in irrigation water that are less than 82 mg/L would not damage turf grasses, such as fine fescues. The SFPUC's Westside Basin Annual Groundwater Monitoring Report (SFPUC 2013) indicates that, in general, the groundwater quality in the area of the irrigation wells ranges from less than 1 mg/L to 62 mg/L. However, higher nitrate concentrations are known to occur in Daly City and South San Francisco, with the highest level of 140 mg/L being recorded in 2007 at the Daly City "A" Street well (SFPUC 2013;

[9] All nitrate concentration values in this Response have been converted to nitrate measured as nitrate, rather than nitrate measured as nitrogen.

see also Appendix H of the Draft EIR, *Task 10.6 Technical Memorandum, Assessment of Groundwater Quality for the Regional Groundwater Storage and Recovery Project and the San Francisco Groundwater Supply Project*). The closest irrigation wells are located approximately one-half mile from any of these areas with nitrate concentrations in excess of 82 mg/L.

The potential migration of groundwater during Project operation is indicated in the Westside Basin Groundwater Model by changes to the direction of groundwater flow. Modeling results predict that when the SFPUC Storage Account is full, flow directions with the Project tend to be similar to modeled existing conditions, with the exception of the Daly City area. As groundwater levels rise around Daly City during multiple years with in-lieu recharge, groundwater flows in this area are predicted to turn slightly further south. At the end of the design drought, no appreciable changes in flow directions relative to modeled existing conditions are predicted to occur due to the Project. None of the cemetery or golf club irrigation wells is predicted by the Westside Basin Groundwater Model to experience substantial changes in groundwater flow directions due to the Project either in wet years when the SFPUC Storage Account is full or at the end of the design drought, as indicated in Figures 10.6-12 through 10.6-15 in Draft EIR Appendix H, *Task 10.6 Technical Memorandum, Assessment of Groundwater Quality for the Regional Groundwater Storage and Recovery Project and the San Francisco Groundwater Supply Project*.

Groundwater in the vicinity of the existing irrigation wells has generally low nitrate concentrations. Because none of the irrigation wells is located close to the monitoring locations with nitrate concentrations over 82 mg/L, and because migration of nitrate in groundwater due to the Project is predicted to be slight, it can be reasonably expected that the Project would not mobilize nitrate sufficiently to cause irrigation water to damage turf, even turf grasses such as fine fescues.

Because impacts to irrigation water quality would be less than significant, no mitigation is needed. Refer also to Response HY-39.

Comment HY-35: Comments related to the vertical stratification of constituents.

This response addresses comments from the commenter listed below; the comments on this topic are quoted in full below this list:

- O-CLMP-Quick

"3. **The DEIR Fails To Adequately Explain Vertical Stratification of Sediments, Contaminants and Water Quality in Different Elevations of the Westside Groundwater Basin.**

The DEIR analyzes of chloride, nitrates and volatile organic compound (VOC) contamination in the Westside Groundwater Basin, both in terms of existing conditions (environmental setting per CEQA Guideline Section 15125) and the GSR Project's impacts (per CEQA Guideline Section 15126). The DEIR's analysis of these water quality issues treats groundwater chlorine, nitrate and VOC concentrations as if they were uniform vertically throughout the aquifer. This assumption of such uniformity is not warranted, as there can be significant variations in contaminate concentrations throughout the vertical strata of the groundwater column, and these concentrations can be significantly impacts by the rising and the failing of groundwater levels within an aquifer.

The DEIR acknowledges that nitrates, tetracholoroethylene (PCE) and tricholoroethylene (TCE) (among other contaminants) have been detected in groundwater samples.[29] Yet, as groundwater levels rise towards the surface (which is expected under the GSR Project during wet years), such rising groundwater levels may have a tendency to mobilize nitrate, PCE and TCE contaminants into the aquifer.

The vertical stratification can also occur with solids/sediments in the groundwater column. That is, high concentration of dissolved solids tend to settle at higher concentrations in lower strata of the water column of groundwater aquifers, such that groundwater extraction wells located in these deeper strata are likely to pump water with more dissolved contaminants.

In failing to address the issue of vertical stratification of contaminations and sediments in the water column of the Westside Groundwater Basins, the GSR Project DEIR has not satisfied either the environmental setting description requirements of CEQA Guideline Section 15125 or the environmental effects analysis requirements of CEQA Guideline Section 15126.

[29] DEIR, pp. 5.16-28 - 5.16-29." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

"***Impact HY-12: Project operation would not cause a violation of water quality standards due to mobilization of contaminants in groundwater from changing groundwater levels in the Westside Groundwater Basin.***

Item 18 – Is water stratified as the GSR Project draws down the aquifer water level?

In general, the water quality for many aquifers is naturally stratified, resulting in the increase of TDS concentration with depth. In addition, anthropogenic industrial, urban, and domestic activities have resulted in impacts by volatile organic compounds and nitrates to the shallow aquifers.

The DEIR did not fully discuss water quality stratification of the underlying aquifers, potential remobilization of existing contaminants by increasing the water table, or lowering the water table that could result in salt water intrusion. Nested wells have been installed in selected areas of the groundwater basin near proposed GSR Project wells. Are there other areas in which nested wells should be installed to evaluate existing contaminant plumes or to evaluate the freshwater/salt water interface?" *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

"*Impact HY-13: Project operation would not result in degradation of drinking water quality or groundwater quality relative to constituents for which standards do not exist.*

See comments and questions discussed above under Impact HY-12." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

"Impact C-HY-6: Operation of the proposed Project would not result in a cumulatively considerable contribution to cumulative impacts related to water quality standards.

See comments and questions discussed above under Impact HY-12." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

"Impact C-HY-7: Operation of the proposed Project would not result in a cumulatively considerable contribution to cumulative impacts related to water quality degradation.

See comments and questions discussed above under Impact HY-12." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

Response HY-35

These comments question whether vertical stratification has been sufficiently considered in the Draft EIR analysis of water quality. The Draft EIR does not evaluate chlorides, nitrates, and volatile organic compounds (VOCs) as though they are uniformly distributed throughout the aquifer as asserted by the commenter. Vertical stratification of contaminants is fully addressed, based on groundwater quality data obtained from a series of monitoring wells, several of which are nested monitoring wells that provide groundwater quality data at different elevations at the same location. The Draft EIR on page 5.16-135 points out that contamination from Potentially Contaminating Activities (PCAs) is found on the order of 30 to 50 feet below ground surface (bgs). The Draft EIR analysis of water quality impacts acknowledges this vertical stratification in that the Draft EIR identifies impacts as significant only if groundwater levels were to rise into this shallower zone where PCAs may be present, as explained on Draft EIR page 5.16-138.

Vertical stratification of chloride data near the coast is presented on pages 5.16-23 and 5.16-25 of the Draft EIR. Chloride data are not lumped together, but are divided into shallow aquifer data, primary production aquifer data, and deep aquifer data.

The Draft EIR explicitly acknowledges that rising groundwater levels may mobilize various constituents. The Draft EIR analysis of water quality impacts is premised on the idea that VOCs and many other contaminants would only be mobilized if groundwater levels rise into the shallow zone where the contaminants exist. However, the Draft EIR concludes on pages 5.16-137 through 5.16-139 that because groundwater levels either would not rise into the shallow groundwater zone or are within the shallow groundwater zone under modeled existing conditions, impacts of the Project operation on water quality relative to the potential to mobilize PCAs would be less than significant.

Information on the distribution of groundwater with higher total dissolved solids (TDS) resulting from seawater intrusion is included in the hydrology setting on pages 5.16-13, 5.16-27 and 5.16-28 and in the discussion of seawater intrusion impacts on page 5.16-106 of the Draft EIR. Monitoring data from nested monitoring wells where samples are taken at varying depths at one location do not show any increase in TDS with depth in the Westside Groundwater Basin (SFPUC 2012b).

One of the comments asks if there are other areas in which nested wells should be installed to evaluate existing contaminant plumes or to evaluate the saltwater/freshwater interface. Because the Draft EIR does not identify a significant impact on water quality relative to the Project's potential to mobilize contaminant plumes or to cause seawater intrusion, no mitigation or identification of additional monitoring wells is required. Further, the 46 existing monitoring well locations, where data have been collected and used in the Draft EIR analysis, are strategically distributed throughout the Westside Groundwater Basin, as shown on Figures 5.16-3 (Groundwater Quality Monitoring Network) and 5.16-4 (Groundwater Elevation Monitoring Network), and, therefore, no additional monitoring wells are needed. The existing Groundwater Monitoring Network and Program is explained on pages 5.16-12 through 5.16-17 of the Draft EIR.

Comment HY-36: Comment related to contamination limited to the first 50 feet.

This response addresses a comment from the commenter listed below; the comment on this topic is quoted in full below this list:

- O-CLMP-Quick

"The analysis of Impact HY-12 is also insufficient for several other reasons. First, it does not provide any factual basis for the assumption that contamination is limited to the top 50 feet below ground surface (bgs).[62] It is quite possible that contamination may be present below 50 feet or even 70 feet bgs. Accordingly, it is also possible that raising groundwater levels to levels lower than 70 feet bgs could mobilize contamination. The DEIR must address these possibilities and the implications for raising the water table to levels that could potentially mobilize deeper areas of soil and/or water contamination.

[62] DEIR, p. 5.16-130." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

Response HY-36

This comment expresses concern that the methodology used in the Draft EIR for the water quality analysis was inadequate relative to the depth of existing contamination and there is not factual support for the assumption that contamination is limited to the top 50 feet below ground surface (bgs). The assumption in the Draft EIR that contamination is limited to the top 50 feet is supported in Draft EIR Appendix H, *Task 10.6 Technical Memorandum, Assessment of Groundwater Quality for the Regional Groundwater Storage and Recovery Project and the San Francisco Groundwater Supply Project*, which provides results of extensive research on PCAs in the South Westside Groundwater Basin and reported that the depth of contaminants was nearly always less than 50 feet. For clarity, the Draft EIR on page 5.16-130, first paragraph, is revised as follows:

> Areas where existing groundwater levels are predicted to be below a depth of 70 feet under modeled existing conditions are evaluated differently from areas where existing

> groundwater levels are above a depth of 70 feet. A depth of 70 feet is selected because an assessment of contamination at PCAs found contamination ~~is assumed~~ to be limited nearly always to the top 50 feet below ground surface; the additional 20 feet serves as a buffer between the shallow groundwater zone level and contamination at the PCA to prevent mobilization of existing contaminants. (Kennedy/Jenks 2012e, SFPUC 2013b)

Given the nature of the shallow geologic materials in the South Westside Groundwater Basin, which often include fine-grained materials such as clay and silts, it is reasonable to assume that shallow groundwater moves very slowly downward, and may form perched aquifers. Based on the nature of these shallow soils through much of the South Westside Groundwater Basin region, and the research on existing known PCAs, it is reasonable to assume for the purposes of this EIR that where contaminants are present in the subsurface, they are held in either shallow perched groundwater or in the shallow unsaturated soil zone and do not extend below 70 feet bgs. Therefore, no revision to the Draft EIR water quality analysis regarding mobilization of organic contaminants located in the upper 50 to 70 feet is warranted.

Comment HY-37: Comment related to using time-averaged water levels in the Draft EIR water quality evaluation.

This response addresses a comment from the commenter listed below; the comment on this topic is quoted in full below this list:

- O-CLMP-Quick

"Third, the DEIR considers that 'time-averaged' water levels in the Aquifer, rather than the lower water levels during take periods to conclude that the 'the downward movement of contaminated groundwater from the shallow water-bearing zone would generally be less than under existing conditions.'[65] This is yet another example of using 'average' water levels to minimize the possibility of impacts. To be conservative, the DEIR must be revised to address the increased downward gradient that would occur when water levels are reduced below existing conditions (especially at the end of design drought periods, when water levels would be substantially below existing conditions).

[65] *See id.* at p. 5.16-131." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

Response HY-37

The comment expresses concern regarding a statement in the Draft EIR which uses the term "time-averaged" water levels. The comment quotes from a paragraph under the heading, "Approach to Analysis", for water quality Impact HY-12 on page 5.16-131 of the Draft EIR, which is describing the physical processes affecting water quality in the South Westside Groundwater Basin for the purpose of providing a basic understanding of groundwater processes for the reader. In this section, the Draft EIR explains that the downward gradient between aquifers with the Project would be smaller on average than under existing conditions because the time-averaged water levels in the Primary Production Aquifer would be higher with the Project than under existing conditions. The discussion of "time-averaged" water levels on page 5.16-131 does not constitute the analysis of Project impacts; that analysis is found on pages 5.16-134 through 5.16-139 under the heading, "Impact Discussion and Significance Determination." The evaluation of groundwater quality impacts does not rely on time-averaged water levels. Instead, it focuses on a worst case condition, when Project-caused groundwater levels would have risen to their highest level because the SFPUC Storage Account is full. High water levels are considered to represent the worst case for water quality impacts because if the high water levels reach shallow contamination they could potentially mobilize contaminants into the lower aquifers. The Draft EIR concludes that the Project would have less-than-significant impacts on mobilization of contaminants, because either groundwater levels would not rise enough to encounter contaminants in shallow soils and groundwater, or groundwater is already present in shallow soils and the Project would make minimal changes.

The potential for increased mobilization of contaminants during the design drought has also been evaluated in response to the commenter's concerns, and found to be less than significant; refer to Response HY-39.

Comment HY-38: Comment related to drinking water quality.

This response addresses a comment from the commenter listed below; the comment on this topic is quoted in full below this list:

- O-CLMP-Quick

"c. **Improper Dismissal of Impacts to Drinking Water Quality.**

The primary source (approximately 85%) of domestic water provided by the SFPUC comes from Hetch Hetchy Reservoir in Yosemite National Park on the Tuolumne River. The drinking water from this source is of exceptional purity and quality. According to the SFPUC website, a unique feature of the SFPUC water supply is that 'the drinking water provided is among the purest in the world.' The SFPUC website also notes that the drinking water from Hetch Hetchy Reservoir is often such high quality that it does not need to be filtered.

A recent newspaper article also confirmed the high quality and purity of SFPUC primary water supply. This article stated that drinking water in San Francisco 'is some of the crispest water found on the planet' and reported that 'San Franciscans are probably unaware that they have some of the freshest tap water in the world.'[66]

Pursuant to the proposed GSR Project, during dry/drought periods, the SFPUC proposes to augment its drinking water from Hetch Hetchy Reservoir with drinking water supplies from the Westside Groundwater Basin. As such, pursuant to the GSR Project, Bay Area customers that now drink Hetch Hetchy water will increasingly be drinking water from a much more urban and much less pristine source.

The GSR Project's switch from Hetch Hetchy water to Westside aquifer water as a drinking water supply may have adverse taste/odor impacts on SPFUC water customers.

The DEIR fails to furnish information and analysis concerning the GSR Project's proposal to substitute the exceptionally pristine Hetch Hetchy drinking water supply with drinking water pumped from the less pristine Westside groundwater aquifer. That is, the DEIR does not describe the particular purity and taste/odor attributes of traditional SFPUC drinking water (the current environmental setting/baseline conditions) and then compare such attributes with the Westside groundwater that would be supplied as a substitute drinking water supply pursuant to the GSR Project.

> [66] *See* Golden Gate Express magazine, *Tap Water Remains Best Choice for SF* (May 12, 2013), available at: http://www.goldengatexpress.org/2013/05/12/tap-water-sf/." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

Response HY-38

The comment expresses the opinion that the switch from Hetch Hetchy drinking water to Westside Groundwater Basin drinking water during dry or drought periods may have adverse taste and odor impacts on SFPUC customers who currently receive only surface water. Taste and odor of potable water is regulated by the U.S. Environmental Protection Agency (U.S. EPA) and State under secondary Maximum Contaminant Limits (MCLs)[10] as explained in the Draft EIR on pages 5.16-45 and 5.16-46. For many years, the Partner Agencies—the City of Daly City, City of San Bruno, and Cal Water, have supplied potable water to their customers as a blend of surface water and groundwater from the Westside Groundwater Basin. Under these existing conditions, the Partner Agencies' water supply, which is already a mix of surface water and groundwater, have met all secondary MCLs (Daly City 2012; see also Appendix H of the Draft EIR, *Task 10.6 Technical Memorandum, Assessment of Groundwater Quality for the Regional Groundwater Storage and Recovery Project and the San Francisco Groundwater Supply Project*). For example, Daly City reports that approximately 46 percent of its water supply comes from groundwater (Daly City 2013), and

[10] The U.S. EPA and Title 22 of the California Code of Regulations establish secondary MCLs to prevent drinking water that may appear colored or taste or smell bad, causing people to stop using water from their public water system. These contaminants are not considered to present a risk to human health at the Secondary MCL, but are enforceable by the State nonetheless.

Cal Water provides about 40 percent of its water supply from groundwater sources (Roberts 2014).

Blending of groundwater and surface water under the Project would occur during Take Years in a drought and would increase the percentage of groundwater supplied to SFPUC customers during those years. The maximum percentage of blending for SFPUC customers would be less than 30 percent groundwater (SFPUC 2014a). Based on the historic ability of the Partner Agencies to achieve taste and odor standards using a higher percentage of groundwater than expected under the Project, no significant impacts on water quality would occur relative to taste and odor for SFPUC customers currently receiving potable water from surface water sources.

Comment HY-39: Comments related to irrigation water quality.

This response addresses comments from the commenters listed below; the comments on this topic are quoted in full below this list:

- G-SB-Fabry
- O-CLMP-Quick

"3. DEIR, page 5.16-136. The DEIR does not acknowledge the potential for a project-related rise in groundwater levels to intercept nitrate mass in the vadose zone, resulting in an increase in nitrate concentration in groundwater. The potential for this mechanism should be included in the analysis and monitoring developed to capture any evidence that this may be occurring." *(City of San Bruno, letter, June 13, 2013 [G-San Bruno-Fabry])*

"b. **Inadequate Analysis of Risk of Mobilizing Contaminants In Soils Overlying the Basin Through Raising the Aquifer's Water Table.**

The DEIR glosses over potential adverse water quality impacts that may be caused by the GSR Project's substantial changes to the water table.[60] The analysis concerning Impact HY-12 is inadequate because it focuses solely on water quality impacts to GSR Project drinking water and ignores the water quality impacts to existing irrigators who currently do not treat their pumped groundwater. In other words, the DEIR looks only at the quality of the water it extracts from the SWG Basin for its use as drinking water and neglects to analyze the potential impacts to the basin from substantially fluctuating water levels.[61] The DEIR must be revised to analyze and mitigate the water quality impacts to the Aquifer as a whole, with particular attention to adverse water quality impacts to existing irrigators.

[60] This is another example of the SFPUC ignoring a pertinent comment concerning the NOP for the DEIR. *See* Letter from Robert Maddow to Bill Wycko, dated July 28, 2009, p. 3.

[61] *Id*. at p. 5.16-135 – 5.16-136." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

"The WSIP PEIR is completely silent with respect to these questions

The analysis of Impact HY-12 must be substantially revised to consider the risk of mobilizing contaminants throughout the area overlying the Aquifer. This risk must be eliminated or minimized through enforceable mitigation that will protect all of the Aquifer's users." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

"*Item 21 – How will potential water quality degradation impact the irrigators? How will that degradation be mitigated? What happens if and when contaminated water is used to irrigate and surficial soils and associated storm water are impacted by the contamination?*

The DEIR states that the operation of the Project could violate water quality standards or waste discharge requirements if the groundwater pumped as part of the Project, after proposed treatment and/or blending would not meet drinking water standards. The DEIR discusses that although there is known contamination within the Westside Basin, the treatment of water used by the SFPUC and Partner Agencies to serve the public will result in minimal degradation of water quality. There are a number of other known water users in the Project area, including the irrigators, who will not have the same benefit. The DEIR must analyze and mitigate the impacts to water quality that will be felt by those who use the aquifer and do not treat the water they pump." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

Response HY-39

This grouping of comments expresses concern that the Draft EIR analyzes water quality only in relation to drinking water standards for groundwater pumped by the Project. This is not correct. The Draft EIR analyzes impacts on drinking water quality, impacts on groundwater quality in general, and impacts relative to potential contamination or effects on existing remediation systems. Section 5.16.3.2 (Approach to Analysis) on page 5.16-130 of the Draft EIR lays out the methodology to evaluate non-drinking water quality impacts. Potential impacts relative to the quality of untreated groundwater are described under the heading, "Project Operations May Mobilize or Spread Contamination in Groundwater or Cause Remediation Systems to Become Less Effective," on pages 5.16-137 through 5.16-139. The evaluation concludes that the potential for the Project to adversely affect groundwater quality from mobilization of any additional contaminants of concern due to rising groundwater levels is less than significant: "Although the Westside Basin Groundwater Model predicts that Primary Production Aquifer groundwater levels will rise up to 40 to 80 feet in the Daly City area and 5 to 40 feet in the Colma area due to the Project in Scenario Year 7, groundwater levels are predicted to remain below 70 feet, below where existing PCA contamination is located. Therefore, shallow PCA contamination in this area would not be mobilized or spread by the Project. (Kennedy/Jenks 2012e)" This conclusion applies to groundwater quality in the aquifer in general, not just to drinking water or to a specific location. Specifically, none of the irrigation wells are located in areas where the Project is predicted to raise groundwater levels to above 70 feet bgs even when the SFPUC Storage Account is full, as shown in Figures 10.6-8, 10.6-19, 10.6-20, and 10.6-21 in Draft EIR Appendix H, *Technical*

Memorandum 10-7 Supplement SFPUC Regional Groundwater Storage and Recovery Project; South Westside Basin Third-party Well Survey and Well Interference Analysis. Refer to Response HY-36 regarding the use of 70 feet as an appropriate limit for evaluation of rising groundwater levels.

The evaluation in the Draft EIR does not have a focused evaluation of how the Project will affect the quality of water for agricultural irrigation. Constituents in irrigation water which may be of concern include soluble ions, such as chloride and nitrate, which can travel to the lower aquifers via percolation and are not limited to the upper 70 feet. Therefore, the information and evaluation is provided here for clarification.

The San Francisco Bay Basin (Region 2) Water Quality Control Plan (Basin Plan) includes Water Quality Objectives for Agricultural Supply, with limits for irrigation water used for agricultural vegetation (as opposed to livestock watering) as shown in Table RTC 9.3.14-2 below.

Table RTC 9.3.14-2
Basin Plan Water Quality Limits for Agricultural Supply and Existing Groundwater Quality in the Westside Groundwater Basin

Parameter	Basin Plan Limit (in mg/L)	Lowest/Highest Reported Values in Westside Groundwater Basin (year) [a]	Source [c]
pH	4.5 - 9.0	6.43 (2012) **10.2 (2004)**	SFPUC Annual Report
EC (mmhos/cm)	0.2 – 3.0	0.264 (2012) **31.4 (2009)**	SFPUC Annual Report
Aluminum	20.0	0.0124 (2007)	USGS
Arsenic	2.0	0.015 (2007)	USGS
Beryllium	0.5	ND (2007)	USGS
Boron	2.0	1.23 (2007)	USGS
Chloride	355.0	**14,000 (2011)**	SFPUC Annual Report
Cadmium	0.5	0.027 (2007)	USGS
Chromium	1.0	0.043 (2007)	USGS
Cobalt	5.0	0.0055 (2007)	USGS
Flouride	15.0	0.79 (2007)	USGS
Iron	20.0	14.7 (2007)	SFPUC Annual Report
Lead	10.0	0.00121 (2007)	USGS

Table RTC 9.3.14-2
Basin Plan Water Quality Limits for Agricultural Supply and Existing Groundwater Quality in the Westside Groundwater Basin

Parameter	Basin Plan Limit (in mg/L)	Lowest/Highest Reported Values in Westside Groundwater Basin (year) [(a)]	Source [(c)]
Lithium	2.5	0.412 (2007)	USGS
Manganese	10.0	1.97 (2012)	SFPUC Annual Report
Molybdenum	0.05	0.0338 (2007)	USGS
Nickel	2.0	0.0465 (2007)	USGS
Nitrate and Nitrite as N	30 [(b)]	**31.6 (2007)** [(d)]	SFPUC Annual Report
Selenium	0.02	0.0134 (2007)	USGS
Sodium Adsorption Ratio (SAR) (adjusted)	9.0	5.97 (2007)	USGS
Vanadium	1.0	0.0095 (2007)	USGS
Zinc	10.0	0.015 (2007)	USGS

Source: RWQCB 2011

Notes:

(a) Values which exceed the Basin Plan limit are shown in bold.

(b) For sensitive crops (per the original table in the Basin Plan)

(c) SFPUC Annual Monitoring Report is: *2012 Final Westside Basin Groundwater Monitoring Report* (2013). The 2012 SFPUC Annual Monitoring Report includes not only data from 2012, but also historical data from previous years of monitoring. USGS is: Ray, M.C., Kulongoski, J.T., and Belitz, Kenneth. 2009, *Ground-Water Quality Data in the San Francisco Bay Study Unit: Results from the California GAMA Program (2007).*

(d) Because the Basin Plan limit is measured as nitrate as N, the SFPUC Annual Monitoring Report values have been converted from Nitrate as NO3 to nitrate as N to facilitate comparison. All other values of nitrate in the document are expressed as nitrate as N.

As Table RTC 9.3.14-2 (Basin Plan Water Quality Limits for Agricultural Supply and Existing Groundwater Quality in the Westside Groundwater Basin) shows, the groundwater quality in the Westside Groundwater Basin is, in general, of good quality for agricultural purposes, with four possible exceptions. These concern pH, electrical conductivity, chloride and nitrate, each of which is discussed here in more detail.

- **pH.** The high pH value of 10.2, measured in 2004, was taken at the San Francisco Zoo, and is not indicative of groundwater quality in the vicinity of irrigators in the Westside Groundwater Basin. One other measurement exceeded the Basin Plan limit for high pH (a measurement in 1981 with a pH of 9.1), taken at Daly City production well DC-4. These two elevated measurements were among hundreds of measurements in many different locations taken throughout the Westside Groundwater Basin from 1958 through 2012. (SFPUC 2013)

- **Electrical Conductivity**. The high value of 31.4 millimhos per centimeter (mmhos/cm) for electrical conductivity[11], measured in 2009, was taken at monitoring well SFO-S, located in the bayside portion of the Westside Groundwater Basin, and does not reflect groundwater quality in the South Westside Groundwater Basin in the vicinity of irrigators. This elevated measurement is the only measurement that exceeded the Basin Plan limit of 3.0 mmhos/cm. No measurements of electrical conductivity in the central portion of the South Westside Groundwater Basin, in the vicinity of the irrigators of the Westside Groundwater Basin exceeded the Basin Plan limit among hundreds of measurements. As discussed in the Draft EIR on page 5.16-25, chloride concentrations at the BUR and SFO monitoring wells are high, suggesting either connate water[12] or seawater has intruded into the shallow groundwater at this site, which could explain the elevated electrical conductivity measurements. These monitoring locations are approximately 2.3 miles from the closest irrigation well, and the Draft EIR concludes in Impact HY-7 that the risk of seawater intrusion would remain the same or be reduced by the Project. (SFPUC 2013)
- **Chloride**. The existing conditions regarding chloride concentrations, including the high value of 14,000 mg/L measured in 2011, are similar to electrical conductivity, in that the only chloride measurements to exceed the Basin Plan limit were taken at the BUR and SFO monitoring wells along the San Francisco Bay. (SFPUC 2013)
- **Nitrate**. The high value of nitrate of 31.6 mg/L (as nitrogen), taken in 2007, appears to reflect groundwater quality only in the vicinity of Daly City and not groundwater quality throughout the Westside Groundwater Basin, because the only values that exceed the Basin Plan limit of 30 mg/L (as nitrogen) occurred in two consecutive years (2006 and 2007) in Daly City (SFPUC 2013). All other measurements of nitrate reported throughout the Westside Groundwater Basin were below the Basin Plan limit (SFPUC 2013). The monitoring location with the high value for nitrate is located approximately 0.50 mile from the closest irrigation well. As explained in Response HY-34, the potential for the migration of nitrate in groundwater due to the Project is predicted to be slight.

Based on the above information, groundwater quality in the area of the Westside Groundwater Basin where irrigation wells are located meets the Basin Plan's water quality objectives for agricultural use. The potential for the migration of nitrate in groundwater due to the Project is predicted to be slight, as explained in Response HY-34. Further, the Draft EIR concludes that the

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[11] Electrical conductivity is a measure of the ability of water to pass an electrical current. Conductivity in water is affected by the presence of inorganic dissolved solids such as chloride, nitrate, sulfate, and phosphate anions (ions that carry a negative charge) or sodium, magnesium, calcium, iron, and aluminum cations (ions that carry a positive charge). The basic unit of measurement of conductivity is the mho. Conductivity is measured in mmhos/cm.

[12] Connate waters are seawater trapped in a formation when the sediments are deposited.

Project will not cause a significant impact due to seawater intrusion, which could be associated with elevated levels of chloride or electrical conductivity levels; see Draft EIR pages 5.16-105 through 5.16-113 and Responses HY-27 through HY-31. Therefore, there is no basis to conclude that the Project would cause groundwater quality to exceed Basin Plan limits for agricultural use, and the conclusion of the Draft EIR that the impact of the Project on groundwater quality would be less than significant is correct.

The comment regarding the PEIR is not relevant because the Draft EIR analysis of water quality does not rely on the PEIR analysis of water quality. The description of the Project has been developed to a greater level of detail than it was at the time the PEIR was prepared. The Draft EIR analysis of groundwater impacts reflects this greater level of understanding of the Project and was specifically developed to analyze the Project as defined at this time.

Comment HY-40: Comment related to groundwater contamination in areas not near GSR or Partner Agency wells.

This response addresses a comment from the commenter listed below; the comment on this topic is quoted in full below this list:

- O-CLMP-Quick

"Second, the analysis considers only known contamination sites within close proximity to GSR Project wells and Partner Agency wells.[63] In other words, it seems to only be concerned with mobilizing contaminants into the groundwater that will impact SFPUC and Partner Agency drinking water supplies (while ignoring potential water quality impacts to the Aquifer in general and to others who rely on the Aquifer). This is inappropriate. Instead, the DEIR must consider known soil and groundwater contamination sites in all areas overlying the Aquifer, in order to assess water quality impacts to all Aquifer users, including existing irrigators.[64] Any of these contamination sites could potentially be a source of contamination that could be mobilized into the Aquifer through raised water table levels that result from the GSR Project's program of in lieu recharge.

[63] *See* DEIR, p. 5.16-129 [description of Groundwater Protection Zones], 5.16-132 – 5.16-139 [impact analysis focusing exclusively on PCA's around GSR Project and Partner Agency Wells]. The DEIR reports that a Preliminary DWSAP report has not been prepared for the proposed alternate site at Site 17 (Alternate). This alternate site is located in very close proximity to Cypress Lawn. We request that a Preliminary DWSAP be prepared for this alternate site.

[64] *See, e.g.,* DEIR, pp. 5.17-6 – 5.17-12 [Table 5.17-1, listing known contamination sites]" *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

Response HY-40

This comment expresses concern about impacts on groundwater quality due to mobilization of contamination near irrigators' wells. While it is unlikely that contamination from PCAs would reach irrigation wells at concentrations that would affect turf grasses (for reasons described in Response HY-34), the following analysis is provided for irrigation wells following the same methodology as used in the Draft EIR for Partner Agency and Project wells. Table 5.16-16 (Predicted Groundwater Levels relative to Depth of Known Contamination), from pages 5.16-138 and 5.16-139 of the Draft EIR is expanded to include irrigation wells, as follows:

TABLE 5.16-16
Predicted Groundwater Levels relative to Depth of Known Contamination

	Predicted Groundwater Levels at Full SFPUC Storage Account				
Nearby Well	**Modeled Existing Conditions Depth to Water (feet)[a]**	**Maximum Increase in Groundwater Level due to Project (feet)**	**Depth to Water with Project (feet)[a]**	**Are known PCAs present within 2,000-foot radius?**	**Deepest depth to water at known PCA within this radius (feet)[b]**
Irrigation Wells					
San Francisco Golf Club #2	90	10	80	Yes	50
Olympic Club #8	85	12	75	Yes	50
Olympic Club #9	85	12	75	Yes	50
Lake Merced Golf Club #3	175	45	130	Yes	56
Woodlawn Memorial Park	200	30	190	Yes	21.8
Italian Cemetery	220	28	190	Yes	21.8
Eternal Home Cemetery	220	28	190	No	Not applicable
Olivet Memorial Park	210	22	190	No	Not applicable
Home of Peace, also serving Salem Cemetery and Hills of Eternity	200	15	185	No	Not applicable
Hills of Eternity Cemetery	200	15	185	No	Not applicable
Cypress Lawn Memorial Park #3	200	12	190	No	Not applicable

TABLE 5.16-16
Predicted Groundwater Levels relative to Depth of Known Contamination

Nearby Well	Predicted Groundwater Levels at Full SFPUC Storage Account: Modeled Existing Conditions Depth to Water (feet)[(a)]	Maximum Increase in Groundwater Level due to Project (feet)	Depth to Water with Project (feet)[(a)]	Are known PCAs present within 2,000-foot radius?	Deepest depth to water at known PCA within this radius (feet)[(b)]
Cypress Lawn Memorial Park #4	190	9	180	No	Not applicable
Holy Cross Cemetery #1	150	7	145	No	Not applicable
Holy Cross Cemetery #4	155	8	145	No	Not applicable
California Golf Club #7	110	6	105	No	Not applicable
California Golf Club #8	110	6	105	Yes	30.6

Source: Kennedy/Jenks 2012e

Note:

(a) Depth to water for both modeled existing conditions and the Project is rounded to the nearest five feet because the Westside Basin Groundwater Model is not as accurate for specific groundwater levels at specific sites as when it is used to calculate Project effects (see further explanation in Section 5.1.6 [Groundwater Modeling Overview]). Therefore, the values in the columns, "Modeled Existing Conditions Depth to Water" and "Maximum Increase in Groundwater Level due to the Project" may not add up exactly to the "Depth to Water with Project."

(b) This column provides the depth of contamination at known PCAs within 2,000 feet of each irrigation well listed. If more than one PCA is located within the 2,000-foot radius, only information on the deepest PCA is provided.

To complete the columns in Table 5.16-16 (Predicted Groundwater Levels relative to Depth of Known Contamination) for known PCAs present within a 2,000-foot radius and the depth to water at known PCAs within this radius, the Draft EIR Appendix H, *Task 10.6 Technical Memorandum, Assessment of Groundwater Quality for the Regional Groundwater Storage and Recovery Project and the San Francisco Groundwater Supply Project* was used to the extent possible. The information on PCAs in Technical Memorandum 10.6 appears to extend only to the San Mateo/San Francisco County line. Therefore, the Geotracker database was consulted on March 3, 2014 regarding geographic areas within 2,000 feet of the San Francisco Golf Club Olympic Club wells. No additional open cases were identified (Geotracker 2014).

The expanded Table 5.16-16 (Predicted Groundwater Levels relative to Depth of Known Contamination) above lists existing irrigation wells and information about PCAs within 2,000 feet of the wells. Table 5.16-16 shows that the Project would not cause groundwater levels to rise to within 70 feet of the surface, into the area where contamination with PCAs would be encountered. Based on the above analyses, the potential impact from mobilization or spreading of contaminants in groundwater as a result of increased pumping would be less than significant.

Comment HY-41: Comment related to potential water quality impacts from the Hillside Disposal Site.

This response addresses a comment from the commenter listed below; the comment on this topic is quoted in full below this list:

- G-Daly City-Sweetland

"Additionally, please note that the Hillside Class III Disposal Site located in Colma is closed, but it is a community concern in regards to potential water quality impacts. Daly City is aware of some community members that have identified it as a potential threat to the basin groundwater supply.[3] The disposal site location is shown in Appendix H of the DEIR- Technical Memorandum 10.6 'Groundwater Quality' (Figure B-1, Solid Waste Facility Location in Attachment 10.6-B *Existing Regulated Sites- Geotracker, SWIS, DTSC, and SLJC),* and the DEIR concludes that the Hillside Class Ill Disposal Site is outside of the Groundwater Protection Zone for the proposed project wells.

Information from the Westside Basin Groundwater Monitoring Program indicates that in the vicinity of the Hillside Disposal Site, groundwater flow in the Primary Production Aquifer is away from Daly City wells and south towards Colma and South San Francisco. Although groundwater and dissolved constituents originating at the site are likely moving away from Daly City, they could be moving toward pumping wells located south of Daly City. Daly City wants to express the importance of water quality monitoring in this and all parts of the basin, and notes that should water quality at proposed wells be impacted by groundwater originating at the Hillside Disposal Site, monitoring and analyses required under the Operating Agreement as well as bi-annual water supply monitoring should identify the presence of constituents of concern. Any violation of drinking water standards would be addressed by treatment, such as blending, to ensure all drinking water standards are maintained.

[3] Steve Bond and Associates, Inc., March 14, 2008 letter to Mr. Vic Pal, San Francisco Bay Regional Water Quality Control Board, 'March 2008 Tentative Order, Waste Discharge Requirements for Hillside Landfill, Colma, San Mateo County.'" *(Daly City Department of Water and Wastewater Resources, letter, June 10, 2013 [G-Daly City-Sweetland])*

Response HY-41

This comment provides information regarding the closed Hillside Class III Disposal site in Colma. The Planning Department appreciates receiving the information from Daly City. Should contaminants of concern emanating from the Hillside Class III Disposal Site be detected at any of the Project wells, such that there would be any violation of drinking water standards, the water would be treated through blending or other techniques to ensure all drinking water standards are met, as explained in the Draft EIR in Chapter 3, Project Description on pages 3-16 and 3-17.

Comment HY-42: Comments related to safe yield, or sustainable yield of the Westside Groundwater Basin.

This response addresses comments from the commenter listed below; the comments on this topic are quoted in full below this list:

- O-CLMP-Quick

"*The DEIR does not explain the Project's affects on the sustainable yield of the Aquifer:* During dry years (take periods), the proposed GSR Project will involve pumping 7.23 mgd from the southern part of the Westside Groundwater Basin ('SWG Basin' or the 'Aquifer'); the Partner Agencies will pump 6.90 mgd.[39] These pumping rates, which total 14.13 mgd, are more than double the rates under existing conditions - the rates will far exceed the estimated 1.14 mgd rate of pumping by the golf club and cemetery overlying irrigators.[40] While the DEIR acknowledges that GSR Project pumping will interfere with the production capacity of existing irrigators' wells, it does not acknowledge or address the extent of that interference.

[39] DEIR, pp. 5.1-9 – 5.1-10 [Table 5.1-2]. The DEIR fails to explain why the pumping rates of Partner Agencies would increase from the baseline rate of 6.84 mgd to 6.90 mgd during so-called hold years. This increase seems inconsistent with the concept of maintaining the status quo during hold years and would tend to draw down the Aquifer more rapidly than existing conditions. Further, it is not clear that the Partner Agencies have the legal right to increase their rate of extraction.

[40] *Ibid.*" *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

"The DEIR does not address the 'safe yield' of the Aquifer. This glaring omission must be corrected in a revised DEIR. Without an analysis of the quantity of water that can be withdrawn annually in a sustainable manner, the lead agency cannot analyze the GSR Project's impacts to groundwater quantity in general and to the existing irrigators in particular" *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

"***Impact HY-14: Project operation may have a substantial adverse effect on groundwater depletion in the Westside Groundwater Basin over the very long term.***

Item 22 – Why is the Basin Safe Yield not discussed in the DEIR? Why would the short-term and long-term projected water levels change if the Project and Partner Agencies did not exceed the basin Safe Yield?

Kirker Chapman (1972) reports an annual safe yield of about 2,050 million gallons, or 6,300 af. Section 1.4.4 Project Operations states 'Under the Project, the SFPUC and Partner Agencies would operate the 16 new well facilities with an annual average pumping capacity of 7.2 million gallons per day (equivalent to 8,100 acre-feet [af] per year) to provide a supplemental dry-year water supply. During dry-year conditions, Partner Agencies would also pump from their own existing wells up to annual average rates consistent with the pumping limitations expressed in the proposed Operating Agreement between the SFPUC and the Partner Agencies, as explained later in this section.' This would imply that the GSR Project plans to pump about 8,100 acre-feet per year (afy) during take periods in addition to a 0.06 mgd increase in pumping by the Partner Agencies from 6.84 mgd to 6.90 mgd—hence, the significant drop in water levels.

The DEIR must be revised to address the basin's safe yield and discuss how the GSR Project and Partner Agencies' pumping relates to that yield." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

Response HY-42

These comments express concerns about the safe yield of the Westside Groundwater Basin and raise four allegations: 1) The Draft EIR does not establish a safe yield for the Westside Groundwater Basin; 2) Kirker Chapman reports an annual safe yield for the Westside Groundwater Basin which the Project pumping would exceed; 3) Without establishing the safe yield, it is not possible to evaluate groundwater impacts either in general or to specific irrigators; and 4) the Draft EIR does not acknowledge or address the extent of well interference impacts on existing irrigators' wells.

1) The Draft EIR does not establish a safe yield for the Westside Groundwater Basin

The traditional definition of safe yield is the amount of water that can be withdrawn from a groundwater basin annually without producing an undesired result (Freeze and Cherry 1979, page 364). Undesired results may be economic, environmental, or legal; undesired environmental results include depletion of groundwater reserves, intrusion of water of undesired quality, degradation of groundwater quality, excessive depletion of streamflow, and land subsidence (Freeze and Cherry 1979; Todd 1980, page 363). Todd (1980, page 363) adds: "In the past the term safe yield, implying a fixed quantity of extractable water basically limited to the average annual basin recharge, has been widely used. The term has now fallen into disfavor because a never-changing quantity of available water depending solely on natural water sources and a specified configuration of wells is essentially meaningless from a hydrologic standpoint."

The Draft EIR does not identify a safe yield for the Westside Groundwater Basin for two reasons. First, the Project would only withdraw groundwater up to a "banked" amount; that is, an amount that has been deposited in the Westside Groundwater Basin through in-lieu recharge, as measured by the SFPUC Storage Account. Refer to Response HY-43 regarding how the SFPUC Storage Account would be measured and managed. Second, the potential for any undesired result, which the safe yield concept seeks to avoid, is evaluated in the Draft EIR with more specificity than by applying the safe yield concept. The result is that significant environmental impacts on existing irrigators are examined more thoroughly than would occur by comparing the Project withdrawals to a hypothesized safe yield. The Draft EIR established evaluation criteria and analyzed impacts in relation to each of the "undesired environmental results" listed by the standard groundwater textbooks above, as shown in the following table:

Table RTC 9.3.14-3
Relationship of Project Impacts to "Undesired Results" in Definition of Safe Yield

"Undesired results" which could result from exceeding safe yield (Freeze and Cherry 1979)	**Draft EIR Impacts related to each "undesired result"**
Depletion of groundwater reserves	**Impact HY-6:** Project operation would decrease the production rate of existing nearby irrigation wells due to localized groundwater drawdown within the Westside Groundwater Basin such that existing or planned land use(s) may not be fully supported. **Impact HY-14:** Project operation may have a substantial adverse effect on groundwater depletion in the Westside Groundwater Basin over the very long term.
Intrusion of water of undesired quality	**Impact HY-8:** Project operation would not result in seawater intrusion due to decreased groundwater levels in the Westside Groundwater Basin.
Degradation of groundwater quality	**Impact HY-10:** Project operation would not have a substantial adverse effect on water quality that could affect the beneficial uses of Pine Lake. **Impact HY-12:** Project operation would not cause a violation of water quality standards due to mobilization of contaminants in groundwater from changing groundwater levels in the Westside Groundwater Basin. **Impact HY-13**: Project operation would not result in degradation of drinking water quality or groundwater quality relative to constituents for which standards do not exist.
Excessive depletion of streamflow	**Impact HY-9:** Project operation could have a substantial, adverse effect on water quality that could affect the beneficial uses of Lake Merced. **Impact HY-11:** Project operation would not have a substantial adverse effect on water quality that could affect the beneficial uses of Colma Creek, San Bruno Creek, Lomita Channel, or Millbrae Creek.

Table RTC 9.3.14-3
Relationship of Project Impacts to "Undesired Results" in Definition of Safe Yield

"Undesired results" which could result from exceeding safe yield (Freeze and Cherry 1979)	Draft EIR Impacts related to each "undesired result"
Land subsidence	**Impact HY-7:** Project operation would not result in substantial land subsidence due to decreased groundwater levels in the Westside Groundwater Basin where the historical low water levels are exceeded.

The identification of one extraction volume that would constitute a sustainable or safe yield for evaluation of impacts in the groundwater basin as a whole would not take into account the need to evaluate localized impacts throughout the variety of geologic and hydrologic features of the Westside Groundwater Basin; therefore, the Draft EIR does not use the concept of safe yield or sustainable yield in the evaluation of groundwater impacts. Instead, the EIR evaluates regional groundwater depletion in Impact HY-14 and more site-specific and function-specific impacts of well interference, subsidence, seawater intrusion, surface water-groundwater interactions, and water quality in Impacts HY-6 through HY-13. Identification of one volume for a sustainable or safe yield would not be protective of irrigators in the Westside Groundwater Basin, as each irrigator may be subject to site-specific impacts from Project operation.

2) Kirker Chapman reports an annual safe yield for the Basin, which the Project pumping would exceed

In 1972, Kirker, Chapman, & Associates produced the report, *Daly City Ground Water Investigation*, for the City of Daly City. This 40-year old report is out of date and inaccurate for a number of reasons, including the fact that it does not reflect the amount of ongoing pumping in the Westside Groundwater Basin and the more recently understood boundaries of the Westside Groundwater Basin. Given its dated understanding of the Westside Groundwater Basin and pumping data, the estimated safe yield is also expected to be out to date. The report does not provide any factual support for a conclusion that the analyses in the Draft EIR listed in Table RTC 9.3.14-3 (Relationship of Project Impacts to "Undesired Results" in Definition of Safe Yield) are flawed. The Draft EIR analyses use current data about pumping; localized conditions; characteristics of irrigators' wells, to the extent well operators provided such information to the City; and a current understanding of Westside Groundwater Basin characteristics.

3) Without establishing the safe yield, it is not possible to evaluate groundwater impacts either in general or to specific irrigators

Because the definition of safe yield is dependent upon identifying and evaluating "undesired results" of pumping, the Draft EIR focused specifically on the undesired results, such as degradation of water quality and land subsidence, as listed in Table RTC 9.13.14-3 (Relationship of Project Impacts to "Undesired Results" in Definition of Safe Yield), above. The Draft EIR's more focused, detailed, and specific evaluations present a more valuable and accurate analysis of the groundwater impacts of the Project than could be obtained through identification of an annual safe yield from the Westside Groundwater Basin as a whole. These more detailed evaluations provide more meaningful information to decision makers and the public at large, as well as to potentially affected irrigators and have resulted in the formulation of more specific mitigation measures where significant impacts have been identified.

4) The Draft EIR does not acknowledge or address the extent of well interference impacts on existing irrigators' wells

The Draft EIR addresses the extent of well interference on irrigators' wells at pages 5.16-73 through 5.16-100. Table 5.16-12 (Estimated Pump Discharge Rate at the End of the Design Drought) on page 5.16-87 of the Draft EIR identifies the extent of pump discharge rate reductions caused by the Project at each irrigation well; and Table 5.16-14 (Estimated Static and Pumping Depth to Water Levels at the End of the Design Drought) on page 5.16-89 of the Draft EIR identifies whether, and the extent to which groundwater levels would drop below the top of the well screen at each irrigation well. After receiving information from Cypress Lawn Memorial Park in February 2014, an additional evaluation of well interference at its irrigation wells is provided in Response HY-21 in this document, which updates the information about Cypress Lawn Memorial Park wells in Tables 5.16-8 (Existing Irrigators' Wells Identified as a Primary, Active, or Secondary Well that May Be Affected by the Project), 5.16-9 (Existing Irrigated Acreage and Estimated Peak Demand at Potentially Affected Land Uses), 5.16-11 (Estimated Static and Pumping Depth to Water Levels at the End of the Design Drought), 5.16-12 (Estimated Pump Discharge Rate at the End of the Design Drought), 5.16-13 (Estimated Peak Demand and 12-Hour Production Capacities), and 5.16-14 (Estimated Static and Pumping Depth to Water Levels at the End of the Design Drought). For those irrigation wells where significant well interference is identified, Mitigation Measure M-HY-6 (Ensure Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation), as revised in this document in Response HY-15, addresses the extent of well interference and would reduce the impact to less-than-significant levels.

A footnote in the comment states that the Draft EIR fails to explain why the pumping rates of the Partner Agencies would increase from the baseline rate of 6.84 mgd to 6.9 mgd during Hold Years and questions whether the Partner Agencies have the legal right to increase their rate of extraction. The Draft EIR indicates that the baseline pumping by the Partner Agencies is the result of average historic pumping of the Partner Agencies (see Draft EIR pages 5.1-9 through 5.1-11), while pumping during Hold (and Take) Years is assumed to be at the maximum rate reported in the Partner Agencies' Urban Water Management Plans (see Draft EIR pages 5.1-9 through 5.1-12). The Project does not propose or seek to authorize any increase in pumping by the Partner Agencies, but rather, in modeling the effects of the Project, it assumes an increase in pumping from 6.84 to 6.9 mgd to ensure that the EIR analysis reflects a reasonable maximum level of use, given estimates found in the Partner Agencies' Urban Water Management Plans. In addition, the draft Operating Agreement for the Project does not authorize Partner Agencies to increase pumping at their existing wells. As a practical matter, the difference is less than 1 percent of the Partner Agencies' existing pumping.

The comment states that the Project consists of pumping 8,100 acre-feet per year (afy) during Take Years in addition to a 0.06 mgd increase in pumping by the Partner Agencies from 6.84 mgd to 6.90 mgd. The comment is correct.

Comment HY-43: Comment related to system losses or groundwater depletion.

This response addresses a comment from the commenter listed below; the comment on this topic is quoted in full below this list:

- O-CLMP-Quick

"2. **The DEIR Fails to Quantify System Losses and Confirm That 100% of Deferred Pumping Results In Storage of Actual Groundwater 'Deposits' That Can Be 'Withdrawn' in Take Periods.**

The DEIR does not identify or explain the estimated amount of 'system losses' that were considered when determining the calculations for Storage Account deposits and withdrawals.[24] System losses, through seepage, outflow, evapotranspiration, maintenance of wells, et cetera, must be accurately estimated and factored into the calculations in order to accurately determine the amount of 'deposited' in lieu deferred pumping that can be claimed later as groundwater available for GSR Project 'withdrawal.' For example, of the 20,000 af of supplemental surface water delivered to Partner Agencies during the In-Lieu Recharge Demonstration Study, how much has the deferred pumping from Partner Agency wells resulted in measurable, verifiable levels of Aquifer recharge? Can SFPUC confirm that <u>all</u> of the 20,000 af in the Storage Account is actually stored and held in the Aquifer and that none has been lost?

The analysis concerning potential seawater intrusion states that, under Project conditions, the amount of 'flux' or outflow to the ocean would increase by 17 af per month (afm) in the northern end of the basin and that the entire Westside Groundwater Basin will discharge 3 afm more groundwater than under existing conditions.[25] The analysis does not report, however, what those existing conditions are. How much of the groundwater in the basin currently flows to the ocean or the Bay or is otherwise lost? The DEIR fails to provide a clear answer to this basic question.

[24] *See* DEIR, p. 5.16-181 [reference to memo addressing mitigation measure to account for "system losses," with no other mention of system losses in the DEIR]; see also SFPUC 2013a [memo re mitigation measure to account for 'system losses' which does not provide any information concerning the estimated quantity of system losses].

[25] DEIR, pp. 5.16-111 – 5.16-112." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

Response HY-43

The comment expresses concern that the Draft EIR does not identify the estimated amount of system losses that were considered when determining the calculations for SFPUC Storage Account deposits and withdrawals. The Draft EIR identifies and discusses the causes of losses (Draft EIR at pages 5.16-142 through 5.16-146) and identifies the responsible parties for performing the calculations of water available in the Storage Account, taking into account in-lieu water provided, water taken out of the aquifer by the SFPUC and Partner Agencies, and losses resulting from the Project (Draft EIR page 3-138 of Chapter 3, Project Description). The Draft EIR Mitigation Measure M-HY-14 requires the SFPUC, working with the GSR Operating Committee, to develop and adopt a monitoring program that will determine the amount of water available for extraction from the SFPUC Storage Account and the development of accounting rules that will account for losses from the Basin due to leakage. Pumping from Project wells is allowed only when there is a positive balance in the SFPUC Storage Account. (Mitigation Measure M-HY-14 [Prevent Groundwater Depletion] on page 5.16-146).

System losses are referred to in the Draft EIR as groundwater depletion. The Draft EIR uses the term groundwater depletion because the CEQA Guidelines Appendix G Checklist Hydrology and Water Quality question IX(b) asks, "Would the Project substantially deplete groundwater supplies…" Potential depletion of groundwater in the Westside Groundwater Basin is discussed in the Draft EIR under Impact HY-14 on pages 5.16-142 through 5.16-146. The Draft EIR uses the Westside Basin Groundwater Model to identify potential decline in groundwater storage in the basin, including declines from seepage, outflow, and evapotranspiration. The model, which uses conservative assumptions such as an 8.5-year design drought and less rainfall than otherwise indicated by historic records, predicts that under modeled existing conditions (i.e., without the Project) groundwater in the basin would decline by approximately 597 afy, as identified on Draft EIR page 5.16-144. The Project impact analysis identifies a storage decline of approximately 416 afy in addition to the approximately 597 afy under modeled existing conditions, as identified on Draft EIR page 5.16-145. This decline can be attributed to the fact that the storage efficiency of the basin is less than 100 percent. Although the modeling predicts a loss of storage in the Westside Groundwater Basin, the draft Operating Agreement, described in Chapter 3, Project Description of the Draft EIR, and Mitigation Measure M-HY-14 (Prevent Groundwater Depletion) limit pumping of the Project wells to times when there is a positive balance in the SFPUC Storage Account. Mitigation Measure M-HY-14 requires adjustment of the balance in the SFPUC Storage Account, to account for losses from the Westside Groundwater Basin due to leakage caused as a result of the Project.

The comment asks how much of the 20,000 acre-feet (af) in the SFPUC Storage Account is actually stored. It is not known how much of the 20,000 af stored in the Westside Groundwater Basin during the In-lieu Recharge Demonstration Study remains in the Westside Groundwater Basin. It can be assumed that not all of the 20,000 af originally deposited in the Westside Groundwater Basin is still stored in the basin. Mitigation Measure M-HY-14 (Prevent Groundwater Depletion) requires that the determination of how much of the 20,000 af is actually stored be completed prior to Project pumping. The determination must occur after the Project has begun operating (to reflect the climate and rainfall for each year) and be based on actual experience using data from metered SFPUC in-lieu water deliveries to the Partner Agencies and regularly measured changes in groundwater elevations during a series of Put and Hold Years. Mitigation Measure M-HY-14 requires the SFPUC, working with the GSR Operating Committee to develop rules to account for losses in groundwater storage, based on generally accepted principles of groundwater management, and is revised to provide an example method for such calculations (SFPUC 2014d).

Draft EIR page 5.16-146, Mitigation Measure M-HY-14, is revised as follows; see revisions in Response HY-48 as well. Also see Section 9.5, Draft EIR Revisions for all changes to the Draft EIR.

Mitigation Measure M-HY-14: Prevent Groundwater Depletion

The SFPUC, working in conjunction with the GSR Operating Committee, shall develop and adopt an SFPUC Storage Account monitoring program that will determine the amount of water available for extraction from the SFPUC Storage Account and develop accounting rules that will account for losses from the Basin due to leakage, consistent with the terms of the Operating Agreement between the SFPUC and the Partner Agencies. The SFPUC shall develop the SFPUC Storage Account monitoring program to determine the balance in the SFPUC Storage Account based on actual experience operating in the Westside Groundwater Basin as proposed under the GSR Project. The SFPUC Storage Account monitoring program will use data from metered SFPUC in-lieu water deliveries to the Partner Agencies and regularly measured changes in groundwater elevations during a series of Put and Hold Years to determine the volume of stored water ~~while developing R~~rules to account for losses in groundwater storage~~,~~ will be based on generally accepted principles of groundwater management. The following is an example of a methodology that the SFPUC, in coordination with the Partner Agencies, could use for determining the amount of water available for extraction taking into account losses from the Basin due to leakage:

Part A: For calculation of increases in the SFPUC Storage Account due to in-lieu deliveries and decreases in the SFPUC Storage Account due to Project pumping.

- A1. On an annual basis, the SFPUC would account for additions to the SFPUC Storage Account by calculating the amount of supplemental water it delivers to Partner Agencies.
- A2. On an annual basis, the SFPUC and the Partner Agencies would account for the amount of Project pumping that occurs.
- A3. The SFPUC would calculate a running total of the volume of water in the SFPUC Storage Account (before accounting for losses due to leakage) using data from items A1 and A2 above.

Part B: For calculation of decreases in the SFPUC Storage Account due to leakage from the Westside Groundwater Basin.

- B1. The SFPUC would use its monitoring network to record on a daily frequency, collect on a quarterly frequency, and compile on an annual basis, groundwater level measurements from its monitoring wells. This information would be used in item B4 below.

- B2. The SFPUC would subdivide the Westside Groundwater Basin into areas (subareas) which have similar geologic and groundwater level responses and similar influence on groundwater storage and calculate the areal extent of each subarea. (Note: subdividing the Westside Basin into subareas allows for a more accurate estimate of storage changes.)

- B3. The SFPUC would assign each of the subareas a storage coefficient value derived from short-term aquifer testing and interpretation of aquifer characteristics under longer-term recharge and pumping conditions.

- B4. The SFPUC would multiply changes in groundwater levels that occur during Hold Years in each subarea by the aquifer's storage coefficient value and areal extent of each subarea to quantify the change in aquifer storage that has occurred. This change in storage, if reflective of a decline in groundwater levels, would be equivalent to the "loss" that occurs in that subarea due to Basin leakage.

- B5. The SFPUC would calculate the sum of each subarea's change in storage, which would equal the total groundwater depletion that has occurred during Hold Years. The SFPUC would then subtract the total from the SFPUC Storage Account to derive an SFPUC Storage Account value that accounts for losses due to leakage from the Westside Groundwater Basin.

To replace water losses in the SFPUC Storage Account due to Basin losses, the SFPUC may deliver additional surface water to the Partner Agencies when surplus surface water is available, creating additional in-lieu recharge to the Westside Basin. This conversion of wet Hold Years to additional Put Years would offset the estimated losses from the Basin as a result of the Project by reducing Partner Agency pumping from their existing wells during those years. Such additional surface water deliveries to the Partner Agencies shall not increase storage in the SFPUC Storage Account above 60,500 af.

The GSR wells shall only be pumped when there is a positive balance in the SFPUC Storage Account, which will be adjusted for losses from the Basin due to leakage caused as a result of the Project. If the additional in-lieu recharge is not sufficient to offset losses identified by the Operating Committee as caused by storage losses from the basin, the GSR wells will only be operated to extract the volume of water in the SFPUC Storage Account.

The comment asks what the existing conditions are for flux to the ocean and San Francisco Bay. This information is presented in Draft EIR Appendix H, *Task 10.3 Technical Memorandum, Assessment of Potential Seawater Intrusion for the Regional Groundwater Storage and Recovery Project and San Francisco Groundwater Supply Project*, Figures 10.3-16 and 10.3-17. The figures show that under modeled existing conditions flux to the Pacific Ocean is predicted to range from approximately 150 to 440 acre-feet per month (afm), while flux to San Francisco Bay is predicted to range from approximately 82 to 110 afm. Therefore, a predicted increase in average annual flux of 17 afm to the Pacific Ocean and 3 afm due to the Project to San Francisco Bay would be small increases relative to existing flux ranges.

Comment HY-44: Comments related to amount of overdraft.

This response addresses comments from the commenters listed below; each comment on this topic is quoted in full below this list:

- G-BAWSCA-Sandkulla
- I-Lawrence (1)

"**5. The yield of the Project needs to be clarified given the modeling results cited in the DEIR that suggest that the Westside Bain is in overdraft by about 1,000 AFY.** The proposed mitigation is to add additional Put years to offset the storage losses. Please clarify the how the project yield might, or might not be, decreased as a result of the need to do additional Put years as opposed to Hold or Take Years. The relationship of the Put water to the SFPUC's self-imposed Interim Supply Limitation should also be clarified as part of this description." *(BAWSCA, letter, May 24, 2013 [G-BAWSCA-Sandkulla])*

"1. Will the Westside Aquifer be overdrawn? Assume planned withdrawals for 7.5 years during a design drought, as well as groundwater extraction as planned in local project SF Groundwater; at the end of 7.5 years, will the aquifer be overdrawn?*

*Footnotes are for my use.

Reference Table 5.16-2; my guess is this is for an average year; my further guess is that estimates are to some level of accuracy, which I do not see (e.g. standard deviation of __ AF).

There is discussion of subsidence beginning on 5.16-27. 5.16 is in volume 2. Lake Merced: a discussion begins 5.16-30." (*Steve Lawrence, e-mail, May 26, 2013 [I-Lawrence (1)])*

Response HY-44

These comments question whether the Project would overdraft the Westside Groundwater Basin and one of the comments says that the Draft EIR shows that the Westside Groundwater Basin is currently in overdraft by 1,000 afy. This interpretation of the Draft EIR modeling results is not correct. The modeling results cited in the Draft EIR predict that groundwater storage would decline by approximately 597 afy over the 47 years assumed under modeled conditions without the Project. But, these modeling results assume in the future less rainfall than has occurred historically. The reason for such an assumption is that the Project is prudently designed to provide water during a design drought; i.e., a worse drought than what has historically occurred within the past 47 years.

This is explained in the Draft EIR on pages 5.16-144 and 5.16-145:

> "The Westside Basin Groundwater Model predicts that under the modeled existing conditions (i.e., without the Project), groundwater storage in the groundwater basin is declining by approximately 597 afy, or approximately 28,000 af over the 47 years of the hydrologic modeling sequence. The predicted 28,000-af decline in groundwater storage is primarily a result of the assumptions used in the modeling, which conservatively included a design drought consistent with the hydrologic modeling assumptions included in the WSIP PEIR. The design drought used in the Westside Basin Groundwater Model was created for planning purposes and represents drought conditions that are worse than anything indicated in recent historic records, as discussed in Section 5.1, Overview, section 5.1.6 (Groundwater Modeling Overview). Over the 47 years of historic hydrologic records used to develop the model, no drought occurred that was as severe as the design drought. Incorporation of a design drought into the Westside Basin Groundwater Model results in approximately 20 inches of rainfall less in the simulation than otherwise indicated by historic records, which is nearly equivalent to losing a full year of precipitation and its associated recharge for the entire Basin. The projected 597 af of annual average decline (which would result in 28,000 af of decline in storage over the 47-year hydrologic modeling period) in groundwater storage can largely be attributed to the conservative inclusion of the design drought into the Westside Basin Groundwater Model (Kennedy/Jenks 2012b, HydroFocus 2011)."

One of the comments also asks if the mitigation measure for groundwater depletion, which is to convert Hold Years to additional Put Years to offset groundwater depletion, would result in decreased Project yield. Additional Put Years, where additional surface water would be supplied to the Partner Agencies (and the Partner Agencies would reduce their groundwater pumping by an equal amount), may be undertaken when surplus surface water supplies are available from the regional water system. Such surplus surface water supply is not expected to be available in all years. Therefore, even with implementation of Mitigation Measure M-HY-14 (Prevent Groundwater Depletion), the Project, as defined in Chapter 3, Project Description in the Draft EIR, is limited to pumping only when there is a positive balance in the SFPUC Storage Account, after accounting for any system losses (i.e., groundwater depletion). In essence, the ability of the Project to meet its goals, especially in future years when demand for SFPUC surface water has risen, is dependent on the availability of surplus surface water supply to keep the SFPUC Storage Account full. When surplus water is not available, pumping in Take Years could be constrained by the amount of water remaining in the SFPUC Storage Account after considering system losses.

The surface water delivered to the Partner Agencies during Put Years (when SFPUC regional water system water is available for delivery) is considered delivery of water to storage and does not affect Interim Supply Allocations.

Comment HY-45: Comment related to the groundwater budget.

This response addresses a comment from the commenter listed below; the comment on this topic is quoted in full below this list:

- O-CLMP-Quick

"Table 5.16-2 reports the annual groundwater budget for the Westside Groundwater Basin – this table estimates that the basin loses more water than it gains through inflow.[26] The DEIR does not answer the implicated question: would the rate of outflow increase with the GSR Project's deferred pumping regime?

[26] *See id*. at p. 5.16-26. The DEIR explains that the 'predicted overall negative change' is 'largely' the product of a modeled drought that is longer than any experienced in the historical record. *Ibid*. It does not explain the basis for this modeled drought, its likelihood of occurring, or whether the negative change is a realistic assessment of the groundwater budget." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

Response HY-45

This comment questions how the groundwater budget would change due to the Project. The rate of outflow is predicted to increase with Project operations; such increased Westside Groundwater Basin losses (increasing from 597 acre-feet per year [afy] under modeled existing conditions to 1,013 afy with the Project) are reported as increased groundwater depletion under Impact HY-14 on pages 5.16-142 through 5.16-146, and such groundwater depletion is identified as a significant impact. More detail regarding the specific inputs and outputs of the Westside Groundwater Basin can be found in Draft EIR Appendix H, *Task 10.1 Technical Memorandum, Groundwater Modeling Analysis for the Regional Groundwater Storage and Recovery Project and San Francisco Groundwater Supply Project,* Attachment 10.1-D.

The comment also states that the basis for the modeled drought and its likelihood of occurring is not explained. However, the design drought is explained in the Draft EIR on page 5.1-17:

> "The modeled hydrologic sequence uses temperature and rainfall data from each year of the 47-year hydrologic record. The sequence of hydrologic data from the historic period of 1958 through 2005 has been altered to include the same 8.5-year 'design drought' used in the WSIP water supply modeling, but has been rearranged to allow for filling of the SFPUC Storage Account to occur during Put Years prior to pumping groundwater during a Take Period (Kennedy/Jenks 2012a). A design drought is a planning and

operations tool used by water agencies to define a reasonable worst-case drought scenario in order to establish design and operating parameters for the water system.

In addition, the modeled design drought is a more severe drought than any that occurred during the 1958 to 2005 historic period. The modeled design drought is simulated by rearranging the hydrologic sequence such that the actual drought that occurred from December 1975 through December 1977 is repeated and placed after the dry hydrologic conditions of July 1987 to November 1992, for a combined total of an 8.5-year design drought sequence."

Refer also to Response HY-44.

Comment HY-46: Comment related to local and regional impacts of pumping.

This response addresses a comment from the commenter listed below; the comment on this topic is quoted in full below this list:

- O-CLMP-Quick

"**Questions and Comments Related to Other Issues**

The following questions and comments are general in nature.

Item 23 – What will the redistribution of pumpage throughout the basin be locally and regionally?

The DEIR placed significant discussion on the local impacts to water level drawdowns to non-project wells but what are the more regional impacts to water levels? Given the quantity and timing of the take period, the redistribution of pumpage would significantly lower the regional water table elevations, affecting all groundwater pumpers in the Westside Basin." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

Response HY-46

This comment asks what the regional groundwater level decreases would be and what the impacts of such regional decreases would be, in addition to the localized drawdowns. The Westside Basin Groundwater Model was used to provide site-specific, localized model results to identify impacts at each irrigator's well. The Westside Groundwater Basin is complex and varied, but in general, the Westside Basin Groundwater Model predicts that groundwater levels would increase during Put Years and Hold Years (about 80% of the time) especially around the Daly City, Cal Water, and San Bruno municipal wells, and that groundwater levels would decrease during Take Years (about 20 percent of the time) especially around Project wells, compared to modeled existing conditions; see Draft EIR Appendix H, *Task 10.1 Technical Memorandum, Groundwater Modeling Analysis for the Regional Groundwater Storage and Recovery Project and San*

Francisco Groundwater Supply Project, Attachment 10.1-B, Model Scenario Hydrographs for Selected Locations.

In addition, Impact HY-14 evaluates Westside Groundwater Basin-wide groundwater depletion, which responds to regional long-term groundwater system losses. There are no additional well interference impacts that would occur due to "regional" groundwater level decreases, beyond those already identified at specific locations.

Comment HY-47: Comment related to groundwater depletion analysis.

This response addresses a comment from the commenter listed below; the comment on this topic is quoted in full below this list:

- G-Daly City-Sweetland

"**HY-14: <u>Project operation may have a substantial adverse effect on groundwater depletion in the Westside Groundwater Basin over the very long term *(Less than Significant with Mitigation).*</u>** Daly City concurs. The groundwater modeling conducted for the DEIR revealed that the basin leaks stored groundwater, and therefore all the water delivered for storage most likely will not be available for extraction during drought periods. The modeling analysis however assumes that all of the surface water delivered for storage is available for extraction, and as a consequence there is a simulated net reduction in groundwater storage. As modeled, the groundwater projects therefore appear unsustainable. The DEIR concludes that because the depletion volume is small relative to the total volume of groundwater stored in the basin, the impact of this long-term depletion is insignificant. However, the comparison to total groundwater in storage is a misleading metric because a substantial portion of the groundwater volume is not accessible for extraction and use.

Under project operations, these concerns are addressed because by the terms of the Operating Agreement future groundwater extraction is limited to the water in the SFPUC Storage Account, and the Operating Agreement specifies that the Storage Account shall account for these water losses. Furthermore, the proposed mitigation allows additional in-lieu recharge to be added when surplus SFPUC system water is available, which will help maximize the Storage Account available for extraction during drought periods.

The hydraulic relationships between recharge, well locations, extraction rates, groundwater level changes, and basin leakage are complex. Additionally, the hydrologic sequence utilized for modeling the effects of these relationships under project operations has less rainfall recharge than occurred historically, and the design drought was inserted late in the simulation period. As a consequence, simulated groundwater storage never fully recovers and additional water deliveries are required to maintain the Storage Account balance. However, the timing and magnitude of these additional deliveries is not intuitive. For example, storage is increased by in-lieu recharge, which occurs at varying rates and magnitudes across the entire basin, but the pumping reductions occur at specific Participating Pumper well locations. The Operating Agreement will address these concerns because it specifies that future groundwater monitoring and hydrologic analyses are required to adaptively manage the project, determine actual leakage losses, and account for losses in the SFPUC Storage Account." *(Daly City Department of Water and Wastewater Resources, letter, June 10, 2013 [G-Daly City-Sweetland])*

Response HY-47

These comments express concern regarding the methodology used for the groundwater depletion analysis in the Draft EIR. This comment indicates that the modeling analysis in the Draft EIR assumed that all of the surface water delivered for storage would be available for extraction. However, this is not entirely correct. The Westside Basin Groundwater Model accounts for outflows to the ocean or Bay or to other system losses, by reducing Westside Groundwater Basin storage by the amount of outflow. An average annual water budget which shows such outflows is provided in the Draft EIR, Section 5.1, Overview, Table 5.1-2 (Modeled Annual average Groundwater Budget for the Westside Groundwater Basin under Modeled Existing Conditions) on page 5.16-26. More detailed water budgets, including results for Project conditions and cumulative conditions, are provided in Draft EIR Appendix H, *Task 10.1 Technical Memorandum, Groundwater Modeling Analysis for the Regional Groundwater Storage and Recovery Project and San Francisco Groundwater Supply Project,* Attachment 10.1-D. To address the losses of stored water, the Draft EIR has included Mitigation Measure M-HY-14 (Prevent Groundwater Depletion), which is described on page 5.16-146 of the Draft EIR.

The comment also indicates that the Draft EIR concludes that because the depletion volume is small relative to the total volume of groundwater stored in the basin, the impact of this long-term depletion is insignificant. On the contrary, Impact HY-14 regarding groundwater depletion is identified as a significant impact in the Draft EIR; see pages 5.16-142 through 5.16-146. The comment states that the comparison of groundwater depletion to total groundwater in storage is a misleading metric because a substantial portion of the groundwater volume is not accessible for extraction and use. It appears likely that the commenter has made this statement regarding a "misleading metric" because the commenter believed that the comparison of groundwater depletion to total groundwater in storage was used as a basis for concluding that the impact was less than significant. Given that the Draft EIR concluded that Impact HY-14 is significant, the comparison is not misleading. However, the Draft EIR acknowledges on page 5.16-14-144, that "It should be noted that the estimated total groundwater storage of 1,076,000 af is not equivalent to the sustainable yield of the basin. Some of the water in the basin has not proven to be a resource, and the accessibility to the total storage amount is not known at this time." The volume of storage in the Westside Groundwater Basin that is accessible for extraction and use is not known, and therefore the Draft EIR used the best available data for comparison of annual groundwater losses to the overall volume of storage in the Westside Groundwater Basin.

The Project, as defined in Chapter 3, Project Description in the Draft EIR, is limited to pumping only when there is a positive balance in the SFPUC Storage Account, after accounting for any systems losses. Mitigation Measure M-HY-14 (Prevent Groundwater Depletion) provides for the SFPUC to convert some Hold Years to Put Years, provided SFPUC regional water system water is available. If additional in-lieu recharge is not sufficient to offset losses identified by the Operating

Committee as caused by storage losses from the Westside Groundwater Basin, the Project wells would only be operated to extract the volume of water in the SFPUC Storage Account. With implementation of Mitigation Measure M-HY-14, the Project would not cause groundwater depletion, and therefore, the Draft EIR concluded that the impact is less than significant with mitigation.

The remainder of the comment indicates a correct understanding of the Project and the evaluation of Project impacts in the Draft EIR.

Comment HY-48: Comments related to mitigation of groundwater depletion impacts.

This response addresses comments from the commenters listed below; each comment on this topic is quoted in full below this list:

- G-BAWSCA-Sandkulla
- G-SB-Fabry
- O-CLMP-Quick

"**2. A robust system of actual water level measurements should be used to ensure that the water is actually being stored at the rate, and in the locations, that it is assumed to be.** The DEIR states multiple times that the volume of water in storage in the Westside Basin will be calculated using metered surface water deliveries (the Put) and metered groundwater extractions (the Take). Given the importance of this supply to regional water supply reliability, the calculated storage should be confirmed using actual field data, and using the groundwater basin model, as appropriate." *(BAWSCA, letter, May 24, 2013 [G-BAWSCA-Sandkulla])*

"10. DEIR, page 5.16-146. Measured data may not be sufficient to account for losses, thus the usage of the groundwater model as a tool should be included in the mitigation measure, with guidance from the Operating Committee. Additionally, losses will occur during Put, Take, and Hold conditions, so the accounting and environmental analysis should not be limited to only Put and Hold years.

Change text from:

> *The SFPUC Storage Account monitoring program will use data from metered SFPUC in-lieu water deliveries to the Partner Agencies and regularly measured changes in groundwater elevations during a series of Put and Hold Years to determine the volume of stored water while developing rules to account for losses in groundwater storage, based on generally accepted principles of groundwater management.*

to:

> *The SFPUC Storage Account monitoring program will use data from metered SFPUC in-lieu water deliveries to the Partner Agencies, regularly measured changes in groundwater elevations, and from the regional groundwater model to determine the volume of stored water while developing rules to account for*

losses in groundwater storage, based on generally accepted principles of groundwater management." (City of San Bruno, letter, June 13, 2013 [G-San Bruno-Fabry])

"13. Mitigation Measure M-HY-14: Prevent Groundwater Depletion. This proposed mitigation measure should recognize the Operating Committees role in the development of the accounting for basin losses. Not only will the SFPUC work with the Operating Committee on the development of the accounting methodology, but also the Partner Agency's will be working with the Operating Committee as provided in the Operating Agreement." *(City of San Bruno, letter, June 13, 2013 [G-San Bruno-Fabry])*

"The analysis of Impact HY-14 purports to address groundwater depletion.[27] This analysis acknowledges 'leakage' from the Aquifer, but does not accurately predict the increased amount of loss that will occur during Put Periods. Instead, it includes a mitigation measure that will establish 'accounting rules that will account for losses from the Basin due to leakage.'[28] This analysis must be done now, before the GSR Project is approved, so that conditions of approval can be established that will limit groundwater pumping by the SFPUC and Partner Agencies.

[27] DEIR, pp. 5.16-142 – 5.16-146.

[28] Id. at p. 5.16-146." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

"*The DEIR does not restrict Partner Agency and SFPUC pumping:* The DEIR describes a proposed requirement for Partner Agencies to reduce their pumping during wet put periods; but this appears to be an assumption, subject to agreement between the SFPUC and the Partner Agencies, not a requirement.[42] In order to protect existing irrigators and prevent overdraft of the Aquifer, the GSR Project must include a requirement that the SFPUC and the Partner Agencies monitor and report all pumping from the Aquifer during put periods (so the amount of water identified as stored in the Aquifer is accurate) and that pumping during dry periods be restricted so that the Aquifer is not drawn down below existing baseline levels. The DEIR must be revised to include this requirement, and must describe the methods that will be employed to monitor and control pumping by Partner Agencies.

[42] DEIR, p. 3-4; *see also id.* at pp. 3-138 – 3-139 ['The Partner Agencies would agree to limit pumping from their existing wells and any new wells to the designated quantities totaling 6.9 mgd over a five-year averaging period']." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

"*Item 26 – Is the accounting system appropriate and sufficient for ensuring that the aquifers in the Westside Basin are not depleted and that current and planned water uses remain viable?*" *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

Response HY-48

This grouping of comments express concern about the adequacy of mitigation proposed for the groundwater depletion impact identified in the Draft EIR. The comment requests use of actual field data to confirm the amount of groundwater stored by the Project. For that issue, refer to

Response 43, which includes revised Mitigation Measure M—HY-14 and an example accounting procedure for calculating Westside Groundwater Basin losses (i.e., groundwater depletion) for the SFPUC Storage Account. The mitigation measure includes the development of a Storage Account monitoring program in conjunction with the GSR Operating Committee. The Storage Account monitoring program is required by the mitigation measure to include data from metered SFPUC in-lieu water deliveries, metered Project pumping, metered Partner Agency pumping, actual Project operation experience, and field monitoring of groundwater elevations. The field monitoring of changes in groundwater elevations would use actual water level measurements, as requested by the comment. In addition to the actual groundwater levels being collected as field data under Mitigation Measure M-HY-14 (Prevent Groundwater Depletion), the SFPUC and Partner Agencies would collect actual field data and water elevations, as specified under Actions B.1 through B.4 of the South Westside Basin Groundwater Management Plan. As noted in the Draft EIR on page 5.16-12, in the South Westside Basin, the SFPUC monitors groundwater levels in 62 groundwater monitoring wells at 26 locations. The SFPUC, in cooperation with its Partner Agencies, has implemented a groundwater monitoring program since 2001 to evaluate groundwater and lake elevations and groundwater quality throughout the Westside Groundwater Basin. This monitoring program will continue in addition to the monitoring required under Mitigation Measure M-HY-14. See Response HY-43 for details on the methodology for quantifying Westside Groundwater Basin losses, i.e., groundwater depletion.

The Westside Basin Groundwater Model would not be the primary tool used for determining Westside Groundwater Basin losses. Instead, an SFPUC Storage Account monitoring program would be implemented. This monitoring program would use actual metered deliveries, pumping data, and measured changes in groundwater levels to determine SFPUC Storage Account losses. No specific interval has been established for updating the groundwater model. However, the groundwater model is expected to be updated periodically as new information becomes available.

As requested by comments and to place the Draft EIR Project Description commitments in the mitigation measure, the following changes are made to Mitigation Measure M-HY-14 (Prevent Groundwater Depletion) on page 5.16-146 of the Draft EIR. See revision in Response HY-43 as well. Refer also to Section 9.5, Draft EIR Revisions, which provides all changes to the Draft EIR, including the combined revisions to Mitigation Measure M-HY-14.

Mitigation Measure M-HY-14: Prevent Groundwater Depletion

<u>The SFPUC and Partner Agencies shall pump from the SFPUC Storage Account only if a positive balance exists in the SFPUC Storage Account as a result of previous in-lieu recharge, taking into account any losses from the Basin resulting from the Project.</u>

The SFPUC, working in conjunction with the GSR Operating Committee, shall develop and adopt an SFPUC Storage Account monitoring program that will determine the amount of water available for extraction from the SFPUC Storage Account and develop accounting rules that will account for losses from the Basin due to leakage, consistent with the terms of the Operating Agreement between the SFPUC and the Partner

> Agencies. The SFPUC shall develop the SFPUC Storage Account monitoring program to determine the balance in the SFPUC Storage Account based on actual experience operating in the Westside Groundwater Basin as proposed under the GSR Project. The SFPUC Storage Account monitoring program will use data from metered SFPUC in-lieu water deliveries to the Partner Agencies and regularly measured changes in groundwater elevations, and from the regional groundwater model during a series of Put, Take, and Hold Years to determine the volume of stored water while developing rules to account for losses in groundwater storage, based on generally accepted principles of groundwater management.

Comments also request that Mitigation Measure M-HY-14 (Prevent Groundwater Depletion) require coordination with the GSR Operating Committee when accounting for Westside Groundwater Basin losses. As stated in the opening sentence of Mitigation Measure M-HY-14 on page 5.16-146 of the Draft EIR, this provision is already included in the mitigation measure: "The SFPUC, working in conjunction with the GSR Operating Committee, shall develop and adopt an SFPUC Storage Account monitoring program that will determine the amount of water available for extraction from the SFPUC Storage Account and develop accounting rules that will account for losses from the Westside Groundwater Basin due to leakage, consistent with the terms of the Operating Agreement between the SFPUC and the Partner Agencies."

One comment states that the analysis must accurately predict the increased amount of loss that would occur during Put periods and condition approval on limiting groundwater that can be pumped, instead of providing in a mitigation measure for the establishment of accounting rules that will account for losses. The analysis of the potential for groundwater depletion on pages 5.16-142 through 5.16-146 adequately assesses the impacts of groundwater depletion that could occur with the Project and identifies the impact as significant, in compliance with CEQA. It then recommends Mitigation Measure M-HY-14, to mitigate the impacts associated with groundwater depletion. Mitigation Measure M-HY-14, as revised in Response HY-43, does not just provide for the future establishment of accounting rules to account for losses. Instead, it establishes an expressly stated Performance Standard that the SFPUC and Partner Agencies must meet to assure that a significant impact due to groundwater depletion does not occur. This mitigation measure requires pumping from the SFPUC Storage Account to be limited to the positive balance that exists in the SFPUC Storage Account. The measure further specifies that data on changes in groundwater elevations gathered from the SFPUC's monitoring program must be used to determine the volume of stored water while developing rules to account for losses in groundwater storage. It specifies that the accounting rules must satisfy accepted principles of groundwater management and an example accounting procedure is provided. Further, the rules to account for losses must be consistent with the terms of the Operating Agreement between the SFPUC and the Partner Agencies. These provisions of Mitigation Measure M-HY-14 are adequate to assure that impacts associated with groundwater depletion will be mitigated to a less-than-significant level.

One of the comments states that the Draft EIR does not restrict Partner Agency and SFPUC pumping because the Project Description uses future tense, e.g., "proposed" or "would", to describe the Project. The Draft EIR Project Description and all references to Project impacts are written using future terms and tenses, to indicate that the Project has not yet been approved and the impacts would only occur if the Project is approved. Such future terms and tenses do not indicate a tentative commitment to the description of the Project. Therefore, the following description on page 3-4 of the Draft EIR is a firm commitment, if the Project is approved:

> "The proposed Project would provide supplemental SFPUC surface water to the Partner Agencies during normal and wet years. During these years, the Partner Agencies would reduce their groundwater pumping by a comparable amount to increase the amount of groundwater in storage through natural, or in-lieu, recharge."

Further, the terms of the draft Operating Agreement on page 3-139 of the Draft EIR propose the following initial apportionment:

> "The Partner Agencies would agree to limit pumping from their existing wells and any new wells to the designated quantities totaling 6.9 mgd over a five-year averaging period. The proposed initial apportionment among the Partner Agencies is as follows:
>
> - Daly City: 3.43 mgd/ 3,840 af per year (Daly City 2011),
> - Cal Water: 1.37 mgd/ 1,534 af per year (Cal Water 2011), and
> - San Bruno: 2.1 mgd/ 2,350 af per year (San Bruno 2011)."

The comment also requests that a firm commitment for monitoring and reporting pumping by the SFPUC and the Partner Agencies be made. Such a commitment is made in Chapter 3, Project Description on page 3-138 of the Draft EIR:

> "The SFPUC would maintain an accounting of the storage volumes in the SFPUC Storage Account. The SFPUC would track the amount of water that has been stored during normal and wet years (Put Periods), and the amount of water pumped from the SFPUC Storage Account (Take Periods). Accruals in the SFPUC Storage Account would be recorded based on metered, in-lieu surface water deliveries and corresponding metered decreases in groundwater pumping. An Operating Committee would be formed for purposes of Westside Groundwater Basin management to monitor and track the SFPUC Storage Account, including any losses from the Westside Groundwater Basin resulting from the Project, and establish annual pumping schedules for Project wells."

In addition, the commitment for monitoring and reporting pumping is reiterated in Mitigation Measure M-HY-14 (Prevent Groundwater Depletion), as indicated earlier in this response.

In summary, the Draft EIR Project Description and Mitigation Measure M-HY-14 (Prevent Groundwater Depletion), as revised in Response HY-43, require a commitment to monitoring changes in the Westside Groundwater Basin, by accounting for additions and subtractions from the SFPUC Storage Account by metering in-lieu water deliveries to Partner Agencies and pumping by the SFPUC and Partner Agencies, from field measurements of actual groundwater levels throughout the Westside Groundwater Basin, and by using subareas with storage coefficients (see Response HY-43 for details on the methodology for accounting for losses). These monitoring efforts would generate the data needed to determine Project inputs and outputs to the Westside Groundwater Basin and resulting actual groundwater levels in the Westside Groundwater Basin. As stated on page 3-138 of the Draft EIR, "An Operating Committee would be formed for purposes of Basin management to monitor and track the SFPUC Storage Account, including any losses from the Basin resulting from the Project, and establish annual pumping schedules for Project wells." Using the monitoring data, the Operating Committee would adjust the volumes in the SFPUC Storage Account to account for any losses from the Westside Groundwater Basin resulting from the Project, and thereby ensure that the Westside Groundwater Basin would not be depleted due to Project operation.

Comment HY-49: Comments related to cumulative impacts of groundwater depletion.

This response addresses comments from the commenters listed below; each comment on this topic is quoted in full below this list:

- G-Daly City-Sweetland
- O-CLMP-Quick

"**C-HY-8: <u>Operation of the proposed Project would have a cumulatively considerable contribution to a cumulative impact related to groundwater depletion effect *(Less than Significant with Mitigation).*</u>** Daly City concurs. Daly City notes that the combined impacts from the Regional Groundwater Storage and Recovery Project and the San Francisco Groundwater Supply Project, when considered cumulatively, provide mutually beneficial impacts in some respects. By itself, the Regional Groundwater Storage and Recovery Project increases groundwater outflow (leakage) to the Pacific Ocean by raising onshore groundwater levels during 'PUT' and 'HOLD' periods. By capturing a large part of that outflow, the San Francisco Groundwater Supply Project reduces the leakage losses that would otherwise occur and increase the total yield of the San Francisco Groundwater Project and the Regional Groundwater Storage and Recovery Project. Conversely, by elevating groundwater levels in the northern part of the South Westside Groundwater Basin, the Groundwater Storage and Recovery Project reduces the risk of seawater intrusion created by the San Francisco Groundwater Supply Project. The DEIR does not explicitly point out these potentially mutually beneficial impacts." *(Daly City Department of Water and Wastewater Resources, letter, June 10, 2013 [G-Daly City-Sweetland])*

"***Impact C-HY-8: Operation of the proposed Project would have a cumulatively considerable contribution to a cumulative impact related to groundwater depletion effect.***

See comments and questions discussed above under Impact HY-14." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

Response HY-49

These comments discuss the cumulative groundwater depletion impact. The first comment indicates ways in which the San Francisco Groundwater Supply (SFGW) Project and the GSR Project have mutually beneficial cumulative impacts. The comment is correct, and no further response is required.

Please refer to Responses HY-42, HY-47, and HY-48 regarding the second comment, which relates to Impact HY-14, Groundwater Depletion.

Comment HY-50: Comments related to diversions from the Tuolumne River.

This response addresses comments from the commenters listed below; each comment on this topic is quoted in full below this list:

- O-TRT-Drekmeier
- PH-SSF-Drekmeier

"TRT is concerned the Project will increase diversions from the Tuolumne River in normal and wet years, potentially resulting in negative impacts on the stretch of River below O'Shaughnessy Dam." *(Tuolumne River Trust, letter, June 5, 2013 [O-TRT-Drekmeier])*

"The approved Modified WSIP capped water sales in the SFPUC service territory at 265 mgd until at least 2018. Historically, 85% of SFPUC water has come from the Tuolumne River and 15% from the SFPUC's Bay Area reservoirs.

Conditions related to management of the SFPUC's Bay Area reservoirs have changed since the WSIP was approved. Most notably, the SFPUC will be required to release an additional 7.4 mgd into Alameda and San Mateo Creeks for fish and wildlife upon completion of upgrades to the Calaveras and Crystal Springs Dams.

Presumably, to make up for this shortfall diversions from the Tuolumne River would need to increase in order to provide supplemental surface water to the agencies that currently pump groundwater. The cumulative impacts of diverting more water from the Tuolumne River must be analyzed in the Project EIR." *(Tuolumne River Trust, letter, June 5, 2013 [O-TRT-Drekmeier])*

"TRT is concerned that increased diversions from Hetch Hetchy could have negative impacts on Poopenaut Valley and other sensitive ecosystems downstream of O'Shaughnessy Dam, especially in light of likely changes in the timing of runoff in the coming era of climate change. An up-to-date analysis, with current data using current analysis protocol, needs to be part of the Project EIR." *(Tuolumne River Trust, letter, June 5, 2013 [O-TRT-Drekmeier])*

"MR. JOHNSTON: And then, Peter Drekmeir?

MR. DREKMEIR: Good evening. I'm Peter Drekmeir. I'm with the Tuolumne River Trust, and I actually just have a few questions.

I just got back from vacation so I wasn't able to read the whole EIR, but I skimmed it, and I couldn't immediately find any details on potential impacts to the Tuolumne River from providing a 5.4 mgd during wet and normal years.

Is that included in the EIR in terms of the Tuolumne River?

MR. JOHNSTON: It is. And then, I can – we can chat a little bit after the hearing, but right now we're just here to receive comments on the adequacy and accuracy." *(Peter Drekmeier, public hearing, transcript, May 14, 2013 [PH-SSF-Drekmeier])*

Response HY-50

This comment expresses concern that the Project would increase diversions from the Tuolumne River in normal and wet years for in-lieu recharge. The San Francisco Planning Department analyzed the impacts on the Tuolumne River from the withdrawals proposed by this and other Water System Improvement Program (WSIP) projects in the Program Environmental Impact Report (PEIR), and those withdrawals were included in the Phased WSIP Variant adopted by the SFPUC in 2008. The Project does not include increased diversions from the Tuolumne River in normal and wet years beyond what was identified in the Phased WSIP Variant, which the WSIP PEIR described and analyzed.

The comment is correct that the Phased WSIP Variant approved by the SFPUC limits average annual water sales from its watersheds to 265 mgd, and is correct that 85 percent of that water would be expected to come from the Tuolumne watershed. The comment is also correct that implementation of releases for the Calaveras Dam Replacement Project and Lower Crystal Springs Dam Improvement Project would represent a potential decrease in available supply of an average annual 3.9 mgd and 3.5 mgd, respectively, with a total of 7.4 mgd average annually. However, as noted above, the Project would not increase diversion from the Tuolumne River. Because there would not be increased diversion from Hetch Hetchy, there would be no adverse effects on Poopenaut Valley or other sensitive ecosystems downstream of O'Shaughnessy Dam as a result of increased diversions beyond the diversions already analyzed in the WSIP PEIR.

Comment HY-51: Comments related to the Raker Act.

This response addresses comments from the commenters listed below; each comment on this topic is quoted in full below this list:

- O-TRT-Drekmeier
- O-RHH-Rosekrans
- PH-SSF-Drekmeier

"Another issue that must be addressed regards the Raker Act. The Raker Act prohibits the SFPUC from selling water from the Tuolumne River to private companies. Since Cal Water is one of the utilities that would receive surface water from the SFPUC under the Project, the EIR should address whether this could be accomplished without violating the Raker Act, especially considering that yield from the SFPUC's Bay Area reservoirs will be reduced by 7.4 mgd." *(Tuolumne River Trust, letter, June 5, 2013 [O-TRT-Drekmeier])*

"Moreover, retaining local supplies is mandated by the plain language of the Raker Act that authorized construction of facilities that make it possible to divert Tuolumne River supplies to the Bay Area.

Section 9(h) of the Raker Act reads:

That the said grantee shall not divert beyond the limits of the San Joaquin Valley and more of the waters from the Tuolumne watershed than, together with the waters which it now has or may hereafter acquire, shall be necessary for its beneficial use for domestic and other municipal purposes." *(Restore Hetch Hetchy, letter, June 11, 2013 [O-RHH-Rosekrans])*

"MR. DREKMEIER: And then, kind of an obscure question, but the Raker Act, which granted the SFPUC the right to build and operate the Hetch Hetchy system, prevents them from selling Tuolumne River water to private companies, and I'm wondering if there was an analysis of whether this would put Cal Water over its entitlement, because right now the thought is that the 15 percent of SFPUC water that is provided to Cal Water comes from the local reservoirs, Calaveras and Crystal Springs. And I'm wondering if this additional Tuolumne water might jeopardize that arrangement.

So, it's a question that you don't need to answer, but it's something to look into." *(Peter Drekmeier, public hearing, transcript, May 14, 2013 [PH-SSF-Drekmeier])*

Response HY-51

These comments express concern that the Project would violate the Raker Act. The comments do not raise an environmental issue related to the Raker Act, and no Raker Act approvals are required for construction and operation of the Project. The SFPUC believes that Project operations would comport with the Raker Act for the following reasons. The Project's in-lieu surface water deliveries for the GSR Project in normal and wet years (Put Years) would be considered delivery of water to storage (new storage within the Westside Groundwater Basin). The Project would be consistent with Raker Act requirements in that total deliveries to Cal Water would not exceed local watershed production, and the water would be used for domestic and municipal purposes.

Please refer to Response HY-50 regarding reductions in yield from local reservoirs.

Comment HY-52: Comments related to data made available after publication of the WSIP PEIR, including the Kirkwood Agreement.

This response addresses comments from the commenter listed below; the comments on this topic are quoted in full below this list:

- O-TRT-Drekmeier

"The Project EIR simply tiers off the 2008 Water System Improvement Program (WSIP) PEIR, and fails to incorporate new conditions and information that have become available since the WSIP was approved." *(Tuolumne River Trust, letter, June 5, 2013 [O-TRT-Drekmeier])*

"The Project EIR must consider new information that has become available since the WSIP PEIR was approved. For example, on April 16, 2012, the SFPUC released a report titled, 'Sensitivity of Upper Tuolumne River Flow to Potential Climate Change Scenarios' (Attachment A). This information must be considered when determining potential impacts on the Tuolumne River of increasing diversions from Hetch Hetchy Reservoir.

After the WSIP was approved, the SFPUC embarked on its Upper Tuolumne River Ecosystem Program (UTREP) that is studying the stretch of the Tuolumne River between O'Shaughnessy Dam and Early Intake. The UTREP is 'An ongoing effort to conduct long-term, collaborative, science-based investigations designed to: 1) Characterize historical and current river ecosystem conditions; 2) Assess their relationship to Hetch Hetchy Project operations; and 3) Provide recommendations for improving ecosystem conditions on a long-term, adaptively managed basis.'

The UTREP is a legally required program with which the SFPUC must comply to meet its obligations under the Kirkwood Agreement. While completion of the UTREP is behind schedule, the information that is currently available must be incorporated into the environmental review for the Regional Groundwater Storage and Recovery Project." *(Tuolumne River Trust, letter, June 5, 2013 [O-TRT-Drekmeier])*

"TRT is concerned that current operations of O'Shaughnessy Dam are in violation of the Kirkwood Agreement. Following is some background information.

On January 31, 1985, the City and U.S. Interior Department entered into a Stipulation (Attachment B) that required a study of the impacts on fish, wildlife, recreational and aesthetic values, as a condition of any modification (including expansion) of the City's Hetch Hetchy System that might affect the flow of the Tuolumne River between O'Shaughnessy Dam and Early Intake. The 1985 Stipulation further provides that the purpose of the study is to determine what change, if any, should be made to the flow release schedule. It reserves the Interior Department's authority to require such change after consideration of any objection.

On November 4, 1985, the City entered into an Interim Agreement (Attachment C) with the Tuolumne River Trust and other conservation organizations, confirming this obligation with respect to the third generating unit of the Kirkwood Powerhouse. The Interim Agreement also granted the groups standing to enforce the conditions of a subsequent agreement between the City and the Interior Department relating to a fisheries study.

On March 10, 1987, the City and Interior Department entered into a Stipulation (Attachment D) requiring the City, or the U.S. Fish and Wildlife Service (FWS), to undertake a study '…to determine what, if any effect, the Kirkwood Powerhouse and Kirkwood Addition would have or have had on the habitat for and populations of resident fish species, between O'Shaughnessy Dam and Early Intake…' The condition requires the study to be completed by December 1992, subject to extension only if the USFWS determines that the study is inconclusive or inaccurate as a result of climatic or other environmental conditions. The Stipulation specifies adjustments to the minimum flow releases, if the USFWS determines that flow in the Tuolumne River '…should be increased.'

USFWS issued a draft report in 1992 (Attachment E) titled 'Instream Flow Requirements for Rainbow and Brown Trout in the Tuolumne River Between O'Shaughnessy Dam and Early Intake.' This report was never finalized, however, it states, 'In 1988, the U.S. Fish and Wildlife Service's Instream Flow Incremental Methodology (IFIM) was applied to the Tuolumne River below Hetch Hetchy Reservoir…An annual fishery allocation of between 59,207 acre-feet and 75,363 acre-feet is recommended, based on the findings of the instream flow study.'

The report recommended increasing instream flows from O'Shaughnessy Dam. For example, in the months of December and January, it recommended an increase in flows from a minimum of 35 cfs to 50 cfs in dry years, from a minimum of 40 cfs to 70 cfs in normal years, and from a minimum of 50 cfs to 85 cfs in wet years.

However, Table 5.3.1-2 of the WSIP PEIR (Vol. 3, Section 5.3, page 5.3.1-13) shows the 'Schedule of Average Daily Minimum Required Releases to Support Fisheries Below O'Shaughnessy Dam' based on a 1985 agreement. Attachment F compares flows listed in the WSIP PEIR with those recommended by the draft USFWS report.

On March 20, 2006 the Tuolumne River Trust, represented by the Natural Heritage Institute, gave notice that the SFPUC was in violation of the 'Modification for Kirkwood Powerhouse Unit No. 3 to Stipulation for Amendment of Rights-of-Way for Canyon Power Project Approved by Secretary of the Interior on May 26, 1961 to Fulfill the Conditions Set Forth in Provision 6 of Said Amended Permit.' Our letter

(Attachment G) asserted that the study required by the Stipulation had not been published and the minimum flow release schedule had not been adjusted.

On February 5, 2008, the SFPUC responded (Attachment H), stating, 'The purpose of this letter is to propose a collaborative process to resolve these implementation issues by December 2009.' The SFPUC proposed, among other things, 'the following measures, schedule and conditions to resolve the outstanding issues from the 1987 Stipulation.'

The SFPUC, the USFWS, Yosemite National Park Service staff, and SFPUC consultants will work together to gather the information necessary to develop physical and biological objectives for an adaptive management plan for O'Shaughnessy Dam flow releases. It is anticipated that these initial studies shall be completed by December 2009.

The SFPUC and the USFWS, in consultation with the Yosemite National Park, the US Forest Service, the California Department of Fish and Game, SFPUC consultants, and the Trust, will review ongoing study material and work together to develop an adaptive management plan for releases into the affected reach to enhance a wider range of resource values. This plan will include a monitoring program, and may also include annual consultations between the USFWS and the SFPUC regarding water releases into the affected reach. The SFPUC and USFWS agree to make best efforts to complete the adaptive management plan by December 2009.

On May 26, 2009, the Tuolumne River Trust accepted the proposed measures, schedule, and conditions proposed by the SFPUC. To meet the obligations of the agreement, the SFPUC initiated its Upper Tuolumne River Ecosystem Program (UTREP)." *(Tuolumne River Trust, letter, June 5, 2013 [O-TRT-Drekmeier])*

Response HY-52

These comments question whether the Draft EIR responds to data made available after publication of the WSIP PEIR, including information pertaining to the SFPUC's Upper Tuolumne River Ecosystem Program (UTREP). The comment asserts that the Draft EIR should not just tier off the PEIR analysis of the impacts of increased diversions from the Tuolumne River under the WSIP but must consider new information that has become available since approval of the PEIR that could affect the analysis. However, as documented in Response HY-50, the Project does not propose to increase diversion from the Tuolumne River beyond what is assumed in the PEIR. As to whether any new information has become available that would change any of the impact conclusions reached about the diversions analyzed in the WSIP PEIR, the San Francisco Planning Department has reviewed relevant environmental information developed since certification of the WSIP PEIR in October 2008 to determine whether new information raises the potential for any new significant or more severe environmental impacts beyond those described in the PEIR, and whether the information would trigger any additional environmental review requirements under CEQA. The results of this review are summarized in Appendix L, a new Appendix to the Draft EIR, *Technical Memorandum, San Francisco Public Utilities Commission's Water System Improvement Program Final Program Environmental Impact Report – Supplemental Review on New*

Studies on the Tuolumne River, dated December 19, 2013 (ESA 2013). Appendix L is included in its entirety in Section 9.5, Draft EIR Revisions, in this Reponses to Comment document. The memo considers these documents related to new studies done about the Tuolumne River:

- Hydrocomp, San Francisco Public Utilities Commission, and Turlock Irrigation District, 2012. *Sensitivity of Upper Tuolumne River Flow to Climate Change Scenarios.*
- McBain & Trush, Inc., 2009. *Upper Tuolumne River Ecosystem Project: O'Shaughnessy Dam Instream Flow Evaluation Study Plan.* Prepared for the San Francisco Public Utilities Commission.
- McBain & Trush, Inc. and Questa Engineering Corporation, 2009. *Upper Tuolumne River Ecosystem Project, 2009 Amphibian and Reptile Assessment Study Plan for the Hetch Hetchy Reach.* Prepared for the San Francisco Public Utilities Commission.
- McBain & Trush, Inc., 2008. *Upper Tuolumne River Ecosystem Project: Preliminary Sediment Source and Sediment Transport Capacity Evaluation: O'Shaughnessy Dam to Poopenaut Valley Technical Memorandum.* Prepared for the San Francisco Public Utilities Commission, Water Enterprise, Natural Resources and Lands Management Division and Hetch Hetchy Water and Power Division.
- Merritt Smith Consulting, 2008. *Upper Tuolumne River Ecosystem Project: Preliminary Analysis of Available Data for Modeling Temperature in the Hetch Hetchy Reach (O'Shaughnessy Dam to Cherry Creek) Technical Memorandum.* Prepared for the San Francisco Public Utilities Commission, Water Enterprise, Natural Resources and Lands Management Division and Hetch Hetchy Water and Power Division.
- National Park Service (NPS), 2013. *Tuolumne Wild and Scenic River Draft Comprehensive Management Plan and Environmental Impact Statement.*
- Russo, Tess A., Andrew T. Fisher, and James W. Roche, 2012. *Improving Riparian Wetland Conditions Based on Infiltration and Drainage Behavior During and After Controlled Flooding.* Journal of Hydrology 432- 433 (2012) 98-111.
- San Francisco Public Utilities Commission (SFPUC), 2012. *Memorandum to SFPUC Commissioners through Ed Harrington, SFPUC General Manager, from David Behar, Climate Program Director, Water Enterprise, regarding Final Report: Sensitivity of Upper Tuolumne River Flow to Potential Climate Change Scenarios.*
- Stock, Greg, Ph.D., James Roche, Monica Buhler, and Sarah Stock, 2012. *Looking Downstream 2010 Update: Physical and Ecological Responses to River Flow Downstream of Hetch Hetchy Reservoir, Yosemite National Park.* Yosemite National Park Division of Resources Management and Science.
- Stock, Greg, Ph.D., James Roche, Monica Buhler, Sarah Stock, Jeff Holmquist, Ph.D., Jutta Schmidt- Gengenbach, Tess Russo and Andrew Fisher, Ph.D., 2011. *Looking Downstream 2009 Update: Physical and Ecological Responses to an Experimental Pulse Flow Downstream of*

Hetch Hetchy Reservoir, Yosemite National Park. Yosemite National Park Division of Resources Management and Science.

- Stock, Greg, Ph.D., James Roche, Monica Buhler, Sarah Stock, Jeff Holmquist, Ph.D., and Jutta Schmidt- Gengenbach, 2010. *Looking Downstream 2008 Update: Physical and Ecological Responses to an Experimental Pulse Flow Downstream of Hetch Hetchy Reservoir, Yosemite National Park.* Yosemite National Park Division of Resources Management and Science.

- Stock, Greg, Ph.D., James Roche, Monica Buhler, Sarah Stock, Denise Della-Santina, Laura Clor, Jeff Holmquist, Ph.D., and Jutta Schmidt-Gengenbach, 2009. *Looking Downstream: Ecological Responses to an Altered Hydrologic Regime Downstream of Hetch Hetchy Reservoir, Yosemite National Park.* Yosemite National Park Division of Resources Management and Science.

- Stillwater Sciences, 2011. *Upper Tuolumne River Ecosystem Project: Streambank Stability Study in Poopenaut Valley, Yosemite National Park, California.* Technical Memorandum, Final. Prepared for McBain & Trush, Inc.

- Watercourse Engineering, Inc., 2010. *Development of a Flow and Temperature Model for the Hetch Hetchy Reach of the Upper Tuolumne River.* Prepared for the Natural Resources Division of the San Francisco Public Utilities Commission.

In addition to relevant studies, the memo also considers the Federal Energy Regulatory Commission relicensing process for the Don Pedro Project, SFPUC water demand projections, and SFPUC water supply projections. The memo concludes that none of the reviewed information changes the conclusions reached in the certified, final WSIP PEIR regarding the environmental impacts associated with increased diversions from the Tuolumne River and consequently, no additional review is required under CEQA Section 21166 and CEQA Guidelines Section 15162).

All of the information presented in the comment from the Tuolumne River Trust was considered by the San Francisco Planning Department in the cited memorandum. Several of the documents listed in the comment, such as the Kirkwood Agreement, pre-date the PEIR; all of these earlier documents were taken into consideration in the PEIR, and need not be reconsidered at this time, because they are not new information that was not known or could not have been known with exercise of reasonable diligence at the time the PEIR was prepared. As this Project is not in any way seeking to change the diversion approved by the SFPUC in 2008, the analysis of impacts from water supply actions approved for the Phased WSIP Variant cannot be reopened under CEQA Section 21166, unless the conditions stated in that section are met, which is not the case.

Comment HY-53: Comment regarding need for more details on monitoring and mitigation measures.

This response addresses a comment from the commenter listed below; the comment on this topic is quoted in full below this list:

- O-CLMP-Quick

"*Item 24 – The SFPUC acknowledges significant adverse impacts.*

The DEIR and associated appendices describe the regional hydrogeologic system of the Westside Basin. The potential impacts have been acknowledged but are poorly understood and described. For example, salt water intrusion, subsidence, well interference, and contaminant redistribution and remobilization have been described in general terms, but the discussion presented in the DEIR lacks details on monitoring and mitigation measures." *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

Response HY-53

This comment requests more details on monitoring and mitigation measures. Section 5.16, Hydrology and Water Quality in the Draft EIR identifies three significant impacts: Impact HY-6 regarding well interference; Impact HY-9 regarding Lake Merced, and; Impact HY-14 regarding groundwater depletion. Significant impacts relative to seawater intrusion, subsidence, and contaminant redistribution and remobilization were not identified, and therefore no mitigation is included. The Draft EIR identifies ways that significant impacts on well interference, Lake Merced, and groundwater depletion can feasibly be reduced to less-than-significant levels through application of four mitigation measures: Mitigation Measure M-HY-6 (Ensure Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation) regarding well interference; Mitigation Measures M-HY-9a (Lake Level Monitoring and Modeling for Lake Merced) and M-HY-9b (Lake Level Management for Lake Merced) regarding Lake Merced; and Mitigation Measure M-HY-14 (Prevent Groundwater Depletion) regarding groundwater depletion. See Response HY-15 for revisions to Mitigation Measure M-HY-6. The mitigation measures include specific monitoring requirements, contain Performance Standards, and require specific data collection during monitoring to ensure that the Performance Standard is met so that significant impacts would be reduced to less-than-significant levels. Requiring data collection, monitoring, and compliance with established Performance Standards is appropriate, reasonable and necessary for these hydrology and water quality-related impacts because the monitoring data can only be collected in the future based on the specific hydrologic, climate, and pumping needs of the irrigators in any specific year. Such an approach to mitigation is specifically authorized in the CEQA Guidelines section 15126.4(a)(1)(B). As the comment does not provide more specific information about the ways in which the impacts are poorly understood or described or the type of detail that is lacking on monitoring and mitigation, no further response can be provided. Please refer to Response HY-6 regarding other comments on monitoring, Response HY-15 regarding well interference mitigation, and Responses HY-43 and HY-48 regarding groundwater depletion mitigation.

Comment HY-54: Comments related to rising groundwater levels and land use impacts therefrom.

This response addresses comments from the commenter listed below; the comments on this topic are quoted in full below this list:

- I-Lawrence (1)

"3. When the planned quantity of water is stored in the aquifer, will any land now dry become wet such that it cannot be used as it has been?" *(Steve Lawrence, e-mail, May 26, 2013 [I-Lawrence (1)])*

"4. With the groundwater table as high as it will be when the aquifer is 'full' with stored 60,500 acre feet of water, is it likely that this water, or some of it, will be extracted, openly or surreptitiously, by landowners, either as a source of cheap(er) water or because land is now swampy or wet?" *(Steve Lawrence, e-mail, May 26, 2013 [I-Lawrence (1)])*

Response HY-54

The comment asks whether the increase in groundwater storage would result in any land now dry becoming wet such that it cannot be used as it has been and whether landowners may be induced to pump more groundwater because groundwater levels would be higher, and therefore cheaper to pump. Firstly, no land would become wet due to Project operation. The Draft EIR reports the analysis of rising water levels on pages 5.16-137 through 5.16-139. On page 5.16-139, the Draft EIR explains:

> "The in-lieu recharge that would occur during Put Years; i.e., reduced pumping on the part of the Partner Agencies in the Primary Production Aquifer at depths greater than 300 feet below ground surface is expected to indirectly lead to higher groundwater levels in the shallow, regionally continuous, groundwater zone (referred to as Model Layer 1 in the Westside Basin Groundwater Model). The Westside Basin Groundwater Model predicts that the maximum increase in groundwater levels is expected to occur at about Scenario Year 7 after several years of above-normal rainfall and at a time when the SFPUC Storage Account would be full. The Model identifies the Daly City and Colma areas as having shallow groundwater zone (Model Layer 1) levels well below 70 feet under modeled existing conditions. Although the Westside Basin Groundwater Model predicts that Primary Production Aquifer groundwater levels will rise up to 40 to 80 feet in the Daly City area and 5 to 40 feet in the Colma area due to the Project in Scenario Year 7, Primary Production Aquifer groundwater levels are predicted to remain below 70 feet …"

Table 5.16-16 (Predicted Groundwater Levels relative to Depth of Known Contamination) on pages 5.16-137 and 5.16-138 indicates that depth to water at specific locations is predicted to be at least 40 or more feet bgs with the Project, except at Site 16, where depth is 10 feet both before and after the Project. Therefore, it can reasonably be expected that no land would become wet that is now dry due to Project operation, that land owners would not need to pump groundwater to avoid land becoming "swampy," and that some landowners may be able to pump more groundwater because of higher groundwater levels.

Secondly, the comment asks if landowners may be induced to pump more groundwater because higher levels of groundwater may become a source of cheaper water. This concern is noted. However, the amount of money that would be saved by pumping from somewhat higher groundwater levels would be small and would not be expected to offset well construction or even reasonably expected operation and maintenance costs. Therefore, the Project is not expected to induce additional groundwater pumping as a source of cheaper water.

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9.3.15 Alternatives

The comments and corresponding responses in this section cover topics in Chapter 7, Alternatives, of the Draft EIR. This includes topics related to:

- AL-1, Additional Alternatives to the Proposed Project
- AL-2, Environmentally Superior Alternative

Comment AL-1: Comments suggesting additional alternatives to the proposed Project beyond what was considered in the Draft EIR.

This response addresses comments from the commenters listed below; each comment on this topic is quoted in full below this list:

- G-VA-Madderom
- O-TRT-Drekmeier
- O-RHH-Rosekrans
- I-Lawrence (2)
- PH-PC-Antonini

"Consequently, VA strongly urges SFPUC to select an alternative that does not impact the Golden Gate National Cemetery." *(Department of Veterans Affairs, letter, May 25, 2013 [G-VA-Madderom])*

"The Project EIR also should study the potential of augmenting aquifer replenishment with injection wells utilizing local stormwater or recycled water to reduce impacts on the Tuolumne River." *(Tuolumne River Trust, letter, June 5, 2013 [O-TRT-Drekmeier])*

"We do believe, however, that San Francisco and its partners should be more aggressive and creative in increasing groundwater recharge." *(Restore Hetch Hetchy, letter, June 11, 2013 [O-RHH-Rosekrans])*

"The Southwest Basin Project is a positive step forward, but literally only a drop in the bucket. To effectively meet customer needs, keep up with other communities throughout California and comply with federal law, San Francisco and its customers must go much further. The city and its wholesale customers must pursue extensive additional regional groundwater projects throughout the service territory to recoup the local water supply that was available a century ago." *(Restore Hetch Hetchy, letter, June 11, 2013 [O-RHH-Rosekrans])*

"Is there an alternative?

Yes: desalination. A plant could be built that would be activated during drought. In that regard, new technology shows promise of replacing reverse osmosis, the current tech, which consumes much electricity. Graphene-based membranes may more efficiently separate salt from sea water.

Please consider the desalination option, and weigh the environmental negatives of GSR, including its effect on Lake Merced, against those of desal." *(Steve Lawrence, email, June 13, 2013 [I-Lawrence (2)])*

"[COMMISSIONER ANTONINI:] And I guess we've been talking for a long time about an average daily demand, 285 gallons. And the way you were making your formula work is there's a certain amount of supply that comes from various sources. And some of it is conservation and some of it is, as you point out here, potentially, I think, 7. -- I forget the number -- 7.6 gallons per day that could be augmented from stored water. Is that number correct?

MR. JOHNSTON: 7.2.

COMMISSIONER ANTONINI: 7.2.

And I think this is extremely good. And I would like to see addressed looking at the ability to store even more and cut down on the amount you're planning for conservation.

As you know, San Francisco's consumption of water is the lowest per capita of anywhere in your region and probably one of the lowest in the United States, and I think we can't be expected to be much lower. And a lot of our public lands are a little dry-looking and kind of under-water sometimes.

And I think we should emphasize the possibility of increasing, if possible, the amount that would be from a stored water (Inaudible) within San Francisco in the lands you're talking about here, which is south of San Francisco, and also in the East Bay. That should be addressed whether there's a capability of storing even more than the 7.2 million gallons per day in the available aquifer space that exists.

I know that the aquifer exists mostly in the southern part of the region, because it can be allowed to go below sea level because it's safe. In the northern part of the region, you don't want to do that because there's a chance of ocean intrusion.

And I just wonder how much more capacity there could be. That's my question for -- for the response is this: Is there a capacity to store even more?

And then I also read with favorable -- the alternative 2b, which would be one that utilizes more pumping from the southern-most stations with deference to Lake Merced, which has been constantly a problem, keeping it high enough.

And the fear would be that pumping from the northern-most stations might put further strains on the lake level. And certainly I would say that's something to look at in terms of choosing the options that are the most advantageous.

But those were my main comments in regards to the report. Thank you." *(Commissioner Antonini, public hearing, transcript, May 16, 2012 [PH-PC-Antonini])*

Response AL-1

This comment group suggests various additional alternatives to be evaluated in the Draft EIR.

None of the alternatives proposed in these comments would reduce the significant effects of the Project more than the alternatives described and evaluated in the Draft EIR. Thus, as explained further below, none of the alternatives proposed by the comments are the types of alternatives contemplated or required to be evaluated under CEQA.

An EIR need not consider every conceivable alternative to a project. Section 15126.6 of the CEQA guidelines specifies that "An EIR shall describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project." Additionally, an EIR need not describe and evaluate alternatives that lessen the significant effects of each component of a project individually; rather the selection of alternatives should respond to the basic objectives of the project and to the project as a whole.

The Draft EIR describes and evaluates four alternatives to the proposed Project (not including the No Project Alternative), and each of these alternatives would reduce certain significant impacts of the Project. The four alternatives each propose to eliminate two sites from the Project – Sites 1 and 4, in the case of Alternatives 2A and 2B; and Sites 7 and 8, in the case of Alternatives 3A and 3B. In the case of Alternatives 2A and 3A, pumping is redistributed to result in the same amount of overall groundwater recovery. Alternatives 2B and 3B would result in some reduced pumping as compared to the Project. The selection of alternatives for the Draft EIR was based on the Project taken as a whole, and, therefore, the alternatives described in the Draft EIR were selected on the basis that they would feasibly attain most of the Project's basic objectives, but would also avoid or reduce certain significant impacts; alternatives were not selected on the basis of reducing impacts at each individual well site.

The Project would have six significant and unavoidable impacts associated with temporary construction impacts (Impacts LU-1, C-LU-1, AE-1, NO-1, NO-3 and C-NO-1), even with implementation of all feasible mitigation (SUM). Alternatives 2A and 2B would each result in the same six significant and unavoidable impacts as the Project but the severity of three of these impacts (LU-1, NO-1 and NO-3) would be less as compared to the Project. Alternatives 3A and 3B would each result in five of the same significant and unavoidable impacts as the Project and Alternatives 2A and 2B, and by eliminating Site 7 would avoid a significant construction-related impact on aesthetics (AE-1). The severity of the remaining five significant impacts would be the same as for the Project except that the severity of a cumulative noise impact (C-NO-1) would be slightly reduced. Alternative 2B is the environmentally superior alternative because, as compared to the Project, it would have significant and unavoidable land use and noise impacts at fewer sites during construction, would reduce the severity of water quality impacts on beneficial uses at

Lake Merced, and would decrease the severity of well interference impacts at five existing irrigation wells. In addition, it would have fewer sites with significant and unavoidable construction-period noise and land use impacts than Alternatives 3A and 3B.

The alternative suggested by the VA is not appreciably different than the alternatives considered in the Draft EIR, as like those alternatives, it proposes to exclude two sites from the Project. The VA-proposed alternative would exclude Sites 14 and 15 and would result in the same six significant impacts as the Project. The VA's suggested alternative would eliminate the significant but mitigable impact on historic resources during construction that would occur only at Sites 14 and 15, and would have significant and unavoidable land use and noise impacts at fewer sites during construction, as compared to the Project. But, it would result in greater significant effects associated with land use and noise than Alternatives 2A and 2B, and unlike Alternative 2B, it would not reduce the severity of water quality impacts on beneficial uses at Lake Merced. Also, as is the case with Alternatives 2B and 3B, eliminating two sites without redistributing pumping elsewhere would reduce the amount of pumping but might also reduce well interference impacts; the extent of either cannot be determined without detailed analysis. Such a precise analysis is not required, however, because as explained above, it is evident that an alternative eliminating Sites 14 and 15, as suggested by the VA, would not result in an appreciable superior alternative than the alternatives analyzed in the Draft EIR. As a result, the alternatives analyzed in the Draft EIR describe a reasonable range of alternatives to the Project without the addition of an alternative that excludes Sites 14 and 15. Furthermore, the proposed Project itself includes three Alternate sites (Sites 17, 18, and 19), fully analyzed in the Draft EIR, which could allow the City to eliminate Sites 14 and 15.

Regarding aquifer replenishment with recycled water or stormwater, it is important to recognize that the overall approach for water supply was determined as part of the Water System Improvement Program (WSIP), which did not consider groundwater replenishment using these sources. As noted in Chapter 7, Alternatives on page 7-3 of the Draft EIR, the Program Environmental Impact Report (PEIR) for the WSIP resulted in the approval of the Phased WSIP, which, "incorporates elements of three alternatives analyzed in the PEIR: the No Purchase Request Increase Alternative, the Aggressive Conservation/Water Recycling and Groundwater Alternative, and the Modified WSIP Alternative." One of the goals of the Project is to "Conjunctively manage the southern portion of the Westside Groundwater Basin through the coordinated use of SFPUC surface water and groundwater pumped by the Partner Agencies" (see page 1-7 of the Draft EIR). The approach to alternatives selection for the GSR Project EIR focused on identifying alternatives that: (1) could meet most of the basic objectives of the GSR Project while reducing one or more of its significant impacts, (2) could foster informed decision-making and public participation, and (3) were feasible. The planning effort for the Project entailed consideration of multiple alternatives by the SFPUC as documented in the SFPUC's Final Alternatives Analysis Report (MWH 2007). Certain conjunctive use alternatives were eliminated from consideration based on their inability to meet most of the Project's basic objectives, their lack of feasibility, or their inability to reduce the Project's environmental impacts. While the suggested alternatives would not have effects on the Tuolumne River, use of the other water sources (i.e., recycled water and stormwater) suggested in the comment would not reduce or eliminate any of the impacts of the Project, namely construction-related noise and land use impacts and operational impacts of decreasing lake levels at Lake Merced and well interference.

The SFPUC is moving forward with a program of water recycling projects, which includes the Westside Recycled Water Project, Eastside Recycled Water Project, Harding Park Recycled Water Project, and Pacifica Recycled Water Project. Brief descriptions of these projects are shown on the SFPUC website http://www.sfwater.org/index.aspx?page=141. (SFPUC accessed September 9, 2013). However, water recycling would augment water supplies and is not projected to replace other drought supply projects such as the GSR Project, nor is it proposed for groundwater replenishment. Use of either recycled water or stormwater for groundwater replenishment would require extensive treatment to meet public health requirements, and the SFPUC believes that it is prudent to first consider recycled or storm water for other nonpotable uses, such as irrigation. In addition to the SFPUC recycled water projects listed above, and consistent with the Phased WSIP Variant, a number of members of the Bay Area Water Supply and Conservation Agency (BAWSCA) are planning recycled water projects. Recycled water projects are being planned by the Alameda County Water District, California Water Service Company, Coastside County Water District, North Coast County Water District, and the cities of East Palo Alto, Hayward, and Millbrae (BAWSCA 2010). Projects proposing to use stormwater are also moving forward. For example, Daly City's Vista Grande Drainage Basin Improvement Project (cumulative project B in Table 5.1-3 [Projects Considered for Cumulative Impacts]) proposes to augment Lake Merced water levels with stormwater.

Regarding the comment urging implementation of more regional groundwater projects, the City concurs that development of additional groundwater recharge projects throughout the region would be beneficial, though it would not reduce any of the impacts of the Project.

Regarding desalination alternatives, please refer to page 7-4 of the Draft EIR. The PEIR for the WSIP already evaluated two desalination alternatives: Year-Round Desalination at Oceanside and Regional Desalination. The PEIR identified the Modified WSIP Alternative, which includes the Project, as the environmentally superior alternative. Because desalination was already considered in the PEIR, further evaluation in this document is not deemed necessary. However, desalination is a completely different water supply option that would not meet the Project objective to conjunctively manage the southern portion of the Westside Groundwater Basin.

Regarding questions about whether the Project itself could be expanded to store more water, the total storage capacity of the Westside Groundwater Basin is unknown, according to information available from the California Department of Water Resources (DWR 2006). The Draft EIR acknowledges this, and this is further discussed in Response HY-47, which notes that the volume of storage in the Westside Groundwater Basin that is accessible for extraction and use is not known. Nevertheless, the Project is designed to help meet the SFPUC's 2030 dry-year demands as described in the Urban Water Management Plan for the City and County of San Francisco (SFPUC 2011). As noted in the Alternatives Analysis Report for the Project: "The program would ultimately develop enough groundwater pumping capacity to produce 8,100 acre-feet per year (afy), or 7.2 million gallons per day (mgd), in addition to groundwater extraction from existing Partner Agency wells. The Project would be designed to provide up to 61,000 acre-feet (af) of stored water from Conjunctive Use wells to meet SFPUC system demands during the last 7.5 years of the SFPUC's design drought. The combined pumping rate of 7.2 mgd and pumping duration of 7.5 years are based on estimates that were developed to meet the SFPUC's 2030 dry-year demands as described in the Urban Water Management Plan" (MWH 2007). Based on the adopted WSIP, the objective of this Project is to develop a dry-year supply of 7.2 mgd, which is consistent with the PEIR. Expanding the Project would not reduce any of the impacts of the Project.

Regarding the favorable comment about Alternative 2B, the Draft EIR, in Chapter 7, Alternatives, pages 7-56 and 7-57, identifies the fact that this alternative reduces impacts on Lake Merced. However, as noted in the Draft EIR, Alternative 2B does not fully achieve Project objectives and would result in a 1.0-mgd shortfall during each year of a severe drought.

Comment AL-2: Comment related to the environmentally superior alternative.

This response addresses a comment from the commenter listed below; the comment on this topic is quoted in full below this list:

- O-CLMP-Quick

"IV. **Alternative 3B, While Still Problematic, is Superior to the Proposed GSR Project.**

Alternative 3B is superior to the proposed GSR Project because it would reduce localized impacts to existing irrigators and it would result in reduced depletion of the Aquifer during take years.[85] While Alternative 3B would not satisfy the stated project objective of increasing the dry-year and emergency pumping capacity of the SGW Basin by 7.2 mgd, this objective is unduly narrow, is inconsistent with the WSIP PEIR analysis, and may conflict with the overlying water rights of existing irrigators.[86]

Even Alternative 3B would be legally infeasible, however, because it would draw down the Aquifer to below levels that would occur without the GSR Project, thereby unlawfully interfering with superior water rights. If Mitigation Measure M-HY-6 is revised to more effectively protect the superior water rights of existing irrigators and prevent well interference, then Alternative 3B could become a feasible alternative.

Alternative 3A is also superior to the proposed GSR Project because it could reduce localized impacts to existing irrigators. However, the DEIR has not determined the extent to which redistributed pumping of 7.2 mgd could reduce these localized impacts. Further, this alternative, like the proposed GSR Project, would tend to draw down the Aquifer substantially below levels projected to occur without the GSR Project. It therefore would also conflict with existing irrigators' superior water rights and would interfere with their wells.

[85] *See* DEIR, pp. 7-30 - 7-31.

[86]As stated previously, the WSIP anticipated that groundwater pumping capacity of the GSR Project would be approximately 6.0 mgd during take years. See WSIP PEIR, p. 3-39. The DEIR does not explain how this capacity could have been substantially increased to 7.2 mgd. If this project objective was consistent with the

WSIP PEIR estimate of 6.0 mgd pumping capacity, then Alternative 3B would fully meet all project objectives. " *(Cypress Lawn Memorial Park, letter, June 11, 2013 [O-CLMP-Quick])*

Response AL-2

This comment relates to alternatives to the Project that were presented in the Draft EIR. The portion of the comment that states that the Draft EIR identifies Alternative 3B as the environmentally superior alternative is correct (see page 7-59 of the Draft EIR). The Draft EIR identified Alternative 3B as the environmentally superior alternative because Alternative 3B would have significant and potentially unavoidable well interference impacts at two fewer sites than the proposed Project or other alternatives.

The Draft EIR identified Mitigation Measure M-HY-6 (Ensure Irrigators' Wells are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation), as technically capable of mitigating well interference impacts to existing nearby irrigation wells to less-than-significant levels. However, the Draft EIR identified potential well interference at existing irrigation wells in areas near GSR Project wells as significant and unavoidable even with implementation of mitigation because at the time the Draft EIR was published, the Planning Department determined that implementation of the mitigation actions included in Mitigation Measure HY-6 could not be assured. Since the publication of the Draft EIR, the Planning Department has reevaluated the feasibility of M-HY-6 and determined that the measure can feasibly reduce well interference impacts to a less-than-significant level for the reasons and as described in Response HY-15.

The revised significance level of Impact HY-6 alters the selection of the environmentally superior alternative in Section 7, Alternatives, of the Draft EIR. As a result of the revised significance level of Impact HY-6, the environmentally superior alternative is now Alternative 2B, because, when compared to the Project and the other alternatives, Alternative 2B would have significant and unavoidable land use and noise impacts at fewer sites during construction, would reduce the severity of water quality impacts on beneficial uses at Lake Merced, and would decrease the severity of well interference impacts at five existing irrigation wells. However, Alternative 2B would not fully achieve the Project objectives, because it would not provide the full 7.2-mgd dry-year and emergency pumping capacity needed to meet Project objectives.

In response to this change in the environmentally superior alternative, pages 7-58 and 7-59 of the Draft EIR, Section 7, Alternatives, are revised. The same revisions are made in response to Comment HY-15. All of the changes to the Draft EIR are presented in Section 9.5, Draft EIR Revisions.

> As described above, none of the alternatives would reduce all the significant and unavoidable impacts of the proposed Project. Alternatives 2A, 2B, 3A, and 3B would cause significant and unavoidable impacts related to construction at one or two fewer sites than the Project; however, significant and unavoidable construction-related impacts would still occur at nine or 10 other facility sites, as they would under the proposed

Project. Such impacts, although significant and unavoidable, would be temporary and would only occur for portions of the 16-month construction period. Alternatives 2A and 2B would avoid the significant construction-period noise and land use impacts at Sites 1 and 4. Alternatives 3A and 3B would avoid the significant and unavoidable aesthetic impact during construction associated with tree removal at Site 7.

Alternatives 3A and 3B would cause significant ~~and potentially unavoidable~~ well interference impacts during operation at one or two fewer existing irrigation wells than the Project; however, significant ~~and potentially unavoidable~~ but mitigable well interference impacts would still occur at 11 or 12 existing irrigation wells, as they would under the proposed Project. The No Project Alternative would not cause significant and unavoidable construction impacts (since no construction would occur), but water levels at Lake Merced would continue to fluctuate as they do now under varying hydrologic conditions, and during a drought as severe as the design drought, lake levels would decline to a level that could have adverse water quality effects at Lake Merced. ~~Because permanent operational impacts are considered more severe than temporary construction-period impacts, Alternative 3B (Reduce Impacts on Colma-area Existing Irrigation Wells and Reduce Yield) is the environmentally superior alternative, in that it would have significant and potentially unavoidable well interference impacts at fewer sites than the proposed Project or Alternatives 2A, 2B, or 3A. 3B (Reduce Impacts on Colma-area Existing Irrigation Wells and Reduce Yield) is therefore identified as the environmentally superior alternative, although, while it would meet most, it would not fully meet all of the Project objectives or WSIP goals.~~

Alternative 2B is the environmentally superior alternative because it would reduce the severity of well interference impacts as compared to the proposed Project and Alternatives 2A and 3A, and it would have fewer sites with significant and unavoidable construction-period noise and land use impacts than Alternatives 3A and 3B. Alternative 2B (Reduce Lake Merced Impacts and Reduce Project Yield) is therefore identified as the environmentally superior alternative, although, while it would meet most, it would not fully meet all of the Project objectives or WSIP goals. In particular, Alternative 2B would not provide the full 7.2-mgd dry-year and emergency pumping capacity needed to meet Project objectives.

Additionally, page 1-33 in Section 1, Executive Summary, of the Draft EIR, is revised. The same revisions are made in response to Comment HY-15. A summary of all changes to the Draft EIR is presented in Section 9.5, Draft EIR Revisions.

None of the alternatives would reduce all the significant and unavoidable impacts of the proposed Project. Alternatives 2A, 2B, 3A, and 3B would cause significant and unavoidable impacts related to construction at one or two fewer sites than the Project; however, significant and unavoidable construction-period impacts would still occur at up to eight other facility sites, as they would under the proposed Project. In addition, such impacts, although significant and unavoidable, would be temporary and would only last through the 16-month construction period. Alternatives 3A and 3B would cause significant ~~and potentially unavoidable~~ well interference impacts during operation at one or two fewer existing irrigation wells than the Project; however, significant ~~and unavoidable~~ but mitigable well interference impacts would still occur at 11 or 12 existing irrigation wells, as they would under the proposed Project. Alternative 3A would cause slightly greater impacts to Lake Merced. The No Project Alternative would not cause significant and unavoidable construction impacts (since no construction would occur), but water levels at Lake Merced would continue to fluctuate as they do now under varying hydrologic conditions, and during a drought as severe as the design drought, lake levels would decline to a level that could have adverse water quality effects at Lake Merced. ~~Because permanent operational impacts are considered more severe than temporary construction-period impacts, Alternative 3B (Reduce Impacts on Colma-area Existing Irrigation Wells and Reduce Yield) is considered the environmentally superior alternative, in that it would have significant and unavoidable well interference impacts at fewer sites than the proposed Project or Alternatives 2A, 2B or 3A.~~

Alternative 2B is the environmentally superior alternative because it would reduce the severity of well interference impacts as compared to the proposed Project and Alternatives 2A and 3A, and it would have fewer sites with significant and unavoidable construction-period noise and land use impacts than Alternatives 3A and 3B. Alternative 2B (Reduce Lake Merced Impacts and Reduce Project Yield) is therefore identified as the environmentally superior alternative, although, while it would meet most, it would not fully meet all of the Project objectives or WSIP goals. In particular, Alternative 2B would not provide the full 7.2-mgd dry-year and emergency pumping capacity needed to meet Project objectives.

A number of other changes to the Draft EIR Chapter 7, Alternatives were made as a result of the change in the impact level for well interference (Impact HY-6) from significant and potentially unavoidable with mitigation to *less than significant with mitigation* as discussed in Response HY-15.

The Draft EIR is revised on page 7-6 under Operation-related Impacts. The same revisions are made in response to Comment HY-15. A summary of all changes to the Draft EIR is presented in Section 9.5, Draft EIR Revisions.

Operation-related Impacts: ~~With the exception of hydrology and land use impacts during project operations, a~~All operational-related impacts were determined to be *less than significant* (LS) or *less than significant with mitigation* (LSM). ~~Potential impacts resulting from well interference during Project pumping were determined to be significant and potentially unavoidable because implementation of the identified mitigation would not be totally within the control of the SFPUC, and project operations could adversely impact existing irrigation wells in areas near GSR Project wells. Mitigation measures identified would effectively reduce impacts to existing irrigation wells to a less-than-significant level; however, since the successful implementation of the identified mitigation measure at all affected existing irrigation wells cannot be certain at this time (as it would depend on cooperation from existing irrigation well owners), the~~

> ~~mitigation may not reduce all impacts to less-than-significant levels at all locations. Therefore, the potential impacts of well interference were determined to be significant and potentially unavoidable even with all feasible mitigation applied (see Impact HY-6 in Section 5.16, Hydrology and Water Quality). All other significant impacts related to Project operations were determined to be l*ess than significant with mitigation* (LSM).~~

The first full paragraph on page 7-16 of the Draft EIR is revised as follows. The same revisions are made in response to Comment HY-15. A summary of all changes to the Draft EIR is presented in Section 9.5, Draft EIR Revisions.

> Increasing pumping at Sites 5 through 15 by 20 percent would increase well interference impacts on the wells at the Colma cemeteries and at the California Golf Club. Under the proposed Project, all irrigation wells at the nine Colma area cemeteries and the California Golf Club would be subject to significant well interference impacts. The increased pumping at Sites 5 through 15 would increase such impacts at these wells by approximately 20 percent. Therefore, the well interference impacts on the Colma cemetery wells and on the California Golf Club wells would be significant and slightly greater under Alternative 2A, than they would be for the proposed Project. Mitigation Measure M-HY-6 (Ensure ~~Existing~~ Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation) would reduce the impacts of well interference to *less-than–significant* levels.~~, except that the implementation of the mitigation measure cannot be assured until the existing irrigation well owners have agreed to allow the mitigation to take place on their property, thereby potentially resulting in a *significant and unavoidable impact with mitigation*.~~ Refer to the discussion of Impact HY-6 in Section 5.16, Hydrology and Water Quality, Section 5.16.3.7 (Operation Impacts and Mitigation Measures – Groundwater) where this impact analysis is presented in greater detail.

The Draft EIR is revised on page 7-20 last sentence of the last paragraph sentence under ***Production rate of preexisting wells***, as follows:

> Therefore, even with the 54 percent pumping reduction at Sites 1 and 4, static water levels at the Lake Merced wells would decrease to below the top of the well screen (albeit approximately 39 feet higher than is predicted to result with the proposed Project), which would reduce but not eliminate the risk of well or pump damage. Therefore, the well interference impact on the Lake Merced Golf Club wells would also be *significant* under Alternative 2B, as it would be for the proposed Project. However, Mitigation Measure M-HY-6 (Ensure Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation) would reduce the impacts of well interference to *less-than–significant* levels for the proposed Project and for Alternative 2B.

The Draft EIR is revised on page 7-24 first paragraph, last sentence under ***Production rate of preexisting nearby wells***, as follows:

> With these estimated lowered static groundwater levels at the end of the design drought, the static water levels at the Eternal Home Cemetery well, Woodlawn Cemetery well, and Italian Cemetery well would fall below the top of the well screens under Alternative 3A. As a result, the well interference impact on these wells would also be *significant* under Alternative 3A, as it would be for the proposed Project. Mitigation Measure M-HY-6 (Ensure Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation) would reduce the impacts of well interference to less-than–significant levels.

Page 7-25 of the Draft EIR is revised as follows:

> Therefore, even with the reduced pumping at Sites 7 and 8, the well interference impact on the Olivet Memorial Park well under Alternative 3A would be *significant*, as it would be for the proposed Project. However, Mitigation Measure M-HY-6 (Ensure Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation) would reduce the impacts of well interference to *less-than–significant* levels for the proposed Project and for Alternative 3A.
>
> The Project is predicted to lower pumping water levels in the Holy Cross Cemetery Well #1 by 86 feet, at the end of the design drought (see Table 5.16-11 [Estimated Static and Pumping Depth to Water Levels at the End of the Design Drought] in Section 5.16, Hydrology and Water Quality). Assuming a linear relationship between pumping and water level, a 32 percent reduction in pumping by eliminating pumping at GSR Sites 7 and 8 would lower pumping water levels by 68 percent of 86 feet (i.e., by 58 feet). If pumping were not increased at any other wells in the vicinity, the pumping water level in the Holy Cross Cemetery Well #1 at the end of the design drought is predicted to be slightly above the top of the well screen. However, because the pumping groundwater level would be very close to the top of the well screen, the additional drawdown from the increased pumping at Sites 11 and 12, as per Alternative 3A, is projected to drop the pumping water level below the top of the well screen. Therefore, the well interference impact on this well would be *significant* under Alternative 3A, as it would be for the proposed Project. However, Mitigation Measure M-HY-6 (Ensure Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation) would reduce the impacts of well interference to *less-than–significant* levels for the proposed Project and for Alternative 3A.
>
> Table 5.16-11 (Estimated Static and Pumping Depth to Water Levels at the End of the Design Drought) also shows that, at the end of the design drought, the Project is predicted to lower pumping water levels in the Home of Peace Well by 81 feet. Therefore, under the Project, the pumping water level is predicted to be below the top of the screen at the end of the design drought. Assuming a linear relationship between pumping and water level, a 32 percent reduction in nearby pumping would lower pumping water levels by 68 percent of 81 feet (i.e., by 55 feet). The pumping water level in the Home of Peace Well at the end of the design drought is predicted to be sufficiently above the top of the well screen. Accordingly, the reduced pumping at Sites 7 and 8 is estimated to

> result in both pumping and static groundwater levels above the top of the well screen at the Home of Peace Cemetery well. The pumping capacities of this well under Alternative 3A are therefore estimated to meet peak demand even when Project pumping is at a maximum (see Impact HY-6 in Section 5.16, Hydrology and Water Quality). As a result, the well interference impact on the Home of Peace Cemetery well would be *less than significant* under Alternative 3A ~~, while the impact of the proposed Project at this well would be *significant*~~ and *less than significant with mitigation* for the proposed Project.

The Draft EIR is revised on page 7-26 third paragraph, last sentence, as follows:

> The static water level in the Lake Merced Golf Club Well #3 at the end of the design drought is predicted to be below the top of the screen. As a result, the well interference impact on the Lake Merced Golf Club well would be *significant*, as it would be for the proposed Project. However, Mitigation Measure M-HY-6 (Ensure Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation) would reduce the impacts of well interference to *less-than–significant* levels for the proposed Project and for Alternative 3A.

The second paragraph on page 7-27 of the Draft EIR is revised as follows. The same revisions are made in response to Comment HY-15. A summary of all changes to the Draft EIR is presented in Section 9.5, Draft EIR Revisions.

> As a result, the well interference impact on these wells would be *significant* under Alternative 3A, as it would be for the proposed Project.
>
> However, implementation of Mitigation Measure M-HY-6 would reduce these impacts of well interference to *less-than-significant* levels, by either increasing irrigation efficiency, modifying irrigation operations, or undertaking other actions detailed in Mitigation Measure M-HY-6 (Ensure ~~Existing~~ Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation). ~~Nevertheless, the implementation of this mitigation measure cannot be assured at this time, until the existing irrigation well owners have agreed to allow the mitigation to take place on their property and, therefore, the impact is determined to be *significant and potentially unavoidable with mitigation*.~~

The following text changes were made on page 7-29 fourth paragraph:

> Operational impacts would be nearly the same as those expected for the proposed Project. A 32 percent reduction in pumping near the Colma-area existing irrigation wells from this alternative as compared to the proposed Project would reduce well interference on the existing wells; ~~however,~~ well interference would ~~still~~ be less than significant with mitigation for Alternative 3A as it would for the proposed Project. The potential for subsidence impacts and for seawater intrusion would be slightly greater for Alternative 3A when compared to the proposed Project; however impacts would be *less than significant* for both the alternative and the proposed Project. Potential impacts on Lake Merced water levels would be slightly greater for Alternative 3A than for the proposed

Project, prior to mitigation, but as mitigated, both would result in less-than-significant impacts on the water quality of Lake Merced (even though, under Alternative 3A, more supplemental water, redistribution of pumping, or discontinued pumping would be required to mitigate such impacts, as compared to the proposed Project). Potential impacts on groundwater quality and groundwater depletion would be the same for the proposed Project and this alternative.

The Draft EIR is revised on pages 7-31 to 7-32 as follows:

The static water levels in the Eternal Home Cemetery Well, Woodlawn Cemetery Well and Italian Cemetery Well at the end of the design drought are predicted to be below the top of the well screens. Therefore, the reduced pumping is expected to result in static groundwater levels at these three cemetery wells falling to below the top of the well screens under Alternative 3B. As a result, the well interference impact on these wells would be *significant* under Alternative 3B, as it would be for the proposed Project. However, Mitigation Measure M-HY-6 (Ensure Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation) would reduce the impacts of well interference to *less-than–significant* levels for the proposed Project and for Alternative 3B.

Table 5.16-11 (Estimated Static and Pumping Depth to Water Levels at the End of the Design Drought) also shows that, at the end of the design drought, the Project is predicted to lower pumping water levels in the Holy Cross Cemetery Well #4 by 81 feet. The same table shows that, at the end of the design drought, the Project is predicted to lower pumping water levels in the Hills of Eternity Cemetery Well by 89 feet. Assuming a linear relationship between pumping and water level, a 32 percent reduction in nearby pumping would lower pumping water levels by 68 percent of 81 feet (i.e., by 55 feet) in the Holy Cross Cemetery Well #4; and by 68 percent of 89 feet (i.e., by 61 feet) in the Hills of Eternity Cemetery Well. The pumping water levels in the Holy Cross Cemetery Well #4 and in the Hills of Eternity Cemetery Well at the end of the design drought are predicted to be below the top of the well screens. As a result, pumping groundwater levels at these wells ~~is~~ are expected to fall below the top of the well screen under Alternative 3B; and the well interference impact on these wells would be *significant* under Alternative 3B, as it would be for the proposed Project. However, Mitigation Measure M-HY-6 (Ensure Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation) would reduce the impacts of well interference to *less-than–significant* levels for the proposed Project and for Alternative 3B.

Table 5.16-11 (Estimated Static and Pumping Depth to Water Levels at the End of the Design Drought) also shows that, at the end of the design drought, the Project is predicted to lower pumping water levels in the Holy Cross Cemetery Well #1 by 86 feet. Assuming a linear relationship between pumping and water level, a 32 percent reduction in nearby pumping would lower pumping water levels by 68 percent of 86 feet (i.e., by 58 feet). The pumping water level in the Holy Cross Cemetery Well #1 at the end of the design drought is predicted to be slightly above the top of the well screen. Because pumping would not be redistributed to any other well sites under Alternative 3B, unlike Alternative 3A, no further reductions in water level would be expected. Furthermore, the pumping capacity of the Holy Cross Cemetery Well #1 is estimated to meet its peak demand when Project pumping is at a maximum, and a 32 percent reduction in nearby pumping, as per this alternative, would therefore not reduce the well's pumping capacity. As a result, the potential well interference impacts on the Holy Cross Cemetery Well #1 would be *less than significant* under Alternative 3B, while the proposed Project impacts would be *less than significant with mitigation*.

The Olivet Memorial Park well is expected to have just enough capacity to meet its expected demands, as predicted modeled existing conditions (see Impact H-6 in Section 5.16, Hydrology and Water Quality). Consequently, any lowering of groundwater levels at this well would likely result in this well having insufficient capacity to meet its expected demands. Therefore, even with the reduced pumping at Sites 7 and 8, the well interference impact on the Olivet Memorial Park well under Alternative 3B would be *significant*, as it would be for the proposed Project. However, Mitigation Measure M-HY-6 (Ensure Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation) would reduce the impacts of well interference to *less-than–significant* levels for the proposed Project and for Alternative 3B.

Table 5.16-11 (Estimated Static and Pumping Depth to Water Levels at the End of the Design Drought) also shows that, at the end of the design drought, the Project is predicted to lower pumping water levels in the Home of Peace Well by 81 feet. Under these Project conditions, this pumping water level would be below the top of the screen. Assuming a linear relationship between pumping and water level, a 32 percent reduction in nearby pumping would lower pumping water levels by 68 percent of 81 feet (i.e., by 55 feet). The pumping water level in the Home of Peace Well at the end of the design drought under Alternative 3B is predicted to be sufficiently above the top of the screen. Therefore, the reduced pumping at Sites 7 and 8 is expected to result in both pumping and static groundwater levels above the top of the well screen at the Home of Peace Cemetery Well at the end of the design drought. The pumping capacity of this well is estimated to meet its peak demand even when Project pumping would be at a maximum (Tables 5.16-13 [Estimated Peak Demand and 12-Hour Production Capacities]), and pumping capacity under Alternative 3B would be slightly greater as a result of eliminating pumping at Sites 7 and 8. As a result, the well interference impact on the Home of Peace Cemetery well would be *less than significant* under Alternative 3B, while the impact of the proposed Project on this well would be *significant* because the water levels due to Project pumping would be below the well screen, even though the pump discharge rate would be adequate to meet peak demand. However, Mitigation Measure M-HY-6 (Ensure Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation) would reduce impacts to *less than significant*.

The Draft EIR is revised on page 7-34 second paragraph, as follows:

> Although this alternative would decrease pumping near the Colma-area by approximately 32 percent, the operational impacts would be similar to those expected for the proposed Project. The expected groundwater levels would still result in the potential for well interference impacts as would the proposed Project and these impacts, in most cases, are similar to those that would occur with the proposed Project though mitigation would reduce the impacts to *less-than-significant* levels. Alternative 3B would reduce the potential for subsidence and seawater intrusion; however, both the proposed Project and Alternative 3B would result in less than significant impacts. Potential impacts on groundwater quality would be the same for the proposed Project and the alternative. Potential impacts related to groundwater depletion would be similar for both the Project and this alternative.

Table 7-2 (Environmental Impacts of the CEQA Alternatives as Compared to the Proposed Project) on page 7-49 of the Draft EIR is revised as follows. The same revisions are made in response to Comment AL-2. A summary of all changes to the Draft EIR is presented in Section 9.5, Draft EIR Revisions.

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TABLE 7-2
Environmental Impacts of the CEQA Alternatives as Compared to the Proposed Project

Impact	Proposed Project	Alternative 1: No Project	Alternative 2A: Reduce Lake Merced Impacts and Maintain Project Yield	Alternative 2B: Reduce Lake Merced Impacts and Reduce Project Yield	Alternative 3A: Reduce Impacts on Colma-area Existing Irrigation Wells and Maintain Project Yield	Alternative 3B: Reduce Impacts on Colma-area Existing Irrigation Wells and Reduce Project Yield
Impact HY-6. Project operation would decrease the production rate of existing nearby irrigation wells due to localized groundwater drawdown within the Westside Groundwater Basin such that existing or planned land use(s) may not be fully supported.	**Less than Significant with Mitigation (LSM)** ~~**Significant and Potentially Unavoidable with Mitigation (SUM)**~~ Operation of the Project would cause significant well interference at 13 existing irrigation wells. Mitigation Measure M-HY-6 would reduce impacts to less-than–significant levels. ~~, except that the certainty of the mitigation measure cannot be assured until the existing irrigation well owners have agreed to allow the mitigation to take place on their property; thus, this impact is conservatively deemed significant and potentially unavoidable with mitigation.~~	**Similar but slightly less than the proposed Project (S~~U~~)** During a drought equivalent to the design drought, groundwater levels would decline to a point such that the production rate of existing wells may not fully support existing or planned land uses.	**Similar but slightly greater than the proposed Project (LSM~~SUM~~)** Alternative 2A would decrease well interference at five existing irrigation wells and increase well interference at 12 existing irrigation wells. The level of significance for well interference at existing irrigation wells would not change compared to the Project. Mitigation Measure M-HY-6 would reduce impacts to less-than-significant levels, ~~except that the certainty of the mitigation measure cannot be assured until the existing irrigation well owners have agreed to allow the mitigation to take place on their property; thus, this impact is conservatively deemed significant and potentially unavoidable with mitigation.~~	**Similar but slightly less than the proposed Project (LSM ~~SUM~~)** Alternative 2B would decrease well interference at five existing irrigation wells, but the level of significance for well interference at existing irrigation wells would not change compared to the Project. Mitigation Measure M-HY-6 would reduce impacts to less-than-significant levels. ~~, except that the certainty of the mitigation measure cannot be assured until the existing irrigation well owners have agreed to allow the mitigation to take place on their property; thus, this impact is conservatively deemed significant and potentially unavoidable with mitigation.~~	**Similar but slightly less than the proposed Project (LSM ~~SUM~~)** Alternative 3A would decrease well interference at 10 existing irrigation wells and increase well interference at seven existing irrigation wells. The level of significance for well interference at existing irrigation wells would not change compared to the Project, except that significant impacts would not occur at the Home of Peace Cemetery well. Mitigation Measure M-HY-6 would reduce impacts to less-than-significant levels. ~~, except that the certainty of the mitigation measure cannot be assured until the existing irrigation well owners have agreed to allow the mitigation to take place on their property; thus, this impact is conservatively deemed significant and potentially unavoidable with mitigation.~~	**Similar but slightly less than the proposed Project (LSM ~~SUM~~)** Alternative 3B would decrease well interference at five existing irrigation wells. The level of significance for well interference at existing irrigation wells would not change compared to the Project, except that significant impacts would not occur at the Home of Peace Cemetery well and the Holy Cross Cemetery well #1. Mitigation Measure M-HY-6 would reduce impacts to less-than–significant levels. ~~, except that the certainty of the mitigation measure cannot be assured until the existing irrigation well owners have agreed to allow the mitigation to take place on their property; thus, this impact is conservatively deemed significant and potentially unavoidable with mitigation.~~

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See Response HY-15 for additional changes to Draft EIR Section 7, Alternatives, related to the significance determination of Impact HY-6 and Mitigation Measure M-HY-6. Also see Section 9.5, Draft EIR Revisions, in this Responses to Comments document, for a complete list of changes to Draft EIR Section 7, Alternatives.

Regarding the portion of the comment that critiques the Project's objective to increase dry year pumping capacity by 7.2 mgd and contends that it is inconsistent with the PEIR, please refer to Response PD-23. As described there, Footnote 23 on page 3-39 of the PEIR explains that the conjunctive use program has been designed to provide an extraction capacity of approximately 8,100 af during a dry year, which is equivalent to about 7 mgd over 7.5 years. Groundwater pumping of about 7 mgd over 7.5 years is approximately equivalent in volume to 6 mgd over 8.5 years. The objective is based on meeting an identified need for drought supply and is thus not deemed to be unduly narrow. As documented in Response PD-16, the Project is designed to only pump water that would accumulate in the SFPUC Storage Account by way of in-lieu recharge, and thus would not conflict with rights of existing irrigators as discussed above and in Response HY-15. Also, refer to Response HY-9 regarding groundwater rights.

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9.4 PROJECT DESCRIPTION REVISIONS

This section summarizes several revisions that have been made to Chapter 3, Project Description of the Draft EIR, as a result of preparing the responses to comments. Following each revision is a discussion of potential environmental effects of the revision and how they affect the analyses and conclusions presented in the EIR.

Revision #1

Description of Revision: On page 3-2 of the Draft EIR, the third paragraph has been revised as shown below in response to Comment PD-15:

> The proposed Operating Agreement between the SFPUC and Partner Agencies (see Section 3.8.1 [Operating Agreement]) contemplates use of the dry-year supplies made available by the Project normally starting in the second year of the design drought. During some dry years pumping may be initiated during the first year of a drought.

Environmental Effects of Revision: This change does not alter the analysis or conclusions of the Draft EIR because the duration of pumping would not change. Pumping would be limited to 7.5 years, as analyzed in the Draft EIR.

Revision #2

Description of Revision: In Response to Comment PD-15, on page 3-5 of the Draft EIR, the text of has been revised to clarify when pumping might occur:

> The identification of a dry year for the purpose of initiating groundwater pumping under the Project would be based upon whether or not a water shortage has been identified for a given fiscal year during the SFPUC's annual determination of the supply of water available to the regional water system under its Water Shortage Allocation Plan (WSA)[2]. This identification would be made as part of the SFPUC's annual April 15 estimate of water supply available to the regional water system, with shortage allocations taking effect on July 1st, the start of the fiscal year. As a result of this timing, Project pumping would normally not occur until the second year of a drought. During some dry years pumping may be initiated during the first year of a drought, so long as the duration of pumping does not exceed 7.5 years. Approximately 20 percent of years are projected to be dry years when the Project would be in groundwater recovery mode (SFPUC 2009b).
>
> Surface water delivered to the Partner Agencies during Put years (normal and wet years) is included in the SFPUC's adopted Water Supply Improvement Program (WSIP) and was analyzed in the Program Environmental Impact Report (PEIR) prepared for the WSIP (San Francisco Planning Department 2008). The surface water deliveries to the Partner Agencies are included in the SFPUC's Interim Supply Limitation of limiting water sales from SFPUC watersheds to an annual average of 265 mgd.

[2] In the July 2009 Water Shortage Allocation Plan (WSA), the SFPUC and its wholesale customers adopted a plan to allocate water between retail and wholesale customers during system wide shortages of 20 percent or less. The specific amount of rationing required by each wholesale customer, including the Partner Agencies, is determined either by agreement of the wholesale customers themselves or, in the absence of such agreement, by the SFPUC after discussion with the wholesale customers.

Environmental Effects of Revision: As noted above, this change does not alter the analysis or conclusions of the Draft EIR because the duration of pumping would not change. Pumping would be limited to the duration of 7.5 years, as analyzed in the Draft EIR.

Revision #3

Description of Revision: Figures 3-2 (Source of Proposed Water Supply for Partner Agencies) and 3-37 (Site 16, Millbrae Corporation Yard) have been revised and are included in Section 9.3.3, Project Description, of this Responses to Comments. Figure 3-2 has been revised in response to Comment PD-3, which requested that the volume of surface water deliveries be added to the Project Conditions portion of the figure, so as to clarify the sources of supply during normal and wet years. Figure 3-37 has been revised in response to Comment PD-3 to correct the identification of labeling of an existing building near Site 16; the label has been revised from convalescent hospital to multi-family residential.

Environmental Effects of Revisions: The additional information about volumes of surface water deliveries in Figure 3-2 (Source of Proposed Water Supply for Partner Agencies) does not alter the analysis or conclusions of the Draft EIR because it only provides clarification about sources of water during normal and wet years.

The revision to Figure 3-37 (Site 16, Millbrae Corporation Yard) does not alter the analysis or conclusions of the Draft EIR. Because multi-family residences (both the apartment building and the condominium building) are considered sensitive receptors in the same manner as a convalescent hospital, the error in the figure does not affect the air quality or noise analysis or any of the environmental analyses in the document, and does not affect any conclusions regarding impacts.

Revision #4

Description of Revision: Comment PD-14 requested a minor correction in the description of Partner Agency pumping. On page 3-10 of the Draft EIR, the third sentence in the second paragraph in Section 3.4.2 (Production Wells and Associated Facilities), has been revised as shown below:

> During dry years, Partner Agency water deliveries from the regional water system would be comprised of reduced surface water deliveries and groundwater pumped from Project wells, as identified in the Operating Agreement. The Partner Agencies' pumping from their existing wells would not exceed ~~the annual average~~ rates consistent with the pumping limits expressed in the Operating Agreement.

Environmental Effects of Revision: This change does not alter the analysis or conclusions of the Draft EIR because it only provides a minor clarification in wording to ensure that the text in the Draft EIR is consistent with the Operating Agreement.

Revision #5

Description of Revision: Comment PD-8 requests more information about expected treatment for volatile organic compounds (VOCs). On page 3-17 in Section 3.4.2 (Production Wells and Associated Facilities) of the Draft EIR, treatment "would be used to achieve water quality goals specific to the SFPUC and each of the Partner Agencies (i.e., blending with surface water…" To clarify that blending may also be used to achieve water quality goals at Site 11 if VOC's are found, a footnote has been added to Table 3-3 (Site-specific Facility Characteristics) on page 3-22 of the Draft EIR as follows:

TABLE 3-3 REVISED
Site-specific Facility Characteristics

Site	Method for Achieving Water Quality Goals for Iron/Manganese[(f)]

Notes:

(f) Blending may also be used at Site 11 if VOCs are found.

Environmental Effects of Revision: This change does not alter the analysis or conclusions of the Draft EIR because it expands the methods that the SFPUC may use to achieve water quality goals to address VOC's should they be found at Site 11.

Revision #6

Description of Revision: Page 3-28 of the Draft EIR is revised as shown below. Comment HY-4 from San Mateo County explained that on-site stormwater detention would be required if any of the Project facility sites would increase discharge of stormwater. In response to this comment the SFPUC has agreed to construct stormwater facilities if needed. The low impact design measures for retention of stormwater would be constructed within the construction area boundaries evaluated in the Draft EIR:

> All facilities would include permanent outdoor lighting. Lights would either be mounted on the building or pole-mounted within the well facility site. All lighting would meet Title 24 of the California Code of Regulations standards including shielding, manual switch operation with automatic shut-off, and energy requirements. Lighting would be added near the main entrance of the well facility for security purposes and adjacent to the parking and service area at the rear of the building, if needed. Lighting would be used only when nighttime access is required. All lights would be switch operated with automatic shut-off.

> Low impact design measures, such as bioswales, would be implemented to store, infiltrate, evaporate, or detain storm water runoff to maintain the predevelopment hydrology of the site as needed. Low impact design measures would be sized in accordance with applicable guidelines and regulations, including, but not limited to, the State Water Resources Control Board, the San Mateo County Flood Control District's requirements for sites within the Colma Creek and San Bruno Creek Flood Control Zones, and would be designed to prevent mosquito breeding or other vector habitat. Based on the location of the sites, the SFPUC will provide the drainage

calculations showing existing and future discharge rates to applicable jurisdictions for review, including the San Mateo County Flood Control District and the State Water Resources Control Board.

Environmental Effects of Revision: This change to the description of the Project would not cause additional impacts that need to be addressed in the Draft EIR, because any necessary facilities would be constructed within the construction area boundaries that have already been evaluated in the Draft EIR. Construction of low impact design measures would not result in impacts not previously analyzed for Project facility sites. Clearing and grading would occur within the construction boundaries already evaluated. Sediment control, tree preservation requirements, and natural resource protection during construction of the facilities would occur in the same manners other proposed facilities; and therefore, impacts have already been evaluated.

Revision #7

Description of Revision: Figure 3-12 (Site 2 Park Plaza Meter, Site 3 Ben Franklin Intermediate School, Site 4 Garden Village Elementary School) has been revised to illustrate the location of the solar array recently installed in the playing field at Garden Village Elementary School. The description of Site 4 on page 3-48 of the Draft EIR has been revised to reflect the changed conditions at the school adjacent to Site 4. Additionally, Comment PD-5 requested that the SFPUC consider planting a hedge along the fence of the new facility constructed near the intersection of Park Plaza Drive and 87th Street. The description of Site 4 on page 3-48 of the Draft EIR is revised as follows:

> ~~An existing baseball backstop would be temporarily relocated during construction; after construction is completed it would be returned to its original location.~~ Turf along the pipeline route would be replaced following construction. The SFPUC would notify the Jefferson Elementary School District of construction activities a minimum of nine months in advance of any construction on school grounds to allow the District to plan any partial school ground closures.

Environmental Effects of Revision: These changes do not alter the analysis or conclusions of the Draft EIR except that rather than a temporary displacement of recreational opportunities for students and others using the playing field during construction at Site 4, the change in the existing conditions of the school grounds already precludes use of the area immediately adjacent to Site 4 for recreational activities. The addition of landscaping does not alter the analysis or conclusions of the Draft EIR because the plantings would be installed within the construction area boundaries that have already been evaluated in the Draft EIR. Additional landscaping would improve the appearance of the site.

Revision #8

Description of Revision: On page 3-73 of the Draft EIR, text at the end of the description of Site 8 has been revised to add the text shown below. The revision is made in response to Comment AE-2, which requested additional landscaping at Site 8:

> A landscape screening plan would be prepared for Site 8 to screen views from Serramonte Blvd. The plan would be prepared in cooperation with the Town of Colma.

Environmental Effects of Revision: The addition of landscaping does not alter the analysis or conclusions of the Draft EIR because the plantings would be installed within the construction area boundaries that have already been evaluated in the Draft EIR. Additional landscaping would improve the appearance of the site.

Revision #9

Description of Revision: As a response to Comment PD-5, page 3-73 of the Draft EIR, the second paragraph of the description of Site 9 in Section 3.4.3 (Facility Sites), has been revised to reflect the change from an overhead electrical line, to an underground electrical line. The revision is made in response to Comment PD-5, which requested undergrounding of the Site 9 electrical line:

> Electrical power would be provided to the site through a new ~~aboveground~~ underground connection routed from El Camino Real, through the perimeter of the Costco parking lot in an existing planting strip, to the well facility site. The electrical line would cross the San Mateo County Flood Control Channel via an existing utility conduit on the underside of the existing pedestrian bridge ~~to an existing PG&E power pole located approximately 590 feet east of the site~~. The total length of the underground electrical power line would be approximately 1,250 feet long.

Draft EIR Figures 3-23 (Site 9, Access Road, Treasure Island Trailer Court) and 3-24 (Site 9, Treasure Island Trailer Court) have also been updated to reflect the revised site plan; the revised figures are presented in Section 9.3.3, Project Description, of this Responses to Comments.

Environmental Effects of Revision: The new underground electrical line alignment does not alter the significance determinations presented in the Draft EIR. The underground alignment would not result in additional significant impacts beyond those identified in the Draft EIR. All mitigation measures applied to Site 9 in the Draft EIR would still be applicable.

The new underground alignment is within the study area of the archaeological, architectural history, and biological studies prepared for the Project (GHD 2014a, 2014b, 2014c). The electrical line would be installed at a depth of three feet in a paved roadway, a highly disturbed planter strip, and a concrete pad. The archaeological literature review conducted for the Project in 2009 covered the area of the new alignment and indicates no archaeological resources have been identified on or near the revised alignment therefore no impacts to cultural resources would occur. Because the electrical line would be installed underground, it would not adversely affect historic resources near Site 9.

The new underground electrical line alignment would not result in biological impacts beyond those identified in the Draft EIR. The electrical line would be installed in an existing conduit on the underside of the pedestrian bridge crossing the San Mateo County Flood Control Channel, and therefore would not affect the flood control channel. Mitigation Measure M-BR-1a (Protection Measures during Construction for Special-status Birds and Migratory Passerines and Raptors) applied to Site 9 in the Draft EIR, and would also be applicable to construction of the Site 9 underground electrical line. There are trees and shrubs in the planter strip which may support nesting birds. Implementation of the mitigation measure would reduce potential impacts to less than significant levels. No new aesthetics impacts would occur because the electrical line would be buried underground and the site would be restored after construction is complete. Potential impacts to the Costco land use would be temporary and limited, due to the location of the electrical line along the perimeter of the parking lot. No new or additional impacts would occur. See Response PD-5 for additional revisions to the Draft EIR.

Revision #10

Description of Revision: In response to Comment PD-7, which clarifies the nature of the existing SFPUC easement, the third sentence on page 3-102 of the Draft EIR has been revised as shown below:

> The well facility would be located on an existing SFPUC pipeline easement in the northern portion of the cemetery.

Environmental Effects of Revision: This revision does not alter the analysis or conclusions of the Draft EIR because it only provides a minor clarification regarding the purpose of the SFPUC's existing easement.

Revision #11

Description of Revision: In response to Comment OV-1 regarding cumulative projects, Chapter 3, Project Description on page 3-102 of the Draft EIR is revised as follows:

> Site 14 would be located north of Sneath Lane in the GGNC in San Bruno on land owned by the U.S. Department of Veterans Affairs (VA). The site layout is shown on Figures 3-34 (Sites 14 & 15 with Pipelines) and 3-35 (Site 14, Golden Gate National Cemetery). The well facility would be located on an existing SFPUC pipeline easement in the northern portion of the cemetery. The proposed Project at Site 14 includes a new production well. The Project may also include demolition of an existing, unused pump station, tank, and well located nearby within the cemetery[1]. Demolition would include closure and abandonment of the existing well according to California Well Standards and removal of the pump station, the tank, and any aboveground piping (California Department of Water Resources 1991). If instead, the VA decides to re-establish an irrigation well or wells at the GGNC, the SFPUC would coordinate construction activities associated with Site 14 with the VA so that construction associated with the VA irrigation well project and work at Site 14 do not overlap.

Environmental Effects of Revision: This revision does not alter the analysis or conclusions of the Draft EIR because the addition of coordination between the SFPUC and the VA would ensure that construction activities associated with Site 14 would not overlap with VA construction should the VA decide to re-establish an irrigation well at the Golden Gate National Cemetery. No change in the reported impact levels would occur as a result of the change, and no cumulative impact would occur at Site 14.

[1] Following preliminary discussions with the VA, the SFPUC is including in the Project Description and analyses in this Draft EIR the demolition of the pump station, tank, and well. However, this work would only proceed with approval from the VA and only in connection with implementation of a well facility at Site 14.

Revision #12

Description of Revision: As a response to Comment PD-5, Table 3-9 (Construction Area Size and Characteristics) on page 3-133 of the Draft EIR is revised as follows to illustrate the minor change to the construction area square footage:

TABLE 3-9
Construction Area Size and Characteristics

Project Site	Construction Area (square feet)
Construction Cluster C	
Site 9	~~18,690~~ 23,890
Site 10	29,415
Site 11	35,070

Environmental Effects of Revision: See Revision #9.

Revision #13

Description of Revision: On page 3-140 of the Draft EIR, the second sentence in the first paragraph in Section 3.8.2 (Project Operations) has been revised as shown below in response to Comment PD-13.

> ~~Neither Project wells nor~~ Pumping from GSR wells and Partner Agency wells ~~would be pumped in these~~ during Put Periods, ~~apart from~~ would be limited to volumes needed to periodically exercise the wells, emergency usage, and other pumping recommended by the Operating Committee for purposes of managing the SFPUC Storage Account.

Environmental Effects of Revision: This clarification in wording does not alter the analysis or conclusions of the Draft EIR.

Revision #14

Description of Revision: On page 3-141 of the Draft EIR, the first bullet in Section 3.8.2 (Project Operations) has been revised as shown below in response to Comment PD-15:

> Proposed Project wells would be operated during a Take Period under the following circumstances:
>
> - Beginning normally in the second dry year of a multiple-year drought; during some dry years pumping may be initiated during the first year of a drought;

Environmental Effects of Revision: This change does not alter the analysis or conclusions of the Draft EIR because the duration of pumping would not change. Pumping would be limited to 7.5 years, as analyzed in the Draft EIR.

Revision #15

Description of Revision: On page 3-141 of the Draft EIR, the second sentence in the last paragraph in Section 3.8.2 (Project Operations) has been revised as shown below in response to Comment PD-16.

> In these circumstances, proposed Project wells could be operated continuously or for shorter intervals, depending on the need for water. During ~~these Take Periods~~ Project operations, when groundwater is pumped from GSR wells, ~~to~~ for activities such as providing a dry-year supply, performing maintenance, or during emergencies, pumping would reduce the balance of water in the SFPUC Storage Account.

Environmental Effects of Revision: This revision does not alter the analysis or conclusions of the Draft EIR because it only provides a minor clarification in the description of pumping. The analysis in the Draft EIR considered both dry-year supply and maintenance pumping.

Revision #16

Description of Revision: On pages 3-141 and 3-142 of the Draft EIR, the first paragraph in Section 3.8.3 (Maintenance) has been revised in response to Comment HY-5. A fourth paragraph has also been added in response to Comment LU-2:

> **3.8.3 Maintenance**
>
> Project wells would require exercising to ensure that the facilities remain operational during normal and wet years. Well exercising would occur either weekly or monthly. Wells would be exercised for one hour per week or for a single, four-hour period monthly. Flow rates for exercising are anticipated to be between 300 to 600 gpm. Operators may fine-tune the exercise schedule according to the characteristics of individual wells. A possible maintenance issue is bio-fouling,[17] which may require periodic disinfection as part of the exercise program. Groundwater pumped during exercising would be discharged to a local storm drain. Planned discharges to the storm drain system would not occur during storm events. In the event there is still chlorine residual in the groundwater, the water would be discharged to a sanitary sewer or dechlorinated prior to discharging to a storm drain. Partner Agencies would continue pumping their existing wells during Put Years as needed to maintain operability.
>
> All well stations would be unmanned. Each well station would be visited daily when wells are operating for routine equipment checks, lasting approximately 30 minutes each. During normal and wet years (i.e., Put Years), the wells normally would be turned off, but regular exercising would be conducted as described above. At these times, the wells would be visited on a weekly basis or at a frequency determined by on-site conditions. During dry years (i.e., Take Years), the wells would be operational and in production. Longer term maintenance could include removal and repair or replacement of pumps, valves, and other equipment.
>
> Production wells may require redevelopment and/or rehabilitation on an infrequent basis. The life of production wells is estimated to be at least 50 years, although pumps may need to be replaced every 15 to 20 years.

For GGNC well sites (Sites 14 and 15), the SFPUC would coordinate with the GGNC to schedule maintenance activities taking into account the operational requirements of a National Cemetery. Scheduling of maintenance activities would include consideration of cemetery operating requirements, services, ceremonies, and other cemetery activities.

Environmental Effects of Revision: This limitation on the timing of discharges does not alter the analysis or conclusions of the Draft EIR because it would tend to reduce any potential impacts associated with discharges. Coordinating maintenance activities with the GGNC would also tend to reduce potential impacts to the land use, and therefore this change does not alter the analysis or conclusions to the Draft EIR.

Revision #17

Description of Revision: In response to Comment PD-7, which clarifies the nature of the existing SFPUC easement, the first row of Table 3-11 (Regulatory/Permitting Agencies/Utility) on page 3-143 of the Draft EIR has been revised as follows:

TABLE 3-11

Regulatory/Permitting Agencies/Utility

Regulatory/Permitting Agency/Utility	Potential Permit/Approval
Federal Regulatory/Permitting Agencies	
U.S. Department of Veterans Affairs (VA)	Agreement for installation and maintenance of well facilities at Site 14 and Site 15; possible amendment to existing easement; approval to demolish building located adjacent to SFPUC right-of-way on Site 14 and decommissioning pipelines; completion of environmental review under the National Environmental Policy Act (NEPA). Section 106 consultation for review and evaluation of Project impacts on cultural resources under the National Historic Preservation Act.

Environmental Effects of Revision: This revision does not alter the analysis or conclusions of the Draft EIR because it only provides a minor clarification regarding the purpose of the SFPUC's existing easement.

Revision #18

Description of Revision: As a response to Comment PD-5, minor changes to the property rights requirements are anticipated with respect to the undergrounding of the power line. Table 3-13 (Anticipated Property Rights Requirements) presented on page 3-147 of Draft EIR includes revisions to reflect the anticipated required easements as follows:

TABLE 3-13

Anticipated Property Rights Requirements[a]

Site	**Site Name**	**Notes**
Site 9	Treasure Island Trailer Court	Access easement would be needed from BART and San Mateo County. May need rights from adjacent property owner to connect to SFPUC Pipeline and to install underground power line.

Environmental Effects of Revision: See Revision #9.

9.5 DRAFT EIR REVISIONS

This chapter presents specific revisions to the text of the Draft EIR that are being made in responses to comments, or to amplify and clarify material in the Draft EIR. Where revisions to the main text are called for, the page and paragraph are set forth, followed by the appropriate revision. Added text is indicated with double underlined text. Deletions to text in the Draft EIR are shown with ~~strikethrough~~ text. Page numbers correspond to the page numbers of the Draft EIR. The revisions to the Draft EIR derive from two sources: (1) comments raised in one or more of the comment letters received by the City and County of San Francisco (CCSF) on the Draft EIR; and (2) staff-initiated changes that correct minor inaccuracies, typographical errors or to clarify material found in the Draft EIR subsequent to its publication and circulation. Staff-initiated changes to clarify information presented in the Draft EIR are highlighted by a black dot (●) in the margin to distinguish them from text changes associated with responses to comments. None of the changes or clarifications presented in this chapter significantly alters the conclusions or findings of the Draft EIR.

9.5.1 Executive Summary

In response to Comment HY-15, Table 1-1 (Summary of Impacts and Mitigation Measures) on pages 1-26 and 1-27 of the Draft EIR is revised as follows:

TABLE 1-1
Summary of Impacts and Mitigation Measures

Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
Impact HY-6. Project operation would decrease the production rate of existing nearby irrigation wells due to localized groundwater drawdown within the Westside Groundwater Basin such that existing or planned land use(s) may not be fully supported.	S	**M-HY-6: Ensure ~~Existing~~ Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use(s) Due to Project Operation.** Refer to the discussion of Impact HY-6 in Section 5.16, Hydrology and Water Quality.	~~SUM~~ LSM
Impact C-HY-2. Operation of the proposed Project would result in a cumulatively considerable contribution to cumulative impacts related to well interference.	S	**M-HY-6: Ensure ~~Existing~~ Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use(s) Due to Project Operation.** Refer to the discussion of Impact ~~HY-6~~ C-HY-2 in Section 5.16, Hydrology and Water Quality.	~~SUM~~ LSM

In response to Comments HY-15 and AL-2, page 1-33 of the Draft EIR is revised as follows:

> None of the alternatives would reduce all the significant and unavoidable impacts of the proposed Project. Alternatives 2A, 2B, 3A, and 3B would cause significant and unavoidable impacts related to construction at one or two fewer sites than the Project; however, significant and unavoidable construction-period impacts would still occur at up to eight other facility sites, as they would under the proposed Project. In addition, such impacts, although significant and unavoidable, would be temporary and would only last through the 16-month construction period. Alternatives 3A and 3B would cause significant ~~and potentially unavoidable~~ well interference impacts during operation at one or two fewer existing irrigation wells than the Project; however, significant ~~and unavoidable~~ but mitigable well interference impacts would still occur at 11 or 12 existing irrigation wells, as they would under the proposed Project. Alternative 3A would cause slightly greater impacts to Lake Merced. The No Project Alternative would not cause significant and unavoidable construction impacts (since no construction would occur), but water levels at Lake Merced would continue to fluctuate as they do now under varying hydrologic conditions, and during a drought as severe as the design drought, lake levels would decline to a level that could have adverse water quality effects at Lake Merced. ~~Because permanent operational impacts are considered more severe than temporary construction-period impacts, Alternative 3B (Reduce Impacts on Colma-area Existing Irrigation Wells and Reduce Yield) is considered the environmentally superior alternative, in that it would have significant and unavoidable well interference impacts at fewer sites than the proposed Project or Alternatives 2A, 2B or 3A.~~
>
> Alternative 2B is the environmentally superior alternative because it would reduce the severity of well interference impacts as compared to the proposed Project and Alternatives 2A and 3A, and it would have fewer sites with significant and unavoidable construction-period noise and land use impacts than Alternatives 3A and 3B. Alternative 2B (Reduce Lake Merced Impacts and Reduce Project Yield) is therefore identified as the environmentally superior alternative, although, while it would meet most, it would not fully meet all of the Project objectives or WSIP goals. In particular, Alternative 2B would not provide the full 7.2-mgd dry-year and emergency pumping capacity needed to meet Project objectives.

9.5.2 Introduction and Background

In response to Comment IN-1, the first paragraph of page 2-4 of the Draft EIR is revised as follows:

> The proposed Project is part of the SFPUC's Water System Improvement Program (WSIP). The purpose of the WSIP is to increase the reliability of the regional water system with respect to seismic response, water delivery, and water quality through the year 2030, as well as water supply to meet water delivery needs in the service area through the year 2018. In approving the WSIP, the SFPUC committed to full implementation of identified facility improvements, water supply delivery to regional customers through 2018, including 81 mgd for retail customers and 184 mgd for wholesale customers, with re-evaluation of 2030 demand projections and water supply options to meet customer demands by 2018.

9.5.3 Project Description

In response to Comment PD-15, the last paragraph on page 3-2 of the Draft EIR is revised as follows:

> The proposed Operating Agreement between the SFPUC and Partner Agencies (see Section 3.8.1 [Operating Agreement]) contemplates use of the dry-year supplies made available by the Project normally starting in the second year of the design drought. During some dry years pumping may be initiated during the first year of a drought.

In response to Comment PD-15, page 3-5 of the Draft EIR is revised as follows:

> The identification of a dry year for the purpose of initiating groundwater pumping under the Project would be based upon whether or not a water shortage has been identified for a given fiscal year during the SFPUC's annual determination of the supply of water available to the regional water system under its Water Shortage Allocation Plan (WSA)[2]. This identification would be made as part of the SFPUC's annual April 15 estimate of water supply available to the regional water system, with shortage allocations taking effect on July 1st, the start of the fiscal year. As a result of this timing, Project pumping would normally not occur until the second year of a drought. During some dry years pumping may be initiated during the first year of a drought, so long as the duration of pumping does not exceed 7.5 years. Approximately 20 percent of years are projected to be dry years when the Project would be in groundwater recovery mode (SFPUC 2009b).
>
> Surface water delivered to the Partner Agencies during Put years (normal and wet years) is included in the SFPUC's adopted Water Supply Improvement Program (WSIP) and was analyzed in the Program Environmental Impact Report (PEIR) prepared for the WSIP (San Francisco Planning Department 2008). The surface water deliveries to the Partner Agencies are included in the SFPUC's Interim Supply Limitation of limiting water sales from SFPUC watersheds to an annual average of 265 mgd.
>
> [2] In the July 2009 Water Shortage Allocation Plan (WSA), the SFPUC and its wholesale customers adopted a plan to allocate water between retail and wholesale customers during system wide shortages of 20 percent or less. The specific amount of rationing required by each wholesale customer, including the Partner Agencies, is determined either by agreement of the wholesale customers themselves or, in the absence of such agreement, by the SFPUC after discussion with the wholesale customers.

In response to Comment PD-3 Figure 3-2 (Source of Proposed Water Supply for Partner Agencies) (page 3-9) is updated. The revised figure is presented in Section 9.3.3, Project Description, of this Responses to Comments document.

In response to Comment PD-14, page 3-10 of the Draft EIR is revised as follows:

> During dry years, Partner Agency water deliveries from the regional water system would be comprised of reduced surface water deliveries and groundwater pumped from Project wells, as identified in the Operating Agreement. The Partner Agencies' pumping from their existing wells

would not exceed ~~the annual average~~ rates consistent with the pumping limits expressed in the Operating Agreement.

In response to Comment PD-8, a table note has been added to Table 3-3 (Site-specific Facility Characteristics) on page 3-22 of the Draft EIR as follows:

TABLE 3-3
Site-specific Facility Characteristics

Site	Method for Achieving Water Quality Goals for Iron/Manganese[f]

Notes:

(f) Blending may also be used at Site 11 if VOCs are found.

In response to Comment HY-4, page 3-28 of the Draft EIR is revised as follows:

All facilities would include permanent outdoor lighting. Lights would either be mounted on the building or pole-mounted within the well facility site. All lighting would meet Title 24 of the California Code of Regulations standards including shielding, manual switch operation with automatic shut-off, and energy requirements. Lighting would be added near the main entrance of the well facility for security purposes and adjacent to the parking and service area at the rear of the building, if needed. Lighting would be used only when nighttime access is required. All lights would be switch operated with automatic shut-off.

Low impact design measures, such as bioswales, would be implemented to store, infiltrate, evaporate, or detain storm water runoff to maintain the predevelopment hydrology of the site as needed. Low impact design measures would be sized in accordance with applicable guidelines and regulations, including, but not limited to, the State Water Resources Control Board, the San Mateo County Flood Control District's requirements for sites within the Colma Creek and San Bruno Creek Flood Control Zones, and would be designed to prevent mosquito breeding or other vector habitat. Based on the location of the sites, the SFPUC will provide the drainage calculations showing existing and future discharge rates to applicable jurisdictions for review, including the San Mateo County Flood Control District and the State Water Resources Control Board.

In response to Comment PD-5, Figure 3-12 (Site 2, Park Plaza Meter, Site 3, Ben Franklin Intermediate School, Site 4, Garden Village Elementary School) (page 3-43) is revised. The revised figure is presented in Section 9.3.3, Project Description, of this Responses to Comments document.

In response to Comment PD-5, the description of Site 4 on page 3-48 of the Draft EIR is revised as follows:

~~An existing baseball backstop would be temporarily relocated during construction; after construction is complete it would be returned to its original location.~~ Turf along the pipeline route would be replaced following construction. The SFPUC would notify the Jefferson Elementary School District of construction activities a minimum of nine months in advance of any construction on school grounds to allow the District to plan for any partial school ground closures.

In response to Comment AE-2, the description of Site 8 on page 3-73 of the Draft EIR is revised as follows:

> A landscape screening plan would be prepared for Site 8 to screen views from Serramonte Blvd. The plan would be prepared in cooperation with the Town of Colma.

In response to Comment PD-5, the description of Site 9 on page 3-73 of the Draft EIR is revised as follows:

> Electrical power would be provided to the site through a new ~~aboveground~~ underground connection routed from an existing junction box located approximately 25 feet from El Camino Real, through the perimeter of the Costco parking lot in an existing planter strip, to the well facility site. The electrical line would cross the San Mateo County Flood Control Channel via an existing utility conduit on the underside of the pedestrian bridge ~~to an existing PG&E power pole located approximately 590 feet east of the site~~. The total length of the underground electrical power line would be approximately 1,250 feet long.

In response to Comment PD-5, Figure 3-23 (Site 9 Access Road Treasure Island Trailer Court) (page 3-77) and Figure 3-24 (Treasure Island Trailer Court) (page 3-78) are revised to reflect the buried electrical line to Site 9. The revised figures are presented in Section 9.3.3, Project Description, of this Responses to Comments document.

In response to Comments PD-7 and OV-1, page 3-102 of the Draft EIR is revised as follows:

> Site 14 would be located north of Sneath Lane in the GGNC in San Bruno on land owned by the U.S. Department of Veterans Affairs (VA). The site layout is shown on Figures 3-34 (Sites 14 & 15 with Pipelines) and 3-35 (Site 14, Golden Gate National Cemetery). The well facility would be located on an existing SFPUC pipeline easement in the northern portion of the cemetery. The proposed Project at Site 14 includes a new production well. The Project may also include demolition of an existing, unused pump station, tank, and well located nearby within the cemetery[1]. Demolition would include closure and abandonment of the existing well according to California Well Standards and removal of the pump station, the tank, and any aboveground piping (California Department of Water Resources 1991). If instead, the VA decides to re-establish an irrigation well or wells at the GGNC, the SFPUC will coordinate construction activities associated with Site 14 with the VA so that construction associated with the VA irrigation well project and work at Site 14 do not overlap.

In response to Comment PD-3 Figure 3-37 (Site 16, Millbrae Corporation Yard) (page 3-109) is updated. The revised figure is presented in Section 9.3.3, Project Description, of this Responses to Comments document.

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[1] Following preliminary discussions with the VA, the SFPUC is including in the project description and analyses in this Draft EIR the demolition of the pump station, tank, and well. However, this work would only proceed with approval from the VA and only in connection with implementation of a well facility at Site 14.

In response to Comment PD-5, Table 3-9 (Construction Area Size and Characteristics) on page 3-133 of the Draft EIR is revised as follows:

TABLE 3-9
Construction Area Size and Characteristics

Project Site	Construction Area (square feet)
Construction Cluster C	
Site 9	18,690 23,890

In response to Comment PD-13, on page 3-140 of the Draft EIR, the second sentence in the first paragraph in Section 3.8.2 (Project Operation) is revised as follows:

> ~~Neither Project wells nor~~ Pumping from GSR wells and Partner Agency wells ~~would be pumped in these~~ during Put Periods, ~~apart from~~ would be limited to volumes needed to periodically exercise the wells, emergency usage, and other pumping recommended by the Operating Committee for purposes of managing the SFPUC Storage Account.

In response to Comment PD-15, on page 3-141 of the Draft EIR, the first paragraph is revised as follows:

> Proposed Project wells would be operated during a Take Period under the following circumstances:
>
> - Beginning normally in the second dry year of a multiple-year drought; during some dry years pumping may be initiated during the first year of a drought;
> - During emergencies;
> - During system rehabilitation, scheduled maintenance or malfunctioning of the water system; or
> - Upon recommendation of the Operating Committee established by the Operating Agreement for purposes of Basin management[16]
>
> [16] The Operating Committee would respond to issues as they arise. Additional CEQA review may be required.

In response to Comment PD-16, page 3-141 of the Draft EIR, the second sentence in the first full paragraph is revised as follows:

> In these circumstances, proposed Project wells could be operated continuously or for shorter intervals, depending on the need for water. During ~~these Take Periods~~Project operations, when groundwater is pumped from GSR wells, ~~to~~ such as providing ~~e~~ a dry-year supply, performing maintenance, or during emergencies, pumping would reduce the balance of water in the SFPUC Storage Account.

In response to Comments LU-2 and HY-5, the Section 3.8.3 (Maintenance) on pages 3-141 and 3-142 of the Draft EIR are revised as follows:

3.8.3 Maintenance

Project wells would require exercising to ensure that the facilities remain operational during normal and wet years. Well exercising would occur either weekly or monthly. Wells would be exercised for one hour per week or for a single, four-hour period monthly. Flow rates for exercising are anticipated to be between 300 to 600 gpm. Operators may fine-tune the exercise schedule according to the characteristics of individual wells. A possible maintenance issue is bio-fouling,[17] which may require periodic disinfection as part of the exercise program. Groundwater pumped during exercising would be discharged to a local storm drain. Planned discharges to the storm drain system would not occur during storm events. In the event there is still chlorine residual in the groundwater, the water would be discharged to a sanitary sewer or dechlorinated prior to discharging to a storm drain. Partner Agencies would continue pumping their existing wells during Put Years as needed to maintain operability.

All well stations would be unmanned. Each well station would be visited daily when wells are operating for routine equipment checks, lasting approximately 30 minutes each. During normal and wet years (i.e., Put Years), the wells normally would be turned off, but regular exercising would be conducted as described above. At these times, the wells would be visited on a weekly basis or at a frequency determined by on-site conditions. During dry years (i.e., Take Years), the wells would be operational and in production. Longer term maintenance could include removal and repair or replacement of pumps, valves, and other equipment.

Production wells may require redevelopment and/or rehabilitation on an infrequent basis. The life of production wells is estimated to be at least 50 years, although pumps may need to be replaced every 15 to 20 years.

For GGNC well sites (Sites 14 and 15), the SFPUC would coordinate with the GGNC to schedule maintenance activities taking into account the operational requirements of a National Cemetery. Scheduling of maintenance activities will include consideration of cemetery operating requirements, services, ceremonies, and other cemetery activities.

[17] Bio-fouling is the undesirable accumulation of microorganisms in the well. Well screen fouling can occur due to microorganisms which clog the pores of the screen, which in turn reduce flow from the well.

In response to Comment PD-7, the first row in Table 3-11 on page 3-143 of the Draft EIR is revised as follows:

TABLE 3-11

Regulatory/Permitting Agencies/Utility

Regulatory/Permitting Agency/Utility	Potential Permit/Approval
Federal Regulatory/Permitting Agencies	
U.S. Department of Veterans Affairs (VA)	Agreement for installation and maintenance of well facilities at Site 14 and Site 15; possible amendment to existing easement; approval to demolish building located adjacent to SFPUC right-of-way on Site 14 and decommissioning pipelines; completion of environmental review under the National Environmental Policy Act (NEPA). Section 106 consultation for review and evaluation of Project impacts on cultural resources under the National Historic Preservation Act.

In response to Comment PD-5, Table 3-13 (Anticipated Property Rights Requirements) on page 3-147 of Draft EIR is revised as follows:

TABLE 3-13

Anticipated Property Rights Requirements[a]

Site	Site Name	Notes
Site 9	Treasure Island Trailer Court	Access easement would be needed from BART and San Mateo County. May need rights from adjacent property owner to connect to SFPUC Pipeline and to install underground power line.

9.5.4 Overview

In response to Comment OV-1, Table 5.1-3 (Projects Considered for Cumulative Impacts) on page 5.1-32 of the Draft EIR is revised as follows:

TABLE 5.1-3
Projects Considered for Cumulative Impacts

Cumulative Project No.	Project Name (Jurisdiction)	Project Description	Potential Cumulative Impact Topics	Potentially Affected Project Components/ Areas of Overlap	Estimated Construction Schedule	Approximate Distance to GSR Project
J[(a)]	GGNC Irrigation Well Re-establishment Project (San Bruno)	The existing irrigation wells at the GGNC would be re-established, including construction of associated well infrastructure, for ongoing irrigation of the Cemetery, which is approximately 161 acres, requiring an estimated annual average of up to 0.27 mgd to be pumped (estimate based on current water sales to the GGNC of 100 million gallons per year) (SFPUC 2011)	Construction: land use, aesthetics, population & housing, cultural resources, traffic, noise, air quality, GHG, recreation, utilities public services, biological resources, geology, hydrology and water quality, hazards and hazardous materials, energy resources Operation: aesthetics, cultural resources, noise, air quality, GHG, hydrology, hazards, energy	Well construction could potentially occur near GSR Sites 14 and 15. It is unknown whether the timing of well construction at the cemetery would overlap with the GSR Project construction. The increased pumping would be from the Westside Groundwater Basin, the same as the GSR Project.	No current known plans.	Could be immediately adjacent to Sites 14 and 15
K[(a)]	Cypress Lawn Cemetery Expansion (Colma)	Cypress Lawn Cemetery buildout would include an expansion of the cemetery by up to 39 acres and may require an additional 0.05 mgd to be pumped from the existing wells at the cemetery (Fugro 2012b).	Construction: land use, aesthetics, population & housing, cultural resources, traffic, noise, air quality, GHG, recreation, utilities public services, biological resources, geology, hydrology and water quality, hazards and hazardous materials, energy resources aesthetics, cultural resources, noise, air quality, GHG, hydrology, hazards, energy Operation: utilities and service systems, hydrology	Expansion could potentially occur near GSR Sites 8 and 17 (Alternate). It is unknown whether the timing of expansion of the cemetery would overlap with the GSR Project construction. The increased pumping would be from the Westside Groundwater Basin, the same as the GSR Project.	No current known plans.	Expansion location is unknown; assumed to occur immediately adjacent to Site 17 (Alternate), and approximately 700 feet south of Site 8, where cumulative impact, if any, would be greatest.

TABLE 5.1-3
Projects Considered for Cumulative Impacts

Cumulative Project No.	Project Name (Jurisdiction)	Project Description	Potential Cumulative Impact Topics	Potentially Affected Project Components/ Areas of Overlap	Estimated Construction Schedule	Approximate Distance to GSR Project
			and water quality, hazards and hazardous materials, energy resources			

Note:

(a) Cumulative projects J and K have been added in response to information provided in the VA and Cypress Lawn comment letters on the Draft EIR. While the VA and Cypress Lawn comments indicate an intent to pursue these projects at some point, little detail has been provided, and these projects do not appear to be "reasonably foreseeable". However, to respond to the information provided by the VA and Cypress Lawn, this Responses to Comments evaluates the cumulative impacts that would result from such potential projects. The evaluation necessarily relies on reasonable assumptions based on the limited information provided.

Figure 5.1-3 (Location of Projects Considered in the Cumulative Analysis) has been updated in response to Comment OV-1; the revised figure is presented in Section 9.3.5, Overview, of this Responses to Comments document.

9.5.5 Land Use

In response to Comment LU-6, Table 5.2.1 (Land Uses in the Vicinity of Facility Sites), on page 5.2-7 of the Draft EIR, is revised as follows for Site 14:

TABLE 5.2-1

Land Uses in the Vicinity of Facility Sites

Site	Jurisdiction	On SFPUC Land?	Land Uses in the Vicinity of the Construction Area (including Pipelines)	Minimum Distance from Construction Area to Land Use
Site 14	San Bruno	~~Yes,~~ No, owned by U.S. Department of Veterans Affairs with SFPUC easement for pipeline ~~Right-of-Way~~	Cemetery (Golden Gate National Cemetery)	~~Adjacent~~ Site is within Cemetery

In response to Comment LU-6, the second sentence under the sub-heading **Site 14** on page 5.2-13 of the Draft EIR is revised as follows:

> The construction area at Site 14 would be located on an existing SFPUC pipeline easement near the northern boundary of the cemetery, in proximity to gravesites.

In response to Comment LU-5, the text after the first full paragraph on page 5.2-18 of the Draft EIR has been added as follows:

> Impacts on land use associated with the inability to irrigate turf at golf clubs and cemeteries due to well interference resulting from Project pumping are evaluated in Section 5.16, Hydrology and Water Quality.

City staff has revised Table 5.2-2 (Summary of Impacts-Land Use) on page 5.2-18 of the Draft EIR, which lists an incorrect significance level for Impact C-LU-1, Sites 11 and 17. The Draft EIR is revised as follows to address this clerical error:

TABLE 5.2-2
Summary of Impacts – Land Use

Sites	Impact C-LU-1: Construction and operation of the proposed Project could result in a cumulatively considerable contribution to cumulative impacts related to land use.
Site 11	LSM
Site 17	LSM

In response to Comment OV-1, Table 5.2-2 (Summary of Impacts – Land Use) on page 5.2-19 of the Draft EIR is revised for Site 15 under Impact C-LU-1 as follows:

TABLE 5.2-2
Summary of Impacts – Land Use

Sites	Impact C-LU-1: Construction and operation of the proposed Project could result in a cumulatively considerable contribution to cumulative impacts related to land use.
Site 15	LSM

In response to Comment OV-1, Impact C-LU-1 on page 5.2-39 of the Draft EIR is revised as follows:

Alter the character of the vicinity or disrupt or displace a land use during construction

Construction of most of the cumulative projects listed in Table 5.1-3 (Projects Considered for Cumulative Impacts) would result in construction-related traffic safety hazards, noise, dust, and equipment exhaust in the vicinity of the proposed GSR Project sites. The cumulative projects identified in Table 5.1-3 are typical construction projects that can be assumed to occasionally occur within the cumulative study area on an ongoing basis; some are public works improvement projects, some are replacement of aging water and transportation infrastructure, and some are housing and commercial development projects. Potential cumulative impacts associated with construction period noise could occur at Sites 8, 12, 17 (Alternate), and 19 (Alternate), which overlap with the Peninsula Pipeline Seismic Upgrade Project; at Sites 11, 12, and 19 (Alternate), which overlap or are adjacent to the PG&E Transmission Pipeline Replacement Project (cumulative project H); at Site 11, which is close to the Cal Water Well Replacement SSF1-25 Project (cumulative project G); ~~and~~ at Site 9, which is close to the Mission & McLellan Project (cumulative project F), at Site 15, which is located at the GGNC along with the GGNC Irrigation Well Re-establishment Project (cumulative project J); and at Sites 8 and 17 (Alternate), which are located near the Cypress Lawn Cemetery Expansion Project (cumulative project K). Although Site 14 is also located at the GGNC, as it is in the vicinity of one of the former GGNC irrigation wells, if GGNC implements project J, the SFPUC would not construct in the Site 14 area at the same time as project J, and no cumulative impact would occur. (see Chapter 3, Project Description, under the heading Site 14: Golden Gate National Cemetery). Land use disruption at Sites 9, 12, and 19 (Alternate) is considered a *significant and unavoidable* impact of the GSR Project because of nighttime construction noise. No nighttime construction is needed at Site 8 because the well has already been drilled at that location, and nighttime noise impacts are *less than significant with mitigation* at Sites 11, 15, and 17.

Although construction of these projects could overlap with construction of the proposed GSR Project, cumulative impacts related to the existing character of the vicinity would be *less than significant*. Nighttime construction would occur in the same vicinity for both GSR Site 11 and the Cal Water Well Replacement SSF1-25 Project, but with mitigation the GSR Project's contribution to cumulative land use impacts would be *less than significant*. None of the other cumulative projects would require nighttime construction near a GSR Project facility site. Daytime construction noise is less than significant at Sites 8 and 17 (Alternate), and can be reduced to less than significant with mitigation at Sites 11, 15, and 19 (Alternate). As with the proposed Project, the daytime construction activities associated with cumulative projects would be temporary and are not expected to rise to levels that would disrupt land use because the types of construction equipment and vehicles would be similar to those used for typical construction projects throughout the study area. Sites 9, 12, and 19 (Alternate) would result in significant disruptions to land use due to *unavoidable significant* impacts from daytime construction noise. Mitigation Measures M-NO-1 and M-NO-3 would reduce construction noise impacts, but the impact would remain significant at those sites. Combined with impacts of construction of cumulative projects at these sites, the GSR could result in cumulatively considerable contribution to a cumulative land use impact related to the existing character of the vicinity (*significant and unavoidable*).

9.5.6 Aesthetics

In response to Comment AE-6, the text at the end of the first paragraph on page 5.3-1 in Section 5.3, Aesthetics of the Draft EIR is revised as follows:

Impacts on visual character associated with the inability to irrigate turf at golf clubs and cemeteries due to well interference resulting from Project pumping are evaluated in Section 5.16, Hydrology and Water Quality.

In response to Comment PD-5, the second and third paragraphs on page 5.3-85 of the Draft EIR are revised as follows:

> The 2,095-square-foot well, chemical treatment, and filtration facility at Site 9 (see Figure 3-8) would be visible from a portion of the Treasure Island Trailer Court, over the property fence and pedestrian path connecting the Verano Condominium complex on Mission Road to El Camino Real, as well as the Verano Condominiums and other detached residences on Mission Road to the southeast (see Figure 3-24). The power source for Site 9 would be an ~~aerial~~ underground line extended from an existing off-site source. There are no views of this site from public roadways. The site is not within a scenic vista nor would it be visible from any nearby designated scenic roadways. As a result, no scenic vistas, resources, or roadways would be affected.
>
> Development of the well facility at Site 9 would require the removal of one Monterey pine. The removal of this mature tree would not have an adverse impact on the visual character of the site, given the low overall visual sensitivity of the site and its surroundings. ~~For the same reason, the installation of the overhead power line would not have an adverse impact on the site's visual character, particularly given the presence of other aerial lines in the immediate area. The overhead power line would be consistent with the visual setting of the area.~~ While the overall visual sensitivity of this site is considered low, the change in visual contrast would be moderate, given that a structure would be constructed on a currently undeveloped site. In addition, views of the facility from the residences would be seen by only a relatively few individuals in a private setting. The gray or stone architectural finish described in Chapter 3, Project Description, Section 3.4.2.2 (Well Facility Types) would soften the utilitarian appearance of the structure. Therefore, the Project's impact on the site's visual character and scenic resources would be *less than significant*. As noted above, there would be *no impact* on scenic roadways, resources, or vistas at this site.

In response to Comment OV-1, Impact C-AE-1 on pages 5.3-102 through 5.3-104 of the Draft EIR is revised as follows:

> *Scenic vistas, scenic resources, and visual character*
>
> The construction area of some of the cumulative projects listed in Table 5.1-3 (Projects Considered for Cumulative Impacts) would be visible to viewers who can also view proposed GSR Project construction areas (in the event that both the proposed GSR Project and cumulative projects were constructed at the same time): the Peninsula Pipelines Seismic Upgrade (PPSU) Project Colma Site (cumulative project D-1) and the Cypress Lawn Cemetery Expansion Project (cumulative project K) would be visible from the vicinity of GSR Sites 8 and 17 (Alternate); the PPSU Project South San Francisco Site (cumulative project D-2) would be visible from the vicinity of GSR Sites 12 and 19 (Alternate); the Mission & McLellan Project (cumulative project F) would be visible from the vicinity of GSR Site 9; the PG&E Transmission Pipeline Replacement Project (cumulative project H) would be visible from the vicinity of GSR Sites 11, 12, and 19 (Alternate)~~,~~; the GGNC Irrigation Well Re-establishment Project (cumulative project J) may be visible from the vicinity of GSR sites 14 and 15; and the Centennial Village Project (cumulative project I) would be visible

from the vicinity of the pipeline construction areas for proposed GSR Site 13 (see Figures 5.3-5, 5.3-6, 5.3-7, 5.3-8, and 5.3-10 for photographs of these locations). None of these areas of visual overlap include scenic corridors, scenic vistas, or scenic resources, except construction at the GGNC, portions of which would be visible from Sneath Lane, a locally designated scenic roadway. No cumulative projects have been identified that would be visible to viewers who would also be in view of construction areas at Sites 1, 2, 3, 4, 5, 6, 7, 10, ~~14, 15,~~16, or 18 (Alternate).

As described in Impact AE-1, construction of the GSR Project would have less-than-significant impacts at GSR Sites 8, 9, 11, 17 (Alternate), and 19 (Alternate), and significant impacts at Sites 12~~,~~ ~~and~~ 13, 14, and 15 due to some degradation of visual quality from the construction staging areas, equipment, materials storage areas, and tree removal. Depending on the extent of overlap among the construction schedules, the cumulative impacts related to visual quality during construction could be significant. Therefore, the GSR Project's contribution to this cumulative impact could be cumulatively considerable given that the GSR Project would require construction staging areas, construction equipment, and material storage in areas with high visual quality.

However, as discussed in Impact AE-1, the GSR Project's impacts related to construction-period impacts on the visual quality in the vicinity of Sites 12~~,~~ ~~and~~ 13, 14, and 15 would be reduced to a less-than-significant level with implementation of Mitigation Measure M-AE-1a (Site Maintenance), Mitigation Measure M-AE-1b (Tree Protection Measures), ~~and~~ Mitigation Measure M-AE-1c (Develop and Implement a Tree Planting Plan at Site 12), Mitigation Measure M-AE-1d (Construction Area Screening at Site 15), and Mitigation Measure M-CR-1a (Minimize Construction-related Impacts on Elements of the Historical Resource at Site 14), (see Impact AE-1, above, for description). Implementation of these mitigation measures would ensure that the construction area is maintained by storing construction materials and equipment generally away from public view and by removing construction debris promptly at regular intervals, ~~and~~ by minimizing tree removal ~~is minimized~~, by screening construction areas, and by implementing measures to protect historical resources. With implementation of these mitigation measures, the GSR Project's contribution to cumulative impacts related to visual quality during construction would not be cumulatively considerable (*less than significant*).

New sources of substantial light

As described in Impact AE-2, the GSR Project would have less-than-significant impacts with regard to the creation of new sources of substantial light at GSR Sites 9, 12, 14, 15, and 19 (Alternate), because a lighting plan for those sites that require nighttime construction would be prepared and implemented, ensuring that lighting would be directed downward, covering only the area to be occupied by the drilling rig.

Depending on the extent of overlap between the construction schedules for the projects listed in Table 5.1-3 (Projects Considered for Cumulative Impacts), implementation of these projects together with the proposed GSR Project at Sites 9, 12, 14, 15, and 19 (Alternate) could result in a cumulative impact relative to the creation of new sources of substantial light. However, these impacts would be temporary (only as-needed during construction) and brief (only during drilling for approximately seven days and up to 48 hours for pump testing). Due to the limited need for lighting on the GSR Project and the controls required in the GSR Project's lighting plan, the potential cumulative impact resulting from the creation of new sources of substantial light associated with construction-related activities would be *less than significant*.

Operation

Scenic vistas, scenic resources, and visual character

~~Two~~Three of the cumulative projects listed in Table 5.1-3 (Projects Considered for Cumulative Impacts) would be visible to viewers who can also view proposed GSR Project permanent facilities at Sites 9, ~~and~~ 13, 14, and 15. The Mission & McLellan Project (cumulative project F) and Site 9 would be visible to viewers at and in the area of the Verano Condominiums. The Centennial Village Project (cumulative project I) and Site 13 would be visible to those traveling along South Spruce Avenue. The GGNC Irrigation Well Re-establishment Project (cumulative project J) and Site 14 would be visible within the GGNC and possibly from residences along Greenwood Drive, and cumulative project J and Site 15 may both be visible from the GGNC and Sneath Lane. These areas of visual overlap would not include scenic corridors, scenic vistas, and scenic resources, except for cumulative project J and Site 15 along Sneath Lane, a locally designated scenic roadway. Depending on the extent of overlap of cumulative project J and Sites 14 and 15, cumulative impacts on the visual character of the GGNC could be significant. However, as discussed in Impact AE-3, the GSR Project's impacts on visual quality at Sites 14 and 15 would be reduced to a less-than-significant level with implementation of Mitigation Measures M-CR-5a (Minimize Facilities Siting Impacts on Elements of the Historical Resource at Site 14) and M-CR-5b (Minimize Facilities Siting Impacts on Elements of the Historical Resource at Site 15). Because cumulative project J involves re-establishment of existing wells, once construction is complete, the operation of the existing wells is not expected to change the current visual character of the GGNC. With implementation of these mitigation measures, the GSR Project's contribution to cumulative impacts related to visual quality during operation would not be cumulatively considerable (*less than significant*).

9.5.7 Cultural and Paleontological Resources

In response to Comment CR-2, the text at the end of the first paragraph on page 5.5-1 of the Draft EIR has been revised:

Impacts on historic character associated with the inability to irrigate turf at golf clubs and cemeteries due to well interference resulting from Project pumping are evaluated in Section 5.16, Hydrology and Water Quality.

City staff has revised citations on page 5.5-10 in Section 5.5, Cultural and Paleontological Resources of the Draft EIR to correctly reflect the references cited in the cultural resources report prepared for the Project:

- Beginning around 4,000 B.P., which is the start of the Late Holocene, the climate began to shift from the warm and dry Altithermal period to cooler and wetter conditions. The general cultural trend observed in California was one of adjusting to new environmental conditions. For example, many of the archaeological sites dating to the Late Holocene in the San Francisco Bay region are shellmounds, midden sites containing large quantities of mollusk shells. This site type in the Bay Area includes the West Berkeley shellmound (Wallace 1978), and the nearby Emeryville shellmound, which is an example of a Late Holocene shellmound on a massive scale, over 30 feet (nine meters) in height and spanning the period of time from 2,700-650 B.P. As at West Berkeley, the Emeryville shellmound yielded an extensive array of worked stone and bone, beads and faunal remains that allowed for a detailed analysis of resource exploitation and subsistence at the time (Broughton 1997, ~~1999~~ 1995). More broadly, N. C. Nelson recorded over 400 of these shellmounds around the edge of the San Francisco Bay in the early twentieth century (Nelson 1909~~, 1910~~). This period is characterized by further niche specialization, a refinement of various technologies and specialized exploitation of plant and animal species. Archaeological sites dating to the Late Holocene also have been found in San Francisco, primarily in the South of Market region. These sites are all multi-activity shellmound and midden sites. The oldest date from an occupation site in San Francisco is 2,200 B.P. (Pastron and Ambro 2005).

City staff has revised citations on page 5.5-11 of the Draft EIR to correctly reflect the references cited in the cultural resources report prepared for the Project:

- In common with most Native American groups throughout what today is California, plant foods probably contributed the majority of calories to the diet. The staple was the acorn, pounded by stone mortar and pestle to form mush, gruel, or bread (Gifford ~~1955~~ 1950). Buckeye yielded edible nuts. Many species of berries were harvested, as were roots, shoots and seeds (Levy 1978). In addition to providing primary subsistence, the flora and fauna of a rich natural habitat provided the remainder of life's necessities for the Ohlone people.

  Tules were harvested and utilized as building materials for structures (Kroeber 1925) and for crude balsa canoes (Heizer and Massey ~~1951~~ 1953). Vegetal resources also provided the fiber for net and cord manufacture and, especially, basket material. Animal parts – bone, tooth, beak, and claw – provided awls, pins, daggers, scrapers, knives, and other tools. Pelts and feathers provided clothing and bedding (Kroeber 1925; Levy 1978). Sinew was used for bow support and bow strings (Harrington 1921). Feather, bone and especially shell were used for items of ornamentation (Mason ~~1916~~ 1912).

  Local rock and mineral sources provided chert, as well as metamorphic and igneous materials for tool manufacture and highly indurate local sandstone yielded suitable material for grinding and pounding tools. Exotic materials, such as steatite and particularly obsidian, could be obtained in trade. The Bay Area inhabitants bartered with locally available commodities, such as cinnabar and hematite (Heizer and Treganza 1972). Other valuable local resources used in trade with inland peoples included salt, shellfish meat, and shell as raw material for ornament manufacture (Davis ~~1961~~ 1974).

City staff has revised citations on page 5.5-12 of the Draft EIR to correctly reflect the references cited in the Historic Context and Archaeological Survey Report (Archeo-Tec 2011) prepared for the Project:

- The establishment of Mission Dolores in 1776 began the "Mission Period" in the San Francisco Bay area. At its peak in the 1820s, Mission Dolores controlled the entire San Francisco Peninsula as far south as San Francisquito Creek (which forms the border between San Mateo and Santa Clara counties), including the Project area (Bancroft 1886; Dwinelle 1867; Hittell ~~1897~~ 1898; Soulé et al. 1855). El Camino Real, also known as the California Mission Trail, connected Alta California's missions; many of the proposed well facility sites are located near or alongside El Camino Real (Hackel 1998). Vast tracts of land on the peninsula, including land where the well facility sites would be located, served as grazing land for cattle belonging to Mission Dolores or the Presidio. In 1833, the Mexican Congress passed a bill that secularized the Missions of Upper and Lower California (Hittell ~~1897~~ 1898).

City staff has revised page 5.5-16 of the Draft EIR to be consistent with the Historic Context and Archaeological Survey Report (Archeo-Tec 2011) prepared for the Project:

- With its new focus on housing the dead of San Francisco, Colma underwent an economic boom during the 1890s because of the large influx of new cemeteries purchased in the town (Colma 1999). At the turn of the century, the San Francisco Burial Ordinance passed, banning all burials within the limits of the City and County of San Francisco (CHA 2007; Archaeological/Historical Consultants 1994). Eviction notices were sent to all cemeteries to remove the bodies and monuments in 1914. Hundreds of thousands of bodies were then removed from San Francisco cemeteries and transferred to those in Colma after some prolonged court battles. ~~In 1889, just as the first cemeteries were being established, Dun's Mercantile Agency Reference Book had five businesses listed for the Colma Area, including a blacksmith, a saloon, a general store, a hotel and a distillery (Dun and Company 1889). By 1901, this list grew to 28 listings (Dun and Company 1901). Once cemeteries became the main business of Colma, the place became known as a necropolis, or city of the dead. The community was run by the Cemetery Association, which was made up of a representative from each cemetery.~~

City staff has revised a citation on page 5.5-19 of the Draft EIR to correctly reflect the reference cited in the Historic Context and Archaeological Survey Report (Archeo-Tec 2011) prepared for the Project:

- The literature review found that the National Register of Historic Places (National Register) had no listings for archaeological sites within the review area. Plat maps exhibited as evidence in Land Commission cases settling title disputes to Rancho Laguna de la Merced and Rancho Buri Buri showed that in 1866 there were two houses at Rancho Laguna de la Merced that were within 0.25 mile of the archaeological C-APEs for Sites 2, 3, and 4. These probably belonged to William Higgins, whose lodgings Hittell described as being "at the most southerly end of Laguna de la Merced in San Mateo County" (Hittell ~~1897~~ 1898; Schussler 1916).

In response to Comment OV-1, Impact C-CR-1 on page 5.5-64 of the Draft EIR is revised as follows:

Historical Resources

~~One~~Two of the cumulative projects listed in Table 5.1-3 (Projects Considered for Cumulative Impacts), the Holy Cross Expansion project (cumulative project E) and the Cypress Lawn Cemetery Expansion project (cumulative project K), could cause an adverse change in the significance of a historical resource. As shown in Table 5.5-5 (Historical Architectural Resources in the Record Search Area, but Outside the Architectural C-APE), the Holy Cross Cemetery District and Cypress Lawn Memorial Park District ~~is a~~ are National Register-eligible districts. The Holy Cross Expansion project and the Cypress Lawn Expansion project could have a direct and significant impact on historical resources if the projects were to change the character of the cemeteries~~y~~ in a way that would compromise ~~its~~ their eligibility to be listed in the National Register, their existing historical resources, or nearby historical resources. However, construction of GSR facilities at Sites 8 and 17 (Alternate), the closest sites to the Holy Cross and Cypress Lawn cemeteries~~y~~, would have no effect on historic resources, so there would be no cumulative impact on the Holy Cross Cemetery District or the Cypress Lawn Memorial Park District. There are no other cumulative projects with the potential to affect historical resources (*no impact*).

City staff has revised the reference list on page 5.5-66 of the Draft EIR to correctly reflect the references in the cultural resources report prepared for the Project:

5.5.1 References

Broughton, J.M. ~~1999~~ 1995. *Resource Depression and Intensification during the Late Holocene, San Francisco Bay: Evidence from the Emeryville Shellmound Vertebrate Fauna.* University of California Publications Anthropological Records 32.

Davis, J.T. ~~1961~~ 1974. *Trade routes and economic exchange among the Indians of California*. Reports of the University of California Archaeological Survey 54. 1-71.

~~Dun and Company. 1889. *Dun's Mercantile Agency Reference Book*. Dun and Company, New York.~~

~~Dun and Company. 1901. *Dun's Mercantile Agency Reference Book*. Dun and Company, New York.~~

Gifford, Edward W. ~~1955~~ 1950. *Central Miwok Ceremonies*. University of California Publications in American Archaeology 1 (1).

Heizer, R.F. and W.C. Massey. ~~1951~~ 1953. *Aboriginal navigation off the coasts of upper and Baja California*. Anthropological Papers 39, Bureau of American Ethnology Bulletin 151. 285-312.

Hittell, Theodore H. ~~1897~~ 1898. *History of California*. Vol. I. N.J. Stone & Co., San Francisco.

Mason, J.A. ~~1916~~ 1912. *The Mutsun dialect of Costanoan based on the vocabulary of de la Cresta*. University of California Publications in American Archaeology and Ethnology 11(7). 399-472.

~~Nelson, N.C. 1910. *Manuscript #11, Pertaining to Archaeological Investigations at CA-SFR-7, the Crocker Site*. Unpublished data on file at the Archaeological Research Facility, University of California at Berkeley.~~

9.5.8 Transportation and Circulation

City staff has revised the header of Table 5.6-9 (Cumulative Traffic Peak Hour Construction Trips) on page 5.6-63 in Section 5.6, Transportation and Circulation of the Draft EIR to correct typographical errors:

TABLE 5.6-9
Cumulative Traffic Peak Hour Construction Trips(a)

Local Roadway Segment	Well Replacement SSF1-25 (Cal Water) (G~~H~~)(b)	PG&E Transmission Pipeline Replacement (H~~I~~)(b)	Centennial Village (I~~J~~)(b)

In response to Comment OV-1, Impact C-TR-1 on page 5.6-60 of the Draft EIR is revised as follows:

Conflict with a plan or policy regarding performance of the traffic system

Most of the cumulative projects listed on Table 5.1-3 (Projects Considered for Cumulative Impacts), in Section 5.1, Overview, Section 5.1.7 (Cumulative Impacts) would result in construction-related incremental vehicle trip additions to the local roadways in northern San Mateo County if construction of these projects were to occur at the same time as construction of the GSR Project. For example, the SFPUC's Peninsula Pipelines Seismic Upgrade Project would, at its Colma and South San Francisco sites, as well as the Baden Valve Lot staging area (cumulative projects D-1, D-2, and D-3, respectively), use similar construction traffic routes as GSR Sites 8, 12, 17 (Alternate), and 19 (Alternate). The Cypress Lawn Cemetery Expansion Project (cumulative project K) could also potentially use similar construction traffic routes as GSR Site 17 (Alternate). The Daly City "A" Street Well Replacement Project (cumulative project C) could be constructed during the same timeframe as the GSR Project and may overlap with construction of GSR Sites 5, 6, and 7. The Cal Water Well Replacement SSF1-25 Project (cumulative project G) and the PG&E Transmission Pipeline Replacement Project in South San Francisco (cumulative project H) could overlap GSR construction at Sites 11, 12, and 19 (Alternate), and the construction access routes may be the same for both projects. Also, the GGNC Irrigation Well Re-establishment Project (cumulative project J) would use similar construction traffic routes as GSR Sites 14 and 15. In addition to the projects listed, it can be reasonably assumed that traffic volumes throughout the cumulative study area may increase slightly by the time GSR Project construction occurs in 2014 and 2015.

In response to Comment OV-1, Table 5.6-9 (Cumulative Traffic Peak Hour Construction Trips) on pages 5.6-63 and 5.6-64 of the Draft EIR is revised as follows:

TABLE 5.6-9
Cumulative Traffic Peak Hour Construction Trips

Local Roadway Segment	GGNC Irrigation Well Re-establishment Project (J)[b]	Cypress Lawn Cemetery Expansion Project (K)[b]	Total Peak Hour Trips
Collins Avenue from Serramonte Boulevard to El Camino Real	6	---	~~12~~ 18
Sneath Lane from I-280 to El Camino Real	---	5	5

In response to Comment OV-1, Table 5.6-10 (Local Roadway Project plus Cumulative Projects Level of Service) on pages 5.6-65 and 5.6-66 of the Draft EIR is revised as follows:

TABLE 5.6-10
Local Roadway Project plus Cumulative Projects Level of Service

Roadway Segment	Closest Project Facility Sites	Existing plus Project[a]				Existing plus Project plus Cumulative Projects[b]				Local LOS Standard[c]
		V/C Ratio		LOS		V/C Ratio		LOS		
		A.M. Peak	P.M. Peak	A.M. Peak	P.M. Peak	A.M. Peak	P.M. Peak	A.M. Peak	P.M. Peak	
Collins Avenue from Serramonte Boulevard to El Camino Real	17 (Alt)	0.24	0.27	A	A	0.27~~6~~	0.30	A	A	D
Sneath Lane from I-280 to El Camino Real	14, 15	0.51	0.51	A	A	0.54	0.54	A	A	D

9.5.9 Noise and Vibration

In response to Comment OV-1, Table 5.7-13 (Summary of Impacts – Noise and Vibration) on page 5.7-30 of the Draft EIR is revised as follows:

TABLE 5.7-13
Summary of Impacts – Noise and Vibration

	Cumulative
Site	**Impact C-NO-1: Construction and operation of the proposed Project could result in a cumulatively considerable contribution to cumulative impacts related to noise.**
Site 15	LSM

In response to Comment NO-1, the second paragraph of Mitigation Measure M-NO-1 on page 5.7-45 of the Draft EIR is revised as follows:

> The SFPUC will retain a qualified noise consultant to prepare a Noise Control Plan and the SFPUC will approve the Noise Control Plan and ensure that it is implemented to reduce construction noise levels at nearby noise-sensitive land uses to meet the ~~following~~ performance standards described below. Upon request, the SFPUC will provide a copy of the completed Noise Control Plan to the jurisdictions listed below~~:~~

In response to Comment NO-1, the first paragraph of Mitigation M-NO-3 (Expanded Noise Control Plan) on page 5.7-78 of the Draft EIR is revised as follows:

> In addition to the requirements of Mitigation Measure M-NO-1 (Noise Control Plan) under Impact NO-1, the SFPUC will require that its construction contractor prepare and implement an Expanded Noise Control Plan to further reduce construction noise levels at nearby noise-sensitive land uses. The SFPUC will provide a copy of the completed Expanded Noise Control Plan to jurisdictions upon request. Construction noise shall not exceed the following performance standards as measured at the exterior of the closest sensitive receptor: If noise measurements are not permitted at the exterior of the sensitive receptor's location, the SFPUC shall take noise measurements and then estimate the noise level at the sensitive receptor by adjusting for the attenuation across the additional distance. If there is any conflict between Mitigation Measure M-NO-1 (Noise Control Plan) and Mitigation Measure M-NO-3 (Expanded Noise Control Plan), the most stringent requirement would be applicable.

In response to Comment OV-1, Impact C-NO-1 on pages 5.7-95 through 5.7-98 of the Draft EIR is revised as follows:

- **Colma**. Peninsula Pipelines Seismic Upgrade Project (PPSU) at the Colma Site (cumulative project D-1)~~,~~ ~~and~~ Holy Cross Cemetery Expansion Project (cumulative project E), and Cypress Lawn Cemetery Expansion Project (cumulative project K). Construction at cumulative project D-1 and K may conflict with the Colma Municipal Code, but construction at cumulative project E (Holy Cross Cemetery Expansion) would be located far enough away from residences that it likely would not conflict with the Town's Municipal Code.

- **San Bruno**. GGNC Irrigation Well Re-establishment Project (cumulative project J). Construction at cumulative project J could conflict with the San Bruno Municipal Code, which regulates the maximum noise levels in residential zones.

The cumulative projects listed above are in proximity to Sites 5, 8, 9, 11, 12, 13, 14, 15, 17 (Alternate), and 19 (Alternate), all of which except for Sites 5 and 15 have potentially significant noise impacts during construction. For Site 14, no cumulative effects would occur because construction would not occur at the same time as cumulative project J. For the other sites, ~~Therefore,~~ cumulative impacts related to exposure of people to noise levels in excess of standards established by local general plan or noise ordinance, or applicable standards of other agencies would be significant, and the GSR Project's contribution could be cumulatively considerable, given that GSR Sites 8, 9, 11, 12, 13, 17 (Alternate), and 19 (Alternate) would have *significant* construction noise impacts.

Of the GSR sites that would be in close proximity to cumulative projects within San Bruno, GSR Project construction would result in a less-than-significant impact at Site 15 related to conflicts with the San Bruno noise ordinance. Cumulative impacts could be significant, and the GSR Project's contribution to the identified significant cumulative noise impact in San Bruno could be cumulatively considerable. However, as discussed in Impact NO-1, the GSR Project's construction impacts related to conflict with the San Bruno noise ordinance would be reduced to a less-than-significant level with implementation of Mitigation Measure M-NO-1 (Noise Control Plan) (see Impact NO-1, above, for description). Implementation of this mitigation measure would ensure that construction activities (other than well drilling and testing) would occur during allowable hours and that noise levels from construction would be reduced below the noise ordinance threshold during construction of the GSR Project. With implementation of this mitigation measure, the GSR Project's contribution to cumulative impacts related to a conflict with the San Bruno noise ordinance would not be cumulatively considerable (*less than significant*).

Temporary increase in ambient noise levels

Of the GSR sites in close proximity to cumulative projects, GSR Project-related daytime and nighttime construction (as discussed under Impact NO-3) would cause *less-than-significant* temporary noise impacts at Site 8 and *significant* impacts at Sites 5, 9, 11, 12, 13, 14, 15, 17 (Alternate), and 19 (Alternate). For Site 14, no cumulative effects would occur because construction would not occur at the same time as cumulative project J. In the case of other listed sites, it is assumed that construction of some of the cumulative projects listed in Table 5.1-3 (Projects Considered for Cumulative Impacts) would also result in a substantial temporary increase in ambient noise levels in the Project vicinity above levels existing without these cumulative projects.

Construction of the proposed GSR facilities at Site 15 would cause significant temporary noise impacts during the nighttime construction activities by increasing noise levels at the nearest residences of up to 58 dBA which would exceed the nighttime sleep interference threshold. However, as discussed in Impact NO-3, the GSR Project's construction-related noise impacts at Site 15 would be reduced to a less-than-significant level with implementation of Mitigation Measures M-NO-1 (Noise Control Plan) and M-NO-3 (Expanded Noise Control Plan) (see Impact NO-3, above, for description), and the Project's contribution to cumulative impacts related to noise during construction at Site 15 would not be cumulatively considerable *(less than significant).*

9.5.10 Recreation

In response to Comment RE-1, footnote 1 on page 5.11-3 in Section 5.11, Recreation of the Draft EIR is revised as follows:

[1] City Datum is a measurement system that has been used at Lake Merced since at least 1926 and is used throughout this document for Lake Merced water levels. The City Datum does not represent the depth of the lake. An elevation of 0 feet City Datum is equal to 11.37 feet above mean sea level (NAVD 88) and ~~8.57~~ 8.62 NGVD 29. Since mean sea level is equivalent to 0 feet NGVD 29, a lake level of ~~8.57~~ -8.62 City Datum is equal to mean sea level, and negative lake elevations above this level are not below mean sea level.

9.5.11 Biological Resources

City staff has revised page 5.14-13 in Section 5.14, Biological Resources of the Draft EIR as follows to include an additional State-threatened species with the potential to occur near Lake Merced:

5.14.1.5 Special-status Animal Species

Based on a review of the CNDDB (CDFG 2011f), the potential for occurrence of 51 special-status animal species in the study area was evaluated. A summary of the formal status, habitat affinities, reported localities close to the facility vicinity, and potential for occurrence within the study area for each of the 51 special-status animal species is presented in Appendix F (Special-status Species Tables), of this EIR. Of the 51 species, 13 species are federally or State-listed species and none of the listed species have suitable habitat within the Project area or study area. The white-tailed kite, a fully protected species under the CFGC, may occur within the facility sites. In addition, the bank swallow, a State-threatened species, nests near Fort Funston, and Lake Merced is an important foraging ground. Of the remaining non-listed, special-status species, the presence of eight other species could not be ruled out, due to the presence of suitable habitat at one or more of the facility sites. The potentially occurring species are listed in Table 5.14-2 (Special-status Animal Species Potentially Occurring within or near Facility Sites or at Lake Merced), and each species is discussed in more detail following the table.

City staff has revised Draft EIR page 5.14-19, Table 5.14-2, as follows to provide information on the bank swallow, which has the potential to occur near Lake Merced:

• **TABLE 5.14-2**
Special-status Animal Species Potentially Occurring within or near Facility Sites[(a)] or at Lake Merced

Common Name	Scientific Name	Location
State-listed Species		
bank swallow	*Riparia riparia*	Lake Merced

City staff has revised Draft EIR page 5.14-20 as follows to include a discussion on the bank swallow, which has the potential to occur near Lake Merced:

• *Bank Swallow*

The bank swallow is listed as a state threatened species. The bank swallow is a colony nester on sandy cliffs near water, marshes, lakes, streams, and the ocean. No suitable nesting habitat is present near GSR well facilities, however, Lake Merced is an important foraging ground for bank swallows nesting at Fort Funston.

City staff has revised Draft EIR pages 5.14-21 and 5.14-22 as follows to correct the discussion of double-crested cormorants:

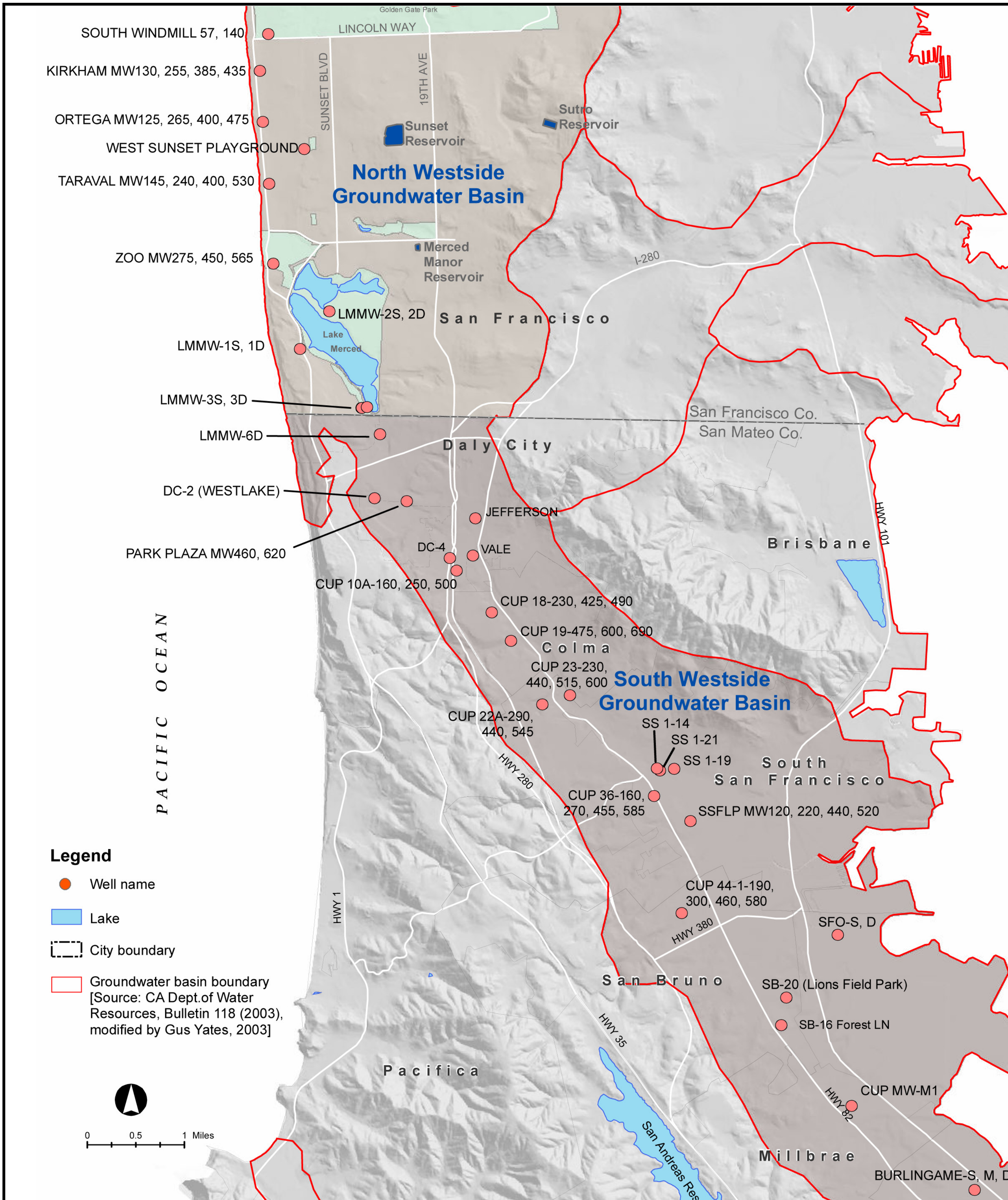
• *Migratory and Special-status Birds*

Several non-special-status migratory birds could nest in or adjacent to Lake Merced. Several raptors are known to nest in San Francisco, including red-tailed hawk (*Buteo jamaicensis*) red-shouldered hawk (*Buteo lineatus*), American kestrel (*Falco sparverius*), Cooper's hawk (*Accipiter cooperi*) and great horned owl (*Bubo virginianus*). In addition, saltmarsh common yellowthroats (*Geolthlypis trichas sinuosa*) (a former federal species of concern and current California species of special concern) are known to nest in the wetlands along the periphery of Lake Merced (CDFG 2011e), and there ~~is a~~ are three double-crested cormorant (*Phalacrocorax auritus*) ~~rookery~~ rookeries in trees at Lake Merced (SFRPD 2006). Additional native birds may also nest in the area. The federal Migratory Bird Treaty Act (MBTA) and CFGC protect raptors and most native migratory birds and breeding birds (see Section 5.14.2 [Regulatory Framework] below).

Draft EIR Figure 5.14-7 (Site 9, Treasure Island Trailer Court, Jurisdictional Waters) has been updated in response to Comment PD-5; the revised figure is presented in Section 9.3.3, Project Description, of this Responses to Comments document.

9.5.12 Hydrology and Water Quality

City staff has revised Figures 5.16-3 (Groundwater Quality Monitoring Network) and 5.16-4 (Groundwater Elevation Monitoring Network) on pages 5.16-15 and 5.16-17 in Section 5.16, Hydrology and Water Quality, of the Draft EIR to update the cited source:



Groundwater Quality Monitoring Network

Regional Groundwater Storage and Recovery Project

Figure 5.16-3 REVISED

Source: SFPUC 2012e

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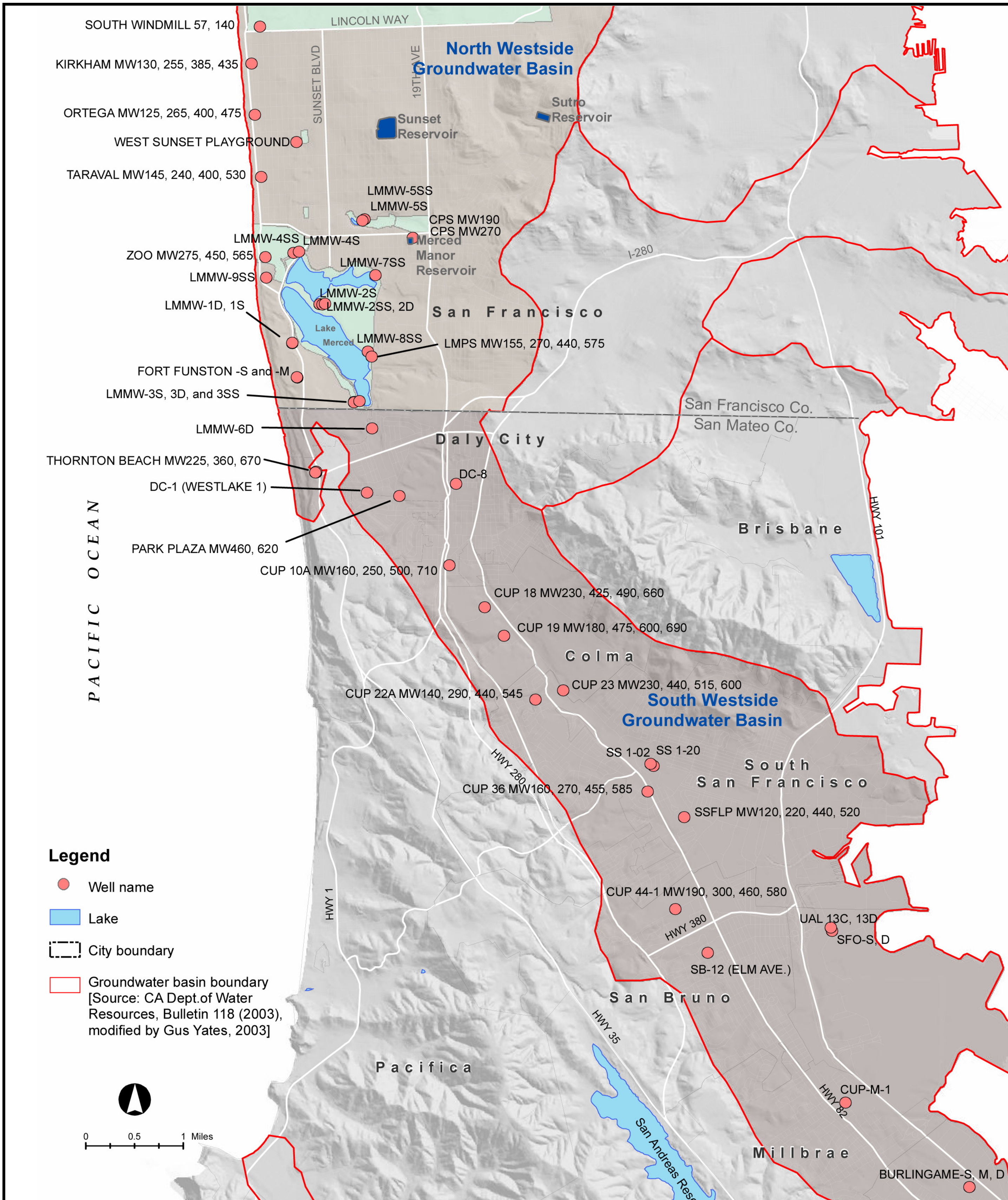

Groundwater Elevation Monitoring Network

Regional Groundwater Storage and Recovery Project

Figure 5.16-4 REVISED

Source: SFPUC 2012e

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In response to Comment RE-1, footnote 8 on page 5.16-30 of the Draft EIR is revised as follows:

> [8] City Datum is a measurement system that has been used at Lake Merced since at least 1926 and is used throughout this document for Lake Merced water levels. The City Datum does not represent the depth of the lake. An elevation of 0 feet City Datum is equal to 11.37 feet above mean sea level (NAVD 88) and ~~8.57~~ 8.62 NGVD 29. Since mean sea level is equivalent to 0 feet NGVD 29, a lake level of ~~8.57~~ -8.62 City Datum is equal to mean sea level, and negative lake elevations above this level are not below mean sea level.

Beginning at the bottom of page 5.16-49 and carrying over into page 5.6-60, City staff has revised the Draft EIR as follows to correct the discussion on stormwater permits:

> The SWPPP must demonstrate that calculations and design details, as well as BMP controls for site runoff, are complete and correct. Non-stormwater discharges include those from improper dumping, accidental spills, and leakage from storage tanks or transfer areas. The Construction General Permit specifies minimum BMP requirements for stormwater control based on the risk level of the site. Post-construction stormwater runoff reduction requirements must be implemented at project sites not covered by a Phase I or Phase II municipal stormwater permit. The post-construction stormwater standards address water quality, runoff reduction, drainage density, and channel protection requirements for the receiving water. San Mateo County, including the Project area, is covered under a Phase I municipal stormwater permit. ~~Thus,~~Pursuant to the Construction General Permit the Project would ~~not~~ be subject to the post-construction stormwater standards specified in the ~~Construction General Permit~~Municipal Regional Stormwater Permit (Order No. R2-2009-0074).

In response to Comment HY-9, Section 5.16.2 (Regulatory Framework) on page 5.16-50 of the Draft EIR is revised as follows to include a new paragraph under Section 5.16.2.1, Federal and State Regulations:

> *Exercise of Overlying Groundwater Rights by Property Owners*
>
> Under California water rights law, landowners whose lands overlie an aquifer have overlying groundwater rights to pump as much water as is necessary to serve reasonable beneficial uses on their overlying property. Large property owners in the vicinity of Project wells that are currently exercising their overlying groundwater rights to the Westside Groundwater Basin for irrigation and other beneficial uses are listed in Table 5.16-8 (Existing Irrigators' Wells Identified as a Primary, Active, or Secondary Well that May Be Affected by the Project).

City staff has revised Draft EIR page 5.16-50, Section 5.16.2.2 (Local Regulations), as follows to correct the discussion on stormwater permits:

> ***5.16.2.2 Local Regulations***
>
> *San Mateo Countywide Water Pollution Prevention Program*

The San Mateo Countywide Water Pollution Prevention Program (SMCWPPP) helps municipalities and unincorporated areas to comply with the countywide NPDES permit by ensuring that new development and redevelopment projects mitigate, to the maximum extent practicable, stormwater runoff impacts on water quality during both construction and operation of projects. As mentioned above, RWQCB Order No. R2-2009-0074 (Order) regulates discharges of stormwater water from municipalities in San Mateo County (RWQCB 2009b). Individual project sites creating more than ~~10,000~~5,000 square feet of new impervious cover are subject to the "C.3" requirements established in Section C.3 of the Order and required to mitigate for water quality, including stormwater treatment measures to minimize stormwater pollutant discharges. In addition, development sites that create or replace one acre or more of impervious service may be subject to flow and volume reduction requirements. None of the GSR facility sites would create more than ~~10,000~~5,000 square feet of new impervious cover and, therefore, are not subject to the C.3 requirements, nor to the flow and volume reduction requirements.

In response to Comment HY-8, page 5.16-51 of the Draft EIR is revised to include a new footnote, as follows:

- Deplete groundwater supplies or interfere with groundwater recharge in a manner that would result in a substantial regional deficit in aquifer storage that would not support existing or planned land uses[15a].

  [15a] The phrase in the CEQA Guidelines Checklist question (b) from IX. Hydrology and Water Quality, "or interfere substantially with groundwater recharge" was not included in the significance criterion, because, given the small size of the proposed facilities, their proposed locations in urban areas, the proposed use of pervious paving for some access driveways and parking areas, and the existing stormwater runoff regulatory requirements, it is not reasonable to assume that the Project would result in a substantial regional deficit in aquifer storage due to substantial interference with groundwater recharge.

In response to Comment HY-15, Table 5.16-7 (Summary of Hydrology and Water Quality Operational and Cumulative Impacts relative to Proposed Project Pumping and In-lieu Recharge) in Section 5.16.3.4 (Summary of Impacts), on page 5.16-61, is revised as follows:

TABLE 5.16-7
Summary of Hydrology and Water Quality Operational and Cumulative Impacts relative to Proposed Project Pumping and In-lieu Recharge

Impact	Significance Level
Project Operational Impacts	
Impact HY-6: Project operation would decrease the production rate of existing nearby irrigation wells due to localized groundwater drawdown within the Westside Groundwater Basin such that existing or planned land use(s) may not be fully supported.	~~SUM[(a)]~~ LSM
Operational Cumulative Impacts	
Impact C-HY-2: Operation of the proposed Project would result in a cumulatively considerable contribution to cumulative impacts related to well interference.	~~SUM[(a)]~~ LSM

~~Notes:~~

~~(a) Implementation of Mitigation Measure M-HY-6 (Ensure Existing Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use Due to Project Operation) depends in part upon the willingness of the well owner to participate in the monitoring program. Therefore, while Mitigation Measure M-HY-6 could reduce the impacts of well interference to a *less-than-significant* level, its implementation cannot be assured at this time. As a result, Impact HY-6 is conservatively categorized as *significant and unavoidable with mitigation*.~~

LS = Less than Significant Impact, LSM = Less than Significant with Mitigation~~, SUM=Significant and Unavoidable Impacts~~

In response to Comment HY-3, Mitigation Measure M-HY-1 (Develop and Implement a Storm Water Pollution Prevention Plan [SWPPP] or an Erosion and Sediment Control Plan), on page 5.16-63 of the Draft EIR, is revised as follows:

Mitigation Measure M-HY-1: Develop and Implement a Storm Water Pollution Prevention Plan (SWPPP) or an Erosion and Sediment Control Plan (All Sites)

Consistent with the requirements of the NPDES General Permit for Storm Water Discharges Associated with Construction Activity, at sites where more than one acre of land disturbance would occur (Sites 3, 4, 5, 6, 7, 12, 13, and 14), the SFPUC or its contractor(s) shall develop a Storm Water Pollution Prevention Plan (SWPPP), submit a notice of intent to the SWRCB's Division of Water Quality and implement site-specific BMPs to prevent discharges of nonpoint-source pollutants in construction-related stormwater runoff into downstream water bodies.

At sites where less than one acre of land disturbance would occur (Sites 1, 2, 8, 9, 10, 11, 15, 16, 17 Alternate, 18 Alternate, 19 Alternate, and the Westlake Pump Station), the SFPUC or its contractor(s) shall prepare and implement Erosion and Sediment Control Plans (ESCPs).

Based on the location of the sites, the SFPUC shall provide the SWPPPs and ESCPs to applicable jurisdictions, including the County of San Mateo, San Mateo County Flood Control District, City of Daly City, Town of Colma, City of South San Francisco, City of San Bruno, and City of Millbrae.

In response to Comment HY-3, Mitigation Measure M-HY-2 (Management of Well Development and Pump Testing Discharges) on page 5.16-67 of the Draft EIR is revised as follows:

Mitigation Measure M-HY-2: Management of Well Development and Pump Testing Discharges (All Sites, Except Westlake Pump Station)

To address potential impacts on receiving water quality that could result during the construction period related to well development and pump testing, the SFPUC and its contractor shall: 1) prepare and implement a site-specific discharge plan; and 2) fully comply with NPDES requirements.

The discharge plan shall specify how the water will be collected, contained, treated, monitored, and discharged to the vicinity storm drainage system or sanitary sewer system. Discharges to storm drains are subject to review and approval by the RWQCB. Based on the location of the sites, the SFPUC shall provide the discharge plans to applicable jurisdictions, including the County of San Mateo, San Mateo County Flood Control District, City of Daly City, Town of Colma, City of South San Francisco, City of San Bruno, and City of Millbrae.

In response to Comment HY-5, Mitigation Measure M-HY-2 (Management of Well Development and Pump Testing Discharges) on page 5.16-68 of the Draft EIR is revised as follows:

> The proposed discharge is anticipated to be conditionally covered under San Mateo County's municipal stormwater permit (Order No. ~~99-059~~ R2-2009-0074, NPDES Permit No. ~~CAS002992~~ CAS612008), contingent upon compliance with certain conditions (RWQCB 2009b, 2012). Prior to any discharge to a storm drainage system, the SFPUC and its contractor shall request a determination from the RWQCB as to the type of permit under which the Project effluent discharges will be regulated.

In response to Comment HY-15, Impact statement HY-6 on page 5.16-73 of the Draft EIR is revised as follows:

5.16.3.7 Operation Impacts and Mitigation Measures – Groundwater

> **Impact HY-6: Project operation would decrease the production rate of existing nearby irrigation wells due to localized groundwater drawdown within the Westside Groundwater Basin such that existing or planned land use(s) may not be fully supported. (Less than Significant ~~and Unavoidable~~ with Mitigation)**

In response to Comments AE-6 and CR-2, page 5.16-73 of the Draft EIR is revised as follows:

> If well interference were great enough, irrigation water currently supplied by existing irrigation wells could be decreased to the extent that existing land uses ~~irrigation uses,~~ such as ~~for~~ irrigated turf at cemeteries and at golf clubs, would not be fully supported. The quality of turf grass at cemeteries and golf clubs is an important component of the attractiveness of these facilities and hence for the economic viability and visual character of these land uses. In addition, failure to maintain landscapes at Cypress Lawn Memorial Park, Woodlawn Memorial Park, Greenlawn Memorial Park, Greek Orthodox Memorial Park, and the Golden Gate National Cemetery, could adversely affect the historic character of these identified cultural resources. Finally, ~~I~~insufficient irrigation water would result in a deterioration of existing turf grass and landscaping, affecting operating conditions at both golf clubs and cemeteries.

In response to Comment HY-21, Table 5.16-8 (Existing Irrigators' Wells Identified as a Primary, Active, or Secondary Well that May Be Affected by the Project) on page 5.16-80 of the Draft EIR is revised as follows:

TABLE 5.16-8
Existing Irrigators' Wells Identified as a Primary, Active, or Secondary Well that May Be Affected by the Project

Well Name	Top of Well Screen (feet below ground surface)	Rated Pump Capacity (gpm)
~~Cypress Lawn Memorial Park #3~~	~~191~~	~~INA~~
Cypress Lawn Memorial Park #4	~~330~~ 380	~~INA~~ 800

In response to Comment HY-21, Table 5.16-9 (Existing Irrigated Acreage and Estimated Peak Demand at Potentially Affected Land Uses) on page 5.16-81 of the Draft EIR is revised as follows:

TABLE 5.16-9
Existing Irrigated Acreage and Estimated Peak Demand at Potentially Affected Land Uses

Land Use	Irrigated Acerage (acres) [a]	Estimated Peak Demand (af per 12-hour period) [b]
Cypress Lawn Memorial Park	~~146~~ 209	~~2.2~~ 3.1

Note:
(a) Acreage from SFPUC 2010b
(b) The apparent discrepancy between Cypress Lawn's Estimated Peak Demand of 3.1 af per 12-hour period and 12-Hour Production Capacity for Existing Conditions of 1.8 af per 12-hour period would be evaluated as part of the Irrigation Well Monitoring and Reporting Program.

In response to Comments LU-5, AE-6, and CR-2, pages 5.16-82 and 5.16-83 of the Draft EIR are revised as follows:

Approach to Analysis

Well interference could occur due to Project-related pumping in a manner that would result in a lowering of the local groundwater to a level where the production rate of preexisting nearby wells would drop to a level that would not fully support existing or planned land uses. For purposes of this analysis, a significant impact would result if the Project were to cause groundwater levels to decrease such that (1) the pump discharge rates of existing irrigators' wells decrease substantially enough that existing or planned land uses would not be fully supported, or (2) groundwater levels fall below the top of the well screen of existing irrigators' wells, resulting in decreased pump discharge rates and potential damage to the well that are substantial enough that existing or planned land uses would not be fully supported. The former cause of well interference is analyzed quantitatively and the latter cause is analyzed qualitatively, as described below.

The well interference analysis presented in this section also applies to impacts to land use (Section 5.2, Land Use), aesthetics (Section 5.3, Aesthetics), and cultural resources (Section 5.5, Cultural Resources) that could result from insufficient water to support existing or planned land uses due to well interference caused by the Project.

In response to Comment HY-20, the third paragraph on page 5.16-84 of the Draft EIR is revised as follows:

If ~~primary, active, and secondary~~ existing irrigation wells, ~~together~~ as currently used by the irrigator, cannot supply the estimated peak demand for a land use over a 12-hour period (nighttime irrigation) ~~at the end of the design drought~~, due to well interference from the Project, then well interference impacts would be significant. In the case where the total capacity of existing primary~~,~~ and other active~~, and secondary~~ wells for a land use cannot supply the estimated peak demand under modeled existing conditions, the existing supply is only marginally adequate. Under these conditions, if well interference from the Project would cause any reduction in pumping capacity, the effect would be significant.

In response to Comment HY-21, Table 5.16-11 (Estimated Static and Pumping Depth to Water Levels at the End of the Design Drought) on pages 5.16-85 and 5.16-86 of the Draft EIR is revised as follows:

TABLE 5.16-11
Estimated Static and Pumping Depth to Water Levels at the End of the Design Drought

Existing Irrigators' Wells	Proposed GSR Sites Considered in Analysis at Existing Irrigators' Wells	Estimated Static Depth to Water (feet below ground surface)			Estimated Pumping Depth to Water (feet below ground surface)		
		Existing Conditions	With Project	Decrease from Project	Existing Conditions	With Project	Decrease from Project
~~Cypress Lawn Memorial Park #3~~	~~5-10~~	~~289~~	~~384~~	~~95~~	~~INA~~	~~INA~~	~~INA~~
Cypress Lawn Memorial Park #4	5-11	~~232~~ 257	~~330~~ 355	98	~~INA~~ 307	~~INA~~ 386	~~INA~~ 79

In response to Comments HY-20 and HY-21, Table 5.16-12 (Estimated Pump Discharge Rate at the End of the Design Drought) on page 5.16-87 of the Draft EIR and text at the bottom of page 5.16-87 are revised as follows:

TABLE 5.16-12
Estimated Pump Discharge Rate at the End of the Design Drought

Existing Irrigators' Wells	Existing Conditions (gpm)	With Project (gpm)	Percent Reduction due to Project
~~Cypress Lawn Memorial Park #3~~	~~INA~~	~~INA~~	~~INA~~
Cypress Lawn Memorial Park #4	~~INA~~ 800	~~INA~~ 500	~~INA~~ 38

If ~~primary, active, and secondary~~ existing wells, as currently used by the irrigator, ~~supporting a land use together~~ cannot supply the peak demand for that land use over a 12-hour period (nighttime irrigation) due to reduced pump discharge rates from the Project, then well interference impacts would be significant. For this analysis, Table 5.16-13 (Estimated Peak Demand and 12-Hour Production Capacities) compares the 12-hour production capacity at each golf club and cemetery to the estimated peak demand needed to maintain adequate irrigation for the land use.

In response to Comment HY-21, Table 5.16-13 (Estimated Peak Demand and 12-Hour Production Capacities) on page 5.16-88 of the Draft EIR is revised as follows:

TABLE 5.16-13
Estimated Peak Demand and 12-Hour Production Capacities (d)

Land Use	Estimated Peak Demand (af per 12-hour period	12-Hour Production Capacity for Primary, Active, and Secondary Wells (af)		Significant Impact relative to Pump Discharge Rates?	Significant Impact relative to Well Screen Elevations? (a)
		Existing Conditions	With Project		
Cypress Lawn Memorial Park	~~2.2~~ 3.1	~~INA~~ 1.8	~~INA~~ 1.1	~~INA~~ Yes	Yes

Note:
(d) The apparent discrepancy between Cypress Lawn's Estimated Peak Demand of 3.1 af per 12-hour period and 12-Hour Production Capacity for Existing Conditions of 1.8 af per 12-hour period would be evaluated as part of the Irrigation Well Monitoring and Reporting Program.

In response to Comment HY-21, Table 5.16-14 (Estimated Static and Pumping Depth to Water Levels at the End of the Design Drought) on page 5.16-89 of the Draft EIR is revised as follows:

TABLE 5.16-14
Estimated Static and Pumping Depth to Water Levels at the End of the Design Drought

Existing Irrigators' Wells	Top of Well Screen (feet below ground surface)	Static Water Level relative to Top of Well Screen (feet) [(a)]		Pumping Water Level relative to Top of Well Screen (feet) [(a)]	
		Existing Conditions	With Project	Existing Conditions	With Project
~~Cypress Lawn Memorial Park #3~~	~~191~~	~~-98~~	~~-193~~	~~INA~~	~~INA~~
Cypress Lawn Memorial Park #4	~~330~~ 380	~~98~~ 123	~~0~~ 25	~~INA~~ 73	~~INA~~ -6

In response to Comment HY-15, the "Approach to Mitigation" section and Mitigation Measure M-HY-6: Ensure Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use(s) Due to Project Operations in the Draft EIR on pages 5.16-93 through 5.16-100 are revised. For better clarity and readability, the replacement text below is not shown in both strikethrough and double underlined text. Instead, the Mitigation Approach and Effectiveness section and Mitigation Measure M-HY-6 are only shown in double underline text to indicate that they are completely revised.

Mitigation Approach and Effectiveness

As provided below, Mitigation Measure M-HY-6 (Ensure Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation) establishes a performance standard to ensure that well interference impacts caused by the Project would be avoided or reduced to *less-than-significant* levels. The purpose of the mitigation is to implement mitigation actions[2] in advance of any significant well interference impact.

The mitigation actions fall into three categories:

1. **Mitigation Actions under SFPUC Control.** These actions involve modifying the Project operations to reduce impacts, such as redistributing pumping, or reducing or ceasing pumping. These actions are described below in Mitigation Measure M-HY-6, mitigation actions #1 and #2.

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[2] The nine mitigation actions in Mitigation Measure M-HY-6 (Ensure Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation) are renumbered in the Responses to Comments document to list the mitigation actions under the SFPUC's control first, as indicated in Table RTC 9.3.14-1 (Renumbering of Mitigation Actions in Mitigation Measure M-HY-6).

2. **SFPUC Provision of a Replacement Water Supply.** The SFPUC would construct the facilities needed to implement this mitigation action in advance of Project operation so the replacement water would be available to any potentially affected irrigator in the event it is needed. The SFPUC would provide the replacement water to irrigators as needed, on a temporary basis until other mitigation is available, if one or both of the following occur: 1) if the SFPUC monitoring data shows that the Performance Standard will not be met and the SFPUC prefers to provide replacement water in order to meet the Performance Standard; or 2) an irrigator provides a written notice of unanticipated well capacity effects believed to be due to Project operation. This action is described below in Mitigation Measure M-HY-6, mitigation action #3.
3. **Mitigation Actions Requiring Agreement with Irrigators.** These actions require consultation and agreement with irrigators to modify irrigators' wells or irrigation systems. These actions are described below in Mitigation Measure M-HY-6, mitigation actions #4 through #9.

The mitigation measure requires an Irrigation Well Monitoring and Reporting Program to provide reliable and timely data to determine if the Project is predicted to result in reduced pumping capacities at irrigators' wells and whether the Performance Standard is being met. The measure requires the preparation of an Irrigation Well Monitoring and Reporting Program that will identify the frequency of data collection at irrigators' wells during Take, Hold, and Put Periods, data analysis, and reporting. The measure also requires the SFPUC to provide advanced notice to irrigation well owners regarding Project operations during Take Periods. If monitoring and reporting data indicate projected impacts due to the Project, the SFPUC will implement mitigation actions.

The following mitigation actions are described in Mitigation Measure M-HY-6:

Mitigation actions #1, Redistribute GSR pumping, and #2, Reduce GSR pumping, would reduce the rate of groundwater level decline in an affected area by redistributing Project pumping to other areas or by reducing Project pumping. However, in no case would redistribution be undertaken where the resulting groundwater levels would then decline to a level that would cause a significant well interference impact at another irrigation well. Therefore, redistribution would be effective at reducing well interference impacts at existing irrigation wells only if some Project wells are determined to be capable of producing more water with less drawdown than originally predicted (SFPUC 2012a, 2012c). Reduction or cessation of Project pumping would be effective at reducing well interference impacts at irrigation wells to less-than-significant impacts. Both redistribution and reduction or cessation of Project pumping would be interim measures, implemented until such time as an alternate mitigation action can be implemented that also mitigates the impact to *less-than-significant* levels.

Mitigation action #3, Replace irrigation water source, would provide a new source of water for irrigation on a temporary basis until other mitigation is available that would reduce well interference impacts at an irrigator's well to less-than-significant during the time that the replacement water is supplied. The SFPUC estimates that the replacement water supply would be provided on an interim basis for about one year or less, until an alternate mitigation action is in place (SFPUC 2014b). The SFPUC would terminate the provision of replacement water upon a determination that the Project is not causing the well interference effect or the SFPUC has implemented a permanent mitigation action or groundwater levels rise to a level where significant well interference impacts are no longer likely to occur.

Mitigation actions #4, Improve irrigation efficiency, and #5, Modify irrigation operations, would install measures such as more-efficient sprinkler heads or soil-moisture sensors and would modify operations, for example, through the use of longer irrigation cycles or revised scheduling of irrigation to respond to evapotranspiration data. These actions would tend to mitigate impacts if the irrigation well capacity were only slightly less than the Performance Standard due to Project pumping. Effectiveness of the actions would vary depending on the design of the existing irrigation system, and would not be expected to be feasible and effective in all cases. (SFPUC 2012c)

Mitigation actions #6, Lower pump in irrigation well, and #7, Lower and change pump in irrigation well, would lower the well pump to accommodate groundwater level fluctuations induced by Project pumping that exceed historic levels, or lower and replace the well pump using a more suitable pump for the conditions that are encountered in order to meet demands. These actions would mitigate impacts if the irrigation well capacity were moderately less than the Performance Standard due to Project pumping. Effectiveness of the actions would vary depending on the design of the existing irrigation well and type of pump used. The actions would also be dependent upon the existing irrigation well being deep enough to accommodate lowering of the pump. For this reason, these actions would not necessarily be feasible and effective in all cases. (SFPUC 2012c)

Mitigation action #8, Add storage capacity for irrigation supply, would add storage; for example, an above-ground tank of 20,000 gallons, which could be up to 20 feet in height. Increased storage capacity may provide the ability to meet peak flow rates that would otherwise be less than the Performance Standard, in that irrigators could store the additional water in the tank to use during the period of peak demand. It appears likely that each of the irrigators could feasibly place a tank on their property; however, increased storage may not be sufficient to meet the Performance Standard in the event of a large reduction in well capacity due to the Project. (SFPUC 2012c)

Mitigation action #9, Replace irrigation well, would be effective at any of the affected land uses, because the replacement well could be constructed deep enough at each of the cemeteries or golf clubs to operate under the new conditions and thereby meet peak irrigation demand. This mitigation action likely would be effective at any of the affected land uses, thereby meeting the Performance Standard and reducing well interference impacts to less-than-significant levels. This mitigation action likely would be feasible from the standpoint that each of the existing irrigator's well sites appears to have available areas in which a replacement well could be installed, and groundwater resources are deep enough in the area of each irrigator to drill deeper wells (SFPUC 2012c). The SFPUC or the irrigator would obtain well permits from the San Mateo County Department of Environmental Health, depending on the location of the replacement well. The County's well ordinances provide that granting of a well permit is dependent upon the well meeting the health, safety, and welfare of its citizens. Because wells that would be installed under Mitigation Measure M-HY-6 would replace existing and currently operational irrigation wells, it is expected that the required well permits would be issued by the County.

Mitigation actions that the SFPUC would implement if the Project would not otherwise meet the identified Performance Standard would vary depending on site-specific conditions at the irrigators' wells and a determination of the extent of the decrease in pumping capacity that is occurring due to Project operations. The list of mitigation actions includes actions by the SFPUC at the irrigators' wells and at the Project wells, and action by the SFPUC to make replacement water available on a temporary basis until other mitigation is available. Each mitigation action is intended to be suitable for feasibly addressing impacts on an irrigator's well, either alone or in combination with one or more of the other mitigation actions. Nevertheless, either one or a combination of the mitigation actions identified in Mitigation Measure M-HY-6 would feasibly reduce impacts to a *less-than significant* level.

Mitigation Measure M-HY-6: Ensure Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use(s) Due to Project Operation

This mitigation measure is organized into four sections, as follows:

- Performance Standard
- Method for Determining Whether Inability to Meet the Performance Standard at an Irrigator's Well Is Due to the Project
- Mitigation Actions to be Undertaken to Meet the Performance Standard
- Irrigation Well Monitoring and Reporting Program

Determinations required by this mitigation measure are subject to the concurrence of the San Francisco Planning Department's Environmental Review Officer (ERO) as identified below. The ERO may require the SFPUC to hire an independent expert to advise the ERO.

Performance Standard: The SFPUC shall ensure that existing irrigators' wells are not damaged, and that the production capacity at existing irrigators' wells is equivalent to either (1) the existing production capacity of the wells, or (2) is sufficient to meet peak irrigation demand at the existing and planned land uses, whichever is less, provided that any potential well damage or loss of capacity is determined to be caused by the Project.

If overlying irrigators install new wells to support irrigation needs of existing and planned land uses, at the time any such new wells are installed, the SFPUC shall add the new wells to the Irrigation Well Monitoring and Reporting Program and through the monitoring program and in consultation with the irrigator, establish the baseline production capacity for the new wells and determine peak irrigation demand needed to support the existing and planned land uses. The SFPUC shall then ensure that the new irrigators' wells are not damaged, and that the production capacity at the new irrigators' wells is equivalent to either (1) the baseline production capacity of the wells, or (2) is sufficient to meet peak irrigation demand at the existing and planned land uses, whichever is less, provided that any potential well damage or loss of capacity is determined to be caused by the Project.

The SFPUC shall ensure that the Performance Standard is met by: 1) undertaking actions under SFPUC control, such as redistributing pumping or reducing or ceasing pumping as described below in mitigation actions #1 and #2; or 2) making an SFPUC replacement water supply available to any potentially affected irrigator as described below in mitigation action #3, and 3) undertaking actions requiring agreement with irrigators, such as modifying irrigators' wells or irrigation systems as described below in mitigation actions #4 through #9. The SFPUC shall implement mitigation actions, individually or in combination, so that water supply provided to the land use is not interrupted.

Prior to Project operation, the SFPUC, working with any irrigators willing to be consulted, shall identify a well interference groundwater impact level for each existing irrigation well, based on available monitoring data from existing irrigation wells and considering well characteristics. The well interference groundwater impact level shall be the lowest groundwater level that will avoid conflict with the Performance Standard, and it will be established prior to Project operation. The well interference groundwater impact levels will be subject to concurrence by the ERO. If monitoring data and extrapolated trends predict that the well interference groundwater impact level would be reached within the ensuing six months due to Project operation, the SFPUC shall initiate implementation of one or more of the mitigation actions before the groundwater impact level is reached to allow sufficient time to have the most appropriate mitigation in place that would result in meeting the Performance Standard.

Method for Determining Whether Inability to Meet the Performance Standard at an Irrigators' Well(s) Is Due to the Project: An irrigator may provide written notice, supported by an expert determination, that the Project is causing observed unanticipated well capacity effects; or the SFPUC may anticipate based on monitoring data that the Performance Standard will not be met at a future date based on Project operation. The SFPUC will use best efforts to provide a minimum of six months written notice to irrigators that monitoring shows a trend that the Performance Standard may not be met. The procedure for determining if the effect is due to the Project, and the SFPUC response, is as follows.

A. Presumption of Effect

Any observed inability to meet the Performance Standard at an irrigation well(s) is assumed to be caused by the Project if: 1) it is temporally correlated with the onset of increased Project pumping; 2) it occurs in an area predicted (by this EIR or by the SFPUC's ongoing monitoring) to be affected by well interference; 3) static groundwater levels have dropped; 4) pumping groundwater levels have not dropped more than static groundwater levels (if pumping groundwater levels drop more than static groundwater levels, it could indicate the drop in production capacity is due to increased well inefficiency unrelated to the Project); and 5) no other obvious and substantiated reason exists for these effects.

B. Information Required to Determine Effect

To support the determination as to whether an observed loss of pumping capacity is due to the Project, the SFPUC shall develop, and share with irrigation well owners at least the following information:

- *Item 1. Reduction of pumping capacity is temporally correlated with the onset of increased Project pumping.* The SFPUC shall develop a graph that shows the pumping of Project and Partner Agency wells within 1.5 miles of the irrigator's well over time, compared to the production capacity of the irrigator's well over the same period.

- *Item 2. Reduction of pumping capacity occurs in an area predicted to be affected by well interference.* The SFPUC shall calculate the cone of depression, using the same methodology as used in evaluating the impact in the EIR, at Project and Partner Agency wells within 1.5 miles of the irrigator's well, as well as at the irrigator's well.

- *Items 3 and 4. Static groundwater levels have dropped and pumping groundwater levels have not dropped more than static water levels.* The SFPUC shall develop a graph showing the difference between static and pumping water levels at the irrigator's well over time.

- *Item 5. Another substantiated reason exists for the inability to meet the Performance Standard.* If warranted, the SFPUC shall provide a written conclusion, based on verifiable evidence, that a reason other than the Project is causing the inability to meet the Performance Standard.

C. Process for Responding to Written Notice from Irrigator

1. If an irrigator submits a written notice requesting the SFPUC replacement water supply where they believe that the Project is causing observed unanticipated well capacity effects, the SFPUC shall provide SFPUC replacement water within 24 hours and then determine whether the Project is causing the effect within 30 days of providing the SFPUC replacement water.
2. If the SFPUC determines that the Project is not causing a conflict with the Performance Standard, an irrigator may object to the SFPUC determination within 30 days, and, if such an objection is received, the SFPUC shall make a final conclusion within 30 days of receipt of such objection. The determination whether or not the inability to meet the Performance Standard is due to the Project is subject to ERO concurrence. If the ERO concurs with the SFPUC's determination that the Project is not the cause of the effect, the SFPUC will provide the irrigator with 30 days' notice of the suspension of delivery of SFPUC replacement water supply, and all water previously delivered would be charged to the irrigator at the SFPUC retail rate. Any remaining dispute between the SFPUC and the irrigator may be resolved through voluntary mediation or arbitration; if the matter is submitted to mediation or arbitration, the SFPUC will continue to provide SFPUC replacement water until otherwise required by the mediation or arbitration.

D. SFPUC Response if Project is Causing Effect

If the SFPUC determines in response to a claim by an irrigator that the Project is causing the effect or the SFPUC predicts the effect, after first considering mitigation actions #1 - 3, the SFPUC shall recommend one or a combination of mitigation actions #4 – 9 to the irrigator. The SFPUC shall work with the irrigator to identify the appropriate mitigation action(s) for the affected irrigation well. The SFPUC shall carry out (or pay the irrigator to carry out) the mitigation action(s). The SFPUC shall continue to provide the SFPUC replacement water supply until the agreed upon mitigation action(s) is completed.

Mitigation Actions to be Undertaken to Meet the Performance Standard: Specific mitigation actions that may be required to ensure that the Performance Standard is met are listed below. In addition, the SFPUC may implement other, similar measures that the affected irrigator and the SFPUC agree will provide equally effective mitigation for well interference impacts. The determination that similar measures will provide equally effective mitigation is subject to ERO concurrence.

Mitigation actions fall into the following three categories:

_A._ Mitigation Actions under SFPUC Control

Mitigation Action #1: Redistribute GSR pumping. The SFPUC would redistribute Project pumping from affected areas to other areas; however, in no case would redistribution be undertaken where the resulting groundwater levels would then decline to a level that would cause a significant well interference impact at another irrigation well. This mitigation action is expected to be an interim measure, implemented until such time as an alternate measure can be implemented that also mitigates the impact to less-than-significant levels without compromising Project objectives. The periodic analyses of data from the Irrigation Well Monitoring and Reporting Program would continue while this action is undertaken. The action would cease when the data analysis demonstrates that the Performance Standard is met without continued redistribution of GSR pumping, or, if an interim measure, until an alternative measure is in place.

Mitigation Action #2: Reduce GSR pumping. The SFPUC would reduce Project pumping (including a cessation in Project pumping) at wells in the vicinity of affected irrigation wells. This mitigation action is expected to be an interim measure, implemented until such time as an alternate measure can be implemented that also mitigates the impact to less-than-significant levels without compromising Project objectives. The periodic analyses of data from the Irrigation Well Monitoring and Reporting Program would continue while this action is undertaken. The action would cease when the data analysis demonstrates that the Performance Standard is met without continued reduction of GSR pumping, or, if an interim measure, until an alternative measure is in place.

B. SFPUC Provision of a Replacement Water Supply

Mitigation Action #3: Replace irrigation water source. As part of the Project and prior to Project operation, SFPUC will install for irrigators new metered supply connections of SFPUC water from the SFPUC's regional water system or SFPUC will wheel SFPUC replacement water through the Cal Water distribution system to connections Cal Water provides to irrigators. Connections to the regional water system or distribution systems will consist of permanent below-ground connections.

Under this Mitigation Measure M-HY-6, the SFPUC shall provide the SFPUC replacement water to irrigators under two circumstances: 1) if an irrigator provides written notice to the SFPUC supported by an expert determination that the Project is causing observed unanticipated well capacity effects; or 2) if the SFPUC monitoring data show that the Performance Standard will not be met and the SFPUC prefers to provide SFPUC replacement water in order to meet the Performance Standard. The irrigator's expert determination will be a written professional opinion of a certified hydrogeologist or a professional engineer with expertise in groundwater hydrology, water supply wells, and water well technology. Under either of these circumstances, the SFPUC shall open the new standby supply connection to the irrigator to provide SFPUC water for irrigation to the irrigator. In the first instance where the SFPUC replacement water supply is provided in response to notice from an irrigator, the SFPUC shall continue to provide the SFPUC replacement water supply while it makes an initial determination regarding whether Project operation caused the observed effect and if required to do so by the mediation or arbitration in a case where it disputes whether the Project is causing the effect (as explained above under the heading, *Method to Determine Whether Inability to Meet the Performance Standard at an Irrigators' Well[s] Is Due to the Project*). In the event the SFPUC determines that the Project is causing the effect, or if the SFPUC provides the SFPUC replacement water supply because its monitoring predicts an effect, the SFPUC shall continue to provide the SFPUC replacement water supply as needed until it can implement another mitigation action. The SFPUC estimates that the SFPUC replacement water supply would be provided on an interim basis for about one year or less, until an alternative measure is in place.

If the SFPUC provides the replacement water on its own initiative or the irrigator requests the water and the Project is determined to have caused the effect, the SFPUC will charge for the water supply at the rate equivalent to the irrigator's cost of groundwater production, as adjusted annually for inflation using the Consumer Price Index or other agreed-upon index. If the irrigator requests the water and the Project is subsequently determined to have not caused the effect, then the SFPUC will charge for the replacement water supply at a rate equivalent to the regular SFPUC rate.

C. Mitigation Actions Requiring Agreement with Irrigators

Mitigation Action #4: Improve irrigation efficiency. The SFPUC would install or completely fund measures to reduce applied water demand through irrigation efficiency measures, such as installation of more efficient sprinkler heads or soil-moisture sensors.

Mitigation Action #5: Modify irrigation operations. The SFPUC would install or completely fund measures to reduce applied water demand through modification of irrigation operation, such as the use of longer irrigation cycles to meet the same irrigation demand or revised scheduling of irrigation to respond to evapotranspiration data, as appropriate given the affected land use.

Mitigation Action #6: Lower pump in irrigation well. The SFPUC would lower the pump or completely fund lowering the pump in an irrigator's well to accommodate water level fluctuations induced by Project pumping.

Mitigation Action #7: Lower and change pump in irrigation well. The SFPUC would lower and replace or completely fund the lowering and replacement of the well pump using a more suitable pump for the conditions that are encountered in order to meet irrigation demand.

Mitigation Action #8: Add storage capacity for irrigation supply. The SFPUC would add or completely fund storage (e.g., an above-ground tank with suitable shielding landscaping, if necessary) to offset reduced well capacity caused by Project operation. In such cases, the SFPUC shall obtain or pay the irrigator to obtain any necessary permits for the work.

Mitigation Action #9: Replace irrigation well. The SFPUC would replace an irrigators' well(s), remove above-ground pumping equipment for any replaced well(s) and properly close such wells in accordance with State and local law or completely fund the actions. The SFPUC or the irrigator would obtain well permits from the San Mateo County Department of Environmental Health. The replaced irrigation well will be included in the Irrigation Well Monitoring and Reporting Program and covered by the Performance Standard contained in this Mitigation Measure M-HY-6.

Irrigation Well Monitoring and Reporting Program: The SFPUC shall monitor and report short- and long-term changes in groundwater conditions and operations at irrigators' wells. All monitoring and data collection will be conducted as defined in the Irrigation Well Monitoring and Reporting Program. The SFPUC will provide advance notice to irrigation well owners regarding the start of Project operations during Take periods.

At least 18 months prior to start of Project operation, the SFPUC shall contact existing irrigators with information about the Irrigation Well Monitoring and Reporting Program. The monitoring program shall include the installation of a flow meter to allow for daily well production volumes to be recorded and a groundwater level transducer/data logger (a device for automatically detecting and recording groundwater levels) for measuring groundwater levels at the irrigators' wells. Baseline monitoring of flow meter data and groundwater level data in the irrigators' well shall be collected and reported to participating well owners as defined in the Irrigation Well Monitoring and Reporting Program. In addition to baseline monitoring of well production and groundwater levels, pumping tests at irrigators' wells shall be conducted prior to Project operation to collect baseline data on pump and well performance, and results shall be reported to irrigators. The pumping tests shall collect data on well capacity and drawdown, well specific capacity, pump efficiency and head-capacity characteristics, sand content, and may include selected water quality parameters.

The SFPUC shall also collect any existing information and data available regarding the irrigators' well(s) from the irrigator, including any estimates or measurements of historical, existing, and planned land and water use (e.g., driller's logs, water level data, pumping records, acres irrigated) to provide information upon which to evaluate the performance of the irrigators' well(s) over time and to establish baseline operating conditions. When there is an opportunity to open an existing irrigator's well (such as when a pump is removed by a well owner), the SFPUC may seek to conduct video log surveys in such wells to determine the condition of the well structure. The SFPUC may conduct periodic re-testing of a well as prompted by the need to evaluate performance throughout the life of the Project.

Following the start of Project operations, if there is uncertainty or disagreement about whether the Project is responsible for a loss in production capacity at an irrigator's well, the SFPUC shall undertake more frequent monitoring and/or testing and shall timely provide the well owner with all data, reports, and information collected concerning well production capacity.

Data from the water level transducers/data loggers and flow meters shall be recorded daily during the first year. Following the first year of data collection, the frequency may be modified (e.g., as prompted by a need to evaluate pump and/or well performance to determine effects of the Project), but in no case will data collection and recording take place less frequently than once per month during Take Periods. The SFPUC shall provide participants with 14-day advance notice for site visit(s), which would be scheduled within a 48-hour window.

Data shall be analyzed and reported to irrigators at a frequency identified in the Irrigation Well Monitoring and Reporting Program. Data analysis shall be conducted when production capacity can be compared to peak demand prior to the peak demand period, when pumping is underway during the beginning of the irrigation season, when groundwater levels will likely be lowest at the end of the peak irrigation season, and when production capacity of the well would be at its lowest.

The SFPUC's certified hydrogeologist or professional engineer with expertise in groundwater hydrology shall compile, analyze and report the collected data to participating irrigators within the timeframe identified in the Irrigation Well Monitoring and Reporting Program. In Project Put and Hold Periods, the SFPUC shall compile, analyze, and report the collected data to irrigators and the ERO at least once per year.

Monitoring of all irrigators' wells shall continue during the period that is the longer of: 1) 17 years (twice the 8.5-year design drought cycle analyzed in the EIR); or 2) the period including the first five Take Years of the Project beginning at the initiation of Project operation. After this initial period of monitoring, the SFPUC, in consultation with the irrigators, shall evaluate the effectiveness of the Irrigation Well Monitoring and Reporting Program and determine if data collection, monitoring, and reporting frequencies and other procedures should be revised or eliminated. Proposed changes to the Program, including a reduction in the frequency of monitoring, will be subject to ERO concurrence.

Impact Conclusion: Less than Significant with Mitigation

In response to Comment HY-24, page 5.16-104 of the Draft EIR is revised as follows:

The compressibility property of clay particles is one of the parameters required to perform the methodology described above. Knowledge of such values is limited and often imprecise; hence, so are the predictions of the extent of compaction and resulting subsidence. Site-specific laboratory test results of the compressibility of clays in the Westside Groundwater Basin were not available and, therefore, typical soil compressibility values of Santa Clara Valley sediments, which are more recent (than the Pleistocene age Merced Formation) and where historic subsidence has occurred, ~~Merced Formation (which underlies much of the Westside Groundwater Basin)~~ were used in the estimations of subsidence.

In response to Comment HY-36, page 5.16-130 of the Draft EIR is revised as follows:

Areas where existing groundwater levels are predicted to be below a depth of 70 feet under modeled existing conditions are evaluated differently from areas where existing groundwater levels are above a depth of 70 feet. A depth of 70 feet is selected because an assessment of contamination at PCAs found contamination ~~is assumed~~ to be limited nearly always to the top 50 feet below ground surface; the additional 20 feet serves as a buffer between the shallow groundwater zone level and contamination at the PCA to prevent mobilization of existing contaminants. (Kennedy/Jenks 2012e, SFPUC 2013b)

In response to Comment HY-33, pages 5.16-130 and 131 of the Draft EIR are revised as follows:

Some components of groundwater recharge can transport contaminants from the surface to the underlying regional aquifer system. The primary sources of groundwater recharge are vertical percolation of rainfall, applied irrigation water, subsurface inflow from surrounding areas and leakage from water supply and sewer pipes (HydroFocus 2011). Horizontal and vertical groundwater gradients can transport contaminants laterally between areas and downward to the underlying aquifer systems ~~assuming there is a hydraulic connection~~.

In response to Comment HY-33, Draft EIR page 5.16-131, second paragraph, is revised as follows:

Fine-grained, low permeability sediments are present between the shallow water-bearing zones and the ~~The~~ Primary Production Aquifer ~~is generally disconnected hydraulically from most occurrences of shallow groundwater zones~~ in the bulk of the South Westside Groundwater Basin ~~by an unsaturated zone and in most places by the presence of shallow fine-grained material~~.

In response to Comment HY-33, Draft EIR page 5.16-131, third paragraph is revised as follows:

Even though ~~permeability is reduced,~~ the shallow water-bearing zone and the Primary Production Aquifer are separated by low permeability sediments, they are ~~have limited~~ hydraulically connected~~ivity~~, and the GSR Project would therefore affect downward gradients and flow.

In response to Comment HY-33, Draft EIR page 5.16-135, third paragraph, is revised as follows:

The existing and potential shallow groundwater zone contamination would need to migrate down to the Primary Production Aquifer to affect the ability of SFPUC and Partner Agency wells to meet drinking water standards. Fine-grained, low permeability sediments are present between ~~T~~the shallow groundwater zone and Primary Production Aquifer ~~are generally disconnected hydraulically~~ in most areas; however, ~~in those areas where there may be some level of connection,~~ the two zones are hydraulically connected, and the Project would therefore affect downward gradients and flow.

In response to Comment HY-40, Table 5.16-16 (Predicted Groundwater Levels relative to Depth of Known Contamination), from pages 5.16-138 and 5.16-139 of the Draft EIR is revised as follows:

TABLE 5.16-16
Predicted Groundwater Levels relative to Depth of Known Contamination

Nearby Well	Predicted Groundwater Levels at Full SFPUC Storage Account: Modeled Existing Conditions Depth to Water (feet)[(a)]	Maximum Increase in Groundwater Level due to Project (feet)	Depth to Water with Project (feet)[(a)]	Are known PCAs present within 2,000-foot radius?	Deepest depth to water at known PCA within this radius (feet)[(b)]
Irrigation Wells					
San Francisco Golf Club #2	90	10	80	Yes	50
Olympic Club #8	85	12	75	Yes	50
Olympic Club #9	85	12	75	Yes	50
Lake Merced Golf Club #3	175	45	130	Yes	56
Woodlawn Memorial Park	200	30	190	Yes	21.8
Italian Cemetery	220	28	190	Yes	21.8
Eternal Home Cemetery	220	28	190	No	Not applicable
Olivet Memorial Park	210	22	190	No	Not applicable
Home of Peace, also serving Salem Cemetery and Hills of Eternity	200	15	185	No	Not applicable
Hills of Eternity Cemetery	200	15	185	No	Not applicable
Cypress Lawn Memorial Park #3	200	12	190	No	Not applicable
Cypress Lawn Memorial Park #4	190	9	180	No	Not applicable
Holy Cross Cemetery #1	150	7	145	No	Not applicable
Holy Cross Cemetery #4	155	8	145	No	Not applicable
California Golf Club #7	110	6	105	No	Not applicable

TABLE 5.16-16
Predicted Groundwater Levels relative to Depth of Known Contamination

Nearby Well	Predicted Groundwater Levels at Full SFPUC Storage Account				Deepest depth to water at known PCA within this radius (feet) [b]
	Modeled Existing Conditions Depth to Water (feet)[a]	Maximum Increase in Groundwater Level due to Project (feet)	Depth to Water with Project (feet) [a]	Are known PCAs present within 2,000-foot radius?	
California Golf Club #8	110	6	105	Yes	30.6

Source: Kennedy/Jenks 2012e

Note:

(a) Depth to water for both modeled existing conditions and the Project is rounded to the nearest five feet because the Westside Basin Groundwater Model is not as accurate for specific groundwater levels at specific sites as when it is used to calculate Project effects (see further explanation in Section 5.1.6 [Groundwater Modeling Overview]). Therefore, the values in the columns, "Modeled Existing Conditions Depth to Water" and "Maximum Increase in Groundwater Level due to the Project" may not add up exactly to the "Depth to Water with Project."

(b) This column provides the depth of contamination at known PCAs within 2,000 feet of each irrigation well listed. If more than one PCA is located within the 2,000-foot radius, only information on the deepest PCA is provided.

City staff has revised Draft EIR page 5.16-143, second to last paragraph, as follows to correct a typographical error:

> Groundwater depletion may have negative effects on the specific uses of groundwater to support existing or planned land uses; therefore, this EIR evaluates impacts separately on groundwater resources relative to well interference, subsidence, seawater intrusion, groundwater-surface water interactions, and water quality. Refer to Impacts HY-7 through ~~HY-14~~ HY-13 for specific evaluations of these other potential impacts.

City staff has revised Draft EIR page 5.16-145, second paragraph, as follows to correct typographical errors:

> The total decrease in groundwater storage volumes due to Project operation is predicted to result in a decline of approximately 416 afy more than under the modeled existing conditions (that is, without the Project). Over the 47-year simulation period, the total additional decline in groundwater storage is predicted to be approximately 20,000 af. This decline can be attributed to the fact that the storage efficiency of the Basin is less than 100 percent, that is, the stored groundwater naturally moves to other locations within the basin and/or out of the basin (e.g., water might move from an area of high groundwater levels to an area of low groundwater levels). Such movement of groundwater out of the Basin is known as "leakage." As described by Kennedy/Jenks (2012b), leakage would be highest when groundwater levels are highest (such as would be the case during prolonged Hold Periods) and lowest when groundwater levels are

lowest (such as would be the case during the design drought). The effect of these losses would be that not all of the water added into the SFPUC Storage Account during normal and wet periods would be available for pumping during dry periods. As described in Chapter 3, Project Description, Section 3.8.1 (Operating Agreement), this possibility would be accounted for under the proposed Operating Agreement, whereby the Operating Committee would monitor and track the SFPUC Storage Account, including any leakage from the Basin attributable to the Project ~~pumping~~.

In response to Comments HY-43 and HY-48, Mitigation Measure M-HY-14, on Draft EIR page 5.16-146, is revised as follows:

Mitigation Measure M-HY-14: Prevent Groundwater Depletion

The SFPUC and Partner Agencies shall pump from the SFPUC Storage Account only if a positive balance exists in the SFPUC Storage Account as a result of previous in-lieu recharge, taking into account any losses from the Basin resulting from the Project.

The SFPUC, working in conjunction with the GSR Operating Committee, shall develop and adopt an SFPUC Storage Account monitoring program that will determine the amount of water available for extraction from the SFPUC Storage Account and develop accounting rules that will account for losses from the Basin due to leakage, consistent with the terms of the Operating Agreement between the SFPUC and the Partner Agencies. The SFPUC shall develop the SFPUC Storage Account monitoring program to determine the balance in the SFPUC Storage Account based on actual experience operating in the Westside Groundwater Basin as proposed under the GSR Project. The SFPUC Storage Account monitoring program will use data from metered SFPUC in-lieu water deliveries to the Partner Agencies and regularly measured changes in groundwater elevations, and from the regional groundwater model during a series of Put, Take, and Hold Years to determine the volume of stored water ~~while developing R~~rules to account for losses in groundwater storage~~,~~ will be based on generally accepted principles of groundwater management. The following is an example of a methodology that the SFPUC, in coordination with the Partner Agencies, could use for determining the amount of water available for extraction taking into account losses from the Basin due to leakage:

Part A: For calculation of increases in the SFPUC Storage Account due to in-lieu deliveries and decreases in the SFPUC Storage Account due to Project pumping.

- A1. On an annual basis, the SFPUC would account for additions to the SFPUC Storage Account by calculating the amount of supplemental water it delivers to Partner Agencies.
- A2. On an annual basis, the SFPUC and the Partner Agencies would account for the amount of Project pumping that occurs.
- A3. The SFPUC would calculate a running total of the volume of water in the SFPUC Storage Account (before accounting for losses due to leakage) using data from items A1 and A2 above.

Part B: For calculation of decreases in the SFPUC Storage Account due to leakage from the Westside Groundwater Basin.

- B1. The SFPUC would use its monitoring network to record on a daily frequency, collect on a quarterly frequency, and compile on an annual basis, groundwater level measurements from its monitoring wells. This information would be used in item B4 below.

- B2. The SFPUC would subdivide the Westside Groundwater Basin into areas (subareas) which have similar geologic and groundwater level responses and similar influence on groundwater storage and calculate the areal extent of each subarea. (Note: subdividing the Westside Basin into subareas allows for a more accurate estimate of storage changes.)

- B3. The SFPUC would assign each of the subareas a storage coefficient value derived from short-term aquifer testing and interpretation of aquifer characteristics under longer-term recharge and pumping conditions.

- B4. The SFPUC would multiply changes in groundwater levels that occur during Hold Years in each subarea by the aquifer's storage coefficient value and areal extent of each subarea to quantify the change in aquifer storage that has occurred. This change in storage, if reflective of a decline in groundwater levels, would be equivalent to the "loss" that occurs in that subarea due to Basin leakage.

- B5. The SFPUC would calculate the sum of each subarea's change in storage, which would equal the total groundwater depletion that has occurred during Hold Years. The SFPUC would then subtract the total from the SFPUC Storage Account to derive an SFPUC Storage Account value that accounts for losses due to leakage from the Westside Groundwater Basin.

To replace water losses in the SFPUC Storage Account due to Basin losses, the SFPUC may deliver additional surface water to the Partner Agencies when surplus surface water is available, creating additional in-lieu recharge to the Westside Basin. This conversion of wet Hold Years to additional Put Years would offset the estimated losses from the Basin as a result of the Project by reducing Partner Agency pumping from their existing wells during those years. Such additional surface water deliveries to the Partner Agencies shall not increase storage in the SFPUC Storage Account above 60,500 af.

The GSR wells shall only be pumped when there is a positive balance in the SFPUC Storage Account, which will be adjusted for losses from the Basin due to leakage caused as a result of the Project. If the additional in-lieu recharge is not sufficient to offset losses identified by the Operating Committee as caused by storage losses from the basin, the GSR wells will only be operated to extract the volume of water in the SFPUC Storage Account.

In response to Comment OV-1, Impact C-HY-1 on page 5.16-147 of the Draft EIR is revised as follows:

Degradation of Water Quality

Construction activities associated with the GSR Project could result in the degradation of water quality from increased soil erosion and associated sedimentation of water bodies, as well as an accidental release of hazardous materials, as analyzed above in Impact HY-1. The discharged groundwater from GSR well development, well pumping tests, initial disinfection, and excavation dewatering could also result in increased sources of silt-laden runoff resulting in on- or off site erosion or siltation and/or the violation of water quality standards and degradation of water quality (Impact HY-2). It is assumed that several of the cumulative projects listed in Table 5.1-3 (Projects Considered for Cumulative Impacts), particularly those projects located in close proximity to the proposed well sites, could adversely affect some of the same water bodies during construction. In particular, the proposed SFPUC Peninsula Pipelines Seismic Upgrade (PPSU) Project (cumulative project D-1 through D-3) includes seismic upgrades to SFPUC existing pipelines that deliver water from the Harry Tracy Water Treatment Plant to the regional water system. Pipeline work for the PPSU Project would occur within the construction boundaries of GSR Sites 8 and 17 (Alternate). The proposed Cypress Lawn Cemetery Expansion Project (cumulative project K) may occur immediately adjacent to GSR Site 17 and about 700 feet away from GSR Site 8. Construction of the PPSU Project and the GSR Project would overlap geographically and may use some of the same staging areas during construction, and construction of the Cypress Lawn Cemetery Expansion could occur at the same time in the same geographic area. Therefore, cumulative impacts from the proposed SFPUC PPSU Project and the Cypress Lawn Cemetery Expansion Project related to surface water quality and sedimentation, such as potential erosion from vegetation removal, grading, and excavation, could be significant, and the GSR Project's contribution to this cumulative impact could be cumulatively considerable given that its construction has the potential to result in significant construction-related water quality impacts.

In response to Comment OV-1, Impact C-HY-1 on page 5.16-148 of the Draft EIR is revised as follows:

New Impervious Surfaces

As discussed under Impact HY-4, the GSR Project would result in the creation of new impervious surfaces, which could increase erosion and siltation, or increase the rate or amount of stormwater runoff, or cause flooding on- or off-site. Other cumulative projects listed in Table 5.1-3 (Projects Considered for Cumulative Impacts), including well facilities associated with the SFGW Project (cumulative project A-1 through A-6), residential and commercial facilities associated with the Mission & McLellan Project (cumulative project F), ~~and~~ the Centennial Village Project (cumulative project I) and the Cypress Lawn Cemetery Expansion Project (cumulative project K), would also create new impervious surfaces and could result in the similar localized effects, resulting in a potentially significant cumulative impact on hydrology. However, due to the relatively minor increase in impervious surface areas (e.g., 205 feet to 3,675 square feet) associated with construction of individual GSR facilities, the GSR Project's contribution to this potential impact on hydrology would not be cumulatively considerable (*less than significant*).

In response to Comments OV-1 and HY-15, Impact C-HY-2 on pages 5.16-149 through 5.16-152 of the Draft EIR are revised as follows:

Impact C-HY-2: Operation of the proposed Project would result in a cumulatively considerable contribution to cumulative impacts related to well interference. (Less than Significant ~~and Unavoidable~~ with Mitigation)

The geographic scope for the analysis of potential cumulative impacts on well interference in the study area is the area within three miles of each of the GSR wells, because if an existing irrigation well were located within 1.5 miles of a GSR Project well on one side, and a cumulative project well within 1.5 miles on the other side of it, hypothetically, it could be affected by both. Table 5.1-3 (Projects Considered for Cumulative Impacts) and their locations are shown on Figure 5.1-3 (Location of Projects Considered in the Cumulative Analysis).

~~Two~~ Four cumulative projects, the SFGW Project (cumulative project A-1 to A-6), GGNC Irrigation Well Re-establishment Project (cumulative project J), Cypress Lawn Cemetery Expansion Project (cumulative project K) and the Holy Cross Cemetery Expansion Project (cumulative project E) would increase pumping in the Westside Groundwater Basin, potentially leading to lower groundwater levels. One cumulative project, the Vista Grande Drainage Basin Improvement Project (cumulative Project B) would discharge treated stormwater to Lake Merced, which could – in turn – potentially increase groundwater levels near Lake Merced.

Additional drawdowns due to the proposed SFGW Project are estimated using the Westside Basin Groundwater Model. These potential drawdowns are combined with estimated groundwater levels for the GSR Project to estimate the combined effects of both projects (Fugro 2012). Additional drawdowns due to the Holy Cross Cemetery Expansion Project and the Cypress Lawn Cemetery Expansion Project are estimated to be negligible relative to well interference impacts (Fugro 2012; Fugro 2014). Additional drawdowns due to the GGNC Irrigation Well Re-establishment Project were calculated using the Theiss method for 7.5 years of continuous pumping of all GSR wells within a 1.5-mile radius of each GGNC well; this included GSR wells at Sites 12, 13, 14, and 15. The Vista Grande Drainage Improvements Project would not increase well interference, because it would not decrease groundwater levels. Because pumping under cumulative conditions would be at maximum levels during a drought, this analysis focuses on the well interference that could occur at the end of the design drought.

The San Francisco Golf Club, Olympic Club, and Lake Merced Golf Club wells are the only existing irrigation wells where both the SFGW Project wells and the GSR Project wells would result in combined groundwater level effects (Fugro 2012). Table 5.16-17 (Estimated Static and Pumping Depth to Water at the End of the Design Drought with Cumulative Projects) shows the projected static and pumping depth to water at wells at these three golf clubs at the end of the design drought during pumping by the cumulative projects. When the wells at the three golf clubs are not being pumped (i.e., static condition), groundwater levels are projected to decrease about four to six feet more from the cumulative pumping than with the GSR Project pumping alone. When the wells are active (i.e., pumping condition), groundwater levels are projected to decrease about 6 feet more from the cumulative pumping than from the GSR Project pumping alone.

TABLE 5.16-17
Estimated Static and Pumping Depth to Water at the End of the Design Drought with Cumulative Projects

Existing Irrigation Well	Estimated Static Depth to Water (feet below ground surface)			Estimated Pumping Depth to Water (feet below ground surface)		
	With GSR Project	With Cumulative Projects	Difference	With GSR Project	With Cumulative Projects	Difference
SF Golf Club #2	196	202	6	228	234	6
Olympic Club #8	136	142	6	195	201	6
Olympic Club #9	136	142	6	164	170	6
Lake Merced Golf Club #3	358	362	4	INA	INA	INA

Source: Fugro 2012

Note:

INA: Information on this existing irrigation well that would allow calculation of impacts of the Project on production capacity is not available.

Cumulative project J (GGNC Irrigation Well Re-establishment Project), is far enough away from the SFGW Project (cumulative projects A-1 through A-6) that it would not be affected by pumping for that project (significant well interference is not expected to occur beyond 1.5 miles from a well, as explained in the Draft EIR on page 5.16-78 in Section 5.16 Hydrology and Water Quality under the heading Existing Irrigation Wells and Associated Land Uses. The closest SFGW Project well is approximately six miles from the wells at cumulative project J). However, the GSR Project is predicted to have well interference impacts on the GGNC wells if they are re-established. There are three existing wells that could be brought back into service: GGNC Wells #1, #3, and #4. There is not sufficient information about GGNC Well #3 to allow analysis of well interference. Table 5.16-17a shows that pumping water levels at GGNC Wells #1 and #4 would be below the top of the well screens both under existing conditions and with Project operation, but that the pumping water level would be lower with the GSR Project.

TABLE 5.16-17a
Estimated Pumping Depth to Water at the end of the Design Drought with Cumulative Project J, Re-establishment of GGNC Wells (feet below ground surface)

GGNC Well No.	Top of Well Screen	Pumping Water Level without GSR Project	Pumping Water Level with GSR Project
1	< 176 [(a)]	388	459
4	208	290	341

Source: Fugro 2014

Note:
(a) Estimated top of well screen based on limited information

Although pumping capacity would likely be reduced at the GGNC wells due to Project operation, as compared to capacity without the GSR Project, it is not possible to perform a specific calculation of reduction in pumping capacity, because information on the existing pumps is not available and it is likely that new pumps would be installed in the future.

Cumulative pumping and the resulting groundwater level decreases identified above in Table 5.16-17 are projected to affect the pump discharge rates of existing irrigation wells, as shown in Table 5.16-18 (Estimated Pump Discharge Rate at the End of the Design Drought with Cumulative Projects). Pump discharge rates at the three golf clubs are projected to decrease due to cumulative pumping approximately one to three percent more than from the GSR Project pumping alone.

TABLE 5.16-18
Estimated Pump Discharge Rate at the End of the Design Drought with Cumulative Projects

Existing Irrigation Well	With GSR Project (gpm)	With Cumulative Projects (gpm)	Percent Reduction Compared to GSR Project
San Francisco Golf Club #2	660	655	1
Olympic Club #8	935	910	3
Olympic Club #9	660	640	3
Lake Merced Golf Club #3	INA	INA	INA

Source: Fugro 2012

Note:
INA: Information on this existing irrigation well that would allow calculation of impacts of the Project on pump discharge rate is not available.

Table 5.16-19 (Estimated Peak Demands and 12-Hour Production Capacities) compares 12-hour production capacities for each well potentially affected by the cumulative projects. Also included in calculations in Table 5.16-19 is the increased demand resulting from the reasonably foreseeable 30-acre expansion of Holy Cross Cemetery to a future total area of 180 acres and from the possible Cypress Lawn expansion of 39 acres. Production capacities of the existing wells at Holy Cross Cemetery and Cypress Lawn are assumed to be the same in the future as they are now. As stated above, this increased demand at Holy Cross Cemetery and Cypress Lawn does not result in additional drawdowns that cause well interference impacts, but the analysis evaluates whether well interference from the Project affects the ability of Holy Cross Cemetery and Cypress Lawn to meet ~~its~~ their expansion demand.

TABLE 5.16-19
Estimated Peak Demands and 12-Hour Production Capacities[(1)]

Land Use	Estimated Peak Demand (af per 12-hour period)	Estimated 12-Hour Production Capacity for Primary, Active, and Secondary Wells (af)		
		Existing Conditions	With GSR Project	With Cumulative Projects
Holy Cross Cemetery (with expansion)	2.6	3.5	2.9	2.9
Cypress Lawn Cemetery (with expansion)	3.7	1.8	1.1	1.1

Note:

INA: Information on the existing irrigation well that would allow calculation of impacts of the Project on production capacity is not available.

[1] The apparent discrepancy between Cypress Lawn's Estimated Peak Demand of 3.1 af per 12-hour period and 12-Hour Production Capacity for Existing Conditions of 1.8 af per 12-hour period would be evaluated as part of the Irrigation Well Monitoring and Reporting Program.

The wells at the Olympic Club and San Francisco Golf Club would likely meet their estimated peak demands even with maximum cumulative pumping at the end of the design drought. The pumping groundwater level under the cumulative effects of the projects is estimated to decrease below the top of the screen at Olympic Club Well #8, and dewatering the 400 feet of screen by one foot would have a negligible impact on well capacity, because the 1-foot drawdown below the top of well screen would be a small percentage of the screen interval. Nevertheless, there is a risk of well or pump damage from lowering groundwater levels below the top of the screen. However, this risk could be avoided by pumping only from Olympic Club Well #9 when groundwater levels are low during drought conditions. Well #9 has a 12-hour discharge capacity of 1.4 af that can meet peak groundwater demand of the Olympic Club. It is assumed that the entire Olympic Club irrigation system can be supplied by Well #9 alone because Well #8 and #9 are located near each other. Therefore, the cumulative projects would have *less-than-significant* cumulative impacts relative to well interference at the Olympic Club and San Francisco Golf Club.

The impacts of the cumulative projects on the Lake Merced Golf Club wells would be slightly greater than under the proposed Project. The cumulative impact of these projects together would be significant at the Lake Merced Golf Club, given that the GSR Project by itself would have significant impacts. The contribution of the GSR Project to this significant cumulative impact would, therefore, be considerable (*significant*).

The well interference water level and pump capacity impacts at Holy Cross Cemetery and Cypress Lawn would be ~~are~~ the same with the GSR ~~p~~Project and the cumulative projects. The well at Holy Cross Cemetery is predicted to~~would~~ meet peak demand even with ~~its~~the Cemetery's expansion. Therefore, there would be *less-than-significant* cumulative impacts relative to well interference at Holy Cross Cemetery.

The pumping capacity of the wells at Cypress Lawn is not predicted to meet peak irrigation demand (as estimated for purposes of this EIR) without the Project in a normal year and likewise is not predicted to meet this estimated peak irrigation demand without the Project at the end of the design drought. The pumping capacity of the Cypress Lawn wells, under conditions with the GSR Project and under a future condition with GSR Project operations and Cypress Lawn's 39-acre expansion, is predicted to be reduced so that the wells would meet less of the peak irrigation demand under Project and cumulative conditions than would be the case without the GSR Project. Therefore, there is predicted to be a significant cumulative well interference impact from the GSR Project and Cypress Lawn Cemetery Expansion.

With implementation of Mitigation Measure M-HY-6 (Ensure ~~Existing~~ Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation), ~~the potentially *significant*~~ the Project's contribution to a significant cumulative impact on well interference would be reduced to a less-than-cumulatively considerable level, in a similar manner as described above for the Project-specific impacts. ~~Mitigation Action #6, Replace Irrigation Well, would be effective at reducing the Project's contribution to cumulative impacts to less-than-considerable levels, because the replacement well could be constructed deep enough to access an aquifer with sufficient water to meet peak irrigation demand while simultaneously avoiding any cumulative effects related to well interference (SFPUC 2012c).~~ Therefore, Mitigation Measure M-HY-6 would reduce the Project's impacts ~~of~~ on well interference to a level that would allow irrigators' wells to continue to support ~~where~~ existing and planned land uses~~would be supported~~ to the extent that the wells would be able to do so under existing conditions~~, except that the feasibility of the mitigation measure cannot be assured until the existing irrigation well owners have agreed to allow the mitigation to take place on their property. Because such assurance has not yet been provided, Impact C-HY-2, with implementation of Mitigation Measure H-HY-6, is conservatively deemed to be cumulatively considerable~~ (*less than significant with mitigation.* ~~*significant and potentially unavoidable with mitigation*~~)

In response to Comment HY-15, the title of Mitigation Measure M-HY-6 (Ensure Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation) on page 5.16-162 of the Draft EIR is revised as follows:

Well Interference

This section provides an evaluation of whether there would be any significant impacts in addition to those identified for the Project due to implementation of Mitigation Measure M-HY-6

(Ensure ~~Existing~~ Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation).

In response to Comment HY-15, text describing the mitigation action of providing replacement water supply on page 5.16-164 of the Draft EIR is revised as follows:

M-HY-6 Mitigation Action #~~9~~3: Replace Irrigation Water Source
~~In the event that the preceding options cannot be immediately implemented without causing an interruption in the irrigation supply, a temporary replacement water supply source would be provided until another mitigation option(s) is implemented. Water would be trucked to the site or would be provided via aboveground pipes from Partner Agency or SFPUC supply from distribution or transmission pipelines close to the location where additional irrigation supplies are needed. The SFPUC would verify that the water quality of the new irrigation source is acceptable. (SFPUC 2012c)~~ The SFPUC would provide replacement water from the SFPUC regional water system through the SFPUC regional distribution system or wheel replacement water through the Cal Water distribution system to irrigators. As part of the Project and prior to Project operation, the SFPUC would install for irrigators new metered supply connections, including new below-ground connecting pipelines, if needed.

In response to Comment HY-15, the first paragraph on page 5.16-165 of the Draft EIR, discussing Land Use, is also revised as follows:

While M-HY-6 Actions ~~#5, #6, and #9~~ #6, and #7 would require the use of construction equipment and vehicles, the scope of these construction activities would be similar to ongoing maintenance activities at the golf clubs and cemeteries. Therefore, construction impacts for M-HY-6 Actions ~~#5, #6, and #9~~ #6, and #7 would be *less than significant*.

Depending on the placement of the pipelines, construction ~~operation~~ of M-HY-6 Action #~~9~~3 may result in ~~minor~~ temporary disruption to recreational uses at the golf clubs due to the combination of temporary increases in noise and dust/exhaust emissions levels, traffic delays, and/or access disruption. The ~~temporary placement of aboveground pipelines~~ installation of irrigation lines in golf clubs could result in golf carts needing to maneuver around areas of pipeline~~s~~ construction while traveling within the golf club or temporarily affect the existing visual quality or scenic views of golf clubs or cemeteries.~~;~~ ~~however,~~ Installation of irrigation lines would only require temporary disruption and ~~aboveground pipelines would be placed and operated such that~~ the golf club would remain available and useable to golfers. These temporary impacts could, however, be significant. Implementation of Mitigation Measures M-NO-1 (Noise Control Plan), M-AQ-2a (BAAQMD Basic Construction Measures), M-TR-1 (Traffic Control Plan), and M-AE-1a (Site Maintenance) to reduce Project impacts would reduce impacts from construction activities related to M-HY-6 Action #3 to less-than-significant levels by requiring measures to reduce construction-related noise, dust, emissions, and traffic access-related issues to less-than-significant levels. The ~~temporary~~ operational impacts of M-HY-6 Action #~~9~~3 to golf clubs and cemeteries would not displace the land use and would therefore be *less than significant*.

In response to Comment HY-15, the second paragraph of the Aesthetics discussion on pages 5.16-165 and 5.16-166 of the Draft EIR is revised as follows:

> The implementation of M-HY-6 Actions ~~#5 through #9~~ #3 and #6 through #9, could result in minor additional aesthetic impacts during construction due to the presence of construction equipment and vehicles; these impacts could be *significant* if construction sites were visible from publicly accessible viewpoints. Implementation of Mitigation Measure M-AE-1a (Site Maintenance) would reduce construction impacts to *less-than-significant* levels by keeping the area clean of debris. Construction-related aesthetic impacts from implementation of M-HY-6 Actions ~~#5 through #9~~ #3 and #6 through #9, would therefore be *less than significant with mitigation*.

In response to Comment HY-15, the fourth paragraph of the Aesthetics discussion on page 5.16-166 of the Draft EIR is revised as follows:

> M-HY-6 Action ~~#8~~#9 would construct a replacement irrigation well at a golf club or cemetery. However, the aesthetic impact of the well would be minor, because the well would extend approximately three feet above ground, which would not significantly affect viewsheds or the visual quality of the cemetery or golf clubs, as viewed from publicly accessible vantage points. M-HY-6 Action #~~9~~3 would not permanently ~~potentially~~ affect the visual quality of the cemetery or golf club because the pipelines would be located ~~above~~ underground. ~~However, this mitigation action is intended to be temporary in duration.~~ For these reasons, operational impacts on aesthetics from M-HY-6 Actions ~~#8 and #9~~ #3 and #9 would be *less than significant*.

In response to Comment HY-15, text under Cultural and Paleontological Resources on pages 5.16-166 and 5.16-167 of the Draft EIR is revised as follows:

> Implementation of M-HY-6 Actions ~~#1, #2, #3, #4, #5, #6, and #9~~, #1, #2, #4, #5, #6, and #7 would not result in additional impacts on cultural or paleontological resources, because these actions would not involve additional excavation, grading, or other ground disturbances. Implementation of these mitigation actions would also not involve new structures or changes to historical resources. As a result, *no impacts* would occur.
>
> There are no historical resources identified at the golf clubs that could be affected by the Project, but several cemeteries within the study area include individual historic resources or the cemeteries are eligible for listing on the National Register. If historic resources are present at a golf club or cemetery where a storage tank, ~~or~~ replacement well, or irrigation line (M-HY-6 Actions ~~#7 and #8~~ #3, #8 and #9) might be needed, the facilities would be sited to avoid impacts on these resources (i.e., sited where the storage tank and well are not visible in proximity to a historic resource), where feasible. Construction of the storage tank, ~~or~~ well, or irrigation line, would be short in duration and impacts on the historic resources during construction would therefore be *less than significant*. Once in place, if a storage tank is within close proximity of a historic resource, the implementation of Mitigation Measures M-AE-3a (Implement Landscape Screening) would reduce impacts on historic resources by providing screening, as also described above to address any potential aesthetics impacts.

It is unknown whether M-HY-6 Actions ~~#7 or #8~~ #3, #8 or #9 would be implemented at a site that contains archaeological or paleontological resources. Damage to an archaeological or paleontological resource would be a *significant* impact. However, implementation of Mitigation Measures M-CR-2 (Discovery of Archaeological Resources), M-CR-3 (Suspend Construction Work if a Paleontological Resource is Identified), and M-CR-4 (Accidental Discovery of Human Remains) would adequately address any potential impacts related to the accidental discovery of these resources during construction by requiring adherence to appropriate procedures and protocols. Impacts on cultural and paleontological resources as a result of implementing M-HY-6 Actions ~~#7 or #8~~ #3, #8 or #9 would therefore be *less than significant with mitigation*.

In response to Comment HY-15, the second paragraph on page 5.16-167 of the Draft EIR, discussing Transportation and Circulation, is revised as follows:

Implementation of M-HY-6 Actions ~~#5, #6, #7, #8, and #9~~ #3, #6, #7, #8, and #9 could result in additional impacts on transportation and circulation due to additional construction traffic on regional highways and local roadways. However, construction traffic from these mitigation actions would be minor and temporary (i.e., truck deliveries for well pump, storage tank, or piping). Mitigation Action #3 could result in temporary impacts to local roadway circulation if irrigation pipeline trenching is required within the public right-of-way. Impacts due to temporary road closures and other circulation impacts could be *significant*. However, implementation of Mitigation Measure M-TR-1 (Traffic Control Plan) would reduce impacts to *less-than-significant* levels by requiring measures to reduce potential impacts on traffic flows in compliance with local and Caltrans requirements. Because any storage tanks~~,~~ or replacement wells ~~or irrigation piping~~ would be located on existing golf club or cemetery property and connected to onsite irrigation plumbing (rather than periodically filled by delivery truck), and because new irrigation piping would be buried underground, implementation of M-HY-6 Actions ~~#7, #8, or, #9~~ #3, #8, or #9 would not permanently impact the performance of the transportation circulation system or increase traffic hazards. Therefore, operational impacts of M-HY-6 Actions ~~#5, #6, #7, #8, or #9~~ #3, #6, #7, #8, or #9 would be *less than significant*.

In response to Comment HY-15, the last paragraph on page 5.16-167 of the Draft EIR, discussing Noise and Vibration, is revised as follows:

Implementation of M-HY-6 Actions ~~#5, #6, and #9~~ #5 and #6 would not generate significant noise impacts during construction. Lowering and/or replacing the pump, or installing aboveground pipelines would be similar in nature to other ongoing maintenance activities and would not substantially increase ambient noise levels at the golf clubs or cemeteries. Any related noise impacts would *therefore be less than significant. No operational impacts would occur*, because the changed pump and aboveground pipelines would not generate perceptible changes in ambient noise levels.

In response to Comment HY-15, the first three full paragraphs on page 5.16-168 of the Draft EIR, discussing Noise and Vibration, are revised as follows:

Implementation of M-HY-6 Action #~~7~~8 would result in additional noise and vibration impacts during construction due to site grading and clearing, construction of a concrete foundation (if necessary), and the use of construction equipment and vehicles. Implementation of M-HY-6 Actions ~~#8~~ #3 and #9 would also result in additional noise and vibration impacts during construction of the irrigation pipelines and replacement irrigation well. ~~If pipelines are required for the irrigation well, p~~Pipeline trench compaction during construction could cause ground-borne vibration, which would be potentially significant depending on the proximity to structures and sensitive receptors. While golf clubs are not considered sensitive noise receptors, cemeteries and places of residence, schools, and churches are considered sensitive to noise disturbances. Additionally, Daly City, Colma, and San Bruno have specific noise regulations for cemeteries and/or golf clubs. Construction of M-HY-6 Actions ~~#7 or #8~~ #3, #8, or #9 could exceed local noise standards and temporarily increases ambient noise levels, which would be *significant*.

Mitigation Measures M-NO-1 (Noise Control Plan) would reduce construction-related noise impacts for M-HY-6 Actions ~~#7 and #8~~ #3, #8, and #9. Mitigation Measure M-NO-2 (Reduce Vibration Levels during Construction of Pipelines) would reduce noise and vibration levels generated during well drilling ~~and~~ or pipeline trench compaction. Implementation of M-NO-1 (Noise Control Plan) would reduce noise impacts from Actions ~~#7~~ #3 and #8 to *less-than-significant* levels. However, Action #~~8~~9 includes drilling, and as discussed in Section 5.7, Noise and Vibration, depending on the proximity of construction to a sensitive noise receptor (e.g., residences or schools), and depending on the local noise regulations for cemeteries and/or golf clubs, it is possible that even with the implementation of these mitigation measures, noise impacts related to noise standards and ambient noise levels from well drilling could be *significant and unavoidable*.

Operation of the storage tank (M-HY-6 Action #~~7~~8) and irrigation pipelines (M-HY-6 Action #3) would not increase ambient noise levels at the golf clubs or cemeteries. Operation of the irrigation well (M-HY-6 Action #~~8~~9) would not increase ambient noise levels because the pump would be located underground. *No operational noise impacts* would therefore occur.

In response to Comment HY-15, the last paragraph on page 5.16-168 of the Draft EIR, discussing Air Quality, is revised as follows:

Implementation of M-HY-6 Actions ~~#1 through #4~~ #1, #2, #4, and #5 would not require construction, and therefore would not result in the emission of criteria air pollutants or violation of air quality standards. *No impact* would occur. M-HY-6 Actions ~~#5, #6, and #9~~ #6 and #7 would require use of construction equipment and vehicles (but no ground disturbance), and would generate small amounts of exhaust emissions. M-HY-6 Actions ~~#7 and #8~~ #3, #8, and #9 would generate fugitive dust and other criteria air pollutants from construction activities such as grading and excavation, and the use of construction equipment and vehicles. These emissions could be *significant*. However, implementation of M-AQ-2a (BAAQMD Basic Construction Measures) would reduce impacts to *less-than-significant* levels by requiring measures to control dust and reduce idling. Post-construction, these mitigation actions would not emit criteria air pollutants. *No impact* from operations would therefore occur.

In response to Comment HY-15, the first paragraph on page 5.16-169 of the Draft EIR, discussing Greenhouse Gas (GHG) Emissions, is revised as follows:

> Implementation of M-HY-6 Actions ~~#1 through #4~~ #1, #2, #4, and #5 would not require construction, and therefore would not generate greenhouse gases. *No impact* would occur. M-HY-6 Actions ~~#5, 6, #7, #8, and #9~~ #3, #6, #7, #8, and #9 would generate a small additional amount of GHG emissions through the combustion of fossil fuels in mobile construction equipment and vehicles, and from the purchase of electricity to operate any electrical equipment for Project construction. However, due to the small scale of these mitigation actions, GHG emissions generated during construction would be *less than significant*. Operation of the Actions ~~#5, #6, #7, and #9~~ #3, #6, #7, and #8 would be similar in scope to existing maintenance activities. Action #~~8~~9 would replace an existing well, so maintenance activities would be the same as for the existing well, and would not result in additional GHG emissions. Therefore, operational impacts associated with GHG emissions generated from worker trips and energy use would be *less than significant*.

In response to Comment HY-15, the third paragraph of the Recreation discussion on page 5.16-169 of the Draft EIR is revised as follows:

> Implementation of M-HY-6 Actions ~~#7, #8, and #9~~ #3, #8, and #9 could result in additional impacts on recreation during construction. If M-HY-6 Action #~~7~~8 is implemented at a golf club, the storage tank would likely be located immediately adjacent to the affected existing irrigation well. If M-HY-6 Action #~~8~~9 is implemented at a golf club, the replacement irrigation well would likely be sited at the outer fringes of playing surfaces or in other non-playing areas, to minimize damage to playing surfaces. Implementation of M-HY-6 Action #~~9~~3 could result in temporary impacts at golf clubs. ~~Placement of aboveground~~ Installation of pipelines could temporarily affect golf cart access between holes and may require golfers using golf carts to take alternative access routes ~~if pipelines cross internal golf club roadways~~; otherwise pipeline placement would not prevent golfers from using the golf club or impact playing surfaces. Therefore, it is unlikely that the placement of the storage tank, irrigation well, or ~~aboveground~~ pipelines would substantially damage or displace existing playing surfaces.

In response to Comment HY-15, the last paragraph on page 5.16-169 carrying over to page 5.16-170 of the Draft EIR, discussing Recreation, is revised as follows:

> Any golf club playing surfaces damaged during construction would be restored to their general pre-construction condition after construction is completed (pursuant to Chapter 3, Project Description, Section 3.5.1.3 [Construction Methods for Water Distribution and Utility Pipeline Installation], which specifies that areas disturbed during construction would be restored to pre-construction conditions). As stated earlier, it is unlikely that the storage tank or irrigation well would substantially displace existing playing surfaces. ~~Depending on the placement of the pipelines, o~~ Operation of M-HY-6 Action ~~#9~~ #3 ~~may result in temporary and minor disruption of~~ would not disrupt recreational uses at the golf clubs because irrigation pipelines would be buried underground. Implementation of these actions would not result in population growth, and

therefore would not increase the use, or require the expansion of existing parks or recreational facilities. Therefore, operational recreation impacts of M-HY-6 Actions ~~#7, #8, and #9~~ #3, #8, and #9 would be *less than significant*.

In response to Comment HY-15, the three paragraphs under Utilities and Service Systems on page 5.16-170 of the Draft EIR is revised as follows:

Implementation of M-HY-6 Action ~~#1, #2, #3, #4, #5, #6, and #9~~ #1, #2, #4, #5, #6, and #7 would not require trenching or other ground disturbances that could disrupt or damage existing utilities. These mitigation actions would not require additional water entitlements; generate additional solid waste or additional discharges to sanitary sewer or stormwater systems. *No such impacts* would therefore occur.

Implementation of M-HY-6 Actions ~~#7 and #8~~ #3, 8, and #9 would result in additional potentially *significant* impacts on utilities and service systems by contributing small additions of solid waste generated during construction and potentially damaging or disrupting utilities during construction. However, as discussed in Section 5.12, Utilities and Service Systems, the Ox Mountain Landfill has a remaining capacity that is sufficient to accommodate the amount of solid waste that would be generated by implementation of M-HY-6 Actions ~~#7 and #8~~ #3, 8, and #9. Additionally, Mitigation Measure M-UT-4 (Waste Management Plan) would require compliance with local solid-waste diversion goals and regulations. Implementation of Mitigation Measures M-UT-1a (Confirm Utility Line Information), M-UT-1b (Safeguard Employees from Potential Accidents Related to Underground Utilities), M-UT-1c (Notify Local Fire Departments), M-UT-1d (Emergency Response Plan), M-UT-1e (Advance Notification), M-UT-1f (Protection of Other Utilities during Construction), M-UT-1g (Ensure Prompt Reconnection of Utilities), M-UT-1h (Avoidance of Utilities Constructed or Modified by Other SFPUC Projects), and M-UT-1i (Coordinate Final Construction Plans with Affected Utilities) would adequately address impacts related to the potential disruption and relocation of utility operations or accidental damage to existing utilities by requiring the SFPUC and/or its contractor(s) to identify the potentially affected lines in advance, coordinate with utility service providers to minimize the risk of damage to existing utility lines, protect lines in place to the extent possible or temporarily re-route lines if necessary, and take special precautions when working near high priority utility lines (e.g., gas transmission lines). Construction impacts on utilities and service systems from M-HY-6 Actions ~~#7 and #8~~ #3, 8, and #9 would therefore be *less than significant with mitigation*. Construction of M-HY-6 Action #~~8~~9 would also discharge to the local sanitary sewer or storm drain system during well development pumping tests. However, as described in Section 5.12, Utilities and Service Systems, the sanitary sewer and storm drain systems in the Project area have sufficient capacity to handle the volume and rate of such discharges during well development.

Operation of M-HY-6 Actions ~~#7 and #8~~ #3, 8, and #9 would not result in impacts on utilities or service systems. A new storage tank or irrigation lines would not result in additional discharges to the storm drain or sanitary sewer system. Since Action #~~8~~9 involves replacing an existing well, no additional discharges to the storm drain or sanitary sewer system would occur.

In response to Comment HY-15, the two paragraphs comprising the Biological Resources discussion on page 5.16-171 are revised as follows:

> Implementation of M-HY-6 Actions #~~1 through #4, and #9~~ #1, #2, #4, and #5, would occur on existing golf club or cemetery property and would not modify existing habitats or require tree removal. Implementation of M-HY-6 Action ~~#5 or #6~~ #6 or #7 would not impact biological resources, because these actions would not require additional construction activities beyond lowering and/or changing the well pump. No trees would be removed and no surface ground disturbance would occur. Construction equipment and workers would be present, but would avoid any waters of the State or of the United States, wetlands, or sensitive habitat near or adjacent to the construction site, as discussed previously in the mitigation action descriptions. As a result, *no impacts* on biological resources from M-HY-6 Actions #~~1 through #4, and #9~~ #1, #2, #4, and #5, would occur.
>
> Implementation of M-HY-6 Actions ~~#7 and #8~~ #3, #8, and #9 could result in additional potentially *significant* impacts on biological resources. Storage tanks would likely be located adjacent to existing irrigation wells. Storage tanks, irrigation lines, and replacement irrigation wells would be sited to avoid jurisdictional waters, wetlands, or other sensitive habitat. However, implementation of this mitigation action could potentially require the removal of trees to accommodate placement of a new tank, irrigation well or irrigation lines, depending on where these ~~tank~~ features ~~was~~ would be constructed. Implementation of Mitigation Measures M-BR-1a (Protection Measures during Construction for Special-status Birds and Migratory Passerines and Raptors), M-BR-1b (Protection Measures for Special-status Bats during Tree Removal or Trimming), Mitigation Measure BR-1c (Monarch Butterfly Protection Measures), M-HY-1 (Develop and Implement a Stormwater Pollution Prevention Plan [SWPPP] or an Erosion and Sediment Control Plan), M-BR-4a (Identify Protected Trees), and M-BR-4b (Protected Tree Replacement) would reduce any such potential impacts to l*ess-than-significant* levels. These measures would require pre-construction surveys to determine whether special-status or migratory birds or bats (including their nests and roosts), or overwintering monarch butterflies are present at or near construction sites. These also include measures to protect nearby habitat from construction-related runoff and sedimentation, and require trees to be protected, avoided, and replaced in accordance with local tree protection ordinances if removed. Therefore, impacts on biological resources from M-HY-6 Actions ~~#7 and #8~~ #3, #8, and #9 would be *less than significant with mitigation*.

In response to Comment HY-15, the first three paragraphs under the Geology and Soils discussion on pages 5.16-171 and 5.16-172 are revised as follows:

> Implementation of M-HY-6 Actions #~~1 through #6, and #9~~ #1, #2, #4, #5, #6, and #7 would occur on existing golf club or cemetery property and would not include the construction of new structures that could expose people to seismic ground shaking or landslides. Implementation of Actions ~~#1, #2, #5, #6, and #9~~ #4 through #7 would be similar in nature to existing ongoing maintenance activities; Actions #~~3 and #4~~ #1 and #2 would not result in physical changes, and

therefore would not result in new or increased risk for landslides or other soil or geologic instability risks. As a result, *no impacts* would occur.

M-HY-6 Actions #3 and #7 could potentially place irrigation pipelines or a storage tank in or on unstable soil that could be susceptible to ~~landslides,~~ ground shaking~~,~~ or settlement. A storage tank could also be placed on soils susceptible to landslides. The exposure of ~~this~~ the structure or pipelines to potentially adverse seismic effects that could lead to tank or pipeline failure could be *significant*. However, implementation of Mitigation Measure M-GE-3 (Conduct Site-specific Geotechnical Investigations and Implement Recommendations) would require site-specific geotechnical investigations, and implementation of recommendations to protect against property loss, injury, or death from ground shaking or settlement that could result from the damage of a new water tank and irrigation pipelines and would be reduced to *less-than-significant* levels. Installation and operation of a replacement irrigation well identified in M-HY-6 Action ~~#8~~ #9 would not include construction of structures intended for human occupancy; therefore, there would be no exposure of people or structures to the effects of landslides, ground shaking, or settlement.

Given that any irrigation pipelines, storage tanks, or replacement irrigation wells would be located within existing cemeteries or golf clubs (or in the case of irrigation pipelines, connecting to existing distribution systems), which are carefully landscaped and highly disturbed, it is unlikely that implementation of these mitigation actions would substantially change existing topography or unique geologic or physical features. If a replacement well were to be sited on the Holy Cross Cemetery property east of Hillside Boulevard, the well would likely be sited to avoid substantial changes to existing topography or unique geologic or physical features. Such potential impacts would be *less than significant*.

In response to Comment HY-15, the first two paragraphs under the Hydrology and Water Quality discussion on page 5.16-172 are revised as follows:

Implementation of ~~the~~ M-HY-6 Actions #1, #2, #4, #5, #6, and #~~9~~7 would not include ground-disturbing construction activities and therefore these mitigation actions would not result in erosion or runoff that would impact water quality. Irrigation (Actions #3, #~~1~~4, #~~2~~5~~, and #9~~) would follow standards necessary to reduce runoff to surface waters and percolation to groundwater. If a new well is drilled (Action #~~8~~9), SFPUC would ensure that water quality of the new well is appropriate for irrigation use. Actions #~~5~~6 and #~~6~~7 would modify pumping to allow irrigation pumping to continue at existing levels. Action #~~4~~ 2 would reduce Project pumping and not require any other construction or operational changes. Therefore, there would be *no impacts* on hydrology or water quality from these mitigation actions.

Implementation of M-HY-6 Actions ~~#7 and #8~~ #3, #8 and #9 could require vegetation removal, grading, excavation, and soil stockpiling, which could result in erosion and sedimentation and impact water quality. This would be a *significant* impact. However, implementation of Mitigation Measure M-HY-1 (Develop and Implement a Storm Water Pollution Prevention Plan [SWPPP] or an Erosion and Sediment Control Plan), would reduce such potential impacts to *less-than-*

significant levels by requiring stabilization and control measures during ground disturbing activities.

In response to Comment HY-15, the three paragraphs comprising the Hazards and Hazardous Materials discussion on page 5.16-173 are revised as follows:

> Implementation of M-HY-6 Actions ~~#1, #2, and #9~~ #4, and #5 would occur on existing golf club or cemetery property and would be similar in scope to ongoing irrigation activities at these facilities. Implementation of these actions would not involve the transport, use, or disposal of hazardous materials. Actions ~~#3 and #4~~ #1 and #2 would not involve construction activities and would also not involve the transport, use, or disposal of hazardous materials. As a result, *no impacts* would occur from M-HY-6 Actions ~~#1 through #4, and #9~~ #1, #2, #4, and #5.
>
> Implementation of M-HY-6 Actions ~~#5, #6, #7, and #8~~ #3, #6, #7, #8, and #9 could require the use of hazardous materials during construction. Impacts related to accidental releases of chemicals (including within proximity to a school) could be *significant*. However, any activities involving the use or transport of hazardous materials would require compliance with applicable hazardous materials laws and regulations. Implementation of Mitigation Measure M-HY-1 (Develop and Implement a Stormwater Pollution Prevention Plan [SWPPP] or an Erosion and Sediment Control Plan) would lessen the potential for impacts to *less than significant with mitigation* related to an accidental release of hazardous materials (including within proximity to a school) by requiring specific practices for the safe storage and handling of chemicals.
>
> M-HY-6 Actions ~~#7 and #8~~ #3, #8, and #9 ~~would not include new structures~~ may include ground disturbance. It is unknown whether implementation of M-HY-6 Actions ~~#7 and #8~~ #3, #8, and #9 would result in the siting of irrigation pipelines, a storage tank~~,~~ or a replacement irrigation well near a hazardous materials site identified on the Cortese List (described in Section 5.17, Hazards and Hazardous Materials). Siting the irrigation pipelines or well near a hazardous materials site could result in the potential to encounter hazardous materials in soil or groundwater, which would be a *significant* hazardous materials impact. However, if these facilities were to be located near a hazardous materials site, implementation of Mitigation Measures M-HZ-2a (Preconstruction Hazardous Materials Assessment), M-HZ-2b (Health and Safety Plan), and M-HZ-2c (Hazardous Materials Management Plan) would reduce the potential hazardous materials impact on the environment to *less-than-significant* levels by requiring a soil investigation to determine the presence of chemical residue, as well as a soil and groundwater management plan to ensure appropriate handling and disposal of excavated material containing hazardous materials. No hazardous materials would be required during operation of M-HY-6 Actions ~~#7 and #8~~ #3, #8, and #9. *No ~~such potential~~ impacts during operation would ~~therefore~~ occur.*

In response to Comments HY-15, the last two paragraphs under Mineral and Energy Resources on pages 5.16-173 and 5.16-174 are revised as follows:

> Implementation of M-HY-6 Actions ~~#1 through #6, and #9~~ #1, #2, #4, #5, #6, and #7 would not change existing land uses or otherwise change the availability of a known mineral resource. Therefore, no such impacts would occur. Implementation of M-HY-6 Actions ~~#1, #2, #5, #6, and #9~~

#3 through #7 could result in a small change in the energy use required by the irrigation systems or wells at the golf clubs and cemeteries. However, any such changes would be negligible in the context of the overall energy use at these facilities, and may actually reduce energy use. As a result, *no impacts* on minerals or energy resources would occur.

Construction of irrigation pipelines (M-HY-6 Action #3), storage tanks (M-HY-6 Action #~~7~~8), or replacement irrigation wells (M-HY-6 Action #~~8~~9) would require the use of fossil fuels. However, given the nature and scale of construction, construction of M-HY-6 Actions ~~#7 or #8~~ #3, #8, or #9 would not require a large amount of fuel or energy usage because of the moderate number of construction vehicles and equipment, worker trips, and truck trips that would be required for a project of this scale. Therefore, construction would not encourage activities that would result in the use of large amounts of fuel and energy. The impact would be *less than significant*. ~~A~~ Irrigation pipelines, a storage tank, or a replacement irrigation well could be sited within the Olympic Golf Club area mapped as MRZ-3. However, implementation of these mitigation actions would not result in the loss of a known or locally important mineral resource because the site is not currently mined, and the placement of an aboveground storage tank, irrigation pipelines or small irrigation well would not preclude future access to this resource or result in a change in this site's resource designation. Impacts on mineral and energy resources from M-HY-6 Actions ~~#7 or #8~~ #3, #8, or #9 would therefore be *less than significant* ~~*with mitigation*~~.

In response to Comment HY-15, the second and third paragraphs under Agriculture and Forest Resources on page 5.16-174 are revised as follows:

M-HY-6 Actions ~~#1 through #6, and #9~~ #1, #2, #4, #5, #6, and #7 do not involve changes to existing zoning, land use, or other construction that would result in the loss of important farmland or forest land. As a result, *no impacts* on agriculture or forest resources from these mitigation actions would occur.

M-HY-6 Actions ~~#7 or #8~~ #3, #8, or #9 would be implemented on existing golf club and/or cemetery property or adjacent to such property. If irrigation pipelines, a storage tank or replacement irrigation well were constructed in the Holy Cross cemetery area mapped as Unique Farmland or other mapped farmland, land actively used for agriculture would likely be avoided to the extent feasible, but a small portion of land mapped as Unique Farmland or Grazing Land could be displaced. However, the area of impact would be small and would not result in a conversion of land designated as Unique Farmland or Grazing Land to non-agricultural use, given that the overall land use would not change as a result of these mitigation actions. The land is not under a Williamson Act contract, and the implementation of M-HY-6 Actions ~~#7 or #8~~ #3, #8, or #9 would not preclude continued and future use for agriculture, or involve other changes that could result in the conversion of agriculture land to some other use given that this is an irrigation supply action. Therefore, impacts on agriculture resources would be *less than significant*.

9.5.13 Hazards and Hazardous Materials

In response to Comment OV-1, Impact C-HZ-1 on page 5.17-44 is revised as follows:

Safety Hazard near an Airport

Of the cumulative projects listed in Table 5.1-3 (Projects Considered for Cumulative Impacts), cumulative projects D-1, and E through J~~I~~ would also be located within lands subject to the San Mateo County Airport Land Use Plan (ALUP). The Holy Cross Expansion Project, ~~and the~~ California Water Service Company Water Well Replacement Project, and Cypress Lawn Cemetery Expansion Project (cumulative projects E, ~~and~~ G, and K respectively) are cemetery expansion and well replacement projects.

9.5.14 Mineral and Energy Resources

In response to Comment OV-1, Impact C-ME-1 on page 5.18-12 of the Draft EIR is revised as follows:

Operation

Energy Resources

Most of the cumulative projects listed in Table 5.1-3 (Projects Considered for Cumulative Impacts) would result in incremental increases in energy demand during long-term operation. The San Francisco Groundwater Supply Project (cumulative projects A-1 to A-6) would use the SFPUC Power Enterprise electricity to pump up to four mgd of groundwater for potable water supply. Expansion of the Holy Cross Cemetery (cumulative project E) and Cypress Lawn Cemetery (cumulative project K) would increase energy use to pump an additional 0.04 mgd and 0.05 mgd, respectively, of groundwater for cemetery operations. The Mission & McLellan Project (cumulative project F) would increase energy demand to supply power to 20 new condominium units. The GGNC Irrigation Well Re-establishment Project (cumulative project J) would increase energy use to pump groundwater for irrigation. Lastly, the Centennial Village Project (cumulative project I) would increase energy demand with a new shopping center and 132 new apartment units.

9.5.15 Other CEQA Issues

In response to Comment HY-15, Section 6.2 (Summary of Cumulative Impacts) on pages 6-7 and 6-8 of the Draft EIR, including Table 6-1 (Summary of Significant Cumulative Impacts), is revised as follows:

Table 6-1 (Summary of Significant Cumulative Impacts), provides a summary of the cumulative impacts associated with the GSR Project that are significant. All significant cumulative impacts could be reduced to less-than-significant levels with implementation of mitigation measures identified in Chapter 5, Environmental Setting, Impacts, and Mitigation Measures, except for unavoidable noise~~, and well interference~~ impacts. See Chapter 5 for a detailed discussion of cumulative impacts by resource topic, and where appropriate, a description of mitigation measures that would avoid or lessen the cumulative impacts.

TABLE 6-1
Summary of Significant Cumulative Impacts

Impact	Significance Determination
Impact C-HY-2: Operation of the proposed Project would result in a cumulative considerable contribution to cumulative impacts related to well interference.	~~SUM~~ LSM

In response to Comment HY-15, the first paragraph in Section 6.3.1 (Significant and Unavoidable Effects of the Proposed Project) on page 6-9 of the Draft EIR is revised as follows:

> This section identifies Project impacts that, even with the implementation of all identified mitigation measures, would remain significant and are, therefore, considered *unavoidable*. All GSR Project impacts would either be less than significant or reduced to less-than-significant levels with implementation of the identified mitigation measures except for unavoidable land use, aesthetics, ~~well interference,~~ and noise impacts. The analysis presented in Chapter 5, Environmental Setting, Impacts, and Mitigation Measures, of this EIR concludes that implementation of the proposed Project would result in ~~four~~ three significant and unavoidable impacts:

In response to Comment HY-15, the fourth bullet under Section 6.3.1 (Significant and Unavoidable Effects of the Proposed Project) on pages 6-9 and 6-10 of the Draft EIR is deleted:

- ~~Operation of the project would decrease the production rate of existing wells due to localized groundwater drawdown within the Westside Groundwater Basin such that existing or planned land uses may not be fully supported. Mitigation could reduce impacts to less than significant. However, feasibility of mitigation would vary depending on the willingness of the well owner to allow the SFPUC to implement mitigation, which would have to take place on the property of existing irrigators. Because such assurance has not yet been provided, the impact is considered significant and potentially unavoidable (see Section 5.16, Hydrology and Water Quality, Impacts HY-7 and C-HY-2).~~

9.5.16 Alternatives

In response to Comments AL-2 and HY-15, the Draft EIR is revised on page 7-6 under Operation-related Impacts, as follows:

> ***Operation-related Impacts:*** ~~With the exception of hydrology and land use impacts during project operations, a~~All operational-related impacts were determined to be *less than significant* (LS) or *less than significant with mitigation* (LSM). ~~Potential impacts resulting from well interference during Project pumping were determined to be significant and potentially unavoidable because implementation of the identified mitigation would not be totally within the control of the SFPUC,~~

> ~~and project operations could adversely impact existing irrigation wells in areas near GSR Project wells. Mitigation measures identified would effectively reduce impacts to existing irrigation wells to a less-than-significant level; however, since the successful implementation of the identified mitigation measure at all affected existing irrigation wells cannot be certain at this time (as it would depend on cooperation from existing irrigation well owners), the mitigation may not reduce all impacts to less-than-significant levels at all locations. Therefore, the potential impacts of well interference were determined to be significant and potentially unavoidable even with all feasible mitigation applied (see Impact HY-6 in Section 5.16, Hydrology and Water Quality). All other significant impacts related to Project operations were determined to be less than significant with mitigation (LSM).~~

In response to Comment HY-15, the discussion of the No Project Alternative on page 7-13 of the Draft EIR is revised as follows:

> The No Project Alternative would avoid all of the construction impacts identified for the GSR Project. The No Project alternative would eliminate the need for construction activities at the GSR facility sites, thereby avoiding all construction impacts identified for the proposed Project, including the significant and unavoidable impacts associated with noise, land use, and aesthetics~~, and hydrology~~, which, in some instances, may be at least partially reduced by mitigation where feasible (in other instances, feasible mitigations may not exist for reducing some of the impacts identified) (See Section 7.3.2 [Impacts of the Proposed Project]).

In response to Comments AL-2 and HY-15, Draft EIR page 7-16, first full paragraph, is revised as follows:

> Increasing pumping at Sites 5 through 15 by 20 percent would increase well interference impacts on the wells at the Colma cemeteries and at the California Golf Club. Under the proposed Project, all irrigation wells at the nine Colma area cemeteries and the California Golf Club would be subject to significant well interference impacts. The increased pumping at Sites 5 through 15 would increase such impacts at these wells by approximately 20 percent. Therefore, the well interference impacts on the Colma cemetery wells and on the California Golf Club wells would be significant and slightly greater under Alternative 2A, than they would be for the proposed Project. Mitigation Measure M-HY-6 (Ensure ~~Existing~~ Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation) would reduce the impacts of well interference to *less-than–significant* levels. ~~, except that the implementation of the mitigation measure cannot be assured until the existing irrigation well owners have agreed to allow the mitigation to take place on their property, thereby potentially resulting in a *significant and unavoidable impact with mitigation*.~~ Refer to the discussion of Impact HY-6 in Section 5.16, Hydrology and Water Quality, Section 5.16.3.7 (Operation Impacts and Mitigation Measures – Groundwater) where this impact analysis is presented in greater detail.

In response to Comment HY-15, the discussion of Alternative 2A in the first paragraph on page 7-19 is revised as follows to reflect changes to the well interference significance determination:

> As a result, well interference impacts would be *less than significant* ~~*and potentially unavoidable*~~ *with mitigation* for both the alternative and the Project, although well interference impacts at some existing wells would be greater under Alternative 2A than the Project.

In response to Comment AL-2, Draft EIR page 7-20, last sentence of the last paragraph sentence under ***Production rate of preexisting wells***, is revised as follows:

> Therefore, even with the 54 percent pumping reduction at Sites 1 and 4, static water levels at the Lake Merced wells would decrease to below the top of the well screen (albeit approximately 39 feet higher than is predicted to result with the proposed Project), which would reduce but not eliminate the risk of well or pump damage. Therefore, the well interference impact on the Lake Merced Golf Club wells would also be *significant* under Alternative 2B, as it would be for the proposed Project. However, Mitigation Measure M-HY-6 (Ensure Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation) would reduce the impacts of well interference to *less-than–significant* levels for the proposed Project and for Alternative 2B.

In response to Comment HY-15, the discussion of Alternative 2B in the third paragraph on page 7-23 is revised as follows:

> ~~However, t~~ This alternative, with mitigation, would have *less than significant* ~~*and potentially unavoidable*~~ well interference impacts, which would be the same level of significance for this impact as with the proposed Project.

In response to Comment AL-2, Draft EIR page 7-24 first paragraph, last sentence under ***Production rate of preexisting nearby wells***, is revised as follows:

> With these estimated lowered static groundwater levels at the end of the design drought, the static water levels at the Eternal Home Cemetery well, Woodlawn Cemetery well, and Italian Cemetery well would fall below the top of the well screens under Alternative 3A. As a result, the well interference impact on these wells would also be *significant* under Alternative 3A, as it would be for the proposed Project. Mitigation Measure M-HY-6 (Ensure Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation) would reduce the impacts of well interference to less-than–significant levels.

In response to Comment AL-2, page 7-25 of the Draft EIR is revised as follows:

> Therefore, even with the reduced pumping at Sites 7 and 8, the well interference impact on the Olivet Memorial Park well under Alternative 3A would be *significant*, as it would be for the proposed Project. However, Mitigation Measure M-HY-6 (Ensure Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation) would reduce the impacts of well interference to *less-than–significant* levels for the proposed Project and for Alternative 3A.
>
> The Project is predicted to lower pumping water levels in the Holy Cross Cemetery Well #1 by 86 feet, at the end of the design drought (see Table 5.16-11 [Estimated Static and Pumping Depth to

Water Levels at the End of the Design Drought] in Section 5.16, Hydrology and Water Quality). Assuming a linear relationship between pumping and water level, a 32 percent reduction in pumping by eliminating pumping at GSR Sites 7 and 8 would lower pumping water levels by 68 percent of 86 feet (i.e., by 58 feet). If pumping were not increased at any other wells in the vicinity, the pumping water level in the Holy Cross Cemetery Well #1 at the end of the design drought is predicted to be slightly above the top of the well screen. However, because the pumping groundwater level would be very close to the top of the well screen, the additional drawdown from the increased pumping at Sites 11 and 12, as per Alternative 3A, is projected to drop the pumping water level below the top of the well screen. Therefore, the well interference impact on this well would be *significant* under Alternative 3A, as it would be for the proposed Project. However, Mitigation Measure M-HY-6 (Ensure Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation) would reduce the impacts of well interference to *less-than–significant* levels for the proposed Project and for Alternative 3A.

Table 5.16-11 (Estimated Static and Pumping Depth to Water Levels at the End of the Design Drought) also shows that, at the end of the design drought, the Project is predicted to lower pumping water levels in the Home of Peace Well by 81 feet. Therefore, under the Project, the pumping water level is predicted to be below the top of the screen at the end of the design drought. Assuming a linear relationship between pumping and water level, a 32 percent reduction in nearby pumping would lower pumping water levels by 68 percent of 81 feet (i.e., by 55 feet). The pumping water level in the Home of Peace Well at the end of the design drought is predicted to be sufficiently above the top of the well screen. Accordingly, the reduced pumping at Sites 7 and 8 is estimated to result in both pumping and static groundwater levels above the top of the well screen at the Home of Peace Cemetery well. The pumping capacities of this well under Alternative 3A are therefore estimated to meet peak demand even when Project pumping is at a maximum (see Impact HY-6 in Section 5.16, Hydrology and Water Quality). As a result, the well interference impact on the Home of Peace Cemetery well would be *less than significant* under Alternative 3A ~~, while the impact of the proposed Project at this well would be *significant*~~ and *less than significant with mitigation* for the proposed Project.

In response to Comment AL-2, the Draft EIR is revised on page 7-26 third paragraph, last sentence, as follows:

The static water level in the Lake Merced Golf Club Well #3 at the end of the design drought is predicted to be below the top of the screen. As a result, the well interference impact on the Lake Merced Golf Club well would be *significant*, as it would be for the proposed Project. However, Mitigation Measure M-HY-6 (Ensure Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation) would reduce the impacts of well interference to *less-than–significant* levels for the proposed Project and for Alternative 3A.

In response to Comments AL-2 and HY-15, Draft EIR page 7-27, second paragraph, is revised as follows:

As a result, the well interference impact on these wells would be *significant* under Alternative 3A, as it would be for the proposed Project.

However, implementation of Mitigation Measure M-HY-6 would reduce these impacts of well interference to *less-than-significant* levels, by either increasing irrigation efficiency, modifying irrigation operations, or undertaking other actions detailed in Mitigation Measure M-HY-6 (Ensure ~~Existing~~ Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation). ~~Nevertheless, the implementation of this mitigation measure cannot be assured at this time, until the existing irrigation well owners have agreed to allow the mitigation to take place on their property and, therefore, the impact is determined to be *significant and potentially unavoidable with mitigation*.~~

In response to Comment AL-2, Draft EIR page 7-29, fourth paragraph, is revised as follows:

Operational impacts would be nearly the same as those expected for the proposed Project. A 32 percent reduction in pumping near the Colma-area existing irrigation wells from this alternative as compared to the proposed Project would reduce well interference on the existing wells; ~~however,~~ well interference would ~~still~~ be less than significant with mitigation for Alternative 3A as it would for the proposed Project. The potential for subsidence impacts and for seawater intrusion would be slightly greater for Alternative 3A when compared to the proposed Project; however impacts would be *less than significant* for both the alternative and the proposed Project. Potential impacts on Lake Merced water levels would be slightly greater for Alternative 3A than for the proposed Project, prior to mitigation, but as mitigated, both would result in less-than-significant impacts on the water quality of Lake Merced (even though, under Alternative 3A, more supplemental water, redistribution of pumping, or discontinued pumping would be required to mitigate such impacts, as compared to the proposed Project). Potential impacts on groundwater quality and groundwater depletion would be the same for the proposed Project and this alternative.

In response to Comment AL-2, Draft EIR pages 7-31 and 7-32 are revised as follows:

The static water levels in the Eternal Home Cemetery Well, Woodlawn Cemetery Well and Italian Cemetery Well at the end of the design drought are predicted to be below the top of the well screens. Therefore, the reduced pumping is expected to result in static groundwater levels at these three cemetery wells falling to below the top of the well screens under Alternative 3B. As a result, the well interference impact on these wells would be *significant* under Alternative 3B, as it would be for the proposed Project. However, Mitigation Measure M-HY-6 (Ensure Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation) would reduce the impacts of well interference to *less-than–significant* levels for the proposed Project and for Alternative 3B.

Table 5.16-11 (Estimated Static and Pumping Depth to Water Levels at the End of the Design Drought) also shows that, at the end of the design drought, the Project is predicted to lower pumping water levels in the Holy Cross Cemetery Well #4 by 81 feet. The same table shows that, at the end of the design drought, the Project is predicted to lower pumping water levels in the Hills of Eternity Cemetery Well by 89 feet. Assuming a linear relationship between pumping and water level, a 32 percent reduction in nearby pumping would lower pumping water levels by 68 percent of 81 feet (i.e., by 55 feet) in the Holy Cross Cemetery Well #4; and by 68 percent of 89 feet (i.e., by 61 feet) in the Hills of Eternity Cemetery Well. The pumping water levels in the Holy Cross Cemetery Well #4 and in the Hills of Eternity Cemetery Well at the end of the design drought are predicted to be below the top of the well screens. As a result, pumping groundwater levels at these wells ~~is~~ are expected to fall below the top of the well screen under Alternative 3B; and the well interference impact on these wells would be *significant* under Alternative 3B, as it would be for the proposed Project. However, Mitigation Measure M-HY-6 (Ensure Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation) would reduce the impacts of well interference to *less-than–significant* levels for the proposed Project and for Alternative 3B.

Table 5.16-11 (Estimated Static and Pumping Depth to Water Levels at the End of the Design Drought) also shows that, at the end of the design drought, the Project is predicted to lower pumping water levels in the Holy Cross Cemetery Well #1 by 86 feet. Assuming a linear relationship between pumping and water level, a 32 percent reduction in nearby pumping would lower pumping water levels by 68 percent of 86 feet (i.e., by 58 feet). The pumping water level in the Holy Cross Cemetery Well #1 at the end of the design drought is predicted to be slightly above the top of the well screen. Because pumping would not be redistributed to any other well sites under Alternative 3B, unlike Alternative 3A, no further reductions in water level would be expected. Furthermore, the pumping capacity of the Holy Cross Cemetery Well #1 is estimated to meet its peak demand when Project pumping is at a maximum, and a 32 percent reduction in nearby pumping, as per this alternative, would therefore not reduce the well's pumping capacity. As a result, the potential well interference impacts on the Holy Cross Cemetery Well #1 would be *less than significant* under Alternative 3B, while the proposed Project impacts would be *less than significant with mitigation*.

The Olivet Memorial Park well is expected to have just enough capacity to meet its expected demands, as predicted modeled existing conditions (see Impact H-6 in Section 5.16, Hydrology and Water Quality). Consequently, any lowering of groundwater levels at this well would likely result in this well having insufficient capacity to meet its expected demands. Therefore, even with the reduced pumping at Sites 7 and 8, the well interference impact on the Olivet Memorial Park well under Alternative 3B would be *significant*, as it would be for the proposed Project. However, Mitigation Measure M-HY-6 (Ensure Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation) would reduce the impacts of well interference to *less-than–significant* levels for the proposed Project and for Alternative 3B.

Table 5.16-11 (Estimated Static and Pumping Depth to Water Levels at the End of the Design Drought) also shows that, at the end of the design drought, the Project is predicted to lower pumping water levels in the Home of Peace Well by 81 feet. Under these Project conditions, this pumping water level would be below the top of the screen. Assuming a linear relationship between pumping and water level, a 32 percent reduction in nearby pumping would lower pumping water levels by 68 percent of 81 feet (i.e., by 55 feet). The pumping water level in the Home of Peace Well at the end of the design drought under Alternative 3B is predicted to be sufficiently above the top of the screen. Therefore, the reduced pumping at Sites 7 and 8 is expected to result in both pumping and static groundwater levels above the top of the well screen

> at the Home of Peace Cemetery Well at the end of the design drought. The pumping capacity of this well is estimated to meet its peak demand even when Project pumping would be at a maximum (Tables 5.16-13 [Estimated Peak Demand and 12-Hour Production Capacities]), and pumping capacity under Alternative 3B would be slightly greater as a result of eliminating pumping at Sites 7 and 8. As a result, the well interference impact on the Home of Peace Cemetery well would be *less than significant* under Alternative 3B, while the impact of the proposed Project on this well would be *significant* because the water levels due to Project pumping would be below the well screen, even though the pump discharge rate would be adequate to meet peak demand. However, Mitigation Measure M-HY-6 (Ensure Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation) would reduce impacts to *less than significant*.

In response to Comment AL-2, Draft EIR page 7-34, second paragraph, is revised as follows:

> Although this alternative would decrease pumping near the Colma-area by approximately 32 percent, the operational impacts would be similar to those expected for the proposed Project. The expected groundwater levels would still result in the potential for well interference impacts as would the proposed Project and these impacts, in most cases, are similar to those that would occur with the proposed Project though mitigation would reduce the impacts to *less-than-significant* levels. Alternative 3B would reduce the potential for subsidence and seawater intrusion; however, both the proposed Project and Alternative 3B would result in less than significant impacts. Potential impacts on groundwater quality would be the same for the proposed Project and the alternative. Potential impacts related to groundwater depletion would be similar for both the Project and this alternative.

City staff has revised Table 7-2 on page 7-35 of the Draft EIR to correct a clerical error related to the significance level of Sites 11 and 17.

TABLE 7-2
Environmental Impacts of the CEQA Alternatives Compared to the Proposed Project

Impacts	Proposed Project
Land Use	
Impact LU-1. Project construction would have a substantial impact on the existing character of the vicinity and could substantially disrupt or displace existing land uses or land use activities.	**Significant and Unavoidable with Mitigation (SUM)** Construction-related noise, traffic, air quality and recreation impacts could temporarily substantially disrupt or displace existing land uses. Mitigation Measures M-NO-1, M-NO-3, M-LU-1~~a~~, AQ-2a, AQ-3, and M-TR-1 would reduce impacts to less-than-significant levels at some sites; however the impact would remain SUM at 10 sites.

TABLE 7-2
Environmental Impacts of the CEQA Alternatives Compared to the Proposed Project

Impacts	Alternative 2A: Reduce Lake Merced Impacts and Maintain Project Yield
Land Use	
Impact LU-2. Project operations would result in substantial long-term or permanent impacts on the existing character or disrupt or displace land uses.	**Similar to but slightly less than the proposed Project (LSM)** Under the Project, Site 1 would have a mitigable impact on its surrounding land use. This alternative would reduce the land use impact slightly by eliminating Site ~~4~~ 1 where impacts are LSM. Impacts at four sites would remain LSM.

In response to Comments AL-2 and HY-15, Table 7-2 (Environmental Impacts of the CEQA Alternatives as Compared to the Proposed Project) on pages 7-49 and 7-51 of the Draft EIR is revised as follows:

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TABLE 7-2

Environmental Impacts of the CEQA Alternatives as Compared to the Proposed Project

Impact	Proposed Project	Alternative 1: No Project	Alternative 2A: Reduce Lake Merced Impacts and Maintain Project Yield	Alternative 2B: Reduce Lake Merced Impacts and Reduce Project Yield	Alternative 3A: Reduce Impacts on Colma-area Existing Irrigation Wells and Maintain Project Yield	Alternative 3B: Reduce Impacts on Colma-area Existing Irrigation Wells and Reduce Project Yield
Impact HY-6. Project operation would decrease the production rate of existing nearby irrigation wells due to localized groundwater drawdown within the Westside Groundwater Basin such that existing or planned land use(s) may not be fully supported.	**Less than Significant with Mitigation (LSM)** ~~**Significant and Potentially Unavoidable with Mitigation (SUM)**~~ Operation of the Project would cause significant well interference at 13 existing irrigation wells. Mitigation Measure M-HY-6 would reduce impacts to less-than–significant levels. ~~, except that the certainty of the mitigation measure cannot be assured until the existing irrigation well owners have agreed to allow the mitigation to take place on their property; thus, this impact is conservatively deemed significant and potentially unavoidable with mitigation.~~	**Similar but slightly less than the proposed Project (SU)** During a drought equivalent to the design drought, groundwater levels would decline to a point such that the production rate of existing wells may not fully support existing or planned land uses.	**Similar but slightly greater than the proposed Project (LSM~~SUM~~)** Alternative 2A would decrease well interference at five existing irrigation wells and increase well interference at 12 existing irrigation wells. The level of significance for well interference at existing irrigation wells would not change compared to the Project. Mitigation Measure M-HY-6 would reduce impacts to less-than-significant levels, ~~except that the certainty of the mitigation measure cannot be assured until the existing irrigation well owners have agreed to allow the mitigation to take place on their property; thus, this impact is conservatively deemed significant and potentially unavoidable with mitigation.~~	**Similar but slightly less than the proposed Project (LSM ~~SUM~~)** Alternative 2B would decrease well interference at five existing irrigation wells, but the level of significance for well interference at existing irrigation wells would not change compared to the Project. Mitigation Measure M-HY-6 would reduce impacts to less-than-significant levels. ~~, except that the certainty of the mitigation measure cannot be assured until the existing irrigation well owners have agreed to allow the mitigation to take place on their property; thus, this impact is conservatively deemed significant and potentially unavoidable with mitigation.~~	**Similar but slightly less than the proposed Project (LSM ~~SUM~~)** Alternative 3A would decrease well interference at 10 existing irrigation wells and increase well interference at seven existing irrigation wells. The level of significance for well interference at existing irrigation wells would not change compared to the Project, except that significant impacts would not occur at the Home of Peace Cemetery well. Mitigation Measure M-HY-6 would reduce impacts to less-than-significant levels. ~~, except that the certainty of the mitigation measure cannot be assured until the existing irrigation well owners have agreed to allow the mitigation to take place on their property; thus, this impact is conservatively deemed significant and potentially unavoidable with mitigation.~~	**Similar but slightly less than the proposed Project (LSM ~~SUM~~)** Alternative 3B would decrease well interference at five existing irrigation wells. The level of significance for well interference at existing irrigation wells would not change compared to the Project, except that significant impacts would not occur at the Home of Peace Cemetery well and the Holy Cross Cemetery well #1. Mitigation Measure M-HY-6 would reduce impacts to less-than–significant levels. ~~, except that the certainty of the mitigation measure cannot be assured until the existing irrigation well owners have agreed to allow the mitigation to take place on their property; thus, this impact is conservatively deemed significant and potentially unavoidable with mitigation.~~

TABLE 7-2
Environmental Impacts of the CEQA Alternatives as Compared to the Proposed Project

Impact	Proposed Project	Alternative 1: No Project	Alternative 2A: Reduce Lake Merced Impacts and Maintain Project Yield	Alternative 2B: Reduce Lake Merced Impacts and Reduce Project Yield	Alternative 3A: Reduce Impacts on Colma-area Existing Irrigation Wells and Maintain Project Yield	Alternative 3B: Reduce Impacts on Colma-area Existing Irrigation Wells and Reduce Project Yield
Impact C-HY-2. Operation of the proposed Project would result in a cumulatively considerable contribution to cumulative impacts related to well interference.	**Less than Significant ~~and Unavoidable~~ with Mitigation (~~SUM~~ LSM)** Operation of the Project under the cumulative scenario would cause significant well interference at 13 existing irrigation wells. Mitigation Measure M-HY-6 would reduce impacts to less-than-significant levels~~, except that the certainty of the mitigation measure cannot be assured until the existing irrigation well owners have agreed to allow the mitigation to take place on their property; thus, this impact is conservatively deemed significant and potentially unavoidable with mitigation~~.	**Similar but slightly less than the proposed Project (S~~U~~)** During a drought equivalent to the design drought, groundwater levels would decline to a point such that the production rate of existing wells may not fully support existing or planned land uses.	**Similar but slightly greater than the proposed Project (~~SUM~~ LSM)** Under the cumulative scenario, alternative 2A would decrease well interference at five existing irrigation wells and increase well interference at 12 existing irrigation wells. The level of significance for well interference at existing irrigation wells would not change compared to the Project. Mitigation Measure M-HY-6 would reduce impacts to less-than-significant levels~~, except that the certainty of the mitigation measure cannot be assured until the existing irrigation well owners have agreed to allow the mitigation to take place on their property; thus, this impact is conservatively deemed significant and potentially unavoidable with mitigation~~.	**Similar but slightly less than the proposed Project (~~SUM~~ LSM)** Under the cumulative scenario, alternative 2B would decrease well interference at five existing irrigation wells, but the level of significance for well interference at existing irrigation wells would not change compared to the Project. Mitigation Measure M-HY-6 would reduce impacts to less-than-significant levels~~, except that the certainty of the mitigation measure cannot be assured until the existing irrigation well owners have agreed to allow the mitigation to take place on their property; thus, this impact is conservatively deemed significant and potentially unavoidable with mitigation~~.	**Similar but slightly less than the proposed Project (~~SUM~~ LSM)** Under the cumulative scenario, alternative 3A would decrease well interference at 10 existing irrigation wells and increase well interference at seven existing irrigation wells. The level of significance for well interference at existing irrigation wells would not change compared to the Project, except that significant impacts would not occur at the Home of Peace Cemetery well. Mitigation Measure M-HY-6 would reduce impacts to less-than-significant levels~~, except that the certainty of the mitigation measure cannot be assured until the existing irrigation well owners have agreed to allow the mitigation to take place on their property; thus, this impact is conservatively deemed significant and potentially unavoidable with mitigation~~.	**Similar but slightly less than the proposed Project (~~SUM~~ LSM)** Under the cumulative scenario, alternative 3B would decrease well interference at five existing irrigation wells. The level of significance for well interference at existing irrigation wells would not change compared to the Project, except that significant impacts would not occur at the Home of Peace Cemetery well and the Holy Cross Cemetery well #1. Mitigation Measure M-HY-6 would reduce impacts to less-than–significant levels~~, except that the certainty of the mitigation measure cannot be assured until the existing irrigation well owners have agreed to allow the mitigation to take place on their property; thus, this impact is conservatively deemed significant and potentially unavoidable with mitigation~~.

In response to Comment HY-15, the second paragraph in Section 7.5 (Environmentally Superior Alternative) on page 7-55 of the Draft EIR is revised as follows:

> Construction of the proposed Project would cause significant and unavoidable noise and land use impacts (Impacts LU-1, NO-1, and NO-3) (see Section 5.2, Land Use, and Section 5.7, Noise and Vibration) from well drilling at nighttime and well facility construction during the daytime. Impacts LU-1 and NO-3 would be significant, even with mitigation, and there is no mitigation available to reduce the impact of nighttime construction conflicting with local noise standards (NO-1). In addition, aesthetic impacts of construction (Impact AE-1) (see Section 5.3, Aesthetics) would be significant and unavoidable at Site 7. All other construction impacts would have no impact, would be less than significant, or would be less than significant with implementation of mitigation measures. Operation of the proposed Project would cause significant ~~and potentially unavoidable~~ well interference impacts from pumping during take years at up to 13 existing irrigation wells. Mitigation would reduce these impacts to less than significant~~, except that the implementation of the mitigation measure cannot be assured until the existing irrigation well owners have agreed to allow the mitigation to take place on their property; for this reason, the impact is deemed to be significant and potentially unavoidable with mitigation~~ (see Impact HY-6 in Section 5.16, Hydrology and Water Quality). All other operational impacts would either have no impact, would be less than significant, or would be less than significant with implementation of mitigation measures. The proposed Project would achieve all of the Project objectives.

In response to Comment HY-15, the first paragraph on page 7-56 of the Draft EIR is revised as follows:

> Mitigation would reduce the well interference impacts to less-than-significant levels in all cases~~, except that the implementation of the mitigation measure cannot be assured until the existing irrigation well owners have agreed to allow the mitigation to take place on their property; for this reason, the impact is deemed to be significant and potentially unavoidable with mitigation~~.

In response to Comment HY-15, the second paragraph on page 7-57 of the Draft EIR is revised as follows:

> Mitigation would reduce the significant well interference impacts to less-than-significant levels~~, except that the implementation of the mitigation measure cannot be assured until the existing irrigation well owners have agreed to allow the mitigation to take place on their property; for this reason, the impact has been deemed significant and potentially unavoidable with mitigation~~.

In response to Comment HY-15, the first paragraph on page 7-58 of the Draft EIR, the discussion of Alternative 3B, is revised as follows to reflect changes to the well interference significance determination:

> Mitigation would reduce the significant well interference impacts to less-than-significant levels~~, except that the implementation of the mitigation measure cannot be assured until the existing irrigation well owners have agreed to allow the mitigation to take place on their property; for this reason, the impact has been deemed significant and potentially unavoidable with mitigation~~.

In response to Comments HY-15 and AL-2, pages 7-58 and 7-59 of the Draft EIR are revised as follows:

> As described above, none of the alternatives would reduce all the significant and unavoidable impacts of the proposed Project. Alternatives 2A, 2B, 3A, and 3B would cause significant and unavoidable impacts related to construction at one or two fewer sites than the Project; however,

significant and unavoidable construction-related impacts would still occur at nine or 10 other facility sites, as they would under the proposed Project. Such impacts, although significant and unavoidable, would be temporary and would only occur for portions of the 16-month construction period. Alternatives 2A and 2B would avoid the significant construction-period noise and land use impacts at Sites 1 and 4. Alternatives 3A and 3B would avoid the significant and unavoidable aesthetic impact during construction associated with tree removal at Site 7.

Alternatives 3A and 3B would cause significant ~~and potentially unavoidable~~ well interference impacts during operation at one or two fewer existing irrigation wells than the Project; however, significant ~~and potentially unavoidable~~ but mitigable well interference impacts would still occur at 11 or 12 existing irrigation wells, as they would under the proposed Project. The No Project Alternative would not cause significant and unavoidable construction impacts (since no construction would occur), but water levels at Lake Merced would continue to fluctuate as they do now under varying hydrologic conditions, and during a drought as severe as the design drought, lake levels would decline to a level that could have adverse water quality effects at Lake Merced. ~~Because permanent operational impacts are considered more severe than temporary construction-period impacts, Alternative 3B (Reduce Impacts on Colma-area Existing Irrigation Wells and Reduce Yield) is the environmentally superior alternative, in that it would have significant and potentially unavoidable well interference impacts at fewer sites than the proposed Project or Alternatives 2A, 2B, or 3A. 3B (Reduce Impacts on Colma-area Existing Irrigation Wells and Reduce Yield) is therefore identified as the environmentally superior alternative, although, while it would meet most, it would not fully meet all of the Project objectives or WSIP goals.~~

Alternative 2B is the environmentally superior alternative because it would reduce the severity of well interference impacts as compared to the proposed Project and Alternatives 2A and 3A, and it would have fewer sites with significant and unavoidable construction-period noise and land use impacts than Alternatives 3A and 3B. Alternative 2B (Reduce Lake Merced Impacts and Reduce Project Yield) is therefore identified as the environmentally superior alternative, although, while it would meet most, it would not fully meet all of the Project objectives or WSIP goals. In particular, Alternative 2B would not provide the full 7.2-mgd dry-year and emergency pumping capacity needed to meet Project objectives.

9.5.17 Appendix C

City staff has revised Appendix C- Summary of Impacts and Mitigation Measures for the Groundwater Storage and Recovery Project, page C-1 as it lists an incorrect significance level for Impact C-LU-1, Sites 11 and 17. The Draft EIR is revised to address this clerical error:

Appendix C
Summary of Impacts and Mitigation Measures for the Groundwater Storage and Recovery Project

Impact Statement	**Site 11**	**Site 17 (A)**	**Mitigation**
Impact C-LU-1. Construction and operation of the proposed Project could result in a cumulatively considerable contribution to cumulative impacts related to land use.	LSM	LSM	**M-NO-1: Noise Control Plan (1, 3, 4, 5, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17 [Alternate], 18 [Alternate], and 19 [Alternate])** **M-NO-3: Expanded Noise Control Plan (1, 3, 4, 5, 9, 10, 11, 12, 13, 14, 15, 16, 17 [Alternate], 18 [Alternate], and 19 [Alternate])** **M-NO-5: Operational Noise Control Measures (Sites 1, 5 [On-site Treatment], 7 [On-site Treatment], 9, 12, 18 [Alternate], and the Westlake Pump Station)**

In response to Comment OV-1, Appendix C - Summary of Impacts and Mitigation Measures for the Groundwater Storage and Recovery Project, Draft EIR page Appendix C-1 is revised as follows:

Appendix C
Summary of Impacts and Mitigation Measures for the Groundwater Storage and Recovery Project

Impact Statement	**Site 15**	**Mitigation**
Impact C-LU-1. Construction and operation of the proposed Project could result in a cumulatively considerable contribution to cumulative impacts related to land use.	LSM	**M-NO-1: Noise Control Plan (1, 3, 4, 5, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17 [Alternate], 18 [Alternate], and 19 [Alternate])** **M-NO-3: Expanded Noise Control Plan (1, 3, 4, 5, 9, 10, 11, 12, 13, 14, 15, 16, 17 [Alternate], 18 [Alternate], and 19 [Alternate])** **M-NO-5: Operational Noise Control Measures (Sites 1, 5 [On-site Treatment], 7 [On-site Treatment], 9, 12, 18 [Alternate], and the Westlake Pump Station)**

In response to Comment OV-1, Appendix C - Summary of Impacts and Mitigation Measures for the Groundwater Storage and Recovery Project, Draft EIR page Appendix C-2, is revised as follows:

Appendix C
Summary of Impacts and Mitigation Measures for the Groundwater Storage and Recovery Project

Impact Statement	**Site 15**	**Mitigation**
Impact C-NO-1. Construction and operation of the proposed Project could result in a cumulatively considerable contribution to cumulative impacts related to noise.	LSM	**M-NO-1: Noise Control Plan (1, 3, 4, 5, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17 [Alternate], 18 [Alternate], and 19 [Alternate])** **M-NO-3: Expanded Noise Control Plan (1, 3, 4, 5, 9, 10, 11, 12, 13, 14, 15, 16, 17 [Alternate], 18 [Alternate], and 19 [Alternate])** **M-NO-5: Operational Noise Control Measures (Sites 1, 5 [On-site Treatment], 7 [On-site Treatment], 9, 12, 18 [Alternate], and the Westlake Pump Station)**

In response to Comment HY-15 Appendix C - Summary of Impacts and Mitigation Measures for the Groundwater Storage and Recovery Project, Draft EIR pages Appendix C-6 through C-8, are revised as follows. The "—" in the table notes cells with no changes.

Appendix C

Summary of Impacts and Mitigation Measures for the Groundwater Storage and Recovery Project

Impact Statement	**All Sites**	**Mitigation**
Impact HY-6. Project operations would decrease the production rate of existing nearby irrigation wells due to localized groundwater drawdown within the Westside Groundwater Basin such that existing or planned land use(s) may not be fully supported.	~~SUM~~ LSM	M-HY-6: Ensure ~~Existing~~ Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use(s) Due to Project Operation
M-HY-6. Mitigation Action #~~1~~ 4: Improve Irrigation Efficiency, and Mitigation Action #~~2~~ 5: Modify Irrigation Operations	--	--
M-HY-6. Mitigation Action #~~3~~ 1: Redistribute GSR Pumping	--	--
M-HY-6. Mitigation Action #~~4~~ 2: Reduce GSR Pumping	--	--
M-HY-6. Mitigation Action #~~5~~ 6: Lower Pump in Irrigation Well and Mitigation Action #~~6~~ 7: Lower and Change Pump in Irrigation Well	--	--
M-HY-6. Mitigation Action #~~7~~ 8: Add Storage Capacity for Irrigation Supply	--	--

Appendix C

Summary of Impacts and Mitigation Measures for the Groundwater Storage and Recovery Project

Impact Statement	All Sites	Mitigation
M-HY-6. Mitigation Action #~~8~~ 9: Replace Irrigation Well	--	M-BR-1d: Monarch Butterfly Protection Measures (Sites 1, 3, 7, 10, and 12)
M-HY-6. Mitigation Action #~~9~~ 3: Replace Irrigation Water Source	NI = Population and Housing~~, Cultural and Paleontological Resources,~~ Wind and Shadow, ~~Utilities and Service Systems,~~ Public Services, ~~Biological Resources, Geology and Soils, Hydrology and Water Quality, Hazards and Hazardous Materials, Mineral and Energy Resources, Agriculture and Forest Resources~~ LS = ~~Land Use, Transportation and Circulation, Noise and Vibration,~~ Greenhouse Gas Emissions, Recreation, Mineral and Energy Resources, Agriculture and Forest Resources LSM = Land Use, Aesthetics, Cultural and Paleontological Resources, Transportation and Circulation, Noise and Vibration, Air Quality, Utilities and Service Systems, Biological Resources, Geology and Soils, Hydrology and Water Quality, Hazards and Hazardous Materials	M-CR-2: Discovery of Archaeological Resources (All Sites except Westlake Pump Station) M-CR-3: Suspend Construction Work if a Paleontological Resource is Identified (All Sites Except Site 9 and Westlake Pump Station) M-CR-4: Accidental Discovery of Human Remains (All Sites Except Westlake Pump Station) M-TR-1: Traffic Control Plan (Sites 2, 4, 5, 6, 7, 10, 12, 13, 14, 15, 17 [Alternate], 18 [Alternate], and 19 [Alternate]) M-NO-1: Noise Control Plan (1, 3, 4, 5, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17 [Alternate], 18 [Alternate], and 19 [Alternate]) M-NO-2: Reduce Vibration Levels during Construction of Pipelines (Sites 3, 4, 12, 15, and 18 [Alternate]) M-UT-1a: Confirm Utility Line Information

Appendix C

Summary of Impacts and Mitigation Measures for the Groundwater Storage and Recovery Project

Impact Statement	**All Sites**	**Mitigation**
		(All Sites) M-UT-1b: Safeguard Employees from Potential Accidents Related to Underground Utilities (All Sites) M-UT-1c: Notify Local Fire Departments (All Sites) M-UT-1d: Emergency Response Plan (All Sites) M-UT-1e: Advance Notification (All Sites) M-UT-1f: Protection of Other Utilities during Construction (All Sites) M-UT-1g: Ensure Prompt Reconnection of Utilities (All Sites) M-UT-1h: Avoidance of Utilities Constructed or Modified by Other SFPUC Projects (All Sites) M-UT-1i: Coordinate Final Construction Plans with Affected Utilities (All Sites) M-UT-4: Waste Management Plan (All Sites) M-BR-1a: Protection Measures during Construction for Special-status Birds and

Appendix C

Summary of Impacts and Mitigation Measures for the Groundwater Storage and Recovery Project

Impact Statement	**All Sites**	**Mitigation**
		Migratory Passerines and Raptors (All Sites) M-BR-1b: Protection Measures for Special-status Bats during Tree Removal or Trimming (Sites 1, 3, 4, 7, 10, 11, 12, 15, and 16) M-BR-1d: Monarch Butterfly Protection Measures (Sites 1, 3, 7, 10, and 12) M-BR-4a: Identify Protected Trees (Sites 3, 4, 7, 10, 11, 12, 13, 14, 15, and 17 [Alternate]) M-BR-4b: Protected Tree Replacement (Sites 4, 7, 9, 12, 15, and 18 [Alternate]) M-GE-3: Conduct Site-Specific Geotechnical Investigations and Implement Recommendations (All Sites) M-HY-1: Develop and Implement a Stormwater Pollution Prevention Plan (SWPPP) or an Erosion and Sediment Control Plan (All Sites) M-HZ-2a: Preconstruction Hazardous Materials Assessment (All Sites) M-HZ 2b: Health and Safety Plan (All Sites) M-HZ-2c: Hazardous Materials

Appendix C

Summary of Impacts and Mitigation Measures for the Groundwater Storage and Recovery Project

Impact Statement	**All Sites**	**Mitigation**
		Management Plan (All Sites)
Impact C-HY-2. Operation of the proposed Project would result in a cumulatively considerable contribution to cumulative impacts related to well interference.	~~SUM~~ LSM	M-HY-6: Ensure Irrigators' Wells Are Not Prevented from Supporting Existing or Planned Land Use(s) Due to Project Operation

9.5.18 Appendix D

In response to Comment HY-15, Appendix D, Table D-2 (WSIP PEIR Impacts Consistency), on page D-45 of the Draft EIR, revised as follows:

TABLE D-2
WSIP PEIR Impacts Consistency

PEIR Impact	PEIR Significance Determination for San Francisco Region Groundwater Project SF-2	GSR Project-level Significance Determination	Same Rationale for Significance Determination as PEIR? (Y/N)	Notes: (Explain difference in significance determinations and/or rationale for determinations)
Impact 5.7.5-2: Cumulative impacts on the South Westside Groundwater Basin.	LS	~~SUM~~ LSM	N	See Impacts C-HY-2, C-HY-3, C-HY-4, C-HY-5, C-HY-6, C-HY-7, and C-HY-8. The PEIR determined that implementation of the proposed conjunctive-use program should result in higher average groundwater levels in the northern portion of the South Westside Groundwater Basin as a result of the coordinated use of surface water and groundwater. The PEIR determined that implementation of the operating agreement(s) would ensure that impacts related to basin overdraft, saltwater intrusion, and land subsidence would be less than significant, and that because there are no other planned future uses of groundwater in this portion of the basin, cumulative groundwater impacts would be less than significant. **The project-level analysis determined implementation of Mitigation Measure M-HY-6 (Ensure ~~Existing~~ Irrigator's Wells Are Not Prevented from Supporting Existing or Planned Land Use[s] Due to Project Operation) would reduce the GSR Project's contribution to cumulative impacts on well interference and the Project would not have a considerable contribution to the cumulative impact relative to well interference. ~~However, because the feasibility of the mitigation measure cannot be assured until the existing irrigation well owners have agreed to allow mitigation to take place on their property, the Project's impact is conservatively deemed to be cumulatively considerable.~~ Implementation of Mitigation Measure M-HY-14 (Prevent Groundwater Depletion) would reduce the Project's impact on long-term depletion of groundwater storage to less-than-cumulatively considerable levels in the South Westside Groundwater Basin. The Project-level analysis determined that the Project would not have a considerable contribution to the cumulative impact relative to seawater intrusion or subsidence in the South Westside Groundwater Basin.**

9.5.19 Appendix F

City staff has revised two rows in the Special-status Animal Species table on pages Appendix F-38 and Appendix F-40 of the Daft EIR to correct discussion of the potential occurrence of bank swallow, and to correct the discussion on double-crested cormorant. City staff has also added a new row to the same table, to include the tricolored blackbird, which has the potential to occur near Lake Merced;

SPECIAL-STATUS ANIMAL SPECIES REPORTED OR WITH POTENTIAL TO OCCUR NEAR THE GROUNDWATER SUPPLY PROJECT

Common Name *Scientific Name*	**Listing Status USFWS/CDFW**	**Habitat**	**Potential to Occur[(a)]**
Bank swallow *Riparia riparia*	–/CT	Colony nester on sandy cliffs near water, marshes, lakes, streams, the ocean. Forages in fields.	**Low potential.** No suitable nesting habitat present.~~, although~~ However, this species nests nearby and ~~occasionally forages at~~ Lake Merced is an important foraging ground for bank swallows nesting at Fort Funston.
Double-crested cormorant *Phalacrocorax auritus*	–/–	Nests along coast on isolated islands or in trees along lake margins.	**High potential.** There ~~is a colony of~~ are three double-crested cormorant~~s~~ rookeries at Lake Merced (SF Field Ornithologists, 2003).
Tricolored blackbird *Agelaius tricolor*	–/* (nesting colony)	Colonial nester in freshwater marshes. Nests over or near the water, typically in emergent vegetation.	**Low potential.** Although the species has been observed at Lake Merced during the nonbreeding season, no known nesting colonies are present.

9.5.20 Appendix L

In response to Comment HY-52, a new appendix, Appendix L, has been added to the Draft EIR. The entirety of Appendix L is as follows:

ESA+ORION
a joint venture

TECHNICAL MEMORANDUM

To:	Tim Johnston — San Francisco Planning Department, Environmental Planning Paul Maltzer — San Francisco Planning Department, Environmental Planning
cc:	Kelley Capone— SFPUC Elaine Warren— City Attorney's Office
From:	Joyce Hsiao, Kelly White, and Barbara Leitner — ESA+Orion Joint Venture
Date:	December 19, 2013
Subject:	San Francisco Public Utilities Commission's Water System Improvement Program, Final Program Environmental Impact Report — Supplemental Review on New Studies on the Tuolumne River

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Introduction

On October 8, 2008, the San Francisco Planning Commission certified the Final Program Environmental Impact Report (PEIR) on the San Francisco Public Utilities Commission's (SFPUC) Water System Improvement Program (WSIP)[1] in fulfillment of the requirements of the California Environmental Quality Act (CEQA). Subsequent to the certification action, the SFPUC approved the Phased WSIP and adopted CEQA Findings, a statement of overriding considerations, and the WSIP Mitigation Monitoring and Reporting Program (MMRP).[2] Because the 30-day statute of limitations for a CEQA challenge lapsed without the filing of litigation, the PEIR is deemed adequate for its intended purposes as a matter of law (See Pub. Resources Code, Section 21167.2). The SFPUC is now actively implementing components of the adopted WSIP in compliance with CEQA. One of the WSIP projects is the Regional Groundwater Storage and Recovery Project (Project), which in the PEIR is referred to as the Westside Groundwater Basin conjunctive-use project.

On April 10, 2013, the San Francisco Planning Department published the Draft EIR on the SFPUC's Regional Groundwater Storage and Recovery Project EIR.[3] The Tuolumne River Trust (TRT) submitted a letter dated June 5, 2013 to the San Francisco Planning Department commenting on this Draft EIR. One of the comments in this letter asserts that the Regional Groundwater Storage and Recovery Project EIR tiers off the WSIP PEIR and "fails to incorporate new conditions and information that have become available since the WSIP was approved." The TRT is concerned that the Project could potentially result in negative

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1 San Francisco Planning Department, 2008. *Final Program Environmental Impact Report for the San Francisco Public Utilities Commission's Water System Improvement Program*. Planning Department File No. 2005.0159E, State Clearinghouse No. 2005092026, certified October 30, 2008. Available for review at the San Francisco Planning Department at 1650 Mission Street, Suite 400, San Francisco, California 94103.

2 San Francisco Public Utilities Commission, 2008. Resolution No. 08-0200, October 30, 2008.

3 San Francisco Planning Department, 2013. *Draft Environmental Impact Report for the San Francisco Public Utilities Commission's Regional Groundwater Storage and Recovery Project*. Planning Department File No. 2008.1396E, State Clearinghouse No. 2009062096, published April 10, 2013. Available for review at the San Francisco Planning Department at 1650 Mission Street, Suite 400, San Francisco, California 94103.

impacts on the Tuolumne River below O'Shaughnessy Dam, and that the Project EIR must consider new information that has become available since the WSIP PEIR was approved.

In response to the concerns presented in the TRT comment letter, environmental information that has been developed since certification of the WSIP PEIR—specifically, studies relevant to the conditions on the reach of the Tuolumne River below O'Shaughnessy Dam—was reviewed to determine if this new information would affect the use of the WSIP PEIR as defined under CEQA Guidelines Section 15168 and for tiering as defined under CEQA Guidelines Section 15385. This memorandum summarizes the results of the review.

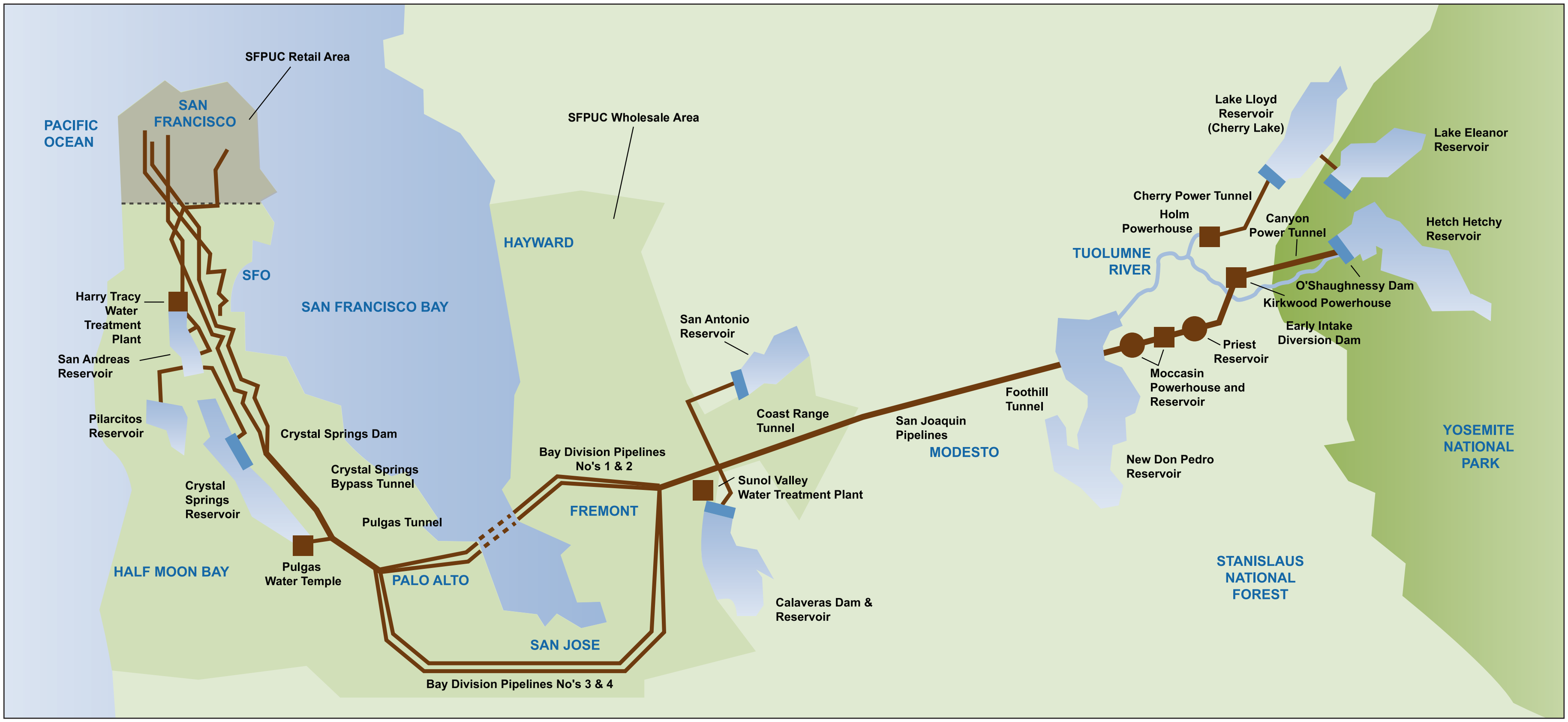
Background

The WSIP is a program of improvements to the SFPUC's regional water system (see **Figure 1**) that serves drinking water to all or parts of San Francisco, San Mateo, Santa Clara, Alameda, and Tuolumne Counties. The program is designed to increase system reliability with respect to water quality, seismic response, water delivery, and water supply to meet water delivery goals in the service area through the year 2018. The WSIP consists of modifications to the SFPUC's water supply and system operations located in three watersheds (Tuolumne River, Alameda Creek, and Peninsula watersheds) together with construction and operation of a series of facility improvement and water supply projects located in seven counties (San Francisco, San Mateo, Santa Clara, Alameda, San Joaquin, Stanislaus, and Tuolumne Counties). Since certification of the PEIR and partially in response to PEIR mitigation requirements, the SFPUC has been working with other organizations to undertake studies along the Tuolumne River below O'Shaughnessy Dam, between Hetch Hetchy and Don Pedro Reservoirs (see **Figure 2**). Specifically, this work consists of climate change and ecosystem studies that have been conducted in the upper Tuolumne River watershed.

The Regional Groundwater Storage and Recovery Project is one element of the WSIP and was identified by the SFPUC as such in the PEIR. It would increase water supply reliability during "dry" years (i.e., those with below-average precipitation) or in emergencies by increasing groundwater storage in the Westside Groundwater Basin during "wet" and "normal" years (i.e., those with above-average and average precipitation, respectively) for subsequent use during dry years. During wet and normal years, the SFPUC would supply its partner agencies in the area of the groundwater basin with surface water from the SFPUC's regional system, generally consisting of about 85 percent Tuolumne River water from the Hetch Hetchy Reservoir and about 15 percent local surface waters from the Alameda Creek and Peninsula watersheds. In dry years, partner agencies would pump the accrued groundwater in storage. With the Project, withdrawals from the Tuolumne River and local watersheds would not change from the amounts identified by the SFPUC in its approval of the WSIP in 2008.

This memorandum identifies and reviews new information on the upper Tuolumne River available subsequent to certification of the PEIR.[4] It summarizes the new information and discusses why this new information does not affect the findings or conclusions of the PEIR and how it: (1) does not result in any new significant environmental impacts; (2) does not substantially increase the severity of previously

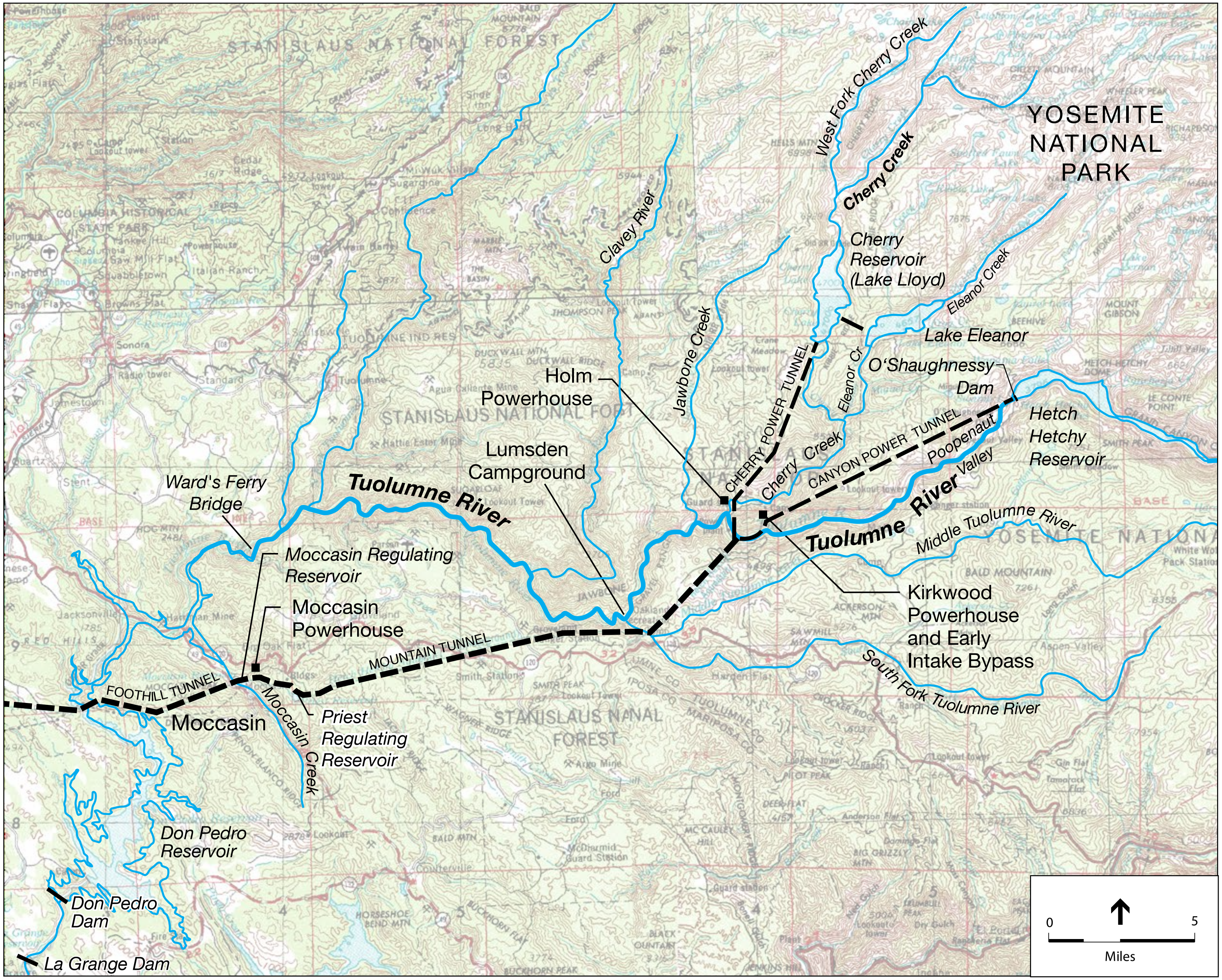
[4] New information in this case is limited to information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the PEIR certification (see CEQA Section 21166; CEQA Guidelines Section 15162).



SOURCE: ESA + Orion

SFPUC Supplemental Review on New Studies on the Tuolumne River

Figure 1
SFPUC Regional Water System



SOURCE: ESA+Orion, 2012; USGS 1970

Figure 2
Upper Tuolumne River Watershed,
Hetch Hetchy Reservoir to Don Pedro Reservoir

identified environmental effects; (3) does not provide information demonstrating the feasibility of mitigation measures or alternatives previously rejected as infeasible; and (4) does not lead to new feasible mitigation measures or alternatives.

Summary of WSIP Water Supply Strategy

As described in the Introduction above, the SFPUC adopted the Phased WSIP, now referred to simply as the WSIP (see PEIR Vol. 7a, Section 13.4). Under the WSIP, the SFPUC intends to construct and operate all of the WSIP facility improvement and water supply projects identified in the PEIR, including the Regional Groundwater Storage and Recovery Project. In addition, under the WSIP, the SFPUC will limit water sales to an average annual amount of 265 million gallons per day (mgd) from the SFPUC watersheds through 2018, thus improving water supply reliability to meet the goals and objectives of the WSIP, including no greater than 20 percent systemwide rationing in any one year of a drought. The limitation on average annual water sales of 265 mgd generally represents the base-year level of supply delivered from the SFPUC watersheds through the regional water system to both the retail and wholesale customers that was analyzed in the PEIR. The SFPUC watersheds that supply surface water to the regional system include the local watersheds (Alameda Creek and Peninsula watersheds) and the Tuolumne River watershed. Under the WSIP, similar to existing conditions, the Tuolumne River watershed would provide approximately 85 percent and the local watersheds would provide approximately 15 percent of the water supply delivered to customers. The SFPUC will maintain the existing 265 mgd average annual sales of surface water from the SFPUC watersheds through 2018. To meet the WSIP drought reliability goals through 2018, there would be a small increase in average annual Tuolumne River diversions of about 2 mgd. To meet the projected purchase request of 285 mgd in 2018, the SFPUC and wholesale customers will collectively develop 20 mgd of increased supply through conservation, recycled water, and groundwater projects.

The Regional Groundwater Storage and Recovery Project is one of the WSIP water supply projects identified to implement the delivery and drought reliability components of the WSIP. The other WSIP projects needed to achieve the WSIP delivery and drought reliability goals include the restoration of the capacities of Crystal Springs and Calaveras Reservoirs and a water transfer with the Modesto Irrigation District and/or Turlock Irrigation District (MID/TID); all of these elements were analyzed in the PEIR and identified as part of the WSIP approved by the SFPUC in 2008. The facilities improvement aspects of the Regional Groundwater Storage and Recovery Project and restoration of the capacities of Crystal Springs and Calaveras Reservoirs were analyzed at a programmatic level of detail in the PEIR, while the water supply and system operations aspects of these projects, including the MID/TID water transfer, were analyzed at a project level. Project-level environmental review of the Lower Crystal Springs Dam Improvements[5] and Calaveras Dam Replacement[6] projects was completed in 2010 and 2011, respectively; construction of the

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[5] San Francisco Planning Department, 2010. *Final Environmental Impact Report for the San Francisco Public Utilities Commission's Lower Crystal Springs Dam Improvements Project*. Planning Department File No. 2006.0536E, State Clearinghouse No. 2007012002, certified October 7, 2010. Available for review at the San Francisco Planning Department at 1650 Mission Street, Suite 400, San Francisco, California 94103.

[6] San Francisco Planning Department, 2011. *Final Environmental Impact Report for the San Francisco Public Utilities Commission's Calaveras Dam Replacement Project*. Planning Department File No. 2005.0161E, State Clearinghouse No. 2005102102, certified January 27, 2011. Available for review at the San Francisco Planning Department at 1650 Mission Street, Suite 400, San Francisco, California 94103.

Lower Crystal Springs Dam Improvements project was completed in 2012, and construction of the Calaveras Dam Replacement project is now underway. Project-level environmental review of the Regional Groundwater Storage and Recovery Project is currently in progress, as described above in the Introduction of this memorandum.

Summary of WSIP PEIR Water Supply Impacts

Plans and Policies

The PEIR (Vol. 3, Section 5.2) provided an overview of the plans and policies governing the SFPUC's water supply, including water quality, water use, and natural resource protection. This section included a description of the federal Wild and Scenic Rivers Act, a figure showing the Tuolumne River's Wild and Scenic River Designation (Figure 5.2-1, PEIR page 5.2-9), Tuolumne Wild and Scenic River Comprehensive Management Plan (Tuolumne River Plan), General Management Plan for Yosemite National Park, and Wilderness Management Plan. At the time of certification of the PEIR, the Tuolumne River Plan was still under development and the PEIR summarized the status of the plan.

Impacts on the Upper Tuolumne River Watershed

In the Tuolumne River watershed, the PEIR described and analyzed impacts of the WSIP water supply and system operations on the following potentially affected resources: stream flow and reservoir water levels; geomorphology; surface water quality; surface water supplies; groundwater; fisheries; terrestrial biological resources, recreational and visual resources; and energy resources (see PEIR Vol. 3, Section 5.3, and Vol. 7a, Sections 14.5, 14.6, and 14.7). With one exception, the PEIR determined that water supply and system operations impacts of the adopted WSIP—including the Regional Groundwater Storage and Recovery Project—on potentially affected resources in the Tuolumne River watershed and downstream water bodies would be less than significant, and no mitigation measures would be required. The one exception is that the PEIR identified a potentially significant, but mitigable, impact (i.e., less than significant with mitigation) on terrestrial biological resources in the Tuolumne River watershed due to the approximately 2 mgd increase in average annual diversions from the Tuolumne River to meet drought reliability goals and the associated modifications in releases from Hetch Hetchy Reservoir. This impact was identified for the reach of the river below O'Shaughnessy Dam, between Hetch Hetchy and Don Pedro Reservoirs, with particular impact on the meadow and alluvial features in this reach, including the Poopenaut Valley (see Figure 2, above). Because the impacts on biological resources result from changes in stream flow, the WSIP impacts on stream flow are briefly described below, followed by the description of the potentially significant impact on biological resources in this reach of the Tuolumne River. Please see PEIR, Vol. 3, Section 5.3, as augmented in Vol. 7a, Sections 14.5, 14.6, and 14.7, for a description of the less-than-significant impacts on the other potentially affected resources.

The WSIP includes an expected increase in average annual diversions of 2 mgd from the Tuolumne River over existing conditions as a result of the combined effects of several systemwide reliability improvements, including the Groundwater Storage and Recovery project, restoring the capacities of Calaveras and Crystal Springs Reservoirs, and a dry-year water transfer from the MID and/or TID. The PEIR determined that the

WSIP would result in slight modifications to the volume, frequency and timing of releases from Hetch Hetchy Reservoir, thereby changing flow patterns in the Tuolumne River below the reservoir compared to the baseline conditions (PEIR, Vol. 3, Section 5.3; Vol. 7a, Section 14.6; and Vol. 8, Appendix O-3).

Below Hetch Hetchy Reservoir, the effects of the WSIP would generally consist of a few days delay in releases of water from the reservoir and a slight reduction in the total volume of releases to the river in normal, below-normal, and dry years, and a slight increase in reservoir releases in wet years. While these changes were determined to be less than significant relative to stream flow, the PEIR determined that the WSIP would result in *potentially significant* impacts on terrestrial biological resources along the Tuolumne River from O'Shaughnessy Dam to Don Pedro Reservoir, and specifically to the sensitive wetland and riparian habitat and associated plant and wildlife species in the Poopenaut Valley (see PEIR Impact 5.3.7-2, Vol. 3, pp. 5.3.7-21 to 5.3.7-22, and Vol. 7a, pp. 14.6-1 to 14.6-13).

The PEIR also determined that implementation of Mitigation Measure 5.3.7-2, Controlled Releases to Recharge Groundwater in Streamside Meadows and Other Alluvial Deposits (see PEIR Vol. 4, Section 6.4.2, pp. 6-49 to 6-50), would reduce the severity of this impact to a less-than-significant level. Mitigation Measure 5.3.7-2, which the SFPUC adopted as part of the WSIP Mitigation Monitoring and Reporting Program, requires the SFPUC to manage releases from Hetch Hetchy Reservoir to promote recharge of groundwater in riverside meadows in the Poopenaut Valley and streamside alluvial deposits. As part of this measure, the SFPUC is required to gather data about environmental conditions in the Poopenaut Valley. Since 2009, the SFPUC has been conducting this effort in coordination with Yosemite National Park and other involved agencies (see discussion of Upper Tuolumne River Ecosystem Project, below). With implementation of this measure, the PEIR indicated that meadow conditions in the Poopenaut Valley would be maintained in the pre-WSIP state or improved.

PEIR Alternatives Analysis

As required under CEQA, the PEIR analyzed a reasonable range alternatives that would feasibly attain most of the project's basic objectives but would avoid or substantially lessen any significant adverse environmental effects of the project. The PEIR (Vol. 4, Chapter 9) evaluated the following eight CEQA alternatives: (1) No Program; (2) No Purchase Request Increase; (3) Aggressive Conservation/Water Recycling and Local Groundwater Alternative with no supplemental Tuolumne River supply; (4) Aggressive Conservation/Water Recycling and Local Groundwater Alternative with supplemental Tuolumne River supply; (5) Lower Tuolumne River Diversion; (6) Year-round Desalination at Oceanside; (7) Regional Desalination for Drought; and (8) Modified WSIP. With the exception of the No Program Alternative, all of the alternatives included components intended to reduce identified impacts on the Tuolumne River watershed. However, these components were generally related to systemwide approaches to reduce deliveries from the watersheds and did not relate specifically to impacts in the upper Tuolumne River watershed. Hence, none of the new information regarding climate change and ecosystem studies on the upper Tuolumne River watershed, described below, affects the feasibility of the CEQA alternatives analyzed in the PEIR or indicates there is a new feasible alternative.

Studies on the Upper Tuolumne River Available Subsequent to PEIR Certification

Several studies related to the SFPUC's water supply and regional water system have been either ongoing or developed subsequent to certification of the PEIR. In general, these studies support information presented in the WSIP PEIR and further inform ongoing implementation of WSIP facility improvement projects and/or implementation of WSIP-related mitigation measures. This section summarizes and reviews recent studies on the upper Tuolumne River watershed, discusses potential relevance to the WSIP (specifically changes in Tuolumne River flows), and determines if any new information would affect the conclusions of the PEIR, either by indicating the potential for a new significant impact or a substantial increase in the severity of an identified impact, demonstrating the feasibility of previously identified mitigation measures or alternatives determined to be infeasible, or leading to a new feasible mitigation measure or alternative.

Overall, as described in detail below, none of the new information developed subsequent to the PEIR certification would affect the environmental analysis or impact conclusions presented in the PEIR related to the upper Tuolumne River watershed such that it would cause new significant impacts or result in the substantial increase in the severity of impacts previously identified in the PEIR.

Upper Tuolumne River Ecosystem Program

The Upper Tuolumne River Ecosystem Program (UTREP) is a long-term, science-based effort to: (1) understand historical and current ecosystem conditions on the upper Tuolumne River, (2) assess the relationship of current ecosystem conditions to Hetch Hetchy regional water system operations, and (3) provide recommendations for environmental water releases and other river management measures that support broad ecosystem values while meeting water supply and power generation needs. The UTREP is being coordinated by the SFPUC in collaboration with Yosemite National Park staff of the National Park Service (NPS), the U.S. Fish and Wildlife Service (USFWS), and Stanislaus National Forest. Work under UTREP is currently focused on developing a new in-stream flow management plan for O'Shaughnessy Dam. One aspect of the study effort is to develop the necessary information to implement the mitigation measure identified in the PEIR regarding spill management for the upper Tuolumne River—Mitigation Measure 5.3.7-2, Controlled Releases to Recharge Groundwater in Streamside Meadows and Other Alluvial Deposits.

The UTREP library[7] contains documents that are relevant to the management of the upper Tuolumne River and major tributaries regulated by the SFPUC's Hetch Hetchy portion of the regional water supply system. The website currently lists 26 reports and publications dating from 1961 to 2013, of which 13 of the documents were published in 2008 or after; these 13 documents are reviewed below. Of the remaining documents, all were published and available prior to certification of the PEIR, and the PEIR considered this information as applicable and necessary for the impact analysis, including specific reference to four of the

[7] The Upper Tuolumne River Ecosystem Program Library website. Visited October 22, 2013. http://utrep.blogspot.com/p/reports-and-publications.html

documents.[8] In particular, the TRT comment letter on the Regional Groundwater Storage and Recovery Project Draft EIR discusses and includes three of the documents on the UTREP library as Attachments B, D, and E. The contents of these documents, dated 1985, 1987, and 1992, were all considered as appropriate in the PEIR and no further analysis of this information is necessary, warranted, or required by CEQA.

O'Shaughnessy Dam Instream Flow Evaluation Study Plan

Summary of Study

The *Upper Tuolumne River Ecosystem Project: O'Shaughnessy Dam Instream Flow Evaluation Study Plan* (McBain & Trush, Inc., 2009) provides an initial study plan for studying the biological and geomorphic relationships between the annual hydrograph and ecosystems in the Hetch Hetchy reach of the upper Tuolumne River between O'Shaughnessy Dam and Early Intake.

The study plan outlines methods for conducting fish and wildlife studies, developing flow-habitat relationships, monitoring and modeling water temperature, and evaluating geomorphology and riparian vegetation dynamics. Ongoing and planned studies proposed by the study plan, including amphibian, reptile, fish, avian, and benthic macroinvertebrate surveys, will update and broaden the understanding of fish and other wildlife in the Hetch Hetchy reach (Tuolumne River from O'Shaughnessy Dam to Kirkwood Powerhouse) and provide baseline data for future monitoring and adaptive management. The study plan recommends the use of a variety of methods for developing flow-habitat relationships based on the strengths of those methods; the results will then be used to ascertain how flow releases relate to ecological benefits. The study plan proposes to develop flow-habitat relationships for focal species such as rainbow trout, Sacramento sucker, foothill yellow-legged frog, and benthic macroinvertebrates, using a combination of microhabitat mapping, 2-D habitat modeling, and transect-based evaluations. Since flow-habitat relationships only address whether the physical habitat could exist under a range of flows, temperature monitoring and modeling in pools and streams is proposed to assess how critical water temperatures are to support the physical habitat. Fluvial geomorphic process investigations will associate depositional features with habitat and estimate the threshold of high snowmelt or rainfall flood peaks necessary to mobilize and maintain these features. Backwater pool investigations will evaluate how pools function both from a hydraulic and habitat perspective in response to the annual hydrograph. Three main stem depositional sites are proposed for monitoring and modeling woody riparian seedling germination and establishment, and for the possible reversal of conifer encroachment. Per the study plan, SFPUC will coordinate with the NPS and USFWS to formulate a limnological (i.e., water temperature and dissolved oxygen stratification) and ecological (e.g., timing and abundance of pond turtle habitat) characterization of Poopenaut Valley pond and wetlands that will directly link to instream flows (and ongoing hydrograph components analyses) in the main stem channel and shallow groundwater flux.

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[8] (1) The PEIR referred to McBain & Trush, 2007, *Upper Tuolumne River: Descriptions of River Ecosystem and Recommended Monitoring Actions*, in Vol. 7a, Section 14.6, p. 14.6-11, regarding potential geomorphology issues. (2) The PEIR referred to U.S. Fish and Wildlife Service, 1992, Instream flow requirements for rainbow and brown trout in the Tuolumne River between O'Shaughnessy Dam and Early Intake, in Vol. 3, Section 5.3.6, pp. 5.3.6-1 to 5.3.6-3, regarding potential fisheries issues. (3 and 4) The PEIR referred to the agreements between the U.S. Department of the Interior and the City and County of San Francisco in the 1985 Stipulation for the Amendment of Rights-of-Ways for Canyon Power Project, as modified by the 1987 Modification for Kirkwood Powerhouse Unit No. 3 with respect to direct and cumulative impacts on Tuolumne River streamflow below O'Shaughnessy Dam in Vol. 3, Section 5.3.1, pp. 5.3.1-12 to 5.3.1-13, and Section 5.7, pp. 5.7-29 to 5.7-30. Other documents listed under the UTREP library that were published prior to PEIR certification were either incorporated into subsequent documents that were referenced in the PEIR or else were not directly relevant to the PEIR impact analysis.

The study plan also recommends that the SFPUC collaborate with the USFWS and NPS to construct an initial analytical framework for evaluating instream flow management scenarios through integration of the abovementioned investigations. The plan recommends a user-friendly gaming tool to manage and integrate the various models and facilitate the development of ecological flow recommendations. The gaming tool should incorporate flow-habitat curves, ecological thresholds/objectives, a riparian initiation model, as well as water supply and management constraints.

Relevance to WSIP

The PEIR (Vol. 3, Section 5.3.7, Impact 5.3.7-2, pp. 5.3.7-24 to 5.3.7-25) determined that the SFPUC proposed operation of O'Shaughnessy Dam under the 2030 version of the WSIP (the forerunner of the adopted Phased WSIP) would result in potentially significant impacts on terrestrial biological resources due to potential effects on riparian habitat and species of concern below the dam; for the adopted WSIP, impacts would be less severe due to the substantially reduced diversions but still potentially significant. The PEIR determined that these impacts would be reduced to less than significant with implementation of Mitigation Measure 5.3.7-2, Controlled Releases to Recharge Groundwater in Streamside Meadows and Other Alluvial Deposits, which under the adopted WSIP MMRP requires that the SFPUC manage releases from Hetch Hetchy Reservoir.

Conclusion

The *Upper Tuolumne River Ecosystem Project: O'Shaughnessy Dam Instream Flow Evaluation Study Plan* (McBain & Trush, Inc., 2009) is designed to increase the understanding of ecological and geomorphic processes below O'Shaughnessy Dam, and how these processes are affected by releases from the dam. The study will inform the implementation of Mitigation Measure 5.3.7-2 and will increase the effectiveness of the measure in maintaining/enhancing sensitive habitat and species in the Poopenaut Valley. The study plan itself does not raise the potential for new impacts, substantial increases in the severity of previously identified impacts, demonstrate the feasibility of previously identified mitigation measures or alternatives determined to be infeasible, nor trigger the need for new mitigation measures or alternatives not previously addressed in the PEIR.

Hydrology Modeling Study

Summary of Study

Improving Riparian Wetland Conditions Based on Infiltration and Drainage Behavior During and After Controlled Flooding (Russo et al., 2012) presents an observational and modeling study of the hydrologic response to a controlled flood sequence in the Poopenaut Valley in 2009. A primary goal of this study is to assess the importance of inundation versus groundwater rise in establishing and maintaining riparian wetland conditions. Observational data, such as soil texture, moisture, and transmissivity were measured, then a simulated model evaluated three principal flooding scenarios to determine which would produce the greatest wetland benefit with the least volume of released water. Wetland conditions identified in this study were based on the definition used by the U.S. Army Corps of Engineers, which is saturation within 30 centimeters (12 inches) of the surface for 14 consecutive days in 5 out of every 10 years. This definition is widely applied and could be considered useful for study purposes. The observational results showed that inundation is the more important method for maintaining saturation in the root zone, although an elevated water table helped to extend the duration of soil saturation. The three principal flooding scenarios evaluated were: (1) inundation at a constant rate of release for 12 days; (2) inundation with a high initial pulse lasting two days then maintaining a release at a constant, but lower, level for 10 days; and (3) cycling higher and lower releases throughout a 12-day period. These scenarios were selected to produce wetland hydrology at an estimated 90 percent of the existing wetlands in the Poopenaut Valley. The third scenario proved to be the most effective at maintaining riparian wetland conditions, provided that repeated cycling of higher and lower river elevations is timed to benefit from the characteristic drainage behavior of the soils. This scenario would require only 28 percent of the water released in the actual pulse flows that occurred in 2009.

Relevance to WSIP

The PEIR (Vol. 3, Section 5.3, Impact 5.3.7-2) found that implementation of the proposed WSIP water supply and system operations could result in potentially significant impacts on terrestrial biological resources due to potential effects on riparian habitat and species of concern. Implementation of Measure 5.3.7-2, Controlled Releases to Recharge Groundwater in Streamside Meadows and Other Alluvial Deposits, would manage releases from Hetch Hetchy Reservoir to recharge riverside meadows, including the Poopenaut Valley, mitigating impacts to a less-than-significant level. The effects of the adopted Phased WSIP on biological resources in the upper Tuolumne River are expected to be less than those of the 2030 version of the WSIP, although still potentially significant, and the SFPUC is required to implement Mitigation Measure 5.3.7-2 as part of the adopted WSIP MMRP to reduce the impact to less than significant.

Conclusion

Improving Riparian Wetland Conditions Based on Infiltration and Drainage Behavior During and After Controlled Flooding (Russo et al., 2012) provides useful and necessary information about soils, hydrology, drainage, and the modeled effects of controlled releases for maintaining wetland conditions in Poopenaut Valley. This report is fully consistent with implementation of Mitigation Measure 5.3.7-2 and will inform its implementation and increase the effectiveness of the measure in maintaining and enhancing sensitive habitat and species in the Poopenaut Valley. The results of the study do not indicate or suggest any new impacts, substantially increase the severity of previously identified impacts, demonstrate the feasibility of previously identified mitigation measures or alternatives determined to be infeasible, nor trigger any new mitigation measures or alternatives not already identified in the PEIR. Rather, this study and other studies being conducted along the upper Tuolumne River provide important information necessary to inform the controlled releases that the SFPUC will implement in accordance with PEIR Mitigation Measure 5.3.7-2 to minimize potential effects of operational changes in release patterns on sensitive habitats and species below O'Shaughnessy Dam.

Ecological and Hydrologic Studies

Summary of Studies

The four *Looking Downstream* reports describe studies carried out between 2007 and 2010 by the NPS (Stock et al., 2009 to 2012) to investigate the current ecological conditions and the effects of experimental pulse flows in the Poopenaut Valley. The purpose of the reports is to provide information to assist in the development of dam release schedules that replicate natural physical processes and benefit ecosystems. Observations were made regarding surface and groundwater hydrology, vegetation, vertebrate wildlife (primarily songbirds), and benthic macroinvertebrates.

The *Looking Downstream* reports summarize the controlled releases that took place from 2006 through 2010. The reports describe how small increases in river levels below O'Shaughnessy Dam cause relatively large increases in river levels in the Poopenaut Valley, largely because the narrow canyon just below the valley constricts flow, causing a backwater effect in the valley. Releases in 2006 peaked at 8,170 cubic feet per second (cfs) and inundated much of the Poopenaut Valley. Releases in 2007 peaked at 3,110 cfs and did not inundate meadows in the Poopenaut Valley or elevate water in the pond, but did elevate local groundwater levels. Releases in 2008 peaked at 6,800 cfs and filled a seasonal pond, which took six weeks to drain. The reports concluded that groundwater conditions were driven by the changes in river levels (i.e., rises and falls) and associated stream flow in the Tuolumne River rather than by hillslope hydrology. In 2009, the SFPUC conducted an experimental pulse release with a peak flow of 7,500 cfs to determine the flows needed to inundate the meadows and pond in the Poopenaut Valley, measure soil moisture and transmissivity, and measure the time needed to fully saturate soil and maintain saturation at rooting depth. This investigation is covered in detail in Russo et al. (2012), described above under the Hydrology Modeling Study. Experimental releases in 2010 consisted of several pulses, the largest over 7,000 cfs, were designed to explore the effects of variable drawdowns on river and tributary bank stability.

Over the four-year period for which reports are available, NPS biologists mapped 11 vegetation types in the Poopenaut Valley, including four wetland (totaling 7.17 hectare [ha]), three riparian (totaling 4.62 ha), and four upland (totaling 12.87 ha) vegetation types. They also delineated wetlands, compiled a species list, conducted surveys for both special-status and invasive exotic plants, and carried out a three-year riparian tree seed dispersal study. They noted that some conifer encroachment into meadows had likely occurred since O'Shaughnessy Dam was constructed, and that some upland areas exhibited hydric soils[9] and vegetation but not wetland hydrology, suggesting that some historical wetlands are transitioning to uplands. Quantitative sampling of each vegetation type was conducted, consisting of transects with nested-frequency plots.[10] The seed dispersal study confirmed that different species release their seed when suitable germination substrate become available, as occurs under a natural (unimpaired) hydrograph.

Vertebrate surveys consisted of passerine bird surveys for four years and acoustic detection surveys for bats in 2010. The passerine bird surveys found a considerable diversity of breeding birds and different

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[9] Hydric soil is a soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part.

[10] A nested-frequency plot is a method of assessing vegetation frequency that accounts for different plant species with different abundances in the same area. With this method, several different sized plots are placed inside each other, or "nested," from smallest to largest.

breeding niches, with montane riparian habitat the most diverse and important habitat. Bat surveys found evidence of nine species present in the Poopenaut Valley, including three California Species of Special Concern. One conclusion was that bat species are an appropriate indicator species for managing Poopenaut Valley's seasonal pond because of their dependence on emergent aquatic insects.

Benthic macroinvertebrate surveys included an extensive inventory and monitoring of abundance and diversity of benthic macroinvertebrates before and after pulse flows. The inventory showed relatively high diversity and abundance, with many fauna that are intolerant of degraded habitat. After the 2009 pulse flows, a reduction in abundance but greater balance among taxa and increased proportional biodiversity were observed. After two months, most taxa had increased in abundance, though most did not reach the densities seen before the release. Similar results were found following subsequent pulse flows, although some variation was observed between years.

Relevance to WSIP

The PEIR noted that the NPS has designated the Poopenaut Valley as an "outstandingly remarkable value" of the Tuolumne Wild and Scenic River (Vol. 3, Section 5.3.7, p. 5.3-7-2). Remarkable features included the extensive complex of riparian, pond, wetland and meadow habitats found in the valley. Subsequent studies carried out in the *Looking Downstream* series quantified the extent and composition of these habitats but did not introduce information about previously-unknown resources. Similarly, rare plant surveys increased knowledge about botanical resources in the Poopenaut Valley but did not reveal new species requiring analysis under CEQA. Bird surveys confirmed the presence of two species of special concern identified in the PEIR as "potentially occurring" in the Poopenaut Valley, noting one as possibly breeding there. The seed dispersal study in the *Looking Downstream* reports largely replicated data cited in the PEIR. The benthic macroinvertebrate studies presented new information, not necessarily known specifically for the Poopenaut Valley at the time of the PEIR, but this information is not required for analysis under CEQA and would not have changed the analysis in the PEIR since it does not change the identification of sensitive habitats, common habitats, or key special-status species or other species of concern.

The PEIR (Vol. 3, Section 5.3, Impact 5.3.7-2, pp. 5.3.7-21 to 5.3.7-22) found that the WSIP would result in potentially significant impacts on sensitive habitats, key special-status species, species of concern, and common habitats and species in meadow and riparian along the Tuolumne River between O'Shaughnessy Dam and Don Pedro Reservoir due to delayed snowmelt releases, reduction in flows, and the associated reduction in meadow groundwater recharge. The effects of the adopted WSIP on biological resources in the upper Tuolumne River are expected to be similar, but less, than those of the 2030 version of the WSIP because the diversions would be much less, and these impacts were still considered potentially significant. Mitigation Measure 5.3.7-2 (Vol. 4, Chapter 6, pp. 6-49 to 6-50) identified an approach that would reduce the potential impacts of WSIP-induced flow changes in the Poopenaut Valley to a less-than-significant level by shaping the late spring and early summer releases to benefit riparian and wetland habitats.

Conclusion

The four *Looking Downstream* NPS reports (Stock et al., 2009 to 2012) provide valuable detail on biological resources in the Poopenaut Valley, but the information is not substantially different from that described in the WSIP PEIR. That is, the PEIR identified important riparian and wetland habitats as well as sensitive plant and vertebrate wildlife species in the Poopenaut Valley that are vulnerable to changes in water releases from O'Shaughnessy Dam. The *Looking Downstream* reports quantify the extent of these habitats and verify the presence of some, but not all, of the species identified as potentially occurring in Poopenaut Valley. This augmented information does not change the PEIR conclusion that impacts on these sensitive resources due to changes in releases from O'Shaughnessy Dam would be potentially significant. The benthic macroinvertebrate data were not known at the time of PEIR preparation; however, this information is not required for analysis under CEQA since it does not change the identification of sensitive habitats, common habitats, or key special-status species or other species of concern. Thus, consideration of the results of this study would not require changes to the WSIP impact analysis because the WSIP would not be found to cause any new impacts or substantial increases in the severity of previously identified impacts when these results are considered. In addition, the study does not demonstrate the feasibility of previously identified mitigation measures or alternatives determined to be infeasible, nor does it trigger any new mitigation measures not already identified in the PEIR. Rather, this study and other studies being conducted along the upper Tuolumne River provide important information necessary to inform the controlled releases that the SFPUC will implement in accordance with PEIR Mitigation Measure 5.3.7-2 to minimize potential effects of operational changes in release patterns on sensitive habitats and species below O'Shaughnessy Dam.

Amphibian and Reptile Assessment Studies

Summary of Study

The report, *2009 Amphibian and Reptile Assessment Study Plan for the Hetch Hetchy Reach* (McBain & Trush, Inc. and Questa Engineering Corporation, 2009) presents a study plan for assessing reptiles and amphibians on the Hetch Hetchy reach of the Tuolumne River. This report states that amphibians have been well-documented as declining worldwide, and their adaptation to and requirement for particular conditions of temperature, timing and flow for breeding in aquatic habitats makes them sensitive to altered flow regimes; it also states that reptiles are declining worldwide as well.

The first of the five tasks identified in the study plan was to select for investigation "focal species," that is, species that are readily detectable and whose population fluctuations in response to altered flow regimes would be both sensitive and hopefully representative of responses by a variety of animal species. The focal species selected for the Hetch Hetchy reach of the Tuolumne River were two reptiles, the Sierran garter snake (*Thamnophis couchii*) and the western pond turtle (*Actinemys marmorata*), and two amphibians, the foothill yellow-legged frog (*Rana boylii*) and the Sierra newt (*Taricha torosa sierrae*). The study plan proposed to review these selections with knowledgeable persons, and then as the second task, carry out a baseline inventory using several field methods, including Visual Encounter Surveys, Area-constrained Searches, and Incidental Encounters. The first two methods would be carried out systematically in time and space within identified portions of the river, and would be combined with more detailed measurements and assessments of species captured or observed. Under the third task, temperature and flow data already being collected in the Hetch Hetchy reach would be integrated with reptile and amphibian survey results. This would be used to assess the effects of alternative flow modifications on the focal species. Task 4 would assess western pond turtle demographics in pools, and Task 5 would assess alternative explanations for foothill yellow-legged frog scarcity within the study reach. The study plan describes detailed methods and schedule for each of the tasks; no data are included in this report.

Relevance to WSIP

The PEIR (Vol. 3, Section 5.3, Impact 5.3.7-2, pp. 5.3.7-21 to 5.3.7-22) found that the WSIP would result in potentially significant impacts on sensitive habitats, key special-status species, species of concern, and common habitats and species in meadow and riparian along the Tuolumne River between O'Shaughnessy Dam and Don Pedro Reservoir due to delayed snowmelt releases, reduction in flows, and the associated reduction in meadow groundwater recharge. The impact identifies potential impacts to amphibians and reptiles, specifically noting the mountain yellow-legged frog and western pond turtle. The effects of the adopted WSIP on biological resources in the upper Tuolumne River are expected to be similar, but less, than those of the 2030 version of the WSIP because the diversions would be much less, and these impacts were still considered potentially significant. Mitigation Measure 5.3.7-2 (Vol. 4, Chapter 6, pp. 6-49 to 6-50) identified an approach that would reduce the potential impacts of WSIP-induced flow changes in the Poopenaut Valley to a less-than-significant level by shaping the late spring and early summer releases to benefit riparian and wetland habitats.

Conclusion

The *2009 Amphibian and Reptile Assessment Study Plan* is consistent with the PEIR, and implementation of this study would partially satisfy PEIR Mitigation Measure 5.3.7-2 which calls for collection of baseline data of ecological conditions in the Poopenaut Valley needed to develop environmental flow recommendations for O'Shaughnessy Dam. Information presented in the study plan does not change or even greatly expand upon what was known and analyzed in the PEIR. The study plan does not demonstrate the feasibility of previously identified mitigation measures or alternatives determined to be infeasible, nor does it trigger any new mitigation measures not already identified in the PEIR. Rather, this study and other studies being conducted along the upper Tuolumne River will result in important information necessary to inform the controlled releases that the SFPUC will implement in accordance with PEIR Mitigation Measure 5.3.7-2 to minimize potential effects of operational changes in release patterns on sensitive habitats and species below O'Shaughnessy Dam.

Geomorphology Studies

Summary of Studies

Preliminary Sediment Source and Sediment Transport Capacity Evaluation

The *Upper Tuolumne River Ecosystem Project: Preliminary Sediment Source and Sediment Transport Capacity Evaluation: O'Shaughnessy Dam to Poopenaut Valley Technical Memorandum* (McBain & Trush, 2008) evaluates sediment supply and sediment transport capacity along the 4-mile-long reach of the upper Tuolumne River between O'Shaughnessy Dam and the Poopenaut Valley to estimate how different dam release schedules affect sediment storage. Because sediment deposits typically provide the physical template for aquatic and riparian habitat in riverine ecosystems, understanding how flow affects sediment supply, transport, and storage is critical for the development of ecologically beneficial flow recommendations below O'Shaughnessy Dam. The evaluation builds on a 2007 reconnaissance-level geomorphic investigation performed by McBain & Trush[11] that indicated sediment storage (i.e., sediment deposits and aggradation in the channel) along the 4-mile reach remains relatively high, despite the presence of the dam.

The Tuolumne River channel below O'Shaughnessy Dam is comprised of stepped higher- and lower-gradient subreaches ranging from very steep and turbulent chutes to broad deep pools. The higher gradient subreaches are confined, have relatively low sediment storage, and are dominated by coarse sediments; lower-gradient subreaches have high sediment storage and are dominated by finer sediments, including fine gravel and sand. A sediment transport evaluation was conducted at two representative sites—at USGS gauge No. 11276500 located approximately one river mile downstream of the dam and in the Poopenaut Valley—to evaluate typical sediment transport conditions in the higher-gradient and lower-gradient subreach types, respectively. Sediment transport capacity rating curves were developed to estimate the sediment transport rate as a function of stream flow for any given flow at each study site. Annual sediment transport capacity was calculated for each water year of record and the results were grouped for three flow regimes: pre-dam, post-dam without Canyon Tunnel diversions, and post-dam with Canyon Tunnel diversions.

The study results indicate that although O'Shaughnessy Dam has reduced high flows and coarse sediment recruitment from the upper terraces, coarse sediments continue to be recruited from the hillslopes and tributaries below the dam. It was determined that the high fine sediment storage in the Poopenaut Valley is likely attributed to low transport rates, which despite the likely substantial reductions in fine sediment supply due to the dam, have allowed fine sediment storage to remain high in the Poopenaut Valley. The SFPUC will be able to use the sediment transport capacity curves developed as part of the evaluation to estimate potential changes in sediment storage under different flow management scenarios.

Streambank Stability Study for the Poopenaut Valley

The *Upper Tuolumne River Ecosystem Project: Streambank Stability Study in Poopenaut Valley, Yosemite National Park, California* (Stillwater Sciences, 2011) investigates bank failure and channel incision along the main tributaries to the Tuolumne River that traverse the Poopenaut Valley floor below O'Shaughnessy Dam. One hypothesis on the potential cause of the observed bank failures is that dam-induced reductions in flow following springtime water releases from the dam may be so rapid that streambank instability is induced as water levels in the valley drop quickly. The hypothesis is based on previous studies conducted on other rivers in the U.S., which indicate that when water-surface levels in stream channels drop much faster than subsurface water levels within the adjacent streambank substrates (as expressed by the height of the groundwater table), the excess pore-water pressures acting within the slowly draining substrates often cause these materials to become structurally unstable, resulting in mass failure of the streambanks.

The objectives of this study are to: (1) investigate the effects of rapid changes in O'Shaughnessy Dam flow releases on bank stability along the tributaries in the Poopenaut Valley; and (2) assist in developing alternative release schedules that could reduce the risk of induced bank failure. To accomplish these

[11] McBain & Trush and RMC Water and Environment, 2007. *Upper Tuolumne River: Description of River Ecosystem and Recommended Monitoring Actions, Final Report*. April. The report was referenced in the PEIR, Vol. 7a, Section 14.6, Master Response on Upper Tuolumne River Issues, pp. 14.6-1 to 14.6-13.

tasks, pore-water pressures and other key channel and bank properties were continuously measured along a representative tributary channel to the Tuolumne River—the Southwest Tributary—during spring 2010 high-flow releases[12] from O'Shaughnessy Dam to see how the tributary responded to variations in stream flow and water levels. Pore-water pressure, bank profile, channel slope, tributary stage, and bank-material properties were monitored in the field during the releases. To augment the field observations, bank profile, channel slope, and bank-material data were input into computer models to estimate the degree of stability at various times during the spring 2010 high-flow releases. The models were also used to investigate specific factors that trigger bank failure during other drawdown scenarios that were not observed during the spring 2010 high-flow releases (e.g., more rapid drawdown rates, loss of vegetation cover).

No mass failures were observed in the field along the Southwest Tributary during the study period. NPS staff did not note any apparent bank failures along the other two tributaries to the Tuolumne River that cross the Poopenaut Valley. The results of the bank stability modeling indicate that the banks along the Southwest Tributary are stable during high releases such as those that occurred in spring 2010. Therefore, the study concluded that bank failures along the tributaries in the Poopenaut Valley do not appear to be adversely affected by the drawdown ramping rates controlled by O'Shaughnessy Dam.

Relevance to WSIP

These geomorphology studies provide additional, detailed information regarding the geomorphic processes in the upper Tuolumne River that augment information presented in the PEIR, but this level of detail was not required for the PEIR impact analysis or conclusion. The PEIR (Vol. 3, Section 5.3, Impact 5.3.2-1, pp. 5.3.2-6 to 5.3.2-7) found that the WSIP would have a less- than-significant impact on geomorphology along the Tuolumne River between O'Shaughnessy Dam and Don Pedro Reservoir because the WSIP would have little effect on the frequency or magnitude of large and infrequent floods that are most likely to influence sediment transport and stream channel characteristics. The WSIP would, therefore, not substantially change the topography or any unique geologic features of the site, nor would it substantially alter the existing drainage pattern of the site that would result in substantial erosion or siltation. The effects of the adopted Phased WSIP on geomorphology in the upper Tuolumne River are expected to be similar, if not less, than those of the 2030 version of the WSIP.

Conclusion

As part of the *Upper Tuolumne River Ecosystem Project: Preliminary Sediment Source and Sediment Transport Capacity Evaluation: O'Shaughnessy Dam to Poopenaut Valley Technical Memorandum* (McBain & Trush, 2008), sediment source and transport conditions in the 4-mile reach of the Tuolumne River downstream of the dam were evaluated and sediment transport capacity rating curves were developed to assist the SFPUC in estimating sediment transport capacity under future flow schedules. The *Upper Tuolumne River Ecosystem Project: Streambank Stability Study in Poopenaut Valley, Yosemite National Park, California* (Stillwater Sciences, 2011) did not find a direct correlation between releases from O'Shaughnessy Dam and bank instability along the tributaries to the Tuolumne River in the Poopenaut Valley. While this study examined alternative release schedules that could reduce the risk of induced bank failure and improve

[12] The spring 2010 high-flow releases were composed of a series of three high-flow pulses released from O'Shaughnessy Dam between May and June for the purpose of facilitating the study.

existing conditions, consideration of this additional information would not result in the determination of any new significant impacts associated with the WSIP compared to existing conditions. Thus, new information developed in these two geomorphology studies do not indicate any new impacts or substantially increases in the severity of previously identified impacts, demonstrate the feasibility of previously identified mitigation measures or alternatives determined to be infeasible, nor trigger any new mitigation measures or alternatives not already identified in the PEIR. Rather, these studies provide important information on sediment transport processes that will further inform the controlled releases that the SFPUC will implement in accordance with PEIR Mitigation Measure 5.3.7-2 to minimize potential effects of operational changes in release patterns on sensitive habitats and species below O'Shaughnessy Dam.

Flow and Temperature Studies

Summary of Studies

Preliminary Analysis of Available Data for Temperature Modeling

The purpose of the *Upper Tuolumne River Ecosystem Project: Preliminary Analysis of Available Data for Modeling Temperature in the Hetch Hetchy Reach (O'Shaughnessy Dam to Cherry Creek) Technical Memorandum* (Merritt Smith Consulting, 2008) is to identify if adequate information exists to develop a dynamic flow and temperature model for the 13-mile-reach of the upper Tuolumne River between O'Shaughnessy Dam and the Cherry Creek confluence. The study determined meteorological data to be the constraining parameter but concluded that sufficient geometric, flow, temperature, and meteorology data exist for the successful implementation and calibration of such a model.

Flow and Temperature Modeling

The *Development of a Flow and Temperature Model for the Hetch Hetchy Reach of the Upper Tuolumne River* (Watercourse Engineering, Inc., 2010) describes development of a flow and temperature model that will provide a better understanding of the relationship between releases from O'Shaughnessy Dam and downstream water temperature to inform how SFPUC reservoir operations can be improved to provide greater ecological benefits. The study focuses on the 13-mile-reach of the upper Tuolumne River between O'Shaughnessy Dam and Early Intake (Hetch Hetchy reach). As part of the study, a computer model was developed to simulate stream flow and water temperature under a range of flow and meteorological conditions. Development of the model entailed: (1) system conceptualization; (2) data assembly and organization; (3) model implementation; (4) model calibration; and (5) model application.

To identify the type of model that would best represent the system, a conceptual understanding of the Hetch Hetchy reach of the upper Tuolumne River was developed by analyzing data on channel geometry, hydrology, water temperature, and meteorological conditions. Data describing the geometry, hydrology, water temperature, and meteorology of the Hetch Hetchy reach were compiled for input into the model or to assist in model calibration and validation. The data were derived from various sources including the United States Geologic Service (USGS), the SFPUC, the California Data Exchange Center (CDEC), and California Irrigation Management Information System (CIMIS). Stream geometry data describing the longitudinal characteristics (longitudinal and planform) and cross-sectional characteristics (habitat types) of the Hetch Hetchy reach were collected and then refined to increase the stability of the model.

Daily flow data for the upper Tuolumne River were obtained from USGS for the Tuolumne River near Hetch Hetchy gauge (USGS gauge No. 11276500, the approximate upstream model boundary) and Tuolumne River above Early Intake gauge (USGS gauge No. 11276600, the downstream model boundary). Accretion between two gauges was computed by subtracting flows at Hetch Hetchy from those at Early Intake. Two years of flow data (2002 and 2006) that would encompass a wide range of flows were used for model implementation and calibration. Computed unimpaired flow data for the period from 1952 to 2007 provided by the SFPUC were examined for representative wet and dry years to ensure that the model was calibrated using an appropriate range of flows.

Measured temperature data were provided by the USGS. Mainstream flow temperatures were defined using USGS measured temperature data at the Tuolumne River near Hetch Hetchy gauging station (USGS 11276500). Tributary flow and accretion water temperatures were defined using measured data from the Tuolumne River above Hetch Hetchy gauging station (USGS 11274790), as well as short-term water temperature data in the three tributaries. Data from several meteorological stations located near the Hetch Hetchy reach were used to construct a complete meteorological data set for atmospheric dust attenuation, cloudiness, dry bulb temperature, dewpoint temperature, atmospheric pressure, wind speed, wind direction, and solar radiation.

The computer model was calibrated for the Hetch Hetchy reach and tested for sensitivity to several parameters. The model was found to be more sensitive to bed temperature, evaporation coefficients, and bed heat exchange coefficients; the model was found to be less sensitive to topographic shade, dead pool area, terrestrial long-wave radiation, and emissivity.

Once built, the model was used to predict water temperatures for alternative flow schedules ranging from 35 to 300 cfs for the 2000–2009 period based on Hetch Hetchy Reservoir conditions and outlet elevations. The results indicate that the model accurately predicts thermal response at several downstream locations over a range of flow releases and meteorological conditions. The model can be used to evaluate different water release schedules under different meteorological conditions to evaluate ecological tradeoffs under different flow conditions.

The study provides recommendations for additional refinements to the model including: additional cross-section data to describe low-flow channel geometry; additional flow and temperature monitoring to refine inflow water temperature for accretions and depletions; installation of a local meteorological station in the vicinity of Early Intake; and identification of local shading elements that may reduce solar insulation that are too small to be detected by digital elevation modeling.

Relevance to WSIP

The PEIR (Vol. 3, Section 5.3.6, Impact 5.3.6-2, pp. 5.3.6-26 to 5.3.6-28) determined that under the 2030 version of the WSIP, potential changes in in-stream temperature between O'Shaughnessy Dam and Don Pedro Reservoir would be less than significant because during nearly all years, temperature conditions under the WSIP would be similar to existing conditions despite the delay and other minor changes in releases. During major droughts such as the 1976–1977 drought, extreme in-stream temperature changes of up to 8 °C could occur, albeit infrequently, but this worst-case increase would not result in temperatures outside of the suitable range for juvenile and adult trout. Of the fishery resources in the upper Tuolumne River, the PEIR determined that rainbow trout would be the most sensitive to temperature increases; however, the increase would occur during the adult and juvenile rearing period and not during the spawning period (see PEIR Vol. 3, pp. 5.3.6-26 to 5.3.6-28). Temperature effects would be substantially less severe under the adopted WSIP than those described in Impact 5.3-6 because of the substantial reduction in average annual diversions compared to the 2030 WSIP.

The PEIR (Vol. 3, Section 5.3.7, Impact 5.3.7-2, pp. 5.3.7-24 to 5.3.7-25) determined that SFPUC operation of O'Shaughnessy Dam under the adopted WSIP would result in potentially significant impacts on terrestrial biological resources due to potential effects on riparian habitat and species of concern in the Poopenaut Valley. However, these impacts could be reduced to less than significant with implementation of Mitigation Measure 5.3.7-2, Controlled Releases to Recharge Groundwater in Streamside Meadows and Other Alluvial Deposits, which would require that the SFPUC manage releases from Hetch Hetchy Reservoir to recharge riverside meadows such as the Poopenaut Valley, thereby maintaining or improving meadow conditions and habitat for the identified species of concern.

Conclusion

The *Upper Tuolumne River Ecosystem Project: Preliminary Analysis of Available Data for Modeling Temperature in the Hetch Hetchy Reach (O'Shaughnessy Dam to Cherry Creek) Technical Memorandum* (Merritt Smith Consulting, 2008) provides input for subsequent modeling studies on flow and temperature. The SFPUC intends to use the model described in the *Development of a Flow and Temperature Model for the Hetch Hetchy Reach of the Upper Tuolumne River* (Watercourse Engineering, Inc., 2010) study as a tool to evaluate the expected ecological benefit associated with their operational decisions for O'Shaughnessy Dam. The model will allow the SFPUC to assess short-term temperature variability, travel times for pulse flows and operational flow changes, impacts of seasonal inputs from tributaries, and the thermal effects of various dam operation options. The model also provides a tool for assessing the role of meteorological conditions on the thermal regime of the river. The model results did not reveal the potential for any new impacts or substantial increases in the severity of previously identified impacts, demonstrate the feasibility of previously identified mitigation measures or alternatives determined to be infeasible, nor trigger any new mitigation measures or alternatives not already identified in the PEIR. Rather, the model will assist the SFPUC in implementing PEIR Mitigation Measure 5.3.7-2 and allow the SFPUC to more carefully consider the potential temperature effects associated with controlled releases.

Climate Change Study

Summary of Study

The SFPUC, in conjunction with the Turlock Irrigation District (TID), completed a study entitled *Sensitivity of Upper Tuolumne River Flow to Climate Change Scenarios* in January 2012 (Hydrocomp, et al., 2012); this study was transmitted to the SFPUC commissioners on April 16, 2012 (SFPUC, 2012). The purpose of the study is to assess the sensitivity of runoff to Hetch Hetchy and Don Pedro Reservoirs[13] as a result of potential changes in temperature and precipitation in the years 2040, 2070, and 2100 as compared to 2010 conditions, and the report identifies runoff projections utilizing a range of possible

[13] The study also looked at changes in inflow to Cherry Reservoir (Lake Lloyd) and Lake Eleanor.

changes to temperature and precipitation due to climate change. The range of temperature and precipitation changes used in this study represent a plausible range of climate change scenarios obtained from the scientific literature and in consultation with climate science experts. The study did not assess the likelihood that any one of the selected scenarios represented expected future conditions and did not address potential impacts of climate change on water supply. The study results are aimed to assist the SFPUC and TID water resource planners in understanding possible effects of flow into Hetch Hetchy and Don Pedro Reservoirs from temperature and precipitation changes.

A physically-based conceptual hydrology simulation model was developed specific to the upper Tuolumne River watershed and used to assess potential changes in the timing and volume of runoff for the years 2040, 2070, and 2100, as compared to 2010 conditions. Six future climate change scenarios were examined which included the following combinations of temperature and precipitation changes: (1) low temperature increase, no precipitation change; (2) moderate temperature increase, no precipitation change; (3) moderate temperature increase, precipitation decrease; (4) moderate temperature increase, precipitation increase; (5) high temperature increase, no precipitation change; and (6) high temperature increase, precipitation decrease. The climate change scenarios have broad ranges for projected future temperatures and precipitation (i.e., the temperature increases compared to 2010 ranged from 1.1 to 3.0 °F in 2040 and in 2100, the range increased from 3.6 to 9.7 °F compared to 2010 conditions; precipitation changes from 2010 conditions ranged from a 5 percent decrease to a 2 percent increase in 2040, and in 2100, a 15 percent decrease to a 6 percent increase). A 34-year stationary meteorological database was developed and used to create the potential future conditions for each climate change scenario.

The study reviewed historical meteorological data spanning from 1930 to 2008, and the model was calibrated based on analysis of watershed topography, soils, vegetation and cover data as well as historical meteorological and stream gauge and reservoir release records. The historical meteorological database for the Tuolumne watershed was found to exhibit long-term trends of increasing daily average temperature since 1960, but no trends were detected in precipitation, wind, solar radiation, or evaporation.

Modeling results indicate that increases in temperature with or without precipitation changes in the upper Tuolumne River watershed would be projected to affect snow accumulation and melt, soil moisture and forests, and reservoir inflows, thereby potentially affecting runoff to Hetch Hetchy and Don Pedro Reservoirs and associated water supply uses, but the study did not include any water supply modeling. In general, the model results for most scenarios indicate that winter snow is expected to decrease and melt earlier in the spring, increasing evapotranspiration and decreasing watershed runoff. Runoff reductions are greater in years with less than normal precipitation. Results for all but one scenario indicate a range of decreased runoff volume (0.7 to 29.4 percent) to Hetch Hetchy Reservoir; the one exception is the scenario that projects an increase in precipitation along with moderate temperature increase, and the model results indicate a slight increase in median runoff volume to Hetch Hetchy Reservoir (1.4 to 2.4 percent).

Model results for runoff to Hetch Hetchy Reservoir (referred to as “O'Shaughnessy” in the study) for 2040 indicate that median runoff volume would decrease from 2.1 to 0.7 percent compared to 2010 conditions for the scenarios with a range of temperature increases but no precipitation change. Changes in temperature and precipitation would also change the seasonal timing of runoff; for most of the scenarios studied, there would be increased runoff in November through April and decreased runoff in May, and for all scenarios studied, there would be decreased runoff in June and July.

Thus, temperature increases due to climate change are expected to reduce snow accumulation and to shift runoff from the spring to the winter in the upper Tuolumne River watershed. With increased temperatures, fall and early winter runoff would increase, while late spring and summer runoff would decrease, and these changes would become more significant in the later time periods. Increased temperature effects are exacerbated in low runoff years because of increased evapotranspiration. In critically dry years, predicted reductions in annual runoff could be substantially greater, with runoff decreasing up to 46.5 percent from 2010 conditions by 2100 under one scenario. Model results for 2070 and 2100 indicate significant soil moisture reduction in summer, which would be expected to change vegetation distribution within the watershed, which in turn might cause a secondary change in the hydrologic response, but this effect was not modeled.

Total runoff is projected to decrease under most of the climate change scenarios evaluated, in some cases marginally and others significantly. Assuming a high temperature increase and precipitation decrease, reduction in median runoff to Hetch Hetchy Reservoir would be 7.6 percent in 2040, a relatively large reduction. However, assuming moderate temperature increase and no precipitation change, reduction in median runoff (about 1.2 percent) and timing changes at Hetch Hetchy Reservoir would be insignificant in 2040, because changes would be small compared to the year-to-year variations that have historically occurred.

Relevance to the WSIP

The PEIR addressed climate change effects on the SFPUC's water resources in Vol. 3, Section 5.7.6, pp. 5.7-92 to 5.7-96, and in Vol. 7, Section 14.11, pp. 14.11-1 to 14.11-33. These discussions focus on determining if and how climate change could affect the identified impacts of the WSIP. The PEIR climate change discussion included the following: literature review on climate change studies on water resources in California relevant to the WSIP; description of the climate change regulatory framework; review of water agencies' water supply management approach to climate change (including a description of the preliminary analyses done for this study); description of SFPUC's studies on climate change effects; qualitative assessment of WSIP impacts with consideration of climate change effects; and the SFPUC's ongoing actions to address climate change. The qualitative assessment of WSIP impacts in the PEIR was based on the results of the literature review, which were then used to establish a reasonably anticipated climate change scenario by 2030 (i.e., moderate to high temperature increase, no change in precipitation). This scenario is similar to two of the scenarios assessed in the climate change study referenced above, which attempted to identify a wider range of climate change scenarios, thus corroborating the reasonableness of the assumptions used in the WSIP PEIR climate change analysis. And, as stated above, the study did not assess the likelihood that any one of the selected scenarios represented expected future conditions.

The PEIR climate change discussion and analysis focused on WSIP effects through a planning horizon of 2030 and with full implementation of the WSIP with a regional water system delivery target of 300 mgd, rather than the planning horizon of 2018 and delivery target of 275 to 285 mgd under the adopted WSIP. With the more severe impacts associated with the 2030 version of the WSIP that was not adopted but upon which the PEIR analysis was based, the PEIR (Vol. 7a, p. 14.11-29) concluded that assuming the reasonably anticipated climate change scenario, identified impacts would be the same or less severe and mitigation measures identified in the PEIR would apply, whether or not climate change is considered. In most cases, when WSIP effects are considered in combination with a climate change scenario, the resulting impacts are either comparable to those described in the PEIR or possibly less severe due to an offsetting effect of the timing of snowmelt compared to the WSIP-induced changes in reservoir storage or releases. Thus, the impact analysis of WSIP water supply and system operations presented in the PEIR provides a reasonable, and sometimes conservative, assessment of environmental effects that accounts for potential climate change through the SFPUC planning horizon of 2030. With the foreshortened planning horizon of the 2018 for the adopted WSIP, which assumes a lower delivery target and, therefore, reduced diversions, the effects of climate change would be even less evident, and any changes would likely be within the interannual variation in runoff that occurs under existing conditions.

Conclusion

The conclusions of *Sensitivity of Upper Tuolumne River Flow to Climate Change Scenarios* (Hydrocomp, et al., 2012) are consistent with and corroborate information presented in the PEIR regarding effects of climate change on Hetch Hetchy Reservoir runoff. The PEIR (Vol. 7a, Section 14.11, pp. 14.11-15 and 14.11-30) describes the preliminary phases of this study, and this study now provides final results. Both the PEIR and the study describe how within the planning horizon of the WSIP, possible climate change scenarios in the Tuolumne River watershed are expected to result in earlier snowmelt and a shift in the timing of spring runoff to the reservoir. Unlike the PEIR, the current climate change study only examined changes in inflow to Hetch Hetchy Reservoir and did not study the effect of flows below O'Shaughnessy Dam under any of the scenarios.

Two of the scenarios analyzed in this study (moderate to high temperature increase and no precipitation change) were similar to the reasonably anticipated climate change scenario used in the PEIR to assess WSIP effects. The quantitative results for 2040 for these scenarios regarding changes in runoff to Hetch Hetchy Reservoir were similar to the qualitative results presented in the PEIR for 2030—that is, changes would be small compared to the year-to-year variation that currently occurs in the watershed. While under another scenario (moderate temperature increase and precipitation decrease), the model results for 2040 indicate a relatively large reduction in runoff to Hetch Hetchy Reservoir, even under this scenario, the climate change effects of the adopted WSIP, with its delivery limitations from the watersheds through 2018, would be substantially reduced compared to the assumed effects from climate change in the PEIR which considered delivery goals through 2030.

Overall, the results of this climate change study do not conflict with the assumptions used in the PEIR for analyzing WSIP impacts with consideration of climate change effects, and do not provide substantial new information that would affect the analysis in the PEIR. As described in the PEIR, impacts of the adopted WSIP combined with climate change effects would be similar to those identified in the PEIR for the WSIP without climate change considerations. Although the study examined a wider range of future scenarios than the PEIR, the study included scenarios similar to the scenario upon which the PEIR based its analysis, showing the reasonableness of the PEIR scenario; and, the study did not provide any new information as to the possibility that any one scenario would be more likely to occur than any other. The results of the study do not lead to the conclusion that the WSIP would result in any new impacts, substantially increase the severity of previously identified impacts, demonstrate the feasibility of previously identified mitigation measures or alternatives determined to be infeasible, nor trigger any new mitigation measures not already identified in the PEIR. The study reiterates conclusions that as additional data are collected in the watershed and as more detailed global climate change models become available, it will be possible to refine the future climate and watershed runoff projections for use in long-term water supply planning for climate change effects.

Tuolumne Wild and Scenic River Draft Comprehensive Management Plan and Environmental Impact Statement

Summary of Draft Plan and Environmental Impact Statement

In January 2013, the NPS published the *Tuolumne Wild and Scenic River Draft Comprehensive Management Plan and Environmental Impact Statement* (Tuolumne River Plan) (NPS, 2013) in accordance with the Wild and Scenic Rivers Act of 1968. The Tuolumne River Plan is the first comprehensive management plan for the 54 miles of designated wild and scenic river within Yosemite National Park. This reach of designated river includes 48 miles of river extending between Dana Fork and Lyell Canyon to the upstream end of Hetch Hetchy Reservoir, and six miles of river extending from 500 feet downstream of O'Shaughnessy Dam, through the Poopenaut Valley, to the western park boundary. The lands immediately surrounding Hetch Hetchy Reservoir are not included in the Tuolumne River Plan area.

The Tuolumne River Plan provides for the protection of the river's free-flowing condition,[14] exceptional water quality,[15] and outstandingly remarkable values. These three attributes are collectively referred to as *river values*. The plan strives to protect and enhance these river values by: (1) identifying and defining the river values; (2) establishing the baseline conditions of river values; (3) identifying management concerns about each river value; (4) listing the actions the NPS will take to correct these concerns; and (5) establishing measurable indicators and standards, including the management standard for each river value, and a monitoring program to ensure that these values are fully protected and enhanced over time.

Since the effects of SFPUC reservoir operations on the hydrologic regime of the Tuolumne River are limited primarily to areas downstream of O'Shaughnessy Dam, this summary focuses on those aspects of the Tuolumne River Plan that pertain to the six miles of designated river located below O'Shaughnessy Dam. Of the six miles located downstream of O'Shaughnessy Dam, the first mile is classified as *scenic*[16] and the remaining five miles are designated as *wild*.[17] The outstanding remarkable values that are identified in the plan for this 6-mile reach, the management concerns associated with the outstanding remarkable values, and the overall approach to managing these values are described below.

> ***Biological Values*** are identified in the Poopenaut Valley, which contains a mix of diverse riparian, wetland, and upland meadow plant communities rarely found in the Sierra. As a result of lowering groundwater levels, some wetlands appear to be transitioning to drier upland habitat, while

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[14] A river must be in a free-flowing state to be eligible for inclusion in the national wild and scenic rivers system.
[15] Water quality in the Tuolumne River is exceptionally high, and far superior to federal and state standards.
[16] Scenic river areas are sections of rivers that are free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads.
[17] Wild river areas are sections that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted.

riparian areas appear to be expanding. The degree to which these changes have been influenced by dam operations is under investigation. The NPS is working collaboratively with the SFPUC to study and monitor the effects of dam releases on natural ecological processes in Poopenaut Valley, with the intent of using the information to inform future dam releases. However, the plan recognizes that management of dam releases are constrained by the legal mandates of the SFPUC to deliver water and power. Because the NPS does not have jurisdiction over the extent to which dam releases affect the ecology in Poopenaut Valley, no management standards are established for this value.

Cultural Values are identified along the entire 54-miles of designated river within Yosemite National Park due to the abundance of archaeological resources along the river corridor. Management concerns include disturbances to archaeological sites caused by foot traffic, and the development and maintenance of potential future facilities. The overall management approach includes reducing roadside parking, eliminating informal trails, and confining facilities to nonsensitive areas wherever feasible.

Recreational Values are identified along the entire 54-miles of designated river within Yosemite National Park due to the abundance of opportunities for river-related recreation characterized by self-reliance and solitude. Increasing day use on wilderness trails threatens to diminish opportunities for solitude on certain trail segments. The plan proposes to protect recreational values by monitoring encounters with other groups on trails, which is a widely-used indicator for a quality wilderness experience, and managing use levels along the river corridor.

The Tuolumne River Plan identifies five alternatives (no action plus four action alternatives), which vary primarily in how they would balance the protection of river values with different kinds of visitor use and associated user capacities. Under all action alternatives, management concerns related to the biological values downstream of O'Shaughnessy Dam would be addressed through continued cooperation with the SFPUC and other stakeholders to inform releases from O'Shaughnessy Dam such that the releases more closely mimic natural flows and provide maximum ecological benefits to the river-dependent ecosystems below the dam.

Relevance to the WSIP

The PEIR described the Tuolumne River Plan while still under development in Vol. 3, Section 5.2, pp. 5.2-16 to 5.2-17, and information relevant to the six miles of designated river located below O'Shaughnessy Dam presented in the 2013 plan has not substantially changed from what was described in the PEIR.

The WSIP water supply and system operations would not affect informal trail routes, roadside parking, or the location of potential future facilities. Therefore, WSIP implementation would have no effect on the cultural values of the designated wild and scenic river.

The management concerns for recreational values that are identified in the Tuolumne River Plan Management relate to visitor use levels. The PEIR (Vol. 3, Section 5.3.8) evaluated the potential for changes in water system operations to adversely affect recreational resources which, in turn, could affect visitor use levels. Although Hetch Hetchy Reservoir is not within the designated wild and scenic river, impacts on reservoir recreation are summarized here because changes in visitor use levels at the reservoir could affect visitor use levels along the adjacent reaches of the designated wild and scenic river. The PEIR

(Impact 5.3.8-1, pp. 5.3.8-23 to 5.3.8-27) determined the WSIP would have a less-than-significant impact on reservoir recreation at Hetch Hetchy Reservoir because lower average reservoir levels would occur only during the off-season—between January and March—when visitation to the reservoir is low. The PEIR (Impact 5.3.8-2, pp. 5.3.8-27 to 5.3.8-34) determined the WSIP would have a less-than-significant impact on non-rafting river recreation below O'Shaughnessy Dam because the relatively minor changes in river flow levels associated with the WSIP, which would occur predominantly in May and June, would be imperceptible to visitors. Further, the PEIR (Impact 5.3.8-3, pp. 5.3.8-34 to 5.3.8-35) determined the WSIP would have a less-than-significant impact on the aesthetic values of the wild and scenic sections of the Tuolumne River because WSIP-related flow reductions would remain within the range experienced under the existing condition and would likely be imperceptible to most visitors. The PEIR impact analysis indicated that visitor use levels are unlikely to be affected by WSIP implementation.

With respect to biological values, the PEIR (Vol. 3, Section 5.3.7, Impact 5.3.7-2, pp. 5.3.7-24 to 5.3.7-25) determined that SFPUC operation of O'Shaughnessy Dam under the WSIP would result in potentially significant impacts on terrestrial biological resources due to potential effects on alluvial features that support meadow and riparian habitat in the Poopenaut Valley. However, the PEIR determined that these impacts could be reduced to less-than-significant levels with implementation of Mitigation Measure 5.3.7-2, Controlled Releases to Recharge Groundwater in Streamside Meadows and Other Alluvial Deposits, which would require that the SFPUC manage releases from Hetch Hetchy Reservoir to recharge riverside meadows such as the Poopenaut Valley, thereby maintaining or improving meadow conditions. This conclusion is consistent the Tuolumne River Plan's objective that releases from O'Shaughnessy Dam more closely mimic natural flows and provide maximum ecological benefits to the river-dependent ecosystems below the dam.

Conclusion

The *Tuolumne Wild and Scenic River Draft Comprehensive Management Plan and Environmental Impact Statement* (NPS, 2013) is designed to provide broad management objectives, and the specific actions and/or programs that will be implemented by the NPS to achieve these objectives, as well as establish monitoring programs to ensure that river values are protected and enhanced over the life of the plan. The PEIR determined that the WSIP would not substantially affect visitor use levels in Yosemite National Park, and thus, the WSIP would not interfere with the NPS's management efforts to protect the cultural and recreational values identified in the Tuolumne River Plan for the lower six miles of designated river. The ongoing studies and monitoring being conducted by the NPS and SFPUC of the effects of dam releases on biological resources along the Poopenaut Valley will inform the implementation of Mitigation Measure 5.3.7-2, Controlled Releases to Recharge Groundwater in Streamside Meadows and Other Alluvial Deposits. The Tuolumne River Plan itself does not raise the potential for new impacts, substantial increases in the severity of previously identified impacts, demonstrate the feasibility of previously identified mitigation measures or alternatives determined to be infeasible, nor trigger the need for new mitigation measures or alternatives not previously addressed in the PEIR.

Overall Conclusion

The new studies conducted subsequent to the PEIR certification do not materially affect the information and conclusions presented in the PEIR, and no changes have occurred with respect to circumstances surrounding the WSIP that would cause new significant environmental impacts. Consistent with CEQA Section 21166 and CEQA Guidelines Sections 15162 and for the reasons discussed, the new information developed since publication of the PEIR would not result in: (1) substantial changes requiring major revisions to the PEIR and involving new significant environmental effects or a substantial increase in the severity of previously identified significant effects; (2) substantial changes that occur with respect to the circumstances under which the project is taken that would require major revision to the PEIR due to new or more severe impacts; and (3) new information of substantial importance which was not known and could not have been know at the time of the PEIR certification and that would (a) raise new significant impacts, (b) substantially increase the severity of previously identified impacts, (c) demonstrate the feasibility of mitigation measures or alternatives previously rejected as infeasible, or (d) lead to new feasible mitigation measures or alternatives considerably different from those previously considered in the PEIR that would substantially reduce one or more significant effects on the environment.

Based on the foregoing, the analyses conducted and the conclusions reached in the certified WSIP PEIR remain valid, and no supplemental environmental review is required for use of the PEIR as a tiering document for the Regional Groundwater Storage and Recovery Project EIR with respect to impacts on the upper Tuolumne River associated with WSIP-related changes in diversions and releases from Hetch Hetchy Reservoir.

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