

October 30, 2008

Final
Program Environmental Impact Report
Volume 1 of 8

For the
San Francisco Public Utilities Commission's
WATER SYSTEM
IMPROVEMENT PROGRAM

San Francisco Planning Department File No. 2005.0159E
State Clearinghouse No. 2005092026

Draft PEIR Publication Date: June 29, 2007

Draft PEIR Public Hearing Dates:

September 5, 2007 in Sonoma

September 6, 2007 in Modesto

September 18, 2007 in Fremont

September 19, 2007 in Palo Alto

September 20, 2007 in San Francisco

October 11, 2007 in San Francisco

Draft PEIR Public Comment Period: June 29, 2007 through October 15, 2007

Comments and Responses Publication Date: September 30, 2008

Final PEIR Certification Date: October 30, 2008

City and County of San Francisco
San Francisco Planning Department



SAN FRANCISCO PLANNING DEPARTMENT

DATE: June 12, 2009

TO: Interested Parties

FROM: Bill Wycko, Environmental Review Officer

SUBJECT: Final Program Environmental Impact Report on the San Francisco Public Utilities Commission's Water System Improvement Program (Case No. 2005.0159E)

1650 Mission St.
Suite 400
San Francisco,
CA 94103-2479

Reception:
415.558.6378

Fax:
415.558.6409

Planning
Information:
415.558.6377

The Final Program Environmental Impact Report (PEIR) on the San Francisco Public Utilities Commission's (SFPUC) Water System Improvement Program (WSIP) was certified by the San Francisco Planning Commission as adequately fulfilling the requirements of the California Environmental Quality Act (CEQA) on October 30, 2008. Subsequent to the certification action, the SFPUC approved the Phased WSIP and adopted the CEQA Findings, including a statement of overriding considerations and the WSIP Mitigation Monitoring and Reporting Program. Copies of the certification motion and CEQA Findings are attached to this memorandum.

This document is the consolidated Final PEIR; it consists of eight volumes that contain the full Draft PEIR (Volumes 1 through 5) and the Comments and Responses document (Volumes 6 through 8), but also incorporates text revisions described in the Comments and Responses document. This consolidated Final PEIR does not contain any new information from that presented in the Draft PEIR (published on June 29, 2007) and the Comments and Responses document (published on September 30, 2008). The text revisions include those prepared in response to comments received on the Draft PEIR as well as corrections and relevant updates. The document also provides cross-references to information in the Comments and Responses document, updates information on the CEQA process, and consolidates the tables of contents for the eight volumes. This document is intended to facilitate use of the Final PEIR as a reference document, which should be cited based on the certification date of October 30, 2008 and referenced as follows:

San Francisco Planning Department, 2008. *Final Program Environmental Impact Report on the San Francisco Public Utilities Commission's Water System Improvement Program*. State Clearinghouse No. 2005092026. Certified October 30, 2008.

To assist the reader in identifying the text changes that were incorporated subsequent to publication of the Draft PEIR, this consolidated Final PEIR includes a vertical line along the outside margin of the pages where changes have been made; new and revised figures are labeled as *New* or *Revised*, respectively, in the figure title. Other than the vertical line along the margin, deleted text is not shown, except where an entire paragraph was deleted, in which case the deletion is noted in square brackets and italics. The consolidated Final PEIR preserves the same pagination as was used in the Draft PEIR so that any cross-references remain accurate; thus, where the text changes involved inserting lengthy new text, the new page numbers are labeled with *a*, *b*, *c*, etc. following the original page number (e.g., pp. 4.7-24a and 4.7-24b follow p. 4.7-24 and come before p. 4.7-25).

In response to some comments on the Draft PEIR, it was necessary to provide supplemental discussion of certain issues to confirm and validate the original analysis or discussion presented in the Draft PEIR, but in these instances the comments did not warrant a change or correction in the text of the Draft PEIR. In these cases, the consolidated Final PEIR includes cross-references and explanatory notes, which are called out in square brackets and italics in the revised text in Volumes 1 through 5 to refer the reader to the additional information presented in the Comments and Responses document (Volumes 6 through 8).

This consolidated Final PEIR also provides guidance for the reader in locating the description of the Phased WSIP and its environmental effects. The Phased WSIP is a variation of the proposed program described and analyzed in the Draft PEIR, and, as indicated in the Comments and Responses document, its potential environmental effects fall within the range of impacts previously evaluated in the Draft PEIR for the originally proposed program and alternatives. The SFPUC ultimately adopted the Phased WSIP, as described above.

The user's guide below is intended to help the reader navigate through the Final PEIR and to find relevant cross-references between the Draft PEIR and Comments and Responses document. It indicates where changes were made to the Draft PEIR as part of the Comments and Responses document, provides cross-references for information on the Phased WSIP, and shows the interrelationships among the various sections of the PEIR.

USER'S GUIDE TO CHANGES IN THE WSIP FINAL PEIR

| Section | Name | Description | Changes from the Draft PEIR? | Other Relevant PEIR Sections |
|------------------|---|---|---|---|
| VOLUME 1 | | | | |
| Summary | Summary | Summary of the proposed program, impacts, mitigation measures, variants, and alternatives | Yes, changes made due to project description updates, updates to impacts and mitigation measures, and introduction of the Phased WSIP Variant | Refer to all chapters of the PEIR for full discussions |
| Chapter 1 | Introduction | Purpose of proposed program and CEQA process | Yes, changes made to correct editorial errors | Refer to Chapter 11 for updates to the CEQA process for the PEIR |
| Chapter 2 | Existing Regional Water System | Existing facilities, operations, regulatory requirements | Yes, changes made to update information on existing facilities and SFPUC policies | |
| Chapter 3 | Program Description | Location, objectives, background, proposed water supply strategy and facilities, required actions and approvals | Yes, changes made due to revisions in some facility project descriptions and to include cross-reference to information on the Phased WSIP Variant | Refer to the following sections for supplemental discussions: Section 13.2 for project revisions; Section 13.4 for the Phased WSIP; Section 14.1 for the need for the program; Section 14.2 for demand projections, conservation, and recycling assumptions; and Section 14.3 for the dry-year water transfer |
| VOLUME 2 | | | | |
| Chapter 4 | WSIP Facility Projects – Setting and Impacts | | | |
| Section 4.1 | Overview | Approach used to analyze program-level impacts and to develop programmatic mitigations for key regional facility improvement projects | No changes | Refer to Appendix C for the assumptions used for facility improvement projects and Section 14.4 for additional discussion of the appropriate level of detail for the program-level analysis |
| Section 4.2 | Plans and Policies | Plans and policies relevant to facility projects and plan consistency evaluation | Yes, changes made to update the setting to include the San Francisco Municipal Green Building Program | |
| Section 4.3 | Land Use and Visual Quality | Setting and impacts | No changes | Refer to Section 6.3 for mitigation measures |
| Section 4.4 | Geology, Soils, and Seismicity | Setting and impacts | No changes | Refer to Section 6.3 for mitigation measures |
| Section 4.5 | Hydrology and Water Quality | Setting and impacts | Yes, changes made to update the regulatory framework to clarify three impacts | Refer to Section 6.3 for mitigation measures |
| Section 4.6 | Biological Resources | Setting and impacts | Yes, changes made to clarify the setting and two impacts | Refer to Section 6.3 for mitigation measures, to Section 14.4 for supplemental discussion, and to Appendix D for supporting details |

USER'S GUIDE TO CHANGES IN THE WSIP FINAL PEIR (Continued)

| Section | Name | Description | Changes from the Draft PEIR? | Other Relevant PEIR Sections |
|-------------------------|--|--|---|---|
| VOLUME 2 (cont.) | | | | |
| Section 4.7 | Cultural Resources | Setting and impacts | Yes, changes made to clarify and refine the historical resources analysis | Refer to Section 6.3 for mitigation measures and to Section 15.3 for supplemental discussion |
| Section 4.8 | Traffic, Transportation, and Circulation | Setting and impacts | Yes, changes made to clarify one impact | Refer to Section 6.3 for mitigation measures and to Appendix F for supporting details |
| Section 4.9 | Air Quality | Setting and impacts | Yes, changes made to update setting to include the Greenhouse Gas Reduction Ordinance | Refer to Section 6.3 for mitigation measures |
| Section 4.10 | Noise and Vibration | Setting and impacts | No changes | Refer to Section 6.3 for mitigation measures and to Appendix F for supporting details |
| Section 4.11 | Public Services and Utilities | Setting and impacts | Yes, changes made to update the setting | Refer to Section 6.3 for mitigation measures |
| Section 4.12 | Recreational Resources | Setting and impacts | Yes, changes made to update the setting, clarify one impact, and augment the references | Refer to Section 6.3 for mitigation measures |
| Section 4.13 | Agricultural Resources | Setting and impacts | No changes | Refer to Section 6.3 for mitigation measures |
| Section 4.14 | Hazards | Setting and impacts | No changes | Refer to Section 6.3 for mitigation measures and to Appendix G for supporting details |
| Section 4.15 | Energy Resources | Setting and impacts | No changes | Refer to Section 6.3 for mitigation measures |
| Section 4.16 | Collective Impacts of WSIP Facilities | Combined impacts of multiple facility projects under the proposed program | No changes | Refer to Section 6.3 for mitigation measures |
| Section 4.17 | Cumulative Effects | Impacts of the proposed program in combination with other projects | No changes | Refer to Section 6.3 for mitigation measures |
| VOLUME 3 | | | | |
| Chapter 5 | WSIP Water Supply and System Operations – Setting and Impacts | | | |
| Section 5.1 | Overview | Approach used to analyze water supply impacts and mitigation measures; includes a description of hydrologic modeling | Yes, changes made due to refinement and update of hydrologic modeling | Refer to Sections 13.3 and 14.5 for supplemental discussion of hydrologic modeling and to Appendices H and O for supporting details |
| Section 5.2 | Plans and Policies | Plans and policies relevant to water supply system operations and plan consistency | Yes, changes made to clarify applicability of plans and policies | |

USER'S GUIDE TO CHANGES IN THE WSIP FINAL PEIR (Continued)

| Section | Name | Description | Changes from the Draft PEIR? | Other Relevant PEIR Sections |
|-------------------------|---|---|---|--|
| | | evaluation | | |
| VOLUME 3 (cont.) | | | | |
| Section 5.3 | Tuolumne River System and Downstream Water Bodies – Setting and impacts on the Tuolumne River, the San Joaquin River, and the Sacramento–San Joaquin Delta watersheds and associated resources | | | |
| Section 5.3.1 | Stream Flow and Reservoir Water Levels | Setting and impacts on stream flow and reservoir levels along the Tuolumne River, San Joaquin River, and Sacramento–San Joaquin Delta | Yes, changes made to clarify impact analysis | Refer to Section 13.3 for supplemental discussion of hydrologic modeling and to Sections 14.6, 14.7, and 14.8 for supplemental discussion of stream flow in the Tuolumne River and downstream water bodies |
| Section 5.3.2 | Geomorphology | Setting and impacts on the geomorphology of the Tuolumne River | No changes | Refer to Sections 14.6 and 14.7 for supplemental discussion of the geomorphology along the Tuolumne River |
| Section 5.3.3 | Surface Water Quality | Setting and impacts on surface water quality in the Tuolumne River, the San Joaquin River, and the Sacramento–San Joaquin Delta | Yes, changes made to clarify regulatory framework | Refer to Sections 14.6, 14.7, and 14.8 for supplemental discussion of surface water quality in the Tuolumne River and downstream water bodies |
| Section 5.3.4 | Surface Water Supplies | Setting and impacts on surface water supplies along the lower Tuolumne River, the San Joaquin River, and the Sacramento–San Joaquin Delta | Yes, changes made to clarify one impact | Refer to Section 14.8 for supplemental discussion of issues related to the San Joaquin River and Delta |
| Section 5.3.5 | Groundwater | Setting and impacts on groundwater resources in the Tuolumne River watershed | Yes, changes made to clarify the regulatory setting | |
| Section 5.3.6 | Fisheries | Setting and impacts on fishery resources along the Tuolumne River, the San Joaquin River, and the Sacramento–San Joaquin Delta and | Yes, changes made to clarify two impacts | Refer to Section 6.4 for mitigation measures and to Section 14.7 for supplemental discussion of fisheries in the lower Tuolumne River |
| Section 5.3.7 | Terrestrial Biological Resources | Setting and impacts on terrestrial biological resources along the Tuolumne River, the San Joaquin River, and the Sacramento–San Joaquin Delta | No changes | Refer to Section 6.4 for mitigation measures and to Section 14.6 for supplemental discussion of biological resources along the upper Tuolumne River |
| Section 5.3.8 | Recreational and Visual Resources | Setting and impacts on recreational and visual resources along the Tuolumne River | Yes, changes made to clarify the setting and one impact | |
| Section 5.3.9 | Energy Resources | Setting and impacts on energy resources related to water supply and | No changes | |

USER'S GUIDE TO CHANGES IN THE WSIP FINAL PEIR (Continued)

| Section | Name | Description | Changes from the Draft PEIR? | Other Relevant PEIR Sections |
|-------------------------|---|--|---|--|
| | | system operations | | |
| VOLUME 3 (cont.) | | | | |
| Section 5.4 | Alameda Creek Watershed Streams and Reservoirs – Setting and impacts on the Alameda Creek watershed and associated resources | | | |
| Section 5.4.1 | Stream Flow and Reservoir Water Levels | Setting and impacts on stream flow and reservoir levels in the Alameda Creek watershed | Yes, changes made due to revisions in some facility project descriptions, updated modeling, and refined impact analysis | Refer to Section 6.3 for mitigation measures and to Section 14.9 for supplemental discussion of revisions to facility project descriptions and refined analysis; refer to Appendices H, N, and O for supporting details of the hydrologic analysis |
| Section 5.4.2 | Geomorphology | Setting and impacts on the geomorphology of Alameda Creek | Yes, changes made to clarify impact analysis | |
| Section 5.4.3 | Surface Water Quality | Setting and impacts on surface water quality in the Alameda Creek watershed | Yes, changes made to clarify the setting and one impact | |
| Section 5.4.4 | Groundwater | Setting and impacts on groundwater resources in the Alameda Creek watershed | Yes, changes made to clarify one impact | |
| Section 5.4.5 | Fisheries | Setting and impacts on fishery resources in the Alameda Creek watershed | Yes, changes made due to revisions in some facility project descriptions, updated modeling, and refined impact analysis | Refer to Section 6.3 for mitigation measures, to Section 14.9 for supplemental discussion of Alameda Creek watershed fishery issues, and to Appendix N for supporting details |
| Section 5.4.6 | Terrestrial and Biological Resources | Setting and impacts on terrestrial biological resources in the Alameda Creek watershed | Yes, changes made to clarify three impacts | Refer to Section 6.3 for mitigation measures |
| Section 5.4.7 | Recreational and Visual Resources | Setting and impacts on recreational and visual resources in the Alameda Creek watershed | Yes, changes made to clarify the setting and to refine the impact analysis due to revisions in some facility project descriptions | Refer to Section 13.2 for revisions to facility project descriptions |
| Section 5.5 | San Francisco Peninsula Streams and Reservoirs – Setting and impacts on the Peninsula watershed (San Mateo and Pilarcitos Creek watersheds) and associated resources | | | |
| Section 5.5.1 | Stream Flow and Reservoir Water Levels | Setting and impacts on stream flow and reservoir levels in the watersheds of San Mateo and Pilarcitos Creeks | Yes, changes made due to updated hydrologic modeling and refined Pilarcitos watershed impact analysis | Refer to Section 13.3 for a description of the updated hydrologic modeling and refined Pilarcitos watershed impact analysis |
| Section 5.5.2 | Geomorphology | Setting and impacts on the geomorphology of San Mateo and Pilarcitos Creeks | No changes | |
| Section 5.5.3 | Surface Water Quality | Setting and impacts on surface water quality in the San Mateo and Pilarcitos Creek watersheds | Yes, changes made due to updated hydrologic modeling and refined Pilarcitos watershed impact analysis | Refer to Section 6.4 for mitigation measures and to Section 13.3 for a description of the updated hydrologic modeling and refined Pilarcitos watershed impact analysis |

USER'S GUIDE TO CHANGES IN THE WSIP FINAL PEIR (Continued)

| Section | Name | Description | Changes from the Draft PEIR? | Other Relevant PEIR Sections |
|-------------------------|---|--|---|---|
| VOLUME 3 (cont.) | | | | |
| Section 5.5.4 | Groundwater | Setting and impacts on groundwater resources in the San Mateo and Pilarcitos Creek watersheds | No changes | |
| Section 5.5.5 | Fisheries | Setting and impacts on fishery resources along San Mateo and Pilarcitos Creeks | Yes, changes made due to updated hydrologic modeling and refined Pilarcitos watershed impact analysis | Refer to Section 6.4 for mitigation measures and to Section 13.3 for a description of the updated hydrologic modeling and refined Pilarcitos watershed impact analysis |
| Section 5.5.6 | Terrestrial Biological Resources | Setting and impacts on terrestrial biological resources in the San Mateo and Pilarcitos Creek watersheds | Yes, changes made due to updated hydrologic modeling and refined Pilarcitos watershed impact analysis | Refer to Section 6.4 for mitigation measures and to Section 13.3 for a description of the updated hydrologic modeling and refined Pilarcitos watershed impact analysis |
| Section 5.5.7 | Recreational and Visual Resources | Setting and impacts on recreational and visual resources along San Mateo and Pilarcitos Creeks | Yes, changes made to clarify the setting | |
| Section 5.6 | Westside Groundwater Basin Resources | Setting and impacts on the north and south portions of the groundwater basin | Yes, changes made to clarify and update the setting and to clarify one impact | Refer to Section 6.4 for mitigation measures |
| Section 5.7 | Cumulative Effects | Cumulative impacts on affected water resources and a discussion of global climate change on the water supply sources | Yes, changes made to update information on cumulative projects and to refine the cumulative analysis of Alameda Creek watershed resources | Refer to Section 14.9 for supplemental discussion of the cumulative analysis of Alameda Creek fisheries and to Section 14.11 for supplemental discussion of global climate change |
| VOLUME 4 | | | | |
| Chapter 6 | Mitigation Measures | Detailed description of mitigation measures and discussion of the impacts of mitigation measures | Yes, changes made to refine and clarify several mitigation measures | Refer to Sections 14.7, 14.9, 14.10, 15.2, and 15.4 for supplemental discussion related to clarification and refinement of mitigation measures |
| Chapter 7 | Growth-Inducement Potential and Indirect Effects of Growth | Water demand projections and analyses of growth-inducement impacts and secondary effects of growth | Yes, changes made to correct editorial errors and to clarify the discussion | Refer to Appendix E for supporting details |
| Chapter 8 | WSIP Variants and Impact Analysis | Description and analysis of variants requested by the SFPUC | Yes, changes made to introduce the Phased WSIP Variant | Refer to Section 13.4 for supplemental discussion of the Phased WSIP Variant |
| Chapter 9 | CEQA Alternatives | Description, analysis, and comparison of CEQA alternatives, the alternatives screening process, and the | Yes, changes made due to refined analysis of Pilarcitos watershed resources and to clarify the Modified WSIP | Refer to Section 13.3 for refined Pilarcitos watershed impact analysis and to Section 14.10 for supplemental discussion of the Modified |

USER'S GUIDE TO CHANGES IN THE WSIP FINAL PEIR (Continued)

| Section | Name | Description | Changes from the Draft PEIR? | Other Relevant PEIR Sections |
|-------------------------|--|--|--|--|
| | | alternatives rejected | Alternative | WSIP Alternative |
| VOLUME 4 (cont.) | | | | |
| Chapter 10 | Impact Overview | Significant unavoidable effects and irreversible environmental changes | No changes | |
| VOLUME 5 | | | | |
| Appendix A | Notice of Preparation / Scoping Report | Copy of Notice of Preparation and Scoping Report | No changes | Supporting information for Chapter 1 |
| Appendix B | WSIP Initial Study Checklist | CEQA checklist of environmental effects | No changes | Refer to Chapters 4, 5, 6, and 7 for complete descriptions of impacts and mitigation measures |
| Appendix C | WSIP Facility Project Information | WSIP facility improvement project information: facilities; operations; locations; construction; affected roads and construction traffic; and permits, approvals and agency coordination that may be required | Yes, changes made due to revisions in some facility project descriptions | Supporting details for Chapter 4; refer to Section 13.2 for revisions to facility project descriptions |
| Appendix D | Biological Resources, Special-Status Species | Special-status species in the Alameda and Peninsula watersheds | No changes | Supporting details for Section 4.6 |
| Appendix E | Growth-Inducement Potential and Supporting Information | Supplemental information on water supply assurances, methodology for demand projections, growth trends, and indirect effects of growth | Yes, changes made to correct minor errors | Supporting details for Chapter 7 |
| Appendix F | Noise and Traffic Background Data | Typical maximum construction noise levels, estimated maximum truck noise levels, and background traffic volumes | No changes | Supporting details for Sections 4.8 and 4.10 |
| Appendix G | Hazardous Materials | Regulatory framework for hazardous materials | No changes | Supporting details for Section 4.14 |
| Appendix H | Modeling Analysis – Water Supply and System Operations | Supporting information on the hydrologic modeling used in the Draft PEIR for water supply and system operations impacts | Yes, changes made to include reference citation | Refer to Appendix O for updated modeling results |
| Appendix I | Report Preparers | EIR authors and consultants | Yes, changes to update information | |
| VOLUME 6 | | | | |
| Chapter 11 | Introduction to Comments and Responses | Update of CEQA process, list of commenters, and guide | Yes, editorial changes made from Comments and Responses | Supplements information in Chapter 1; refer to Appendices K, L, and M for |

USER'S GUIDE TO CHANGES IN THE WSIP FINAL PEIR (Continued)

| Section | Name | Description | Changes from the Draft PEIR? | Other Relevant PEIR Sections |
|-------------------------|---|---|--|---|
| | | to responses | document to reflect updated CEQA process for the PEIR | additional supporting details |
| VOLUME 6 (cont.) | | | | |
| Chapter 12 | Comment Letters | | | |
| Section 12.1 | Federal Agencies | Comments from federal agencies | No changes | Refer to Section 15.1 for responses |
| Section 12.2 | State Agencies | Comments from state agencies | No changes | Refer to Section 15.2 for responses |
| Section 12.3 | Local and Regional Agencies | Comments from local and regional agencies | No changes | Refer to Section 15.3 for responses |
| Section 12.4 | Groups | Comments from groups | No changes | Refer to Section 15.4 for responses |
| Section 12.5 | Citizens | Comments from citizens | No changes | Refer to Section 15.5 for responses |
| Section 12.6 | Public Hearing Transcripts | Copies of transcripts from public hearings | No changes | Refer to Chapter 15 for responses |
| Section 12.7 | Form Letters | Form letter comments | No changes | Refer to Section 15.6 for responses |
| VOLUME 7a | | | | |
| Chapter 13 | Introduction to Responses and WSIP Revisions | | | |
| Section 13.1 | Overview of Responses | Organization of responses | No changes | |
| Section 13.2 | Program Description Changes | Revisions to the proposed program since publication of the Draft PEIR | No changes | Supplements information in Chapter 3 |
| Section 13.3 | Updated Water System Assumptions | Updated information on hydrologic modeling | No changes | Supplements information in Sections 5.1, 5.4, and 5.5 |
| Section 13.4 | Phased WSIP Variant | Description and environmental impacts of the Phased WSIP | Yes, changes made from Comments and Responses document to correct errors that were previously published in an errata | Supplements information in Chapters 3 and 8 |
| Chapter 14 | Master Responses – Comprehensive responses to issues that received numerous comments | | | |
| Section 14.1 | Purpose and Need | Master response | No changes | Supplements information in Chapter 3 |
| Section 14.2 | Demand Projections, Conservation, and Recycling | Master response | No changes | Supplements information in Chapter 3 |
| Section 14.3 | Proposed Dry-Year Transfer | Master response | No changes | Supplements information in Chapter 3 |

USER'S GUIDE TO CHANGES IN THE WSIP FINAL PEIR (Continued)

| Section | Name | Description | Changes from the Draft PEIR? | Other Relevant PEIR Sections |
|--------------------------|---|---|-------------------------------------|---|
| Section 14.4 | PEIR Appropriate Level of Analysis | Master response | No changes | Supplements information in Chapter 4 |
| VOLUME 7a (cont.) | | | | |
| Section 14.5 | Water Resources Modeling | Master response | No changes | Supplements information in Section 5.1 |
| Section 14.6 | Upper Tuolumne River Issues | Master response | No changes | Supplements information in Section 5.3 |
| Section 14.7 | Lower Tuolumne River Issues | Master response | No changes | Supplements information in Section 5.3 |
| Section 14.8 | Delta and San Joaquin River Issues | Master response | No changes | Supplements information in Section 5.3 |
| Section 14.9 | Alameda Creek Fishery Issues | Master response | No changes | Supplements information in Sections 5.4 and 5.7; refer also to Appendix N |
| Section 14.10 | Modified WSIP Alternative | Master response | No changes | Supplements information in Chapter 9 |
| Section 14.11 | Climate Change | Master response | No changes | Supplements information in Section 5.7 |
| Chapter 15 | Responses to Individual Comments | | | |
| Section 15.1 | Federal Agencies | Responses to comments from federal agencies | No changes | See Section 12.1 for comments |
| Section 15.2 | State Agencies | Responses to comments from state agencies | No changes | See Section 12.2 for comments |
| Section 15.3 | Local and Regional Agencies | Responses to comments from local and regional agencies | No changes | See Section 12.3 for comments |
| VOLUME 7b | | | | |
| Chapter 15 | Responses to Individual Comments (cont.) | | | |
| Section 15.4 | Groups | Responses to comments from groups | No changes | See Section 12.4 for comments |
| Section 15.5 | Citizens | Responses to comments from citizens | No changes | See Section 12.5 for comments |
| Section 15.6 | Form Letters | Responses to form letter comments | No changes | See Section 12.7 and Appendix L for comments |
| Chapter 16 | Staff-Initiated Text Changes | Revisions to Draft PEIR | No changes | Refer to all chapters with changes from the Draft PEIR |
| VOLUME 8 | | | | |
| Appendix J | Draft PEIR Notification | Draft PEIR notification, mailing list, and public hearing materials | No changes | Provides supplemental information to Chapter 11 |
| Appendix K | Attachment Log | Summary of attachments | No changes | Provides supplemental |

USER'S GUIDE TO CHANGES IN THE WSIP FINAL PEIR (Continued)

| Section | Name | Description | Changes from the Draft PEIR? | Other Relevant PEIR Sections |
|-------------------------|--|--|-------------------------------------|---|
| | | to comments | | information to Chapter 12 |
| Appendix L | Form Letter 1 Submittals | Copies of form letters | No changes | Refer to Section 12.7 for responses |
| VOLUME 8 (cont.) | | | | |
| Appendix M | Comment Letters Received After December 31, 2007 | Copies of comment letters received after December 31, 2007 and cross-references to pertinent responses | No changes | Provides supplemental information to Chapter 12 |
| Appendix N | Technical Memorandum – Estimation of Flow Changes in Lower Alameda Creek | Supporting analysis of flows in lower Alameda Creek | No changes | Provides supporting information for Sections 5.4 and 14.9 |
| Appendix O | Hydrologic Modeling – Additional Supporting Information | Updated hydrologic modeling results prepared for the Comments and Responses document | No changes | Refer to Appendix H for modeling results used in the Draft PEIR |

Attachments:

1. Planning Commission Motion No. 17734, October 30, 2008
2. Water System Improvement Program, California Environmental Quality Act Findings



SAN FRANCISCO PLANNING DEPARTMENT

Subject to: (Select only if applicable)

- Inclusionary Housing (Sec. 315)
- Jobs Housing Linkage Program (Sec. 313)
- Downtown Park Fee (Sec. 139)
- First Source Hiring (Admin. Code)
- Child Care Requirement (Sec. 314)
- Other

1650 Mission St.
Suite 400
San Francisco,
CA 94103-2479

Reception:
415.558.6378

Fax:
415.558.6409

Planning
Information:
415.558.6377

Planning Commission Motion No. 17734

HEARING DATE: October 30, 2008

Hearing Date: October 30, 2008
Case No.: **2005.0159E**
Project: **Water System Improvement Program**
Zoning: N/A
Block/Lot: N/A
Project Sponsor: San Francisco Public Utilities Commission
 1155 Market Street, 11th Floor
 San Francisco, CA 94103
Staff Contact: Diana Sokolove - (415) 575-9046
 diana.sokolove@sfgov.org

ADOPTING FINDINGS RELATED TO THE CERTIFICATION OF A FINAL PROGRAM ENVIRONMENTAL IMPACT REPORT FOR A PROPOSED WATER SYSTEM IMPROVEMENT PROGRAM FOR THE SAN FRANCISCO PUBLIC UTILITIES COMMISSION.

MOVED, that the San Francisco Planning Commission (hereinafter "Commission") hereby CERTIFIES the Final Program Environmental Impact Report identified as Case No. 2005.0159E for the Water System Improvement Program (WSIP), including a series of facilities improvement projects, in Alameda, Santa Clara, San Francisco, San Joaquin, San Mateo, Stanislaus, and Tuolumne Counties (hereinafter "Project"), based upon the following findings:

1. The City and County of San Francisco, acting through the Planning Department (hereinafter "Department") fulfilled all procedural requirements of the California Environmental Quality Act (Cal. Pub. Res. Code Section 21000 *et seq.*, hereinafter "CEQA"), the State CEQA Guidelines (Cal. Admin. Code Title 14, Section 15000 *et*

seq., (hereinafter "CEQA Guidelines") and Chapter 31 of the San Francisco Administrative Code (hereinafter "Chapter 31").

- A. The Department determined that a Program Environmental Impact Report (hereinafter "PEIR") was required and in accordance with Sections 15063 and 15082 of the CEQA Guidelines, the Department prepared a Notice of Preparation (NOP) of an EIR and conducted scoping meetings (see Draft PEIR, Appendix A). The NOP was circulated to local, state, and federal agencies and to other interested parties on September 6, 2005, initiating a public comment period that extended through October 24, 2005. Pursuant to CEQA Guidelines Section 15083, the San Francisco Planning Department held five public scoping meetings, one each in Sonoma, Modesto, Fremont, Palo Alto and San Francisco, between October 5, 2005 and October 19, 2005. The purpose of the meetings was to present the proposed WSIP to the public and receive public input regarding the proposed scope of the Program EIR analysis. A scoping report was prepared to summarize the public scoping process and the comments received in response to the NOP, and the main body of the report is included in Appendix A of the Draft Program EIR.
 - B. On June 29, 2007, the Department published the Draft Program Environmental Impact Report (hereinafter "DPEIR") and provided public notice in a newspaper of general circulation of the availability of the DPEIR for public review and comment and of the date and time of the Planning Commission public hearings on the DPEIR; this notice was mailed to the Department's list of persons requesting such notice and other interested parties.
 - C. Notices of availability of the DPEIR and of the date and time of the public hearing were posted near the project site at O'Shaughnessy Dam in Tuolumne County by Department staff on July 25, 2007, and posting of the Notice of Availability were made by Department staff at a public library in each of the counties potentially affected by the Program (i.e., Alameda, San Francisco, San Joaquin, San Mateo, Santa Clara, Stanislaus, and Tuolumne Counties) in July 2007.
 - D. On June 29, 2007, copies of the DPEIR were mailed or otherwise delivered to a list of persons requesting it, to those noted on the distribution list in the DPEIR, and to government agencies, the latter both directly and through the State Clearinghouse. The DPEIR was posted on the Department's website.
 - E. Notice of Completion was filed with the State Secretary of Resources via the State Clearinghouse on June 29, 2007.
2. The DPEIR was circulated to local, state, and federal agencies and to interested organizations and individuals for review and comment on June 29, 2007 for a 90-day public review period. The public review period was subsequently extended and closed on October 15, 2007, for a total of 108 days. Six duly advertised public

hearings on the Draft PEIR to accept written or oral comments were held in Sonoma, Modesto, Fremont, Palo Alto, and San Francisco (two hearings) between September 5, 2007 and October 11, 2007. All of the public hearings transcripts are in the Project record.

3. The Department prepared responses to comments on environmental issues received at the public hearings and in writing during the public review period for the DPEIR, prepared revisions to the text of the DPEIR in response to comments received or based on additional information that became available during the public review period, and corrected errors in the DPEIR. This material was presented in a Draft Comments and Responses document, published on September 30, 2008, distributed to the Commission and all parties who commented on the DPEIR, and made available to others upon request at Department offices and on the Department's website.
4. A Final Program Environmental Impact Report (hereinafter "FPEIR") has been prepared by the Department, consisting of the Draft Program Environmental Impact Report, any consultations and comments received during the review process, any additional information that became available, and the Comments and Responses, all as required by law.
5. Project files on the FPEIR have been made available for review by the Commission and the public. These files are available for public review at the Department offices at 1650 Mission Street, and are part of the record before the Commission. Linda Avery is the custodian of records. Copies of the DPEIR and associated reference materials as well as the C&R document are also available for review at public libraries in each of the following counties: Alameda, San Francisco, San Joaquin, San Mateo, Santa Clara, Stanislaus, and Tuolumne.
6. The San Francisco Public Utilities Commission, the Project Sponsor, has indicated that the presently preferred program is the Phased WSIP Variant, which is described and analyzed in the FPEIR.
7. The FPEIR added new information to the DPEIR, as detailed in the Department Staff Memorandum dated October 16, 2008. This additional information does not involve a new significant environmental impact, a substantial increase in the severity of a significant environmental impact, or a feasible alternative or mitigation measure considerably different from others previously analyzed that would clearly lessen the significant environmental impacts of the Program and that the Project Sponsor declines to adopt. No information indicates that the DPEIR was inadequate or conclusory. Therefore, recirculation of the PEIR is not required or necessary because: (1) no new significant environmental impact would result from the Program (the Phased WSIP Variant as well as the originally preferred Program) or from a new mitigation measure proposed to be implemented; (2) no substantial increase in the severity of an environmental impact would result; (3) no feasible program

alternative or mitigation measure considerably different from others previously analyzed would clearly lessen the environmental impacts of the Phased WSIP Variant, but the project's proponents decline to adopt it; and (4) the Draft PEIR was not so fundamentally and basically inadequate and conclusory in nature so that meaningful public review and comment were precluded.

8. The Commission, in certifying the completion of said FPEIR, hereby does find that the Phased WSIP Variant described in the FPEIR and preferred by the Project Sponsor, will have the following significant and unavoidable effects on the environment.

Significant and Unavoidable Water Supply/System Operations Impacts:

- The proposed water supply and system operations would reduce stream flows and alter the stream hydrograph along Alameda Creek below the Alameda Creek Diversion Dam in the Alameda Creek watershed in Alameda County and result in a significant and unavoidable impact on stream flow in Alameda Creek between the diversion dam and the confluence with Calaveras Creek;
- The proposed water supply and system operations would result in a potentially significant and unavoidable impact in the Peninsula watershed on fishery resources in Crystal Springs Reservoir in San Mateo County; and
- The Program would indirectly contribute to potentially significant and unavoidable environmental impacts caused by growth in the SFPUC service area, as identified in the planning documents and associated environmental documents for the affected jurisdictions.

Potentially Significant and Unavoidable WSIP Facility Improvement Project Impacts:

The WSIP may have significant and unavoidable impacts on the environment in the following ways based on programmatic information provided in the FPEIR about the WSIP facilities improvement projects. These impacts will be reevaluated in subsequent CEQA documentation based on site-specific, project-level information. Until more detailed project-level assessments are completed to determine the significance of impacts, these impacts are conservatively considered to be potentially significant and unavoidable. The impacts include:

Land Use and Visual Quality

- Temporary disruption or displacement of land uses during construction periods.

- Existing land uses could be displaced to accommodate proposed facilities at some locations.
- Removal of a large area of existing oak woodland cover as part of the Calaveras Dam Replacement project would permanently alter a scenic vista.

Cultural Resources

- Alteration or demolition of existing or potential historic facilities.
- Substantial adverse effects on existing or potential historic districts.

Noise and Vibration

- Excessive construction noise could occur in close proximity to sensitive receptors and audible construction noise could occur during the more noise-sensitive nighttime hours.
- Construction activities could generate vibration in proximity to sensitive receptors during the nighttime hours with implementation of some WSIP facility projects.

Biological Resources

- Multiple facility improvement projects in the Sunol Valley would have a potentially significant and unavoidable collective impact on biological resources because of the number of WSIP projects in this region and the extent of overlap in terms of construction activity timing and location.
- Potentially significant and unavoidable collective impacts on special-status plant species could occur during construction of the Crystal Springs/San Andreas Transmission Upgrade and Lower Crystal Springs Dam projects.

Impacts Due to Implementation of Multiple WSIP Projects (Collective Impacts)

- Temporary impacts on existing land uses near the Irvington Tunnel portal in Fremont could occur during construction if staging and access under both the New Irvington Tunnel and Bay Division Pipeline Reliability Upgrade projects overlap in this vicinity.

- Impacts on biological resources in Sunol Valley because of the number of WSIP projects in this region and the extent of overlap in terms of construction activity timing and location.
- Impacts on biological resources (special-status plant species) on the Peninsula during construction of the Crystal Springs/San Andreas Transmission Upgrade and Lower Crystal Springs Dam projects.
- Impacts on historical resources due to implementation of multiple projects in areas with water system facilities more than 45 years old.
- Truck traffic impacts due to the numerous potentially-affected roadways, including regional roadways.
- Multi-regional effects on air quality from ozone and particulate matter emissions during construction of multiple projects.
- Noise impacts from construction of multiple WSIP projects the San Joaquin, Bay Division, Peninsula, and San Francisco regions.

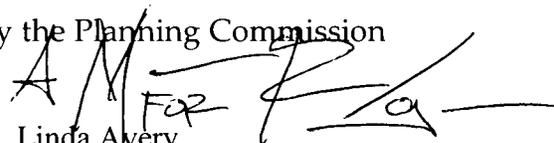
Impacts Due to Implementation of all WSIP Projects Combined with Non-WSIP Projects (Cumulative Impacts)

- Impacts on individual historic resources or on potential historic districts in the Sunol Valley and Peninsula regions.
 - Regionwide traffic impacts from construction-related traffic (e.g., increased travel times).
 - Regionwide air quality impacts due to the nonattainment status for ozone and particulate matter in both the San Francisco Bay Area and San Joaquin Valley Air Basins as well as the Program's contribution to construction-related diesel particulate matter emissions.
 - Construction-related noise impacts on local and regional roadways.
9. On October 30, 2008, the Commission reviewed and considered the FPEIR and hereby does find that the contents of said report and the procedures through which the FPEIR was prepared, publicized and reviewed comply with the provisions of

CEQA, the CEQA Guidelines and Chapter 31 of the San Francisco Administrative Code.

10. The Planning Commission hereby does find that the FPEIR concerning File No. 2005.0159E, Water System Improvement Program, reflects the independent judgment and analysis of the City and County of San Francisco, is adequate, accurate and objective, and that the Comments and Responses document contains no significant revisions to the DPEIR, and hereby does CERTIFY THE COMPLETION of said FPEIR in compliance with CEQA and the CEQA Guidelines.

I hereby certify that the foregoing Motion was ADOPTED by the Planning Commission at its regular meeting of October 30, 2008.


Linda Avery
Commission Secretary

AYES: Commissioners Olague, Miguel, Antonini, Borden, Moore, and Lee

NOES: None

ABSENT: None

EXCUSED: Commissioner Sugaya

ADOPTED: October 30, 2008

ATTACHMENT A

WATER SYSTEM IMPROVEMENT PROGRAM

CALIFORNIA ENVIRONMENTAL QUALITY ACT FINDINGS: FINDINGS OF FACT, EVALUATION OF MITIGATION MEASURES AND ALTERNATIVES, AND STATEMENT OF OVERRIDING CONSIDERATIONS

SAN FRANCISCO PUBLIC UTILITIES COMMISSION

In determining to approve the Phased Variant of the Water System Improvement Program (“Phased WSIP Variant” or the “Program”), the San Francisco Public Utilities Commission (“SFPUC”) makes and adopts the following findings of fact and decisions regarding mitigation measures and alternatives, and adopts the statement of overriding considerations, based on substantial evidence in the whole record of this proceeding and under the California Environmental Quality Act (“CEQA”), California Public Resources Code Sections 21000 et seq., particularly Sections 21081 and 21081.5, the Guidelines for Implementation of CEQA (“CEQA Guidelines”), 14 California Code of Regulations Sections 15000 et seq., particularly Sections 15091 through 15093, and Chapter 31 of the San Francisco Administration Code.

This document is organized as follows:

Section I provides a description of the Program proposed for adoption (the Phased WSIP Variant), the environmental review process for the Program, the approval actions to be taken and the location of records;

Section II identifies the impacts found not to be significant that do not require mitigation;

Section III identifies potentially significant impacts that can be avoided or reduced to less-than-significant levels through mitigation and describes the disposition of the mitigation measures;

Section IV identifies significant impacts that cannot be avoided or reduced to less-than-significant levels and describes any applicable mitigation measures as well as the disposition of the mitigation measures;

Section V evaluates the different Program alternatives and the economic, legal, social, technological, and other considerations that support approval of the Phased WSIP Variant and the rejection of the alternatives, or elements thereof, analyzed; and

Section VI presents a statement of overriding considerations setting forth specific reasons in support of the Commission's actions and its rejection of the alternatives not incorporated into the Program.

The Mitigation Monitoring and Reporting Program (“MMRP”) for the mitigation measures that have been proposed for adoption is attached with these findings as **Attachment B**. The MMRP is required by CEQA Section 21081.6 and CEQA Guidelines Section 15091. Attachment B

provides a table setting forth each mitigation measure listed in the Final Program Environmental Impact Report for the WSIP ("Final PEIR" or "PEIR") that is required to reduce or avoid a significant adverse impact. Attachment B also specifies the agency responsible for implementation of each measure and establishes monitoring actions and a monitoring schedule. The full text of the mitigation measures is set forth in Attachment B.

These findings are based upon substantial evidence in the entire record before the Commission. The references set forth in these findings to certain pages or sections of the Draft Program Environmental Impact Report ("Draft PEIR" or "DEIR") or the Comments and Responses document ("C&R") in the Final PEIR are for ease of reference and are not intended to provide an exhaustive list of the evidence relied upon for these findings.

I. APPROVAL OF THE PROGRAM

A. Program Description

By this action, the SFPUC adopts and implements substantially the Program identified as the Phased WSIP Variant in Chapter 13, Section 13.4 of the PEIR, to increase the reliability of the regional water system that serves 2.4 million people in San Francisco and the San Francisco Bay Area; the Phased WSIP Variant is a variation of the original WSIP described in Chapter 3 of the PEIR. The Phased WSIP Variant involves *full implementation of all proposed WSIP facility improvement projects* as described in Chapter 3 of the Draft EIR to insure that the public health, seismic safety and delivery reliability goals are achieved as soon as possible *and phased implementation of a water supply program to meet projected water purchases through 2030*. Under the Phased WSIP Variant, the SFPUC establishes an interim mid-term planning horizon – 2018. The Commission is making a decision about providing water supply to the water customers through 2018 only, and is deferring a decision regarding long-term water supply after 2018 and through 2030 until it undertakes further water supply planning and demand analysis. All non-water supply related goals and system performance objectives identified for the original WSIP would be achieved under the Phased WSIP Variant and all individual WSIP facility improvement projects proposed in the original WSIP would be constructed.

Under the Phased WSIP Variant, the SFPUC will construct and operate all the regional water system WSIP facility improvement projects while (1) limiting water sales to an average annual of 265 million gallons per day (mgd) from the watersheds through 2018; and (2) improving water supply reliability to meet the goals and objectives of the WSIP including no greater than 20 percent rationing systemwide in any one year of a drought. The Phased WSIP Variant would not provide water supply to meet 300 mgd average annual water sales in 2030 as proposed under the WSIP. Rather, the SFPUC would limit deliveries to no more than an annual average of 265 mgd from the watersheds through 2018, and the SFPUC and wholesale customers would collectively develop 20 mgd in conservation, recycled water, and groundwater to meet or offset the projected regional water system purchase request of 285 mgd in 2018. This 20 mgd of conservation, recycled water, and groundwater includes development of 10 mgd of conservation, recycled water and groundwater in San Francisco as proposed under the WSIP and 10 mgd of conservation, recycled water and groundwater developed by the wholesale customers, which is in

addition to 15 mgd of conservation, recycled water and groundwater already assumed by the wholesale customers in preparing their regional water system purchase requests.

There is no change between the WSIP and the Phased WSIP Variant in the average annual water delivery proposed for the SFPUC's retail customers; the current average annual retail customer demand is approximately 91 mgd and this same amount would be provided to the retail customers through 2018, although 10 mgd of this amount would be provided through conservation, recycled water, and groundwater developed in San Francisco. While the WSIP proposed to provide the full 2030 projected wholesale customer average annual purchase requests of 209 mgd, the Phased WSIP Variant instead is designed to meet a projected 2018 wholesale customer average annual purchase request of 194 mgd in 2018, although 10 mgd of this amount would be provided through conservation, recycled water, and groundwater projects.

Under the Phased WSIP Variant, the SFPUC also would implement the delivery and drought reliability elements of the WSIP, including the Westside Basin Conjunctive Use Project and proposed dry-year transfers from the Modesto Irrigation District ("MID") and the Turlock Irrigation District ("TID"), which would increase average annual diversions from the Tuolumne River by about 2 mgd over existing conditions.

Before 2018, the SFPUC would engage in a new planning process to re-evaluate water system demands and water supply options. As part of the process, San Francisco would conduct additional environmental studies and CEQA review as appropriate to address the SFPUC's recommendation regarding water supply and proposed water system deliveries after 2018. This Commission would review and consider approval of the terms of any new master Water Sales Agreement that would take effect after 2018.

As originally proposed, the WSIP established program goals for improvements to the regional water system and system performance objectives in the areas of water quality, seismic reliability, delivery reliability, and water supply through the year 2030. The facility improvement projects and the proposed water supply option included in the WSIP as originally proposed were designed to: (1) ensure compliance with existing and anticipated future water quality standards under all operating conditions; (2) upgrade the seismic standards of critical facilities to improve seismic reliability and to reduce the system's vulnerability to earthquakes; (3) improve water delivery reliability under a variety of operating conditions by improving overall operations of the system; and (4) assure that the SFPUC has an adequate supply of water available to deliver to customers during both non-drought and drought periods through 2030.

The SFPUC initially proposed the draft WSIP in early 2005 as the result of long-term planning and in response to legislative mandates, including a 2002 voter-approved bond measure. The draft WSIP is described in PEIR Chapter 3. For budgeting and management purposes, the SFPUC categorized as part of the WSIP all capital improvements and projects that will receive financing from the 2002 voter-approved bond measure. Some, but not all, of the activities and projects that the SFPUC has identified for financing purposes as part of the WSIP are analyzed in the Program EIR as explained in PEIR Section 3.4. (CEQA Guidelines section 15168.) Other proposed WSIP activities that are not evaluated in the PEIR are undergoing independent project-level CEQA review as explained in EIR Section 3.4.6. For purposes of these CEQA findings, the facility projects included under the "Program," "WSIP," or "Variant" refer only to the facility

improvement projects included in the PEIR. WSIP facility improvement projects included in the PEIR will also undergo independent project-level CEQA review.

In March 2008, the SFPUC determined that it would like the option to consider approval and implementation of a variation of the WSIP. The program variation is called the Phased WSIP Variant and is a hybrid combination of the WSIP program as originally proposed and the No Purchase Request Increase Alternative analyzed in the Draft EIR at pages 9-7 through 9-16, 9-40 through 9-47 and 9-84 through 9-96, as well as the Modified WSIP Alternative analyzed in the Draft PEIR at pages 9-7 through 9-16 and 9-78 through 9-96 and in the C&R pages 14.10-1 through 14.10-26. The Phased WSIP Variant also includes some elements of the Aggressive Conservation and Recycling Alternative analyzed in the Draft EIR at pages 9-7 through 9-16, 9-47 through 9-59, and 9-84 through 9-96.

The Phased WSIP Variant includes the following key program elements:

- Full implementation of all of the 17 proposed WSIP facility improvement projects described in the PEIR (Draft EIR Sections 3.4.6 and 3.8; C&R Chapter 16, pages 16-14 to 16-17).
- Water supply delivery to regional water system customers through 2018 only of 265 mgd average annual target delivery originating from the Tuolumne, Alameda and Peninsula watersheds. This includes 184 mgd for the wholesale customers (including 9 mgd for the cities of San Jose and Santa Clara), and 81 mgd for the retail customers.
- Development of 20 mgd of conservation, recycled water and groundwater within the service area (10 mgd retail; 10 mgd wholesale).
- Dry year transfer from MID and/or TID of about 2 mgd coupled with the Westside Groundwater Basin conjunctive-use project to meet the drought year goal of limiting rationing to no more than 20 percent on a systemwide basis.
- Re-evaluation of 2030 demand projections, potential regional water system purchase requests, and water supply options by 2018 and a separate SFPUC decision in 2018 regarding regional water system water deliveries after 2018.
- Financial incentives to limit water sales to an annual average of 265 mgd from the watersheds.

The SFPUC will deliver to customers up to 265 mgd from the SFPUC watersheds on an average annual basis. While average annual deliveries from the SFPUC watersheds would be limited to 265 mgd such that there would be no increase in diversions from the Tuolumne River to serve additional demand, there would be a small increase in average annual Tuolumne River diversions of about 2 mgd over existing conditions in order to meet the delivery and drought reliability elements through 2018. As part of adoption of this Program, the SFPUC will implement the mitigation measures identified for the Phased WSIP Variant in the Final PEIR, including measures addressing interim impacts from potential increases in deliveries from the SFPUC watersheds over the total average annual of 265 mgd in the event that conservation, recycled water and groundwater projects are not completed prior to the increase in customers' demand.

The SFPUC must maintain water deliveries to all its customers for the protection of public health and safety. Therefore, the SFPUC will work with its customers to develop financial incentives to limit water sales to an average annual amount of 265 mgd from the watersheds through 2018.

With the projected 20 mgd of conservation, recycled water and groundwater projects, the system would meet average daily demand of 285 mgd in 2018.

Summaries of the WSIP facility improvement projects and the WSIP water supply under the Phased WSIP Variant are provided in the SFPUC staff memorandum dated September 30, 2008, and summaries of the WSIP facility improvement projects are set forth in PEIR Chapter 3, pages 3-48 through 3-73 and Appendix C, and are listed below. The projects are analyzed in the PEIR, Chapter 4. This approval action slightly modified the staff recommendation as set forth in the Resolution.

Phased WSIP Variant Facility Improvement Projects

The size and design of the WSIP facility improvement projects are driven by the system performance objectives and would not change as a result of the water supply decision proposed in the Phased WSIP Variant. The SFPUC prepared a memorandum describing the factors affecting facilities capacity, dated July 29, 2008, and the information from that memorandum is incorporated by reference here. The draft WSIP included multiple program goals for improving seismic reliability and water delivery reliability, meeting current and future water quality regulations, and meeting water supply reliability goals through the year 2030. Design and capacity of the WSIP facility improvement projects is driven by all four of the WSIP objectives - the need to improve system performance for seismic reliability and water delivery reliability as well as maintaining high water quality standards and meeting water supply goals. All four of these objectives are factored into the decision on how to size the WSIP's individual facilities. As is explained in the SFPUC memorandum, even if the goal of meeting projected increases in water supply demands were dropped from the mix of program objectives, the other program goals would cause the SFPUC to design WSIP facility improvement projects of the same size. The sizing of the facilities is necessary to reliably deliver an average annual amount up to 300 mgd in light of the regional system's needs for seismic and delivery reliability during both drought and non-drought periods, and to meet water quality requirements.

The Phased WSIP Variant includes the following facility improvement projects:

San Joaquin Region

SJ-1, Advanced Disinfection

SJ-2, Lawrence Livermore Supply Improvements

SJ-3, San Joaquin Pipeline System

SJ-5, Tesla Portal Disinfection Station

Sunol Valley Region

SV-1, Alameda Creek Fishery Enhancement

SV-2, Calaveras Dam Replacement

SV-3, Additional 40-mgd Treated Water Supply

SV-4, New Irvington Tunnel

SV-5, SVWTP – Treated Water Reservoirs

SV-6, San Antonio Back-Up Pipeline

Bay Division Region

BD-1, Bay Division Pipeline Reliability Upgrade

Peninsula Region

PN-2, Crystal Springs/San Andreas Transmission Upgrade

PN-3, HTWTP Long-Term Improvements

PN-4, Lower Crystal Springs Dam Improvement:

San Francisco Region

SF-1, San Andreas Pipeline No. 3 Installation

SF-2, Groundwater Projects

SF-3, Recycled Water Projects

B. Program Objectives

The SFPUC developed the WSIP to address several problems and issues that it had identified with its regional water system. In developing the WSIP goals and objectives, the SFPUC incorporated two fundamental principles pertaining to the existing regional system: (1) maintaining a clean, unfiltered water source from the Hetch Hetchy system, and (2) maintaining a gravity-driven system.

Among the considerations leading to identification of the WSIP were the following:

- *Aging Infrastructure.* The SFPUC regional water system is old. Many of its components were built in the 1800s and early 1900s; parts of the regional water system were built using now-outdated construction materials and/or methods and are currently in need of major repair. As the system ages, its reliability decreases and the risk of failure increases.
- *Exposure to Seismic and Other Hazards.* The 167-mile-long system crosses five active earthquake faults. Many of the SFPUC regional water system components are located on or in the immediate vicinity of major earthquake faults. Due to the age of the system, many facilities do not meet modern seismic standards. To protect public safety, the California Department of Water Resources, Division of Safety of Dams has imposed operating restrictions on Calaveras and Crystal Springs Reservoirs, reducing the local storage capacity and impairing normal system operations; this storage capacity needs to be restored.
- *Maintain Water Quality.* The regional water system currently meets or exceeds existing water quality standards. However, system upgrades are needed to improve the SFPUC's ability to continue to maintain compliance with current water quality standards and to meet anticipated future water quality standards under a range of operating conditions, including such events as a major earthquake, without reducing system reliability.
- *Improve Asset Management and Delivery Reliability.* In order to implement a feasible asset management program in the future that will provide continuous maintenance and repairs to facilities, the regional water system requires redundancy (i.e., backup) of some critical facilities necessary to meeting day-to-day customer water supply needs. Without adequate redundancy of

critical facilities, the SFPUC has limited operational flexibility in the event of an emergency or a system failure, as well as constraints on conducting adequate system inspection and maintenance.

- *Meet Customer Water Demands.* Additional supplies are needed to satisfy current demand in drought years and projected 2030 demand in all years. The experience of the last 150 years of record as well as recent studies on California’s climate show the region is susceptible to droughts. Two of the most severe droughts occurred during the past 30 years. The regional water system currently has insufficient water supply to meet customer demand during a prolonged drought, and this situation will worsen in the future.

To address these challenges to the reliability of the regional water system, the SFPUC must replace or upgrade numerous components of the system and add some new components—thus the need for the WSIP and its associated facility improvement projects.

Goals and objectives were established for the WSIP described and analyzed in the PEIR. Because of the decision to phase implementation of a water supply program to meet projected water purchases through 2030, the water supply objective for the Phased WSIP Variant is slightly different from the water supply objective originally proposed, as revised below. The goals and objectives of the Phased WSIP Variant are presented below.

Phased WSIP GOALS AND OBJECTIVES

| Program Goal | System Performance Objective |
|--|--|
| Water Quality – <i>maintain high water quality</i> | <ul style="list-style-type: none"> • Design improvements to meet current and foreseeable future federal and state water quality requirements. • Provide clean, unfiltered water originating from Hetch Hetchy Reservoir and filtered water from local watersheds. • Continue to implement watershed protection measures. |
| Seismic Reliability – <i>reduce vulnerability to earthquakes</i> | <ul style="list-style-type: none"> • Design improvements to meet current seismic standards. • Deliver basic service to the three regions in the service area (East/South Bay, Peninsula, and San Francisco) within 24 hours after a major earthquake. Basic service is defined as average winter-month usage, and the performance objective for design of the regional system is 229 mgd. The performance objective is to provide delivery to at least 70 percent of the turnouts in each region, with 104, 44, and 81 mgd delivered to the East/South Bay, Peninsula, and San Francisco, respectively. • Restore facilities to meet average-day demand of up to 300 mgd within 30 days after a major earthquake. |

| Program Goal | System Performance Objective |
|--|---|
| Delivery Reliability – <i>increase delivery reliability and improve ability to maintain the system</i> | <ul style="list-style-type: none"> • Provide operational flexibility to allow planned maintenance shutdown of individual facilities without interrupting customer service. • Provide operational flexibility to minimize the risk of service interruption due to unplanned facility upsets or outages. • Provide operational flexibility and system capacity to replenish local reservoirs as needed. • Meet the estimated average annual demand of up to 300 mgd under the conditions of one planned shutdown of a major facility for maintenance concurrent with one unplanned facility outage due to a natural disaster, emergency, or facility failure/upset. |
| Water Supply – <i>meet customer water needs in non-drought and drought periods</i> | <ul style="list-style-type: none"> • Meet average annual water demand of 265 mgd from the SFPUC watersheds for retail and wholesale customers during non -drought years for system demands through 2018. • Meet dry-year delivery needs through 2018 while limiting rationing to a maximum 20 percent system-wide reduction in water service during extended droughts. • Diversify water supply options during non-drought and drought periods. • Improve use of new water sources and drought management, including groundwater, recycled water, conservation, and transfers. |
| Sustainability – <i>enhance sustainability in all system activities</i> | <ul style="list-style-type: none"> • Manage natural resources and physical systems to protect watershed ecosystems. • Meet, at a minimum, all current and anticipated legal requirements for protection of fish and wildlife habitat. • Manage natural resources and physical systems to protect public health and safety. |
| Cost-effectiveness – <i>achieve a cost-effective, fully operational system</i> | <ul style="list-style-type: none"> • Ensure cost-effective use of funds. • Maintain gravity-driven system. • Implement regular inspection and maintenance program for all facilities. |

C. Environmental Review

In accordance with Sections 15063 and 15082 of the CEQA Guidelines, the San Francisco Planning Department, as lead agency, prepared a Notice of Preparation (NOP) of an EIR and conducted scoping meetings (see Draft PEIR, Appendix A). The NOP was circulated to local, state, and federal agencies and to other interested parties on September 6, 2005, initiating a public comment period that extended through October 24, 2005.

As indicated in the NOP, the Program EIR addresses the full range of environmental impacts of the WSIP. The NOP included a preliminary list of the potential environmental impacts related to the following resource topics: surface water resources; groundwater resources; fisheries and aquatic resources; terrestrial vegetation and wildlife; geology, soils, and seismicity; cultural resources; land use, plans, and policies; recreation; agricultural resources; traffic, transportation,

and circulation; air quality; noise and vibration; public services, utilities, and energy; hazards and public safety; visual quality; socioeconomics; growth-inducement potential and secondary effects of growth; and cumulative effects. The NOP provided a general description of the proposed action, the need for the program and program benefits, the proposed facilities, and the program location.

Pursuant to CEQA Guidelines Section 15083, the San Francisco Planning Department held five public scoping meetings, one each in Sonoma, Modesto, Fremont, Palo Alto and San Francisco, between October 5, 2005 and October 19, 2005. The purpose of the meetings was to present the proposed WSIP to the public and receive public input regarding the proposed scope of the Program EIR analysis. Attendees were provided an opportunity to voice comments or concerns regarding potential effects of the WSIP.

A scoping report was prepared to summarize the public scoping process and the comments received in response to the NOP, and the main body of the report is included in Appendix A of the Draft Program EIR. Based on sign-in sheets at each of the meetings, 260 participants attended the scoping meetings, with 75 of those participants providing oral comments. Transcripts of each scoping meeting are included in the full scoping report on file with the San Francisco Planning Department.

The San Francisco Planning Department also held a scoping meeting for resource agencies on Thursday, November 3, 2005 in San Francisco. Representatives from the following agencies attended: U.S. Army Corps of Engineers, San Francisco Bay Regional Water Quality Control Board, California Department of Fish and Game, and U.S. Fish and Wildlife Service. Representatives of the U.S. Environmental Protection Agency and the National Marine Fisheries Service were invited but unable to attend. Additional coordination with public agencies through informal consultation and telephone interviews was conducted throughout the EIR process.

In addition to comments received during scoping meetings, comments on the NOP were received by letter sent via mail, email, or fax (104, including 5 form letters counted once each but submitted multiple times), orally by speakers at the scoping meetings (79), and by phone (187 voicemail messages left with the San Francisco Planning Department). The comments addressed concerns regarding the full range of potential environmental issues as well as program alternatives and the CEQA process.

The San Francisco Planning Department then prepared the Draft Program EIR, which describes the WSIP and the environmental setting for the proposed program, identifies potential impacts, presents mitigation measures for impacts found to be significant or potentially significant, and evaluates program alternatives. It also includes an analysis of three variants to the proposed WSIP, as requested by the SFPUC. The analysis of environmental impacts is divided into three main groups: (1) construction and operational impact of the WSIP facility improvement projects; (2) water supply and system operational impacts of the WSIP; and (3) growth-inducing impacts. In assessing construction and operational impacts of the facility improvement projects, the Program EIR considers impacts of individual projects, the “collective” construction and operational impacts from multiple WSIP facility improvement projects, and cumulative impacts associated with construction and operation of WSIP projects in combination with other past,

present, and future actions with potential for similar impacts on the same resources as those affected by the WSIP. Similarly, in assessing water supply and system operations impacts, the Program EIR includes analysis of cumulative impacts associated with the WSIP water supply and system operations in combination with other past, present, and future actions with potential for impacts on the same resources as those affected by the WSIP.

Each environmental issue presented in this Draft PEIR is analyzed with respect to significance criteria that are based on the San Francisco Planning Department Major Environmental Analysis Division (MEA) guidance regarding the environmental effects to be considered significant. MEA guidance is, in turn, based on CEQA Guidelines Appendix G with some modifications. In cases where potential environmental issues associated with the WSIP are identified but are not clearly addressed by MEA's standard Initial Study checklist, additional impact significance criteria are presented. (Draft EIR, Appendix B.)

The Draft EIR was circulated to local, state, and federal agencies and to interested organizations and individuals for review and comment on June 29, 2007 for a 90-day public review period, which was extended once and closed on October 15, 2007, for a total of 108 days. Six public hearings on the Draft PEIR to accept written or oral comments were held in Sonoma, Modesto, Fremont, Palo Alto, and San Francisco (two hearings) between September 5, 2007 and October 11, 2007. During the public review period, the San Francisco Planning Department received approximately 1,500 written comments sent through the mail or by hand-delivery, fax, or email as well as approximately 200 oral comments made at six public hearings. A court reporter was present at each of the public hearings, transcribed the oral comments verbatim, and prepared written transcripts. Appendix J of the PEIR includes a summary of the Draft PEIR notification and public hearing process.

The Comments and Responses ("C&R") document was published on September 30, 2008 and it provides copies of all of the comments received on the Draft PEIR as well as individual responses to those comments. In some cases, the responses to individual comments are presented as master responses, which consist of comprehensive discussions of issues that received numerous comments. In addition, the C&R includes descriptions of changes in the WSIP that were proposed by the SFPUC after publication of the Draft PEIR, and it includes a description and analysis of the Phased WSIP Variant.

The C&R provided additional, updated information and clarification on issues raised by commenters, as well as consultant, SFPUC and Planning Department experts. The Final PEIR incorporates information obtained and produced after the Draft PEIR was completed, and contains additions, clarifications, and modifications, including a description and analysis of the Phased WSIP Variant. The Planning Commission reviewed and considered the Final PEIR and all of the supporting information. The Final PEIR provided augmented and updated information on many issues presented in the Draft PEIR, including (but not limited to) the following topics: revisions to the Hetch Hetchy/Local Simulation Model; additional analysis of the Tuolumne River impacts; changes and clarifications on the Pilarcitos Watershed analysis and impact conclusions; an analysis of the Alameda Creek Fisheries issues, including future potentially occurring steelhead in the Alameda Creek watershed; updated information on the San Joaquin River and the San Francisco Bay Delta; an update to the information provided on climate change

issues; and WSIP facility improvement projects updates. In certifying the Final PEIR, the Planning Commission found that the Final PEIR does not add significant new information to the Draft EIR that would require recirculation of the PEIR under CEQA because the Final PEIR contains no information revealing (1) any new significant environmental impact that would result from the Phased WSIP Variant or from a new mitigation measure proposed to be implemented, (2) any substantial increase in the severity of a previously identified environmental impact, (3) any feasible project alternative or mitigation measure considerably different from others previously analyzed that would clearly lessen the environmental impacts of the Phased WSIP Variant, but that was rejected by the project's proponents, or (4) that the Draft EIR was so fundamentally and basically inadequate and conclusory in nature that meaningful public review and comment were precluded. This Commission concurs in that determination.

D. Environmental Analysis of the Phased WSIP Variant

The Final PEIR included a description and analysis of the Phased WSIP Variant, as discussed in the C&R, Chapter 13, Section 13.4. The C&R analysis concluded that the potential environmental effects of the Phased WSIP Variant fall within the range of impacts already evaluated in the Draft PEIR for the WSIP and the alternatives. This Variant is similar to the No Purchase Request Increase Alternative analyzed in the Draft EIR. Also relevant are the analyses of the No Program Alternative, the Aggressive Conservation/Water Recycling and Local Groundwater Alternative, and the Modified WSIP Alternative.

The Phased WSIP Variant would have the same impacts associated with proposed facility construction and operation as the WSIP. The 17 facility improvement projects proposed under the WSIP and analyzed in the Program EIR would also be implemented under the Phased WSIP Variant to meet the intent of the water quality, seismic reliability, delivery reliability, and water supply goals of the WSIP.

The Phased WSIP Variant would have impacts associated with its proposed water supply program similar to those described in the Draft PEIR for the alternatives where the wholesale customer purchase requests for 2030 would not be provided by the regional water system. Under those alternatives, the Draft PEIR assumed that the wholesale customers might pursue other types of projects to either reduce demand and/or to supplement the surface water supplies delivered by the regional water system from the SFPUC watersheds. The potential facility and operations impacts associated with such projects are discussed in the Draft EIR in Section 9.2.2, No Program Alternative (Vol. 4, Chapter 9, pp. 9-34 to 9-37), Section 9.2.3, No Purchase Request Increase Alternative (Vol. 4, Chapter 9, pp. 9-40 to 9-45), and Section 9.2.4, Aggressive Conservation/Water Recycling and Local Groundwater Alternative (Vol. 4, Chapter 9, pp. 9-55 to 9-57).

Similar to the Modified WSIP Alternative and the Aggressive Conservation/Water Recycling and Local Groundwater Alternative, the Phased WSIP Variant, which envisions developing additional local conservation, recycled water and groundwater projects, could result in construction and operation of additional recycled water and groundwater facilities in the wholesale customer service areas; thus, collective impacts in the Bay Division and Peninsula Regions and associated cumulative effects would occur. The types of impacts associated with implementation of the local recycled water and groundwater projects are summarized in Table

13.9 (which is the same as Draft EIR Table 9.12) in C&R Section 13.4 (C&R, page 13-34) and generally relate to construction of new infrastructure, water quality, and groundwater resources, and operational uses of energy and long-term air quality emissions.

In the event local conservation, recycled water or groundwater projects are not sufficient or cannot be developed in time to meet the demands of each of the wholesale customers, SFPUC customers could be expected to pursue alternative water supply sources. The types of impacts associated with water supply acquisition projects are summarized in Table 13.8 (which is the same as Draft EIR Table 9.10) in C&R Section 13.4 (C&R, pages 13-31 to 13-32). Depending on the facilities needed to convey the supplemental supplies to the wholesale customer service areas, the construction and operation of such facilities could result in a full range of construction and operational impacts similar to those described in Draft EIR Chapter 4 for the WSIP facility improvement projects in the South Bay and Peninsula areas (such as traffic, air quality, noise, energy use, waste disposal, and vibration). In general, certain types of impacts are common to water supply transfers/acquisition and include: the cessation of water application to lands irrigated by the water being transferred; changes related to flows, fisheries, and water quality; and impacts caused by the use of existing or the construction of new infrastructure. If water is transferred from agricultural customers, without implementation of agricultural conservation measures, the transfer can result in the conversion of agricultural land to nonagricultural land. Beneficial environmental effects (related to retiring drainage-impaired lands, reducing the application of pesticides, etc.) can also occur. The need for new facilities and/or changes in the operations of existing facilities depend on the source of supply (e.g., the Tuolumne River through transfers with TID and MID, water-rights holders north of the Delta, in the Delta, or south of the Delta), the quantity of supply, the means of conveyance, and any additional storage requirements. Construction or expansion of interties or connecting pipelines could be required, potentially resulting in impacts similar to those described for the WSIP pipeline projects.

If desalination technologies were used to supplement potable water supplies, implementation of a desalination project to augment wholesale customer water supplies would result in the full range of construction impacts at the proposed facility location (such as traffic, air quality, noise, and vibration) as well as operational impacts related to aquatic resources, water quality, energy consumption, air quality, visual resources, land use and planning, traffic, and greenhouse gas emissions. The programmatic impacts of construction and operation of a desalination facility are described in the Draft EIR under WSIP Variant 2, Regional Desalination for Drought (Draft EIR, Chapter 8, pp. 8-24 to 8-32).

The water supply impacts of the Phased WSIP Variant would be similar to those analyzed in Chapter 9 of the Draft PEIR for the No Purchase Request Increase Alternative, and overall the impacts of the Phased WSIP Variant through 2018 would be less than the water supply impacts of the WSIP set out in Chapter 5 of the PEIR. With a few exceptions, the water supply impacts identified as potentially significant and mitigable for the proposed WSIP remain potentially significant and mitigable for the Phased WSIP Variant. Two impacts on the lower Tuolumne River were determined to be less than significant as long as the SFPUC does not increase deliveries to customers above 265 mgd from the watersheds: Impact 5.3.6-4, effects on fishery resources along the Tuolumne River below La Grange Dam; and, Impact 5.3.7-6, impacts on terrestrial biological resources along the Tuolumne River below La Grange Dam. Although the

Phased WSIP Variant is designed to keep deliveries from exceeding an annual average level of about 265 mgd, in the event the SFPUC must deliver more than 265 mgd to its customers from the watersheds, the SFPUC shall implement the mitigation measures associated with these impacts in proportion to the extent of the exceedance. In implementing the Phased WSIP Variant, the need could arise to temporarily increase deliveries from the Tuolumne River and local watersheds over the 265 mgd average annual target levels to meet customer water delivery needs in the near term, because of public health and safety considerations and because it might not be possible to implement all of the local conservation, recycling and groundwater projects and actions in time to meet increasing customer demands. Although avoidance of these impacts on the lower Tuolumne River is not assured, the magnitude, frequency, and duration of the impacts are likely to be less than the originally proposed WSIP. The impact analysis for the Phased WSIP Variant recognized that, between now and 2018, deliveries from the Tuolumne River and local watersheds might increase above the 265 mgd average annual level (to a possible 275 mgd average annual) for up to a few years. By 2018, and perhaps well before, it is expected that local projects would provide sufficient local supply and conservation to bring SFPUC watershed deliveries back down to current levels, average annual 265 mgd.

Under the Phased WSIP Variant, the SFPUC would monitor sales to ensure that sales delivered from the SFPUC watersheds are limited to an average annual of 265 mgd through 2018. The SFPUC would measure and review average annual sales at the close of each fiscal year. Mitigation Measures 5.3.6-4a or 5.3.6-4b, as well as Mitigation Measure 5.3.7-6, will be implemented when the average annual sales exceed 265 mgd from the watersheds. The SFPUC would continue to implement the necessary measure(s) until the average annual SFPUC watershed deliveries are 265 mgd or less. Similar to the WSIP, implementation of Measure 5.3.6-4a is the preferred mitigation approach, and for the Phased WSIP Variant, the amount of conserved water required to reduce the impact to less than significant would be proportional to the amount of increased diversions from the Tuolumne River contributing to exceeding the 265 mgd deliveries restriction.

Four impacts in the Pilarcitos watershed were determined to be potentially significant and mitigable for the originally proposed WSIP, but are considered less than significant for the Phased WSIP Variant through 2018: Surface Water Quality Impact 5.5.3-2, effects on water quality in Pilarcitos Creek between Pilarcitos Reservoir and Stone Dam; Fisheries Impacts 5.5.5-4, effects on fishery resources in Pilarcitos Reservoir, and 5.5.5-5, effects on fishery resources along Pilarcitos Creek below Pilarcitos Reservoir and below Stone Dam; and, Terrestrial Biology Impact 5.5.6-4, impacts on biological resources in Pilarcitos Reservoir. With the Phased WSIP Variant, operations for Pilarcitos Reservoir and releases to Pilarcitos Creek will be similar to existing conditions resulting in a less than significant impact. Thus no mitigation is required. (DEIR pages 5.5.3-5 through 5.5.3-7; C&R pages 13-39 and 13-44; DEIR page 5.5.5-7; C&R pages 13-39 and 13-44; DEIR pages 5.5.6-17 through 5.5.6-22; C&R pages 13-39, 13-44 and 16-80 to 16-82.)

E. Changes to Facility Improvement Projects in the Alameda Creek Watershed

Since publication of the Draft PEIR in June 2007, SFPUC staff proposed modifications to the project descriptions of two of the facility improvement projects—the Alameda Creek Fishery

Enhancement (SV-1) and Calaveras Dam Replacement (SV-2) projects—and these proposed changes would affect overall system operations.¹ These modifications were made due to the numerous comments received on the potential impacts on future steelhead fishery resources in the Alameda Creek watershed as well as to actions taken in July 2007 by other agencies in the watershed. The SFPUC has incorporated project revisions and protective measures into these two projects to reduce the WSIP’s potential to affect habitat conditions for potential future-occurring steelhead in the upper watershed. The project revisions would occur regardless of steelhead presence or absence in the upper watershed, while the protective measures are designed to reduce the WSIP’s potential to affect habitat conditions for potential, future-occurring steelhead in the Alameda Creek watershed in the event that man-made barriers in Alameda Creek are removed and steelhead gain access to the upper watershed. The following project revisions have been incorporated into the Alameda Creek Fishery Enhancement (SV-1) and Calaveras Dam Replacement (SV-2) projects:

- The Calaveras Dam Replacement project would include facility modifications at the Alameda Creek Diversion Dam (ACDD) to construct a new bypass structure needed to implement bypass stream flows.
- If a structural alternative involving construction of a recapture facility is selected under the Alameda Creek Fishery Enhancement project, the recapture facility would be located at the downstream end of the reach of Alameda Creek between the lower Sunol Valley and the confluence with Arroyo de la Laguna. As an alternative to the recapture facility, the SFPUC may coordinate with other water agencies to develop and implement other means of recapturing fishery enhancement flows consistent with the 1997 California Department of Fish and Game Memorandum of Understanding (CDFG MOU).²

The project components designed to provide protective measures for future-occurring steelhead in the upper Alameda Creek watershed will include the following:

- An operational plan to provide minimum stream flows to support steelhead spawning below the ACDD to the confluence with Calaveras Creek when precipitation naturally generates runoff and flow in the creek, including the site-specific studies needed to determine the specific minimum stream flow requirements to support steelhead spawning in this reach of the creek.
- A detailed monitoring plan to survey and document steelhead spawning, subject to review and comment by the appropriate resource agencies.
- Interim minimum flows would be implemented consistent with the 1997 CDFG MOU, with the additional requirement that these flows would be achieved through bypass flows

¹ See Memorandum from Michael Carlin to the Planning Department dated July 16, 2008.

² Under the 1997 CDFG MOU, the SFPUC and CDFG reached agreement on the magnitude and timing of flows to be released from Calaveras Reservoir for the purposes of improving fishery habitat conditions. The MOU includes provisions for the SFPUC to divert flows from Alameda Creek to the SFPUC regional system at a suitable downstream location equivalent to the magnitude and timing of these releases; the MOU refers to this as “recapture.”

at the ACDD at all times when flows are available in upper Alameda Creek, rather than through releases at Calaveras Dam, and with the following conditions:

- The SFPUC would provide seasonal flow bypasses at the ACDD and/or flow releases from Calaveras Dam, either (1) without recapture or (2) with recapture at a point approximately at the downstream end of the reach of Alameda Creek between the lower Sunol Valley and the confluence with Arroyo de la Laguna, below critical riffle locations or lower in the creek, between December 1 and June 30 (combined adult and juvenile migration period) in an amount equivalent to the flow release schedule provided in the 1997 CDFG MOU.
- As an alternative to the recapture facility, the SFPUC would coordinate with other water agencies to develop and implement other means of recapturing enhancement flows consistent with the 1997 CDFG MOU at a location downstream of the reach of Alameda Creek between the lower Sunol Valley and the confluence with Arroyo de la Laguna.

The C&R also proposed a minor revision to an existing mitigation measure (Mitigation Measure 5.4.5-3a, Minimum Flows for Resident Trout on Alameda Creek) to address other native stream species, including steelhead. The mitigation measures are set forth in the MMRP attached to these Findings as Attachment B. The project description modifications would generally reduce the impacts identified in the Draft PEIR, and, in some cases, would reduce impacts from potentially significant to less than significant (i.e., Impacts 5.4.7-1 and 5.4.7-2). Implementation of the project revisions and protective measures, along with the mitigation measures designed to reduce impacts on resident trout, would be effective in assuring that if in the future steelhead successfully migrate above the BART weir, that the Phased WSIP Variant will not result in a significant adverse effect on steelhead life stages and habitat in Alameda Creek.

F. Approval Actions

1. Planning Commission Actions

On October 30, 2008, the Planning Commission certified the Final PEIR.

2. Public Utilities Commission Actions

The San Francisco Public Utilities Commission is taking the following actions and approvals to implement the Program.

- Adopt these CEQA findings and the attached Mitigation Monitoring and Reporting Program.
- Approve the Water System Improvement Program, the Phased WSIP Variant, as described herein.
- Endorse the selected Water Supply Elements of a new Water Sales Agreement (“Elements”) and authorize the General Manager to negotiate such Agreement with the wholesale customers in substantial conformance with the water supply principles.

3. San Francisco Board of Supervisors Actions

- The Planning Commission's certification of the EIR may be appealed to the Board of Supervisors. If appealed, the Board of Supervisors will determine whether to uphold the certification or to remand the EIR to the Planning Department for further review.
- The San Francisco Board of Supervisors approves an allocation of bond monies to pay for mitigation measures necessary to implement the Program.

4. Other -- Federal, State, and Local Agencies

Implementation of the water supply mitigation measures will involve consultation with/required approvals by other local, state and federal regulatory agencies, including:

- Modesto Irrigation District
- Turlock Irrigation District
- California Water Resources Control Board
- California Department of Fish and Game
- California Department of Health Services (for approval and permits required for drinking water source assessments for groundwater wells)
- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service
- NOAA Fisheries- National Marine Fisheries Service
- U.S. Department of the Interior, National Park Service, Yosemite National Park (for consultation on and sharing data from ongoing studies in the Poopenaut Valley)

To the extent that the identified mitigation measures require consultation or approval by these other agencies, this Commission urges these agencies to assist in implementing, coordinating or approving the mitigation measures, as appropriate to the particular measure.

There will be further project approvals following project-specific environmental review, for each of the individual WSIP projects. The actions described herein contemplate only the approval and implementation of the Program as a whole and not each and every project-specific approval.

G. Content and Location of Record

The record upon which all findings and determinations related to the Program are based includes the following:

- The draft Water System Improvement Program and the Phased WSIP Variant.
- The PEIR, and all documents referenced in or relied upon by the PEIR. (The references in these findings to the Program EIR or the PEIR include both the Draft EIR and the C&R documents.)

- All information (including written evidence and testimony) provided by City staff to the SFPUC and the Planning Commission relating to the PEIR, the WSIP, the proposed Program, and the alternatives set forth in the PEIR.
- All information (including written evidence and testimony) presented to the SFPUC and the Planning Commission by the environmental consultant and sub-consultants who prepared the PEIR, or incorporated into reports presented to the SFPUC.
- All information (including written evidence and testimony) presented to the City from other public agencies relating to the WSIP, the Program or the PEIR.
- All information (including written evidence and testimony) presented at any public hearing or workshop related to the WSIP, the Program and the PEIR.
- For documentary and information purposes, all locally-adopted land use plans and ordinances, including, without limitation, general plans, specific plans and ordinances, together with environmental review documents, findings, mitigation monitoring programs and other documentation relevant to planned growth in the area.
- The Mitigation Monitoring and Reporting Program.
- All other documents available to the SFPUC and the public, comprising the administrative record pursuant to Public Resources Code Section 21167.6(e).

The Public Utilities Commission has relied on all of the documents listed above in reaching its decision on the Program, even if not every document was formally presented to the Commission. Without exception, any documents set forth above not so presented fall into one of two categories. Many of them reflect prior planning or legislative decisions with which the Commission was aware in approving the Program. Other documents influenced the expert advice provided to Planning Department and PUC staff or consultants, who then provided advice to the Commission. For that reason, such documents form part of the underlying factual basis for the Commission's decisions relating to the adoption of the Program.

The public hearing transcript, a copy of all letters regarding the Draft EIR received during the public review period, the administrative record, and background documentation for the Final PEIR, as well as additional materials concerning approval of the Phased WSIP Variant and adoption of these findings are contained in SFPUC files, located at the SFPUC, 1155 Market Street, San Francisco. **Kelley Capone** is the custodian of records for the SFPUC. CEQA files are also available at the San Francisco Planning Department, 1650 Mission Street, San Francisco. **Linda Avery** is the Custodian of Records for the Planning Department. All files have been available to the SFPUC and the public for review in considering these findings and whether to approve the Program.

H. Findings About Significant Environmental Impacts And Mitigation Measures

The following Sections II, III and IV set forth the SFPUC's findings about the Final PEIR's determinations regarding significant environmental impacts and the mitigation measures proposed to address them. These findings provide the written analysis and conclusions of the SFPUC regarding the environmental impacts of the Phased WSIP Variant and the mitigation measures included as part of the Final PEIR and adopted by the SFPUC as part of the Phased WSIP Variant. To avoid duplication and redundancy, and because the SFPUC agrees with, and hereby adopts, the conclusions in the Final PEIR, these findings will not repeat the analysis and conclusions in the Final PEIR, but instead incorporates them by reference herein and relies upon them as substantial evidence supporting these findings.

In making these findings, the SFPUC has considered the opinions of SFPUC staff and experts, other agencies and members of the public. The SFPUC finds that the determination of significance thresholds is a judgment decision within the discretion of the City and County of San Francisco; the significance thresholds used in the PEIR are supported by substantial evidence in the record, including the expert opinion of the PEIR preparers and City staff; and the significance thresholds used in the PEIR provide reasonable and appropriate means of assessing the significance of the adverse environmental effects of the Program. Thus, although, as a legal matter, the SFPUC is not bound by the significance determinations in the PEIR (see Pub. Resources Code, § 21082.2, subd. (e)), the SFPUC finds them persuasive and hereby adopts them as its own.

These findings do not attempt to describe the full analysis of each environmental impact contained in the Final PEIR. Instead, a full explanation of these environmental findings and conclusions can be found in the Final PEIR and these findings hereby incorporate by reference the discussion and analysis in the Final PEIR supporting the Final PEIR's determination regarding the Phased WSIP Variant's impacts and mitigation measures designed to address those impacts. In making these findings, the SFPUC ratifies, adopts and incorporates in these findings the determinations and conclusions of the Final PEIR relating to environmental impacts and mitigation measures, except to the extent any such determinations and conclusions are specifically and expressly modified by these findings.

As set forth below, the SFPUC adopts and incorporates all of the mitigation measures set forth in the Final PEIR and the attached MMRP to substantially lessen or avoid the potentially significant and significant impacts of the Phased WSIP Variant. In adopting these mitigation measures, the SFPUC intends to adopt each of the mitigation measures proposed in the Final PEIR for the Phased WSIP Variant. Accordingly, in the event a mitigation measure recommended in the Final PEIR has inadvertently been omitted in these findings or the MMRP, such mitigation measure is hereby adopted and incorporated in the findings below by reference. In addition, in the event the language describing a mitigation measure set forth in these findings or the MMRP fails to accurately reflect the mitigation measures in the Final PEIR due to a clerical error, the language of the policies and implementation measures as set forth in the Final PEIR shall control. The impact numbers and mitigation measure numbers used in these findings reflect the impact and mitigation measure numbers used in the Final PEIR.

In the sections II, III and IV below, the same findings are made for a category of environmental impacts and mitigation measures. Rather than repeat the identical finding dozens of times to

address each and every significant effect and mitigation measure, the initial finding obviates the need for such repetition because in no instance is the SFPUC rejecting the conclusions of the Final PEIR or the mitigation measures recommended in the Final PEIR for the Phased WSIP Variant. There are determinations of significance regarding the originally proposed WSIP and proposed mitigation measures identified in the PEIR that are not applicable to the Phased WSIP Variant, and therefore, those impacts and mitigation measures are not included in these findings.

II. IMPACTS FOUND TO BE LESS THAN SIGNIFICANT AND THUS REQUIRING NO MITIGATION

A. WSIP Water Supply Impacts

Under CEQA, no mitigation measures are required for impacts that are less than significant. (Pub. Resources Code, § 21002; CEQA Guidelines, §§ 15126.4, subd. (a)(3), 15091.) The Phased WSIP Variant diverts less water than the proposed WSIP and therefore the water supply impacts are generally the same as or less than those of the originally proposed WSIP. (See C&R section 13.4, pp. 13-29 through 13-44.) Based on substantial evidence in the whole record of this proceeding, the SFPUC finds that implementation of the water supply portion of the Phased WSIP Variant will not result in any significant impacts in the following areas and that these impact areas therefore do not require mitigation:

1. Tuolumne River System and Downstream Water Bodies

- **Stream Flow (Impacts 5.3.1-1**, effects on flow along the river below O’Shaughnessy Dam; **5.3.1-2**; effects of flow along Cherry Creek below Cherry Dam; **5.3.1-3**; effects of flow along Eleanor Creek below Eleanor Dam; **5.3.1-4**; effects of flow along the river below La Grange Dam; **5.3.1-5**, effects of flow along the San Joaquin River and the Sacramento-San Joaquin Delta) (DEIR pages 5.3.1-20 through 5.3.1-39; C&R pages 14.6-8 to 14.6-10, 14.7-12 to 14.7-14, 14.8-2 to 14.8-9 and 16-47);
- **Geomorphology (Impacts 5.3.2-1**, effects on sediment transport and channel characteristics between O’Shaughnessy Dam and Don Pedro Reservoir; **5.3.2-2**, effects on sediment transport and channel characteristics below La Grange Dam) (DEIR pages 5.3.2-5 through 5.3.2-7; C&R pages 14.6-10 to 14.6-12 and 14.7-15 to 14.7-16);
- **Surface Water Quality (Impacts 5.3.3-1**, effects on quality in Hetch Hetchy Reservoir and along the Tuolumne River below O’Shaughnessy Dam; **5.3.3-2**, effects on quality in Don Pedro Reservoir and along the Tuolumne River below La Grange Dam; **5.3.3-3**, effects on quality along the San Joaquin River and the Sacramento-San Joaquin Delta) (DEIR pages 5.3.3-13 through 5.3.3-20; C&R pages 14.6-12 to 14.6-13, 14.7-10 to 14.7-11, and 14.8-2 to 14.8-16);
- **Surface Water Supplies (Impacts 5.3.4-1**, effects on Tuolumne River, San Joaquin River, and Stanislaus River water users; **5.3.4-2**, effects on Delta water users) (DEIR pages 5.3.4-5 through 5.3.4-11; C&R pages 14.8-9 to 14.8-16, 15-4-217 to 15.4-218, and 16-48);
- **Groundwater (Impacts 5.3.5-1**, alteration of stream flows along the Tuolumne River, which could affect local groundwater recharge and levels; **5.3.5-2**, alteration of stream

flows along the Tuolumne River, which could affect local groundwater quality) (DEIR pages 5.3.5-3 through 5.3.5-5);

- **Fisheries (Impacts 5.3.6-1**, impacts on effects on fishery resources in Hetch Hetchy Reservoir; **5.3.6-2**, effects on fishery resources along the Tuolumne River between Hetch Hetchy Reservoir and Don Pedro Reservoir; **5.3.6-3**, effects on fishery resources in Don Pedro Reservoir; **5.3.6-5**, fishery resources along the San Joaquin River) (DEIR pages 5.3.6-24 through 5.3.6-28 and 5.3.6-32 through 5.3.6-33; C&R pages 15.4-226 to 15.4-227 and 16-49);
- **Terrestrial Biology (Impacts 5.3.7-1**, impacts on riparian habitat and related biological resources in Hetch Hetchy Reservoir and along the bedrock channel portions of the Tuolumne River from O'Shaughnessy Dam to Don Pedro Reservoir; **5.3.7-3**, impacts on biological resources in Lake Eleanor and along Eleanor Creek; **5.3.7-4**, biological resources in Lake Lloyd and along Cherry Creek; **5.3.7-5**, biological resources in Don Pedro Reservoir; **5.3.7-7**, conflicts with the provisions of adopted conservation plans or other approved biological resource plans for the Tuolumne Wild and Scenic River) (DEIR pages 5.3.7-14 through 5.3.7-27);
- **Recreational and Visual Resources (Impact 5.3.8-1**, effects on reservoir recreation due to changes in water system operations; **5.3.8-2**, effects on river recreation due to changes in water system operations; **5.3.8-3**, effects on the aesthetic values of the Tuolumne Wild and Scenic River.) (DEIR pages 5.3.8-23 through 5.3.8-35; C&R pages 16-49);
- **Energy Resources (Impact 5.3.9-1**, Effects on hydropower generation at facilities along Tuolumne River (beneficial).) (DEIR pages 5.3.9-2 through 5.3.9-3);
- **Cumulative Impacts (Impacts 5.7.2-1**, cumulative effects on the Tuolumne River from Hetch Hetchy Reservoir to Don Pedro Reservoir; **5.7.2-2**, cumulative effects on the Tuolumne River from Don Pedro Reservoir to the San Joaquin River; and **5.7.2-3**, cumulative effects on the San Joaquin River, Stanislaus River, and Delta) (DEIR pages 5.7-22 through 5.7-52).

2. Alameda Creek Watershed

- **Stream Flow (Impacts 5.4.1-1**, effects on flow along Calaveras Creek below Calaveras Reservoir; **5.4.1-3**, effects in San Antonio Reservoir and along San Antonio Creek; **5.4.1-4**, effects on flow along Alameda Creek below the confluence of San Antonio Creek) (DEIR pages 5.4.1-19 through 5.4.1-25 and 5.4.1-35 through 5.4.1-43; C&R pages 16-50 through 16-57);
- **Geomorphology (Impacts 5.4.2-1**, effects on channel formation and sediment transport along Calaveras Creek; **5.4.2-2**, effects on channel formation and sediment transport along Alameda Creek downstream of the diversion dam and downstream of the San Antonio Creek confluence; **5.4.2-3**, effects on channel formation and sediment transport along San Antonio Creek downstream of San Antonio Reservoir) (DEIR pages 5.4.2-3 and -4; C&R pages 15.2-29 to 15.2-34, 15.3-15 to 15.3-17 and 16-57 to 16-58);
- **Surface Water Quality (Impacts 5.4.3-1**, effects on water quality in Calaveras Reservoir; **5.4.3-2**, effects on water quality in San Antonio Reservoir; **5.4.3-3**, changes in water quality along Calaveras, San Antonio, and Alameda Creeks) (DEIR pages 5.4.3-6 through 5.4.3-12; C&R pages 15.2-34 to 15.2-38 and 16-59 to 16-60);

- **Groundwater Bodies (Impact 5.4.4-1**, changes in groundwater levels, flows, quality, and supplies) (DEIR pages 5.4.4-5 through 5.4.4-7; C&R pages 15.3-19 and 16-60);
- **Fisheries (Impacts 5.4.5-1**, effects on fishery resources in Calaveras Reservoir (beneficial); **5.4.5-2**, Effects on fishery resources along Calaveras Creek below Calaveras Dam and along Alameda Creek below confluence with Calaveras Creek (beneficial); **5.4.5-4**, effects on fishery resources in San Antonio Reservoir (beneficial); **5.4.5-5**, effects on fishery resources along San Antonio Creek below San Antonio Reservoir; **5.4.5-6**, effects on fishery resources along Alameda Creek below confluence with San Antonio Creek) (DEIR pages 5.4.5-16 through 5.4.5-18 and 5.4.5-21 and 22);
- **Terrestrial Biology (Impacts 5.4.6-1 Other Species of Concern/Common Habitats and Species**, effects on riparian habitat and related biological resources in Calaveras Reservoir; **5.4.6-2, Sensitive Habitats/Other Species of Concern**, effects on riparian habitat and related biological resources along Alameda Creek, from below the diversion dam to the confluence with Calaveras Creek; **5.4.6-3, Sensitive Habitats/Other Species of Concern/Common Habitats and Species**, effects on riparian habitat and related biological resources along Calaveras Creek, from Calaveras Reservoir to the confluence with Alameda Creek; **5.4.6-4, Sensitive Habitats/Other Species of Concern/Common Habitats and Species**, effects on riparian habitat and related biological resources along Alameda Creek, from the confluence with Calaveras Creek to the confluence with San Antonio Creek; **5.4.6-5**, effects on riparian habitat and related biological resources in San Antonio Reservoir; **5.4.6-6**, effects on riparian habitat and related biological resources along San Antonio Creek between Turner Dam and the confluence with Alameda Creek; **5.4.6-7**, effects on riparian habitat and related biological resources along Alameda Creek below the confluence with San Antonio Creek; **5.4.6-8**, conflicts with the provisions of adopted conservation plans or other approved biological resource plans) (DEIR pages 5.4.6-14 through 5.4.6-26; C&R pages 5.2-13 to 15.2-14, 16-62 to 16-64);
- **Recreational and Visual Impact -- (Impacts 5.4.7-1**, effects on recreational facilities and/or activities; and **5.4.7-2**, visual effects on scenic resources or visual character of water bodies (DEIR, pp. 5.4.7-5 and 5.4.7-6; C&R pp. 13-5 and 16-65 to 16-66). Operations under the Phased WSIP Variant would substantially reduce flows along Alameda Creek in the Sunol Regional Wilderness during winter and early spring months and could affect the recreational experience for hikers. However, protective measures included in the Calaveras Dam Replacement project would include bypass flows at the Alameda Creek Diversion Dam when flow is available, thereby retaining flowing water in the creek and maintain the recreational and visual qualities. On July 16, 2008 the SFPUC revised the project description for the Calaveras Dam Replacement project. The revised project description includes specific operational protocols for seasonal bypass flows at the Alameda Creek Diversion Dam (ACDD) and the Calaveras Dam. Bypassing flow from the ACDD, when such flows are present, results in water in Alameda Creek below the ACDD to the confluence with Calaveras Creek. The addition of the flow releases from ACDD resulted in a determination that this impact is now less than significant for recreation and visual effects.
- **Cumulative Impacts (Impact 5.7.3-1**, cumulative effects on the Alameda Creek watershed). (DEIR, pages 5.7-61 through 5.7-67; C&R, pages 14.9-24 through 14.9-50).

3. Peninsula Watersheds

- **Stream Flow (Impacts 5.5.1-1**, effects on flow along the San Mateo Creek; **5.5.1-2**, effects on flow along Pilarcitos Creek) (DEIR pages 5.5.1-12 through 5.5.1-22; C&R pages 16-61 to 16-73);
- **Geomorphology (Impact 5.5.2-1**, changes in sediment transport and channel morphology in the Peninsula watershed) (DEIR pages 5.5.2-2 through 5.5.2-4);
- **Surface Water Quality (Impacts 5.5.3-1**, effects on water quality in Crystal Springs Reservoir, San Andreas Reservoir, and San Mateo Creek; **5.5.3-2**, effects on water quality in Pilarcitos Creek between Pilarcitos Reservoir and Stone Dam.) (DEIR pages 5.5.3-5 through 5.5.3-7; C&R pages 13-39 and 13-44). (Note: The PEIR determined Impact 5.5.3-2 to be potentially significant and mitigable for the WSIP, but this impact determination is less than significant for the Phased WSIP Variant through 2018.) With the Phased WSIP Variant, operations for Pilarcitos Reservoir and releases to Pilarcitos Creek will be similar to existing conditions, resulting in a less than significant impact;
- **Groundwater (Impact 5.5.4-1**, alteration of stream flows along Pilarcitos Creek, which could affect groundwater levels and water quality) (DEIR pages 5.5.4-1 through 5.5.4-3);
- **Fisheries (Impacts 5.5.5-2**, effects on fishery resources in San Andreas Reservoir; **5.5.5-3**, effects on fishery resources along San Mateo Creek; **5.5.5-4**, effects on fishery resources in Pilarcitos Reservoir; **5.5.5-5**, effects on fishery resources along Pilarcitos Creek below Pilarcitos Reservoir and below Stone Dam) (DEIR page 5.5.5-7; C&R pages 13-39 and 13-44). (Note: The PEIR determined Impacts 5.5.5-4 and 5.5.5-5 to be potentially significant and mitigable for the WSIP, but these impact determinations are less than significant for the Phased WSIP Variant through 2018.) Proposed operations under the Phased WSIP Variant would be within the same range as existing conditions, resulting in a less than significant impact);
- **Terrestrial Biology (Impacts 5.5.6-2**, impacts on biological resources in San Andreas Reservoir; **5.5.6-3**, impacts on biological resources along San Mateo Creek below Lower Crystal Springs Dam; **5.5.6-4**, impacts on biological resources in Pilarcitos Reservoir; **5.5.6-5**, impacts on biological resources along Pilarcitos Creek below Pilarcitos Reservoir; **5.5.6-6**, impacts on biological resources along Pilarcitos Creek below Stone Dam; **5.5.6-7**, conflicts with the provisions of adopted conservation plans or other approved biological resource plans) (DEIR pages 5.5.6-17 through 5.5.6-22; C&R pages 13-39, 13-40, 13-44 and 16-80 to 16-82). (Note: The PEIR determined Impact 5.5.6-4 to be potentially significant and mitigable for special status species for the originally proposed WSIP with implementation of a mitigation measure for the originally proposed WSIP. Since the Phased WSIP Variant does not result in impacts that require mitigation, this impact is less than significant for the Phased WSIP Variant through 2018);
- **Recreational and Visual Resources (Impact 5.5.7-1**, effects on recreational facilities and/or activities; **5.5.7-2**, visual effects on scenic resources or the visual character of water bodies.) (DEIR pages 5.5.7-4 through 5.5.7-6);
- **Cumulative Impacts (Impacts 5.7.4-1**, cumulative effects on the San Mateo Creek watershed, **5.7.4-2**, cumulative effects on the Pilarcitos Creek watershed). (DEIR, pages 5.7-74 through 5.7-84).

4. South Westside Groundwater Basin

- **Groundwater -- Impacts 5.6-1** -- basin overdraft due to pumping from the Westside Groundwater Basin; **5.6-3** -- seawater intrusion due to decreased groundwater levels in the Westside Groundwater Basin. (DEIR pages 5.6-25 through 5.6-27 and 5.6-29)

5. North and South Westside Groundwater Basin

- **Groundwater -- Impacts 5.6-4**, land subsidence due to decreased groundwater levels in the Westside Groundwater Basin if the historical low water levels are exceeded; **Impact 5.6-6**, drinking water contaminants above maximum contaminant levels and adverse effects of adding treated groundwater to the distribution system.) (DEIR pages 5.6-23 through 5.6-27 and 5.6-28 through 5.6-32)
- **Cumulative Impacts (Impacts 5.7.5-1**, cumulative effects on the North Westside Groundwater Basin, **5.7.5-2**, cumulative effects on the South Westside Groundwater Basin). (DEIR pages 5.7-89 to 5.7-91.)

Each of these topics is analyzed and discussed in detail in the record, including in, but not limited to, the Draft PEIR at Chapter 5, Sections 5.3, 5.4, 5.5, and 5.6 and in the C&R Chapter 13, Section 13.4.

B. WSIP Facility Construction and Operation Impacts

Under CEQA, no mitigation measures are required for impacts that are less than significant. (Pub. Resources Code, § 21002; CEQA Guidelines, §§ 15126.4, subd. (a)(3), 15091.) The Phased WSIP Variant will have the same facility construction and operation impacts as the originally proposed WSIP because the Phased WSIP Variant implements all the same projects as the originally proposed WSIP. (See C&R pages 13-17, 13-30 through 33.) Based on substantial evidence in the whole record of this proceeding, the SFPUC finds that implementation of the Facility Construction and Operations portion of the Phased WSIP Variant will not result in any significant impacts in the following areas and that these impact areas therefore do not require mitigation:

- **Land Use and Visual Quality** (Impact **4.3-3**, Temporary construction impacts on scenic vistas or visual character) (DEIR, pp. 4.3-28 to 4.3-29);
- **Geology, Soils, and Seismicity** (Impacts **4.4-2**, Erosion during construction; **4.4-3**, Substantial alteration of topography; **4.4-5**, Surface fault rupture; **4.4-6**, Seismically induced ground shaking; **4.4-7**, Seismically induced ground failure, including liquefaction and settlement; **4.4-8** Seismically induced landslides or other slope failures) (DEIR, pp. 4.4-27 to 4.4-29, 4.4-31 to 4.4-41);
- **Hydrology and Water Quality** (Impacts **4.5-1**, Degradation of water bodies as a result of erosion and sedimentation or a hazardous materials release during construction; **4.5-3a**, Degradation of water quality due to dewatering discharges; **4.5-3b**, Degradation of water quality due to construction-related discharges of treated water; **4.5-5**, Degradation of water quality and increased flows due to discharges to surface water during operation) (DEIR, pp. 4.5-21 to 4.5-28, 4.5-31 to 4.5-37, 4.5-41 to 4.5-49);

- **Traffic, Transportation and Circulation** (Impact **4.8-6**, Long-term traffic increases during facility operation) (DEIR, pp. 4.8-28 to 4.8-31);
- **Air Quality** (Impacts **4.9-4**, Air pollutant emissions during project operation; **4.9-5**, Odors generated during project operation; **4.9-6**, Secondary emissions at power plants; **4.9-7**, Conflict with implementation of applicable regional air quality plans addressing criteria air pollutants and state goals for reducing greenhouse gas emissions) (DEIR, pp. 4.9-37 to 4.9-47);
- **Noise and Vibration** (Impact **4.10-4**, Disturbance due to long-term noise increases) (DEIR, pp. 4.10-33 to 4.10-38);
- **Hazards** (Impacts **4.14-3**, Risk of fires during construction; **4.14-4**, Gassy conditions in tunnels; **4.14-6**, Accidental hazardous materials release from construction equipment; **4.14-7**, Increased use of hazardous materials during operation; **4.14-8**, Emission or use of hazardous materials within ¼ mile of a school) (DEIR, pp. 4.14-26 to 4.14-31, 4.14-35 to 4.14-42);
- **Collective** (Impacts **4.16-2**, Collective exposure of people or structures to geologic and seismic hazards; **4.16-9**, Collective impacts on utilities and landfill capacity) (DEIR, pp. 4.16-13, 4.16-33);
- **Cumulative** (Impacts **4.17-1**, Cumulative disruption of established communities, changes in existing land use patterns, and impacts on the existing visual character; **4.17-2**, Cumulative exposure of people or structures to geologic and seismic hazards; **4.17-3**, Cumulative impacts related to the degradation of water quality, alteration of drainage patterns, increased surface runoff, and flooding hazards; **4.17-4**, Cumulative loss of sensitive biological resources; **4.17-9**, Cumulative impacts related to disruption of utility service or relocation of utilities; **4.17-10**, Cumulative effects on recreational resources during construction; **4.17-11**, Cumulative conversion of farmland to nonagricultural uses; **4.17-12**, Cumulative effects related to hazardous conditions and exposure to or release of hazardous materials; **4.17-13**, Cumulative increases in the use of nonrenewable energy resources) (DEIR, pp. 4.17-46 to 4.17-52, 4.17-60 to 4.17-64).

Each of these topics is analyzed and discussed in detail in the record, including in, but not limited to, the Draft PEIR at Chapter 4, Sections 4.3, 4.4, 4.5, 4.8, 4.9, 4.10, 4.14, 4.16, and 4.17.

III. FINDINGS OF POTENTIALLY SIGNIFICANT IMPACTS THAT CAN BE AVOIDED OR REDUCED TO A LESS-THAN-SIGNIFICANT LEVEL

CEQA requires agencies to adopt mitigation measures that would avoid or substantially lessen a project's identified significant impacts or potential significant impacts if such measures are feasible (unless mitigation to such levels is achieved through adoption of a project alternative). The findings in this Section III and in Section IV concern mitigation measures set forth in the PEIR. These findings discuss mitigation measures as proposed in the PEIR and recommended for adoption by the SFPUC, which can be implemented by the SFPUC. The mitigation measures proposed for adoption in this section are the same as the mitigation measures identified in the Final PEIR for the Phased WSIP Variant. The full explanation of the potentially significant environmental impacts is contained in Chapters 4, 5, and 13 of the Final PEIR. The full text of the mitigation measures is contained in the Final PEIR and in **Attachment B**, the Mitigation Monitoring and Reporting Program.

As explained previously, **Attachment B** contains the Mitigation Monitoring and Reporting Program required by CEQA Section 21081.6 and CEQA Guidelines Section 15091. It provides a table setting forth each mitigation measure listed in the PEIR that is required to reduce or avoid a significant adverse impact. **Attachment B** also specifies the agency responsible for implementation of each measure, establishes monitoring actions and a monitoring schedule.

The SFPUC adopts all of the mitigation measures proposed for the Phased WSIP Variant. The SFPUC will implement all of the water supply and system operations mitigation measures as part of adoption of the Phased WSIP Variant. The SFPUC will implement the programmatic mitigation measures identified to address WSIP facility improvement projects impacts as part of approval and adoption of individual WSIP projects, and these programmatic mitigation measures will be re-evaluated as part of the project-level CEQA review and will be confirmed, refined or replaced with an equivalent measure, as applicable. The SFPUC finds that all the mitigation measures are appropriate and feasible, and that changes or alterations will be required in, or incorporated into, the Program and the projects that mitigate or avoid the significant environmental effect as identified in the PEIR. Based on the analysis contained in the PEIR, other considerations in the record, and the standards of significance, the SFPUC finds that implementation of all of the proposed mitigation measures will reduce potentially significant impacts to a *less-than-significant* level, discussed in this Section III.

A. WSIP Water Supply and System Operations Impacts

1. Tuolumne River System and Downstream Water Bodies

Fisheries

Impact 5.3.6-4 – Fisheries: Effects on fishery resources along the Tuolumne River below La Grange Dam in the event diversions from the Tuolumne River substantially increase over existing conditions. (DEIR, pp. 5.3.6-28 to 5.3.6-32; C&R pp. 14.7-2 to 14.7-7 and 13-43 to 13-44.) Under the Phased WSIP Variant, there may be a short-term increase in deliveries to customers from the watersheds above the existing level of 265 mgd, while the SFPUC and/or BAWSCA and wholesale customers implement the local conservation, recycled water and projects needed to meet demands through 2018. In this interim period, there is a potential for increased diversions from Hetch Hetchy Reservoir to serve SFPUC customers, which in turn would result in flow reductions below La Grange Dam and infrequent water temperature increases, which could adversely affect habitat conditions for juvenile salmonids. Flow changes with the Phased WSIP Variant with the 265 mgd delivery limitation and a small increase in average annual diversions from the Tuolumne River of 2 mgd in order to implement delivery and drought reliability elements of the WSIP through 2018 were determined to be less than significant. However, it is recognized that under the Phased WSIP Variant, deliveries could exceed 265 mgd while the SFPUC and/or wholesale customers implement the local conservation, recycled water and groundwater projects needed to meet increasing demands. Therefore, it was conservatively assumed that total water deliveries above 265 mgd could cause potentially significant impacts on the lower Tuolumne River during these periods until average annual deliveries were reduced to 265 mgd. This impact is less than significant if the annual average

deliveries to customers does not exceed 265 mgd from the watersheds and does not require mitigation.

Mitigation Measure 5.3.6-4a, Avoidance of Flow Changes by Reducing Demand for Don Pedro Reservoir Water, OR Mitigation Measure 5.3.6-4b, Fishery Habitat Enhancement

This Commission recognizes that mitigation measure 5.3.6-4a is partially within the jurisdiction of MID and TID. The Commission urges MID and TID to assist in implementing this mitigation measure, and finds that MID and TID can and should participate in implementing this mitigation measure.

This Commission also recognizes that mitigation measure 5.3.6-4b is partially within the jurisdiction of other agencies, including the California Department of Fish and Game. The Commission urges this agency to assist in implementing this mitigation measure, and finds that this agency can and should participate in implementing this mitigation measure if measure 5.3.6-4a is determined to be infeasible.

Terrestrial Biological Resources

Impact 5.3.7-2 – Terrestrial Biology: Impacts on alluvial features that support meadow and riparian habitat along the Tuolumne River from O’Shaughnessy Dam to Don Pedro Reservoir. (DEIR, pp. 5.3.7-21 to 5.3.7-22; C&R pages 14.6-4 to 14.6-7.) The alluvial area supporting the largest wetland complex in this section of the Tuolumne River is the Poopenaut Valley, although smaller alluvial areas downstream, where larger tributaries empty into the Tuolumne River, also support riparian and/or wetland habitats. Delayed snowmelt releases, reductions in flow, and the resulting reduction in groundwater recharge would result in an incremental reduction in the extent and diversity of wetland and riparian habitats, including sensitive wetland and riparian habitats in the Poopenaut Valley. A reduction in wetland and riparian habitat would reduce suitable breeding habitat for key special-status species potentially occurring along this reach (e.g., foothill yellow-legged frog, California red-legged frog, and willow flycatcher), the populations of which are already critically reduced in the Sierra Nevada. A reduction in the extent and diversity of wetland and riparian habitats would reduce habitat quality and extent for animal and plant species of concern. All natural habitats affected by the Program are considered sensitive. The Program could affect a large number of common animal species that depend on sensitive meadows and larger riparian areas for food and cover.

Mitigation Measure 5.3.7-2, Controlled Releases to Recharge Groundwater in Streamside Meadows and Other Alluvial Deposits.

Impact 5.3.7-6 – Terrestrial Biology: Impacts on biological resources along the Tuolumne River below La Grange Dam in the event that diversions from Hetch Hetchy Reservoir substantially increase over existing conditions (DEIR, pages 5.3.7-25 to 5.3.7-26; C&R pages 14.4-13 and 13-43 to 13-44). Under the Phased WSIP Variant, there may be a short-term increase in deliveries to customers from the watersheds above the existing level of 265 mgd, while the SFPUC and/or BAWSCA and wholesale customers implement the local conservation, recycled water and projects needed to meet demands through 2018. In this interim period, there is a potential for increased diversions from Hetch Hetchy Reservoir to serve SFPUC customers,

which in turn would result in flow reductions below La Grange Dam. Delayed spring releases and reductions in average and total flow (particularly during and following an extended drought) below La Grange Dam would reduce or eliminate suitable conditions for the recruitment of some riparian species along the river. Because of the known presence of key special-status species and the very limited amount of remaining suitable habitat along this reach of the Tuolumne River, this incremental impact would be potentially significant. Flow changes with the Phased WSIP Variant with the 265 mgd delivery limitation and a small increase in average annual diversions from the Tuolumne River of 2 mgd in order to implement delivery and drought reliability elements of the WSIP through 2018 were determined to be less than significant. However, it is recognized that under the Phased WSIP Variant, deliveries could exceed 265 mgd while the SFPUC and/or wholesale customers implement the local conservation, recycled water and groundwater projects needed to meet increasing demands. Therefore, it was conservatively assumed that deliveries above 265 mgd could cause potentially significant impacts on the lower Tuolumne River during these periods until average annual deliveries were reduced to 265 mgd. Species of concern that would be adversely affected by changes in the extent and quality of suitable riparian habitat include western pond turtle, several bat species, and a wide variety of riparian- and marsh-associated bird species. The populations of common species that depend on riparian habitat could be adversely affected by the alteration of habitat. This impact is less than significant if the annual average deliveries to customers does not exceed 265 mgd from the watersheds, and would not require mitigation.

Mitigation Measure 5.3.6-4a, Avoidance of Flow Changes by Reducing Demand for Don Pedro Reservoir Water OR Mitigation Measure 5.3.7-6, Lower Tuolumne River Riparian Habitat Enhancement

This Commission recognizes that mitigation measure 5.3.6-4a is the preferred mitigation approach but implementation is partially within the jurisdiction of MID and TID or other water agencies. The Commission urges MID and TID or other water agencies to assist in implementing this mitigation measure, and finds that MID and TID or other water agencies can and should participate in implementing this mitigation measure.

This Commission also recognizes that mitigation measure 5.3.7-6 is partially within the jurisdiction of other agencies, depending on the selected action and could include the California Department of Fish and Game, U. S. Fish and Wildlife Service and U.S. Army Corps of Engineers. The Commission urges these agencies to assist in implementing this mitigation measure, and finds that these agencies can and should participate in implementing this mitigation measure if measure 5.3.6-4a is determined to be infeasible.

2. Alameda Creek Watershed

Fisheries

Impact 5.4.5-3 – Fisheries: Effects on fishery resources along Alameda Creek downstream of Alameda Creek Diversion Dam. (DEIR, pp. 5.4.5-18 to 5.4-20 and C&R, pp. 13-37 and 13-38; 13-44; 16-61 and 16-62.) Following implementation of the Calaveras Dam Replacement project (SV-2) as one of the WSIP facility improvement projects, operation of Calaveras Reservoir and the Alameda Creek Diversion Dam would be restored to pre-2002 conditions. A substantial

increase in diversions from Alameda Creek to Calaveras Reservoir would reduce flows in this stretch of the creek, despite proposed bypass flows at the diversion dam. Diversion of most or all flows during late winter and spring months would reduce the ability of resident rainbow trout to spawn and for eggs to incubate; additional monitoring would be needed to determine the effectiveness of proposed bypass flows to sustain trout population. In addition, the increased diversion of flows to the reservoir would prevent fish passage to downstream reaches of the creek, and increase the potential for fish entrainment since there are currently no screens on the diversion dam. If monitoring indicates that resident trout populations are not being sustained, the SFPUC shall either modify the minimum stream flow or implement mitigation measure 5.4.5-3b.

**Mitigation Measure 5.4.5-3a, Minimum Flows for Resident Trout on Alameda Creek
Mitigation Measure 5.4.5-3b, Alameda Diversion Dam Diversion Restrictions or Fish Screens**

This Commission recognizes that mitigation measures 5.4.5-3a and 5.4.5-3b are partially within the jurisdiction of other agencies, including the California Department of Fish and Game, the California Regional Water Quality Control Board and the U.S. Army Corps of Engineers. The Commission urges these agencies to assist in implementing this mitigation measure, and finds that these agencies can and should participate in implementing this mitigation measure.

Terrestrial Biological Resources

Impact 5.4.6-1 – Terrestrial Biology: Effects on riparian habitat and related biological resources in Calaveras Reservoir. (DEIR, pp. 5.4.6-14 to 5.4.6-17; C&R pp. 13-37 and 13-38; 13-44.) Increased reservoir storage elevations would result in inundation and permanent loss of seasonal wetlands, seeps, perennial freshwater marsh, and riparian habitat that have established since 2002. Since 2002, foothill yellow-legged frogs have occupied approximately 10,000 linear feet of stream channel along Arroyo Hondo between the maximum reservoir elevation mandated by the Division of Safety of Dams and the spillway elevation. Higher maintained reservoir levels would reduce the length of this high-quality habitat along the creek and adversely affect existing populations of foothill yellow-legged frog.

Mitigation Measure 5.4.6-1, Compensation for Impacts on Terrestrial Biological Resources

This Commission recognizes that mitigation measure 5.4.6-1 is partially within the jurisdiction of other agencies, including the California Department of Fish and Game, the California Regional Water Quality Control Board, and the U.S. Army Corps of Engineers. The Commission urges these agencies to assist in implementing this mitigation measure, and finds that these agencies can and should participate in implementing this mitigation measure.

Impact 5.4.6-2 – Terrestrial Biology: Effects on riparian habitat and related biological resources along Alameda Creek, from below the diversion dam to the confluence with Calaveras Creek. (DEIR, pp. 5.4.6.2-18 to 5.4.6-19; C&R pp. 13-37 and 13-38; 13-44; 15.2-12.) A reduction in the frequency, duration, and magnitude of flows below the diversion dam would reduce the total available aquatic breeding habitat and food sources for California red-legged frog and foothill yellow-legged frog populations that currently occupy this reach of Alameda Creek.

Mitigation Measure 5.4.1-2, Diversion Tunnel Operation
Mitigation Measure 5.4.5-3a, Minimum Flows for Resident Trout on Alameda Creek

This Commission recognizes that mitigation measures 5.4.5-3a and 5.4.1-2 are partially within the jurisdiction of other agencies, including the California Department of Fish and Game. The Commission urges these agencies to assist in implementing this mitigation measure, and finds that these agencies can and should participate in implementing this mitigation measure.

Impact 5.4.6-3 – Terrestrial Biology: Effects on riparian habitat and related biological resources along Calaveras Creek, from Calaveras Reservoir to the confluence with Alameda Creek. (DEIR, pp. 5.4.6-19 to 5.4.6-22; C&R pp. 13-37 and 38; 13-44.) Future outlet work at Calaveras Dam would have the capacity to make higher-volume releases than under existing conditions. Depending on the timing and volume of operational releases, they could adversely affect the reproductive success of special-status amphibian species along this reach (e.g., California red-legged frog and foothill yellow-legged frog).

Mitigation Measure 5.4.6-3, Operational Procedures for Calaveras Dam Releases

Impact 5.4.6-4 – Terrestrial Biology: Effects on riparian habitat and related biological resources along Alameda Creek, from the confluence with Calaveras Creek to the confluence with San Antonio Creek. (DEIR, pp. 5.4.6-22 to 5.4.6-23; C&R pp. 13-37 and 13-38; 13-44.) Depending on annual rainfall and localized site conditions along this creek segment, changes in winter and summer flows along this reach could result in both beneficial and adverse impacts on habitat for California red-legged frog and foothill yellow-legged frog populations.

Mitigation Measure 5.4.6-3, Operational Procedures for Calaveras Dam Releases
Mitigation Measure 5.4.5-3a, Minimum Flows for Resident Trout on Alameda Creek

This Commission recognizes that mitigation measures 5.4.6-3 and 5.4.5-3a are partially within the jurisdiction of other agencies, including the California Department of Fish and Game. The Commission urges this agency to assist in implementing this mitigation measure, and finds that this agency can and should participate in implementing this mitigation measure.

3. Peninsula Watersheds

Terrestrial Biological Resources

1. **Impact 5.5.6-1 – Terrestrial Biology:** Impacts on biological resources in upper and Lower Crystal Springs Reservoirs. (DEIR, pp. 5.5.6-14 to 5.5.6-17; C&R pp. 13-39 to 13-41; 13-44.) Implementation of the Lower Crystal Springs Dam Improvements project (PN-4) would raise average monthly water levels in Crystal Springs Reservoir and result in a short-term reduction in the overall extent of freshwater marsh as the reservoir fills. Proposed changes in operations would maintain maximum reservoir levels during summer for longer periods than under existing conditions, which could affect the composition and structure of riparian habitats. In addition, sensitive upland habitats that are unable to tolerate these longer periods of inundation would be lost. Elevated reservoir levels would inundate existing populations of special-status plant species, including serpentine-associated fountain thistle and Marin western

flax, and their habitat could be permanently lost. The extent of available habitat for San Francisco garter snake and California red-legged frog would be temporarily reduced during reservoir refill, but wetland habitat that would establish at higher elevations could be more extensive. Raised reservoir levels would provide greater opportunities for largemouth bass and other predators to access frogs and snakes. Periodic drawdown during planned maintenance could adversely affect San Francisco garter snake foraging habitat. Changes in wetland habitat due to reservoir refill and proposed operations would adversely affect reptile and bird species of concern, particularly if permanent changes in the composition of wetland vegetation occur. Permanent loss of upland habitat, including upland trees, grassland, and coastal scrub, would result in significant impacts on several bird and mammal species of concern. Serpentine- and grassland-associated plant species unable to tolerate extended periods of inundation would be lost. Due to the extent of area involved, impacts on common habitats and species would be significant.

Mitigation Measure 5.5.6-1a, Adaptive Management of Freshwater Marsh and Wetlands at Upper and Lower Crystal Springs Reservoirs

Mitigation Measure 5.5.6-1b, Compensation for Impacts on Terrestrial Biological Resources

Mitigation Measure 5.5.6-1c, Compensation for Serpentine Seep-Related Special-Status Plants

This Commission recognizes that mitigation measure 5.5.6-1 is partially within the jurisdiction of other agencies, including the California Department of Fish and Game, the California Regional Water Quality Control Board, the U.S. Army Corps of Engineers and possibly the National Marine Fisheries Service. The Commission urges these agencies to assist in implementing this mitigation measure, and finds that these agencies can and should participate in implementing this mitigation measure.

4. North Westside Groundwater Basin

1. **Impact 5.6-1 – Groundwater:** Basin overdraft due to pumping from the Westside Groundwater Basin. (DEIR, pp. 5.6-23 to 5.6-24; C&R pp. 13-10; 13-29 and 13-30.) The proposed water supply option would include installation of up to four primary production and deep aquifer production wells in San Francisco to provide a total of 2 mgd of annualized production rate, as implemented through Local Groundwater Projects (part of SF-2). With implementation of the Phased WSIP Variant, production of up to 4 mgd (4,500 afy) under the Local Groundwater Projects (SF-2) and continued nonpotable pumping of 0.5 mgd (560 afy) would be the major groundwater use in the North Westside Groundwater Basin once irrigation pumping is replaced with recycled water at the San Francisco Zoo and Golden Gate Park; thus, the maximum total annual pumping by 2018 is estimated to be 5,060 afy. Based on water years 1987 and 1988, the annual recharge to this basin was estimated at 4,850 afy. However, this analysis was done during the first two-years of an on-going drought and therefore is considered to be a low estimate of groundwater recharge to the North Westside Groundwater Basin relative to average conditions. Estimates of recharge to the basin are being refined as part of ongoing groundwater modeling efforts on behalf of the SFPUC, and this analysis indicates that recharge to the basin could range from about 4,850 afy to 6,950 afy. The total proposed pumping rate of 4.5 mgd (5,060 afy) would be within the range of recharge to the groundwater basin. However, because it exceeds the lower end of the range, and the studies indicating the range have not been completed at this program-level of analysis, potential impacts related to depletion of

groundwater resources in the North Westside Groundwater Basin would be considered *potentially significant*.

Mitigation Measure 5.6-1, Groundwater Monitoring to Determine Basin Safe Yield

Impact 5.6-2 – Surface water: changes in water levels in Lake Merced and other surface water features, including Pine Lake, due to decreased groundwater levels in the Westside Groundwater Basin. (DEIR, pp. 5.6-27 to 5.6-28; C&R pp. 13-10; 13-29 and 30.) Because the primary production aquifer is not in direct hydraulic connection with the shallow aquifer in the Lake Merced vicinity or with Lake Merced, proposed pumping from the primary production aquifer under Local Groundwater Projects is not expected to have a direct effect on lake levels, but could potentially cause an indirect effect. Shallow groundwater levels could decline due to flow from the shallow aquifer under Lake Merced toward the primary production aquifer in which future production wells would be completed under the proposed program. Therefore, the potential to adversely affect water levels in Lake Merced and other surface water features would be *potentially significant*.

Mitigation Measure 5.6-1, Groundwater Monitoring to Determine Basin Safe Yield Mitigation Measure 5.6-2, Implementation of a Lake Level Management Plan

Impact 5.6-3 – Groundwater: Seawater intrusion due to decreased groundwater levels in the Westside Groundwater Basin. (DEIR, pp. 5.6-28 to 5.6-29; C&R pp. 13-10; 13-29 and 13-30.) In the North Westside Groundwater Basin, the shallow aquifer is in direct connection with the ocean from approximately Lake Merced to the north. Because the shallow aquifer is in direct connection with the ocean and groundwater pumping would lower groundwater levels, impacts related to the potential to cause seawater intrusion in the North Westside Groundwater Basin would be *potentially significant*.

Mitigation Measure 5.6-1, Groundwater Monitoring to Determine Basin Safe Yield

5. North and South Westside Groundwater Basins

- **Impact 5.6-5 – Groundwater:** Contamination of drinking water due to groundwater pumping in the Westside Groundwater Basin. (DEIR, pp. 5.6-31 to 5.6-32; C&R pp. 13-10; 13-29 and 30.) During operation, groundwater production wells constructed under the Local and Regional Groundwater Projects could induce migration of chemical or microbiological contamination from sources surrounding the wells, potentially resulting in an exceedance of drinking water standards in the groundwater. However, under the California Department of Public Health Drinking Water Source Assessment Protection (DWSAP) program, the SFPUC would develop a drinking water source assessment. The second step in the DWSAP program is the voluntary development and implementation of a source water protection program. Development of this program is not mandated under the DWSAP program, but protection of water quality is an important component of a complete wellhead protection program for the protection of drinking water quality. Until production well locations are selected and a drinking water source assessment performed, the potential for contamination of a drinking water well cannot be fully evaluated. Therefore, impacts related to potential contamination of a drinking water source are

considered *potentially significant* for the Local and Regional Groundwater Projects (SF-2)

Mitigation Measure 5.6.5, Drinking Water Source Assessments for Groundwater Wells

B. WSIP Facility Improvement Projects Construction and Operation Impacts

The Phased WSIP Variant will have the same impacts as the originally proposed WSIP because it implements all facility improvement projects as the originally proposed WSIP. (C&R pp. 13-17; 13-30 – 33.)

1. Land Use and Visual Quality

Impact 4.3-1 – Land Use: Temporary Disruption or Displacement of Existing Land Uses During Construction. Potentially significant land use impacts were identified in association with the following facility improvement projects: SJ-3, BD-1, BD-2, SF-1, SF-2, and SF-3. (DEIR, pp. 4.3-9 to 4.3-20, 6-4 to 6-6, 6-30 to 32, 6-34 to 6-42, 6-44.)

Mitigation Measure 4.8-1a, Traffic Control Plan Measures

Mitigation Measure 4.8-1b, Coordination of Individual Traffic Control Plans

Mitigation Measure 4.9-1a, SJVAPCD Dust Control Measures

Mitigation Measure 4.9-1b, SJVAPCD Exhaust Control Measures

Mitigation Measure 4.9-1c, BAAQMD Dust Control Measures

Mitigation Measure 4.9-1d, BAAQMD Exhaust Control Measures

Mitigation Measure 4.9-2a, Health Risk Screening or Use of Soot Filters

Mitigation Measure 4.9-2b, Vacate SFPUC Land Managers' Residences in Sunol Valley

Mitigation Measure 4.10-1a, Noise Controls

Mitigation Measure 4.10-1b, Vacate SFPUC Caretaker's Residence at Tesla Portal

Mitigation Measure 4.10-2a, Limit Hourly Truck Volumes

Mitigation Measure 4.10-2b, Restrict Truck Operations

Mitigation Measure 4.10-2c, Vacate SFPUC Land Manager's Residence

Mitigation Measure 4.10-3a, Vibration Controls to Prevent Cosmetic or Structural Damage

Mitigation Measure 4.10-3b, Limit Vibration Levels at or Below Vibration Perception Threshold

Mitigation Measure 4.10-3c, Limit Tunnel-Related Detonation to Daylight Hours

Mitigation Measure 4.12-1, Coordination with Golf Course/Recreational Facility Managers

Impact 4.3-4 – Visual Quality: Permanent Adverse Impacts on Scenic Vistas or Visual Character. Potentially significant visual quality impacts were identified in association with the following facility improvement projects: SJ-1, SJ-5, SV-1, SV-4, BD-1, BD-2, PN-2, PN-3, PN-4, SF-1, SF-2, and SF-3. (DEIR, pp. 4.3-29 to 4.3-43, 6-7 to 6-8.)

Mitigation Measure 4.3-4a, Architectural Design

Mitigation Measure 4.3-4b, Landscaping Plans

Mitigation Measure 4.3-4c, Landscape Screens

Mitigation Measure 4.3-4d, Minimize Tree Removal

Impact 4.3-5 – Visual Quality: New Permanent Sources of Light and Glare. Potentially significant glare impacts were identified in association with all of the facility improvement projects. (DEIR, pp. 4.3-43 to 4.3-44, 6-8.)

Mitigation Measure 4.3-5, Reduce Lighting Effects

2. Geology, Soils, and Seismicity

Impact 4.4-1 – Geology, Soils, and Seismicity: Slope instability during construction. Potentially significant geology, soils, and seismicity impacts were identified in association with the following facility improvement projects: SJ-2, SV-1, SV-2, SV-3, SV-4, SV-5, PN-3, SF-2, and SF-3. (DEIR, pp. 4.4-23 to 4.4-27, 6-4, 6-9.)

Mitigation Measure 4.4-1, Quantified Landslide Analysis

Impact 4.4-4 – Geology, Soils and Seismicity: Squeezing Ground and Subsidence During Tunneling. Potentially significant geology, soils and seismicity impacts were identified in association with the following facility improvement projects: SV-4 and BD-1. (DEIR, pp. 4.4-29 to 4.4-31, 6-9.)

Mitigation Measure 4.4-4, Subsidence Monitoring Program

Impact 4.4-9 – Geology, Soils and Seismicity: Expansive or Corrosive Soils. Potentially significant geology, soils and seismicity impacts were identified in association with all of the facility improvement projects. (DEIR, pp. 4.4-42 to 4.4-47, 6-4, 6-9.)

Mitigation Measure 4.4-9, Characterize Extent of Expansive and Corrosive Soil

3. Hydrology and Water Quality

Impact 4.5-2 – Hydrology and Water Quality: Depletion of Groundwater Resources. Potentially significant hydrology and water quality impacts were identified in association with the following facility improvement projects: SV-4. (DEIR, pp. 4.5-28 to 4.5-30, 6-9 to 6-10.)

Mitigation Measure 4.5-2, Site Specific Groundwater Analysis and Identified Measures

Impact 4.5-4 – Hydrology and Water Quality: Flooding or water quality impacts associated with impeding or redirecting flood flows. Potentially significant hydrology and water quality impacts were identified in association with the following facility improvement projects: SJ-3, SV-1, SV-4, BD-1, BD-2, and SF-2. (DEIR, pp. 4.5-37 to 4.5-41, 6-10.)

Mitigation Measure 4.5-4a, Flood Flow Protection Measures

Mitigation Measure 4.5-4b, Site Specific Flooding Analysis and Identified Measures

Impact 4.5-5 – Hydrology and Water Quality: Degradation of water quality and increased flows due to discharges to surface water during operation. Potentially significant hydrology and water quality impacts were identified in association with the following facility improvement projects: SF-2. (DEIR, pp. 4.5-41 to 4.5-49, 6-10.)

Mitigation Measure 4.5-5, Stormwater Treatment and Groundwater Monitoring

Impact 4.5-6 – Hydrology and Water Quality: Degradation of water quality as a result of alteration of drainage patterns or an increase in impervious surfaces. Potentially significant hydrology and water quality impacts were identified in association with the following facility improvement projects: SJ-2. (DEIR, pp. 4.5-49 to 4.5-54, 6-6, 6-10.)

Mitigation Measure 4.5-6, Appropriate Source Control and Site Design Measures

4. Biological Resources

Impact 4.6-1 – Biological Resources: Impacts on wetlands and aquatic resources. Potentially significant impacts to biological resources were identified in association with the following facility improvements: SJ-1, SJ-2, SJ-3, SJ-5, SV-1, SV-2, SV-3, SV-4, SV-5, BD-1, BD-2, PN-2, PN-4, SF-1, SF-2, and SF-3. (DEIR, pp. 4.6-43 to 4.6-51, 6-4 to 6-6, 6-11 to 21.)

Mitigation Measure 4.6-1a, Wetlands Assessment

Mitigation Measure 4.6-1b, Compensation for Wetlands and Other Biological Resources

Impact 4.6-2 – Biological Resources: Impacts on Sensitive Habitats, Common Habitats, and Heritage Trees. Potentially significant impacts to biological resources were identified in association with the following facility improvements: SJ-1, SJ-2, SJ-3, SJ-5, SV-1, SV-2, SV-3, SV-4, SV-5, BD-1, BD-2, PN-2, PN-4, SF-1, SF-2, and SF-3. (DEIR, pp. 4.6-52 to 4.6-59, 6-4 to 6-6, 6-12 to 6-13.)

Mitigation Measure 4.6-1b, Compensation for Wetlands and Other Biological Resources

Mitigation Measure 4.6-2, Habitat Restoration/Tree Replacement

Impact 4.6-3 – Biological Resources: Impacts on key special status species – direct mortality and/or habitat effects. Potentially significant impacts to biological resources were identified in association with the following facility improvements: SJ-1, SJ-2, SJ-3, SJ-5, SV-1, SV-2, SV-3, SV-4, SV-5, BD-1, BD-2, PN-2, and PN-4. (DEIR, pp. 4.6-59 to 4.6-68, 6-4 to 6-6, 6-11 to 6-13.)

Mitigation Measure 4.6-1b, Compensation for Wetlands and Other Biological Resources

Mitigation Measure 4.6-3a, Protection Measures During Construction for Key Special-Status Species and Other Species of Concern

Mitigation Measure 4.6-3b, Standard Mitigation Measures for Specific Plants and Animals

Impact 4.6-4 – Biological Resources: Water discharge effects on riparian and/or aquatic resources. Potentially significant impacts to biological resources were identified in association

with the following facility improvements: SJ-3, SV-4, BD-1, and BD-2. (DEIR, pp. 4.6-69 to 4.6-73, 6-13.)

Mitigation Measure 4.6-4, Pipeline and Water Treatment Plant Treated Water Discharge Restrictions

Impact 4.6-5 – Biological Resources: Conflicts with adopted conservation plans, or other approved biological resources plans. Potentially significant impacts to biological resources were identified in association with the following facility improvements: SJ-3. (DEIR, pp. 4.6-73 to 4.6-74, 6-11 to 6-13.)

Mitigation Measure 4.6-1a, Wetlands Assessment

Mitigation Measure 4.6-1b, Compensation for Wetlands and Other Biological Resources

Mitigation Measure 4.6-2, Habitat Restoration/Tree Replacement

Mitigation Measure 4.6-3a, Protection Measures During Construction for Key Special-Status Species and Other Species of Concern

Mitigation Measure 4.6-3b, Standard Mitigation Measures for Specific Plants and Animals

5. Cultural Resources

Impact 4.7-1 – Cultural Resources: Impacts on paleontological resources. Potentially significant impacts to cultural resources were identified in association with the following facility improvements: SJ-1, SJ-3, SJ-5, SV-1, SV-2, SV-3, SV-4, SV-5, PN-3, SF-1, SF-2, and SF-3. (DEIR, pp. 4.7-47 to 4.7-55, 6-4 to 6-6, 6-22.)

Mitigation Measure 4.7-1, Suspend Construction Work if Paleontological Resource is Identified

Impact 4.7-2 – Cultural Resources: Impacts on unknown and known prehistoric and historic archaeological resources. Potentially significant impacts to cultural resources were identified in association with all of the facility improvements. (DEIR, pp. 4.7-55 to 4.7-63, 6-4 to 6-6, 6-22 to 6-26.)

Mitigation Measure 4.7-2a, Archeological Testing, Monitoring, and Treatment of Human Remains

Mitigation Measure 4.7-2b, Accidental Discovery Measures

Impact 4.7-3 – Cultural Resources: Impacts on the historical significance of a historic district or a contributor to a historic district. Potentially significant impacts to cultural resources were identified in association with the following facility improvements: SJ-1, SJ-3, SV-4, BD-1, BD-2, PN-4, and SF-1. (DEIR, pp. 4.7-69 to 4.7-75, 6-26 to 6-30.)

Mitigation Measure 4.7-3, Protection of Historic Districts

Mitigation Measure 4.7-4a, Alternatives Identification and Resource Relocation

Mitigation Measure 4.7-4b, Historical Resources Documentation

Mitigation Measure 4.7-4c, Secretary of the Interior’s Standards for Treatment of Historic Properties

Mitigation Measure 4.7-4d, Historic Resources Survey and Redesign

Mitigation Measure 4.7-4e, Historic Resources Protection Plan

Mitigation Measure 4.7-4f, Preconstruction Surveys and Vibration Monitoring

Impact 4.7-4 – Cultural Resources: Impacts on the historical significance of individual facilities resulting from demolition or alteration. Potentially significant impacts to cultural resources were identified in association with the following facility improvements: SJ-1, SJ-3, BD-1, BD-2, and SF-1. (DEIR, pp. 4.7-76 to 4.7-83, 6-4 to 6-6, 6-26 to 6-30.)

Mitigation Measure 4.7-4a, Alternatives Identification and Resource Relocation

Mitigation Measure 4.7-4b, Historical Resources Documentation

Mitigation Measure 4.7-4c, Secretary of the Interior’s Standards for Treatment of Historic Properties

Mitigation Measure 4.7-4d, Historic Resources Survey and Redesign

Mitigation Measure 4.7-4e, Historic Resources Protection Plan

Mitigation Measure 4.7-4f, Preconstruction Surveys and Vibration Monitoring

Impact 4.7-5 – Cultural Resources: Impacts on adjacent historic architectural resources. Potentially significant impacts to cultural resources were identified in association with the following facility improvements: SJ-3, SJ-5, SV-2, SV-4, BD-1, BD-2, PN-2, PN-4, SF-1, and SF-3. (DEIR, pp. 4.7-83 to 4.7-86, 6-4 to 6-6, 6-26 to 6-30.)

Mitigation Measure 4.7-4a, Alternatives Identification and Resource Relocation

Mitigation Measure 4.7-4b, Historical Resources Documentation

Mitigation Measure 4.7-4c, Secretary of the Interior’s Standards for Treatment of Historic Properties

Mitigation Measure 4.7-4d, Historic Resources Survey and Redesign

Mitigation Measure 4.7-4e, Historic Resources Protection Plan

Mitigation Measure 4.7-4f, Preconstruction Surveys and Vibration Monitoring

6. Traffic, Transportation, and Circulation

Impact 4.8-1 – Traffic, Transportation, and Circulation: Temporary reduction in roadway capacity and increased traffic delays. Potentially significant impacts to traffic, transportation, and circulation were identified in association with the following facility improvements: SJ-3, SV-2, BD-1, PN-2, PN-4, SF-1, SF-2, and SF-3. (DEIR, pp. 4.8-10 to 4.8-15, 6-4 to 6-6, 6-30 to 6-31.)

Mitigation Measure 4.8-1a, Traffic Control Plan Measures

Mitigation Measure 4.8-1b, Coordination of Individual Traffic Control Plans

Impact 4.8-2: Short-term traffic increases on roadways due to construction related vehicle trips. Potentially significant impacts to traffic, transportation, and circulation were identified in association with the following facility improvements: SJ-1, SJ-2, SJ-3, SJ-5, SV-1, SV-2, SV-3,

SV-4, SV-5, BD-1, BD-2, PN-2, PN-3, PN-4, SF-1, and SF-3. (DEIR, pp. 4.8-15 to 4.8-20, 6-4 to 6-6, 6-30 to 6-32.)

Mitigation Measure 4.8-1a, Traffic Control Plan Measures

Mitigation Measure 4.8-1b, Coordination of Individual Traffic Control Plans

Impact 4.8-3 – Traffic, Transportation, and Circulation: Impaired access to adjacent roadways and land uses. Potentially significant impacts to traffic, transportation, and circulation were identified in association with the following facility improvements: SJ-3, SV-2, BD-1, BD-2, PN-4, SF-1, SF-2, and SF-3. (DEIR, pp. 4.8-20 to 4.8-24, 6-4 to 6-6, 6-30 to 6-32.)

Mitigation Measure 4.8-1a, Traffic Control Plan Measures

Impact 4.8-4 – Traffic, Transportation, and Circulation: Temporary displacement of on-street parking. Potentially significant impacts to traffic, transportation, and circulation were identified in association with the following facility improvements: BD-1, PN-4, SF-1, SF-2, and SF-3. (DEIR, pp. 4.8-24 to 4.8-27, 6-4 to 6-6, 6-30 to 6-32.)

Mitigation Measure 4.8-1a, Traffic Control Plan Measures

Mitigation Measure 4.8-4, Accommodation of Displaced Public Parking Supply for Recreational Visitors

Impact 4.8-5 – Traffic, Transportation, and Circulation: Increased potential traffic safety hazards during construction. Potentially significant impacts to traffic, transportation, and circulation were identified in association with all of the facility improvements. (DEIR, pp. 4.8-27 to 4.8-28, 6-4 to 6-6, 6-30 to 6-31.)

Mitigation Measure 4.8-1a, Traffic Control Plan Measures

7. Air Quality

Impact 4.9-1 – Air Quality: Construction emissions of criteria pollutants. Potentially significant impacts to air quality were identified in association with the following facility improvements: SJ-1, SJ-2, SJ-3, SJ-5, SV-1, SV-2, SV-3, SV-4, SV-5, BD-1, and BD-2. (DEIR, pp. 4.9-21 to 4.9-27, 6-4 to 6-6, 6-34 to 6-37.)

Mitigation Measure 4.9-1a, SJVAPCD Dust Control Measures

Mitigation Measure 4.9-1b, SJVAPCD Exhaust Control Measure

Mitigation Measure 4.9-1c, BAAQMD Dust Control Measures

Mitigation Measure 4.9-1d, BAAQMD Exhaust Control Measures

Impact 4.9-2 – Air Quality: Exposure to diesel particulate matter (DPM) during construction. Potentially significant impacts to air quality were identified in association with the following facility improvements: SV-2, SV-5, and BD-1. (DEIR, pp. 4.9-27 to 4.9-34, 6-37 to 6-38.)

Mitigation Measure 4.9-2a, Health Risk Screening or Use of Soot Filters

Mitigation Measure 4.9-2b, Vacate SFPUC Land Managers' Residences in Sunol Valley

Impact 4.9-3 – Air Quality: Exposure to emissions (possibly including asbestos) from tunneling. Potentially significant impacts to air quality were identified in association with the following facility improvements: SJ-3, SV-4, BD-1, PN-2, SF-1, SF-2, and SF-3. (DEIR, pp. 4.9-34 to 4.9-36, 6-38.)

Mitigation Measure 4.9-3, Tunnel Gas Odor Control

8. Noise and Vibration

Impact 4.10-2, Noise and Vibration: Temporary Noise Disturbance Along Construction Haul Routes. Potentially significant noise impacts were identified in association with the following facility improvement project: SV-4. (DEIR, pp. 4.10-23 to 4.10-26, 6-41 to 6-42.)

Mitigation Measure 4.10-2c, Vacate SFPUC Land Manager's Residence

Impact 4.10-3 – Noise and Vibration: Disturbance due to construction related vibration. Potentially significant vibration impacts were identified in association with the following facility improvement project: SV-4. (DEIR, pp. 4.10-27 to 4.10-33, 6-42.)

Mitigation Measure 4.10-1a, Noise Controls

Mitigation Measure 4.10-3a, Vibration Controls to Prevent Cosmetic or Structural Damage

9. Public Services and Utilities

Impact 4.11-1 – Public Services and Utilities: Potential temporary damage to, or disruption of existing regional or local public utilities. Potentially significant impacts to public services and utilities were identified in association with the following facility improvement projects: SJ-3, SV-1, SV-2, SV-3, SV-4, BD-1, BD-2, PN-2, PN-4, SF-1, SF-2, and SF-3. (DEIR, pp. 4.11-10 to 4.11-15, 6-4 to 6-6, 6-43 to 6-44.)

Mitigation Measure 4.11-1a, Notify Neighbors of Potential Utility Service Disruption

Mitigation Measure 4.11-1b, Locate Utility Lines Prior to Excavation

Mitigation Measure 4.11-1c, Confirmation of Utility Line Information

Mitigation Measure 4.11-1d, Safeguard Employees from Potential Accidents Related to Underground Utilities

Mitigation Measure 4.11-1e, Notify Local Fire Departments

Mitigation Measure 4.11-1f, Emergency Response Plan

Mitigation Measure 4.11-1g, Prompt Reconnection of Utilities

Mitigation Measure 4.11-1h, Coordinate Final Construction Plans with Affected Utilities

Impact 4.11-2 – Public Services and Utilities: Temporary Solid Waste Effects on Solid Waste Landfill Capacity. Potentially significant impacts to public services and utilities were identified in association with all of the facility improvement projects. (DEIR, pp. 4.11-15 to 4.11-21, 6-44.)

Mitigation Measure 4.11-2, Waste Reduction Measures

Impact 4.11-3 – Public Services and Utilities: Impacts related to compliance with federal, state, and local statutes and regulations related to solid waste. Potentially significant impacts to public services and utilities were identified in association with all of the facility improvement projects. (DEIR, pp. 4.11-22, 6-44.)

Mitigation Measure 4.11-2, Waste Reduction Measures

Impact 4.11-4 – Public Services and Utilities: Impacts related to the relocation of utilities. Potentially significant impacts to public services and utilities were identified in association with all of the facility improvement projects. (DEIR, pp. 4.11-22 to 4.11-23, 6-4 to 6-6, 6-43 to 6-44.)

Mitigation Measure 4.11-1a, Notify Neighbors of Potential Utility Service Disruption

Mitigation Measure 4.11-1b, Locate Utility Lines Prior to Excavation

Mitigation Measure 4.11-1c, Confirmation of Utility Line Information

Mitigation Measure 4.11-1d, Safeguard Employees from Potential Accidents Related to Underground Utilities

Mitigation Measure 4.11-1e, Notify Local Fire Departments

Mitigation Measure 4.11-1f, Emergency Response Plan

Mitigation Measure 4.11-1g, Prompt Reconnection of Utilities

Mitigation Measure 4.11-1h, Coordinate Final Construction Plans with Affected Utilities

10. Recreational Resources

Impact 4.12-1 – Recreational Resources: Temporary Conflicts with established recreational uses during construction. Potentially significant impacts to recreational resources were identified in association with the following facility improvement projects: SJ-3, SV-4, BD-1, BD-2, PN-2, SF-1, SF-2, and SF-3. (DEIR, pp. 4.12-18 to 4.12-27, 6-4 to 6-6, 6-30 to 6-32, 6-34 to 6-44.)

Mitigation Measure 4.12-1, Coordination with Golf Course/Recreational Facility Managers

Mitigation Measure 4.8-1a, Traffic Control Plan Measures

Mitigation Measure 4.8-1b, Coordination of Individual Traffic Control Plans

Mitigation Measure 4.9-1a, SJVAPCD Dust Control Measures

Mitigation Measure 4.9-1b, SJVAPCD Exhaust Control Measure

Mitigation Measure 4.9-2a, Health Risk Screening or Use of Soot Filters

Mitigation Measure 4.9-2b, Vacate SFPUC Land Managers' Residences in Sunol Valley

Mitigation Measure 4.10-1a, Noise Controls

Mitigation Measure 4.10-1b, Vacate SFPUC Caretaker's Residence at Tesla Portal

Mitigation Measure 4.10-2a, Limit Hourly Truck Volumes

Mitigation Measure 4.10-2b, Restrict Truck Operations

Mitigation Measure 4.10-2c, Vacate SFPUC Land Manager's Residence

Mitigation Measure 4.10-3a, Vibration Controls to Prevent Cosmetic or Structural Damage

Mitigation Measure 4.10-3b, Limit Vibration Levels at or Below Vibration Perception Threshold

Impact 4.12-2 – Recreational Resources: Conflicts with established recreational uses due to facility siting and project operation. Potentially significant impacts to recreational resources were identified in association with the following facility improvement projects: SF-1, SF-2, and SF-3. (DEIR, pp. 4.12-27 to 4.12-28, 6-7 to 6-8, 6-44.)

Mitigation Measure 4.3-4a, Architectural Design

Mitigation Measure 4.3-4b, Landscaping Plans

Mitigation Measure 4.3-4c, Landscape Screens

Mitigation Measure 4.3-4d, Minimize Tree Removal

Mitigation Measure 4.12-2, Appropriate Siting of Proposed Facilities

11. Agricultural Resources

Impact 4.13-1 – Agricultural Resources: Temporary conflicts with established agricultural resources. Potentially significant impacts to agricultural resources were identified in association with the following facility improvement projects: SJ-3, SV-1, SV-2, SV-3, and SV-4. (DEIR, pp. 4.13-11 to 4.13-15, 6-4 to 6-6, 6-45.)

Mitigation Measure 4.13-1a, Supplemental Noticing and Soil Stockpiling

Mitigation Measure 4.13-1b, Avoidance or Soil Stockpiling

Impact 4.13-2 - Agricultural Resources: Conversion of farmlands to non-agricultural uses. Potentially significant impacts to agricultural resources were identified in association with the following facility improvement projects: SJ-3, SV-3, and SV-5. (DEIR, pp. 4.13-15 to 4.13-17, 6-45.)

Mitigation Measure 4.13-2, Siting Facilities to Avoid Prime Farmland

12. Hazards

Impact 4.14-1 – Hazards: Potential to encounter hazardous materials in soil or groundwater. Potentially significant hazards impacts were identified in association with the following facility improvement projects: BD-1, BD-2, SF-1, SF-2, and SF-3. (DEIR, pp. 4.14-16 to 4.14-22, 6-4 to 6-6, 6-45 to 6-46.)

Mitigation Measure 4.14-1a, Site Health and Safety Plan

Mitigation Measure 4.14-1b, Materials Disposal Plan

Mitigation Measure 4.14-1c, Coordination with Property Owners and Regulatory Agencies

Impact 4.14-2 – Hazards: Exposure to naturally occurring asbestos. Potentially significant hazards impacts were identified in association with the following facility improvement project: BD-1. (DEIR, pp. 4.14-23 to 4.14-26, 6-46.)

Mitigation Measure 4.14-2, Health Risk Screening and Airborne Asbestos Monitoring Plan

Impact 4.14-5 – Hazards: Exposure to hazardous building materials. Potentially significant hazards impacts were identified in association with the following facility improvement projects: SJ-3, SJ-5, SV-2, SV-4, BD-1, PN-2, PN-3, PN-4, SF-1, SF-2, and SF-3. (DEIR, pp. 4.14-31 to 4.14-35, 6-46.)

Mitigation Measure 4.14-5, Hazardous Building Materials Surveys and Abatement

13. Energy Resources

Impact 4.15-1 – Energy Resources: Construction related energy use. Potentially significant energy impacts were identified in association with all of the facility improvement projects. (DEIR, p. 4.15-8, 6-34 to 6-37, 6-47.)

Mitigation Measure 4.9-1b, SJVAPCD Exhaust Control Measure

Mitigation Measure 4.9-1d, BAAQMD Exhaust Control Measures

Impact 4.15-2 – Energy Resources: Long-term energy use during operation. Potentially significant energy impacts were identified in association with the following facility improvement projects: SJ-1, SJ-2, SJ-3, SJ-5, SV-1, SV-3, SV-5, BD-1, BD-2, PN-2, PN-3, SF-1, SF-2, and SF-3. (DEIR, pp. 4.15-8 to 4.15-14, 6-47.)

Mitigation Measure 4.15-2, Incorporation of Energy Efficient Measures

14. Collective Facilities Impacts

Impact 4.16-1a – Collective temporary and permanent impacts on existing land uses in the vicinity of the proposed facility site. Potentially significant collective land use impacts were identified in association with the following facility improvement project regions: Peninsula Region Improvements. (DEIR, pp. 4.16-8 to 4.16-11, 6-32.)

Mitigation Measure 4.8.-4, Accommodation of Displaced Public Parking Supply for Recreational Visitors

Impact 4.16-1b – Collective temporary and permanent impacts on the visual character the surrounding area. Potentially significant collective visual quality impacts were identified in association with the following facility improvement project regions: San Joaquin Region, Bay Division Region, Peninsula Region, San Francisco Region. (DEIR, pp. 4.16-11 to 4.16-12, 6-7 to 6-8.)

Mitigation Measure 4.3-4a, Architectural Design

Mitigation Measure 4.3-4b, Landscaping Plans

Mitigation Measure 4.3-4c, Landscaping Screens

Impact 4.16-3 – Collective WSIP impacts related to the degradation of surface waters and flooding hazards. Potentially significant collective hydrology and water quality impacts were identified in association with multi-regional effects as well as the following facility improvement

project regions: San Joaquin Region, Sunol Valley Region, Bay Division Region, Peninsula Region and San Francisco Region. (DEIR, pp. 4.16-13 to 4.16-16, 6-10.)

Mitigation Measure 4.5-4a, Flood Flow Protection Measures

Mitigation Measure 4.5-4b, Site-Specific Flooding Analysis and Identified Measures

Mitigation Measure 4.5-5, Stormwater Treatment and Groundwater Monitoring

Mitigation Measure 4.5-6, Appropriate Source Control and Site Design Measure

Impact 4.16-4 – Collective loss of sensitive biological resources. Potentially significant collective biological resource impacts were identified in association with multi-regional effects as well as the following facility improvement project regions: San Joaquin Region and Bay Division Region. (DEIR, pp. 4.16-16 to 4.16-19, 6-11 to 6-21.)

Mitigation Measures 4.6-1a, Wetlands Assessment

Mitigation Measure 4.6-1b, Compensation for Wetlands and Other Biological Resources

Mitigation Measure 4.6-2, Habitat Restoration/Tree Replacement

Mitigation Measure 4.6-3a, Protection Measures During Construction for Key Special-Status Species and Other Species of Concern

Mitigation Measure 4.6-3b, Standard Mitigation Measures for Specific Plants and Animals

Mitigation Measure 4.16-4a, Bioregional Habitat Restoration Measures

Mitigation Measure 4.16-4b, Coordination of Construction Staging and Access

Impact 4.16-5 – Collective increase in impacts related to archaeological, paleontological and historical resources. Potentially significant collective cultural resource impacts were identified in association with multi-regional effects as well as the following facility improvement project regions: San Joaquin Region and Bay Division Region. (DEIR, pp. 4.16-19 to 4.16-22, 6-26 to 6-30.)

Mitigation Measure 4.7-4a, Alternatives Identification and Resource Relocation

Mitigation Measure 4.7-4b, Historical Resources Documentation

Mitigation Measure 4.7-4c, Secretary of the Interior’s Standards for Treatment of Historic Properties

Mitigation Measure 4.7-4d, Historic Resources Survey and Redesign

Mitigation Measure 4.7-4e, Historic Resources Protection Plan

Mitigation Measure 4.7-4f, Preconstruction Surveys and Vibration Monitoring

Impact 4.16-6 – Collective traffic increases on local and regional roads. Potentially significant collective traffic impacts were identified in association with the following facility improvement project regions: San Joaquin Region, Sunol Valley Region, Bay Division Region, Peninsula Region and San Francisco Region. (DEIR, pp. 4.16-23 to 4.16-26, 6-30 to 6-33.)

Mitigation Measure 4.8-1a, Traffic Control Plan Measures

Mitigation Measure 4.8-1b, Coordination of Individual Traffic Control Plans

Mitigation Measure 4.16-6a, SFPUC WSIP Projects Construction Coordinator

Mitigation Measure 4.16-6b, Combined San Joaquin Traffic Control Plan

Mitigation Measure 4.16-6c, Combined Sunol Valley Traffic Control Plan

Impact 4.16-7 – Collective increases in construction and/or operational emission in the region. Potentially significant collective air quality impacts were identified in association with the following facility improvement project regions: San Joaquin Region, Sunol Valley Region, and Bay Division Region. (DEIR, pp. 4.16-26 to 4.16-29, 6-37 to 6-39.)

Mitigation Measure 4.9-2a, Health Risk Screening or Use of Soot Filters

Mitigation Measure 4.9-2b, Vacate SFPUC Land Managers’ Residences in Sunol Valley

Mitigation Measure 4.16-7a, Dust and Exhaust Control Measures for All WSIP Projects

Mitigation Measure 4.16-7b, Health Risk Screening or Use of Soot Filters for All Projects in the San Joaquin and Sunol Valley Regions

Mitigation Measure 4.16-7c, Vacate SFPUC Land Managers’ Residences for All Projects in the Sunol Valley Region

Impact 4.16-8 – Collective increases in construction-related and operational noise. Potentially significant collective noise impacts were identified in association with the following facility improvement project regions: Sunol Valley Region. (DEIR, pp. 4.16-30 to 4.16-33, 42 to 6-43.)

Mitigation Measure 4.16-8b, Vacate Land Manager’s Residence for All Projects in Sunol Valley Region

Impact 4.16-9 – Collective impacts on landfill capacity. Potentially significant impacts on landfill capacity were identified in association with all of the facility improvement project regions (Draft PEIR, p. 4.16-33.)

Mitigation Measure 4.11-2, Waste Reduction Measures

Impact 4.16-10 – Collective effect on recreational resources during construction. Potentially significant collective recreational resource impacts were identified in association with the following facility improvement project regions: San Joaquin Region, Sunol Valley Region, Bay Division Region, Peninsula Region and San Francisco Region. (DEIR, pp. 4.16-33 to 4.16-34, 6-44.)

Mitigation Measure 4.12-1, Coordination with Golf Course/Recreational Facility Managers

Mitigation Measure 4.12-2, Appropriate Siting of Proposed Facilities

Impact 4.16-11 – Collective conversion of farmland to nonagricultural uses. Potentially significant collective agricultural resource impacts were identified in association with the following facility improvement project regions: San Joaquin Region and Sunol Valley Region. (DEIR, p. 4.16-34, 6-45.)

Mitigation Measure 4.13-2, Siting Facilities to Avoid Prime Farmland

Impact 4.16-12 – Collective effects related to hazardous conditions and exposure to ore release of hazardous materials. Potentially significant collective hazard impacts were identified in association with the following facility improvement project regions: San Joaquin Region, Sunol

Valley Region, Bay Division Region, Peninsula Region and San Francisco Region. (DEIR, pp. 4.16-35 to 4.16-36, 6-30 to 6-32, 6-46.)

Mitigation Measure 4.8-1a, Traffic Control Plan Measures

Mitigation Measure 4.8-1b, Coordination of Individual Traffic Control Plans

Mitigation Measure 4.14-1b, Materials Disposal Plan

Impact 4.16-13 – Collective increases in the use of nonrenewable energy resources. Potentially significant collective energy resource impacts were identified in association with multi-regional effects as well as the following facility improvement project regions: San Joaquin Region, Sunol Valley Region, Bay Division Region, Peninsula Region, and San Francisco Region. (DEIR, pp. 4.16-36 to 4.16-38, 6-35 to 6-37, 6-47.)

Mitigation Measure 4.9-1b, SJVAPCD Exhaust Control Measures

Mitigation Measure 4.9-1d, BAAQMD Exhaust Control Measures

Mitigation Measure 4.15-2, Incorporation of Energy Efficiency Measures

Conservation, Recycling and Groundwater Programs: The Final PEIR also identified possible impacts and mitigation strategies for facilities potentially developed by the wholesale customers to decrease demand for water or to supplement water supply as well. (See C&R pages 13-30 – 34; see also DEIR pp. 9-34 to 9-37; 9-55 to 9-57.) While it is difficult to predict what facilities will be implemented by the wholesale customers, any decisions to approve new projects or programs will undergo further CEQA review and will be approved by the individual customer or by BAWSCA. This Commission recommends that the wholesale customers approve projects that incorporate the mitigation strategies set forth in the Final PEIR, and finds that the wholesale customers can and should adopt applicable mitigation measures and strategies.

IV. SIGNIFICANT IMPACTS THAT CANNOT BE AVOIDED OR REDUCED TO A LESS THAN SIGNIFICANT LEVEL

Based on substantial evidence in the whole record of these proceedings, the SFPUC finds that, where feasible, changes or alterations have been required, or incorporated into, the Phased WSIP Variant to reduce the significant environmental impacts listed below as identified in the FEIR. The SFPUC finds that the mitigation measures in the PEIR and described below are appropriate, and that changes have been required in, or incorporated into, the Phased WSIP Variant that, to use the language of Public Resources Code section 21002 and CEQA Guidelines section 15091, may substantially lessen, but do not avoid (i.e., reduce to less than significant levels), the potentially significant environmental effect associated with implementation of the individual WSIP facility improvement projects, as described in the Program EIR Chapter 4, and the potentially significant or significant environmental effects associated with implementation of the water supply program, as described in the Program EIR, Chapter 13. The SFPUC adopts all of the mitigation measures proposed in the Program EIR that are relevant to the Phased WSIP Variant and set forth in the MMRP, attached hereto as Attachment B. The SFPUC further finds, however, for the impacts listed below, that no mitigation is currently available to render the effects less than significant. The effects therefore remain significant and unavoidable. Based on the analysis contained within the Program EIR, other considerations in the record, and the

standards of significance, the SFPUC finds that because some aspects of the Phased WSIP Variant would cause potentially significant impacts for which feasible mitigation measures are not available to reduce the impact to a less-than-significant level, the impacts are *significant and unavoidable*.

With respect to the facility improvement projects impacts and those water supply/system operations impacts directly related to one of the WSIP projects, the PEIR provides a program-level of analysis based on preliminary project information. Due to the lack of site-specific details, the impacts are based on reasonable worst-case assumptions, and the feasibility of many mitigation measures is uncertain. Thus, to be conservative, these impacts are considered *potentially significant and unavoidable*. However, subsequent environmental review and analysis of all WSIP facility improvement projects will occur when more detailed, site-specific information is available, and it may be determined that either the impacts no longer apply or that feasible mitigation measures may be available.

The SFPUC determines that the following significant impacts on the environment, as reflected in the Program EIR, are unavoidable, but under Public Resources Code Section 21081(a)(3) and (b), and CEQA Guidelines 15091(a)(3), 15092(b)(2)(B), and 15093, the SFPUC determines that the impacts are acceptable due to the overriding considerations described in Section VII below. This finding is supported by substantial evidence in the record of this proceeding.

A. WSIP Water Supply and System Operations Impacts

1. Alameda Creek Stream Flow

Impact 5.4.1-2 – Stream Flow: Effects on flow along Alameda Creek below the Alameda Creek Diversion Dam. (DEIR, pp. 5.4.1-25 to 5.4.1-33, C&R page 13-37.) Restoring the levels of the Calaveras Dam reservoir under the Calaveras Dam Replacement Project would increase diversions from Alameda Creek to Calaveras Reservoir, nearly eliminating the low and moderate (1 to 650 cfs) flows in Alameda Creek downstream of the diversion dam that currently occur when the diversion gates are closed, and substantially reducing many higher (greater than 650 cfs) flows. Under the Phased WSIP Variant, flows in Alameda Creek in the reach below the diversion dam to the Calaveras Creek confluence and in the reach below the confluence would be substantially reduced compared to the conditions in existence since December 2001, when the California Department of Water Resources, Division of Safety of Dams imposed storage capacity restrictions on Calaveras Reservoir. This reduction of stream flows and alteration of the stream hydrograph is considered a substantial hydrologic effect and, as a result, this impact is *significant and unavoidable*. Implementation of Measure 5.4.1-2 would reduce the impact by requiring the SFPUC to close the diversion dam and cease Alameda Creek diversions to Calaveras Reservoir as soon as possible each year, once the reservoir is at desired levels, such that the later-season storm flows not needed to refill Calaveras Reservoir are allowed to flow down Alameda Creek past the diversion dam to the lower reaches. This measure would help reduce the impact, but not to a less than significant level.

Mitigation Measure 5.4.1-2, Diversion Tunnel Operation

2. San Francisco Peninsula Fisheries

Impact 5.5.5-1 –Fisheries: Effects on fishery resources in Crystal Springs Reservoir (Upper and Lower). (DEIR, pp. 5.5.5-6 to 5.5.5-7; C&R, pp. 15.2-15 and 15.2-16.) Restoring the levels of the reservoir under the Lower Crystal Springs Dam Improvements project (PN-4) could cause a potential loss of stream channel and potential spawning area in San Mateo Creek. However, upstream areas may provide suitable replacement habitat to support the population and this prospect is currently under evaluation in the project-level CEQA review for the Lower Crystal Springs Dam Improvements project. Thus, implementation of Measure 5.5.5-1, Create New Spawning Habitat Above Crystal Springs Reservoir, if feasible, may reduce this impact to less than significant. The project-level CEQA review for the Lower Crystal Springs Dam Improvements project will further evaluate the severity of this impact and the feasibility and efficacy of Measure 5.5.5-1. To be conservative, at the program-level of analysis, this impact is considered *potentially significant and unavoidable*.

Mitigation Measure 5.5.5-1, Create New Spawning Habitat Above Crystal Springs Reservoir

B. Growth Inducing Impacts

CEQA Guidelines section 15126.2, subdivision (d) requires a discussion of the ways in which projects could be growth inducing, including the ways in which “the proposed project could foster economic and population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment.” CEQA also requires a discussion of ways in which a project may remove obstacles to growth, as well as ways in which a project may set a precedent for future growth or encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively. PEIR Chapter 7 and Appendix E provide detailed analysis of the growth-inducing effects of the originally proposed WSIP in the Draft PEIR and concluded in the C&R document, page 13-45, that the Phased WSIP Variant would have similar growth-inducing impacts through 2018.

Impact 7-1 – By removing the lack of a reliable water supply system as one potential obstacle to growth within the SFPUC service area and providing, and assisting in development of, additional water supply sources such as recycled water and groundwater projects as well as promotion of more efficient use of water through conservation measures, the Phased WSIP Variant would have an indirect growth-inducing effect according to the CEQA definition above. The Phased WSIP Variant would support planned growth in the SFPUC service area through 2018, although it appears that some growth would occur irrespective of the Phased WSIP Variant due to increased water delivery efficiencies (e.g., plumbing code changes), conservation, and other water supply sources. Growth would in turn result in indirect effects. In most cases, the effects of planned population and employment growth have been identified and addressed in the EIRs for the general plans and associated area plans and specific plans adopted by the jurisdictions in the service area. Some of the identified indirect effects of growth are significant and unavoidable; others are significant but can be mitigated.

Potentially significant and unavoidable impacts as a result of planned growth in the SFPUC service area have been identified in the following areas: traffic congestion, air pollution, traffic noise, construction noise, increased demand for public schools and other public services, loss of

recreational opportunities and impacts on visual quality resulting from the loss of open space, cumulative effects on over-utilized parks, loss of wildlife habitat and wetlands and impacts on other biological resources, cumulative impacts on cultural resources, increased flooding potential, increased urban runoff pollutants, seismic hazards, induced population growth, failure to meet housing demand for projected population growth, exposure of new development to contaminated soil or groundwater, insufficient water supply, insufficient wastewater disposal capacity, loss of agricultural resources, land use conflicts, conflicts with existing land use plans or policies, and changes in density, scale, and character of an area.

The Phased WSIP Variant would have the same growth-inducement potential through 2018 as the WSIP because the SFPUC (with the cooperation of BAWSCA and the wholesale customers) would provide the additional water supply to meet 2018 purchase requests. The Phased WSIP Variant would support much of the planned growth through 2018 in the jurisdictions served by the SFPUC regional water system. In general, development planned and approved through the general plan process in the SFPUC service area would have environmental impacts. The environmental consequences of this planned growth have been largely addressed in local plans and the associated CEQA review as well as in other, project-specific documentation. In a number of jurisdictions, negative declarations or mitigated negative declarations were prepared for general plans and related planning documents that were found not to have significant environmental effects. (DEIR, pp. 7-1 to 7-78; C&R page 13-45.)

With the exception of the No Purchase Request Alternative, all of the alternatives analyzed in the PEIR contribute in similar ways to growth inducement impacts, since each of the Alternatives provides alternative ways of meeting future water supply demand as one of the WSIP objectives. It is also likely that the water customers would find alternate sources of water to meet future demand under the alternatives that are not effective in meeting demand like the Aggressive Conservation and Recycling Alternative. Under this scenario, the Alternative itself may not be growth-inducing, but growth could still occur. There are no mitigation measures proposed for implementation by the SFPUC that could substantially decrease or eliminate growth-inducing impacts because the SFPUC does not have control over the decisions that each local agency will make with respect to growth in their jurisdictions. Individual agencies' general plans and environmental documents contain actions, limitations and mitigation measures that will be implemented in the individual jurisdictions with local development project or program approvals. These kinds of mitigation measures were identified in the PEIR pages 7-67 through 7-78 and in PEIR Appendix E, Section E.5 and Table E.5.1. This Commission urges the local agencies to implement those mitigation measures already identified as feasible, and finds that these agencies can and should implement those mitigation measures

B. WSIP Facility Construction and Operation Impacts

1. Land Use and Visual Quality

Impact 4.3-1 – Land Use: Temporary disruption or displacement of existing land uses during construction. Potentially significant and unavoidable land use impacts were identified in

association with the following facility improvement project: SV-4. (DEIR, pp. 4.3-9 to 4.3-16, 6-4 to 6-6, 6-8, 6-30 to 6-32, 6-34 to 6-42.)

- Mitigation Measure 4.16-1a, Construction Coordination at Irvington Portal**
- Mitigation Measure 4.8-1a, Traffic Control Plan Measures**
- Mitigation Measure 4.8-1b, Coordination of Individual Traffic Control Plans**
- Mitigation Measure 4.9-1c, BAAQMD Dust Control Measures**
- Mitigation Measure 4.9-1d, BAAQMD Exhaust Control Measures**
- Mitigation Measure 4.9-2a, Health Risk Screening or Use of Soot Filters**
- Mitigation Measure 4.9-2b, Vacate SFPUC Land Managers' Residences in Sunol Valley**
- Mitigation Measure 4.10-1a, Noise Controls**
- Mitigation Measures 4.10-2a, Limit Hourly Truck Volumes**
- Mitigation Measure 4.10-2b, Restrict Truck Operations**
- Mitigation Measure 4.10-2c, Vacate SFPUC Land Manager's Residence**
- Mitigation Measure 4.10-3a, Vibration Controls to Prevent Cosmetic or Structural Damage**
- Mitigation Measure 4.10-3b, Limit Vibration Levels at or Below Vibration Perception Threshold**
- Mitigation Measure 4.10-3c, Limit Tunnel-Related Detonation to Daylight Hours**

Impact 4.3-2 – Land Use: Permanent Displacement or Long-Term Disruption of Existing Land Uses. Potentially significant and unavoidable land use impacts were identified in association with the following facility improvement projects: SJ-3, SV-3, BD-1, PN-2, SF-2, and SF-3. (DEIR, pp. 4.3-20 to 4.3-28, 6-7.)

Mitigation Measure 4.3-2, Facility Siting Studies

Impact 4.3-4 – Visual Quality: Permanent Adverse Impacts on Scenic Vistas or Visual Character. Potentially significant and unavoidable visual quality impacts were identified in association with the following facility improvement project: SV-2. (DEIR, pp. 4.3-29 to 4.3-39, 6-7 to 6-8.)

- Mitigation Measure 4.3-4a, Architectural Design**
- Mitigation Measure 4.3-4b, Landscaping Plans**
- Mitigation Measure 4.3-4c, Landscape Screens**
- Mitigation Measure 4.3-4d, Minimize Tree Removal**

2. Cultural Resources

Impact 4.7-3 – Cultural Resources: Impacts on historical significance of a district or a contributor to a historic district. Potentially significant and unavoidable cultural resource impacts were identified in association with the following facility improvement projects: SV-2 and PN-2. (DEIR, pp. 4.7-69 to 4.7-75, 6-7 to 6-8, 6-26, 6-29 to 6-30.)

- Mitigation Measure 4.7-3, Protection of Historic Districts**
- Mitigation Measure 4.7-4a, Alternatives Identification and Resource Relocation**
- Mitigation Measure 4.7-4b, Historical Resources Documentation**

Mitigation Measure 4.7-4c, Secretary of the Interior’s Standards for Treatment of Historic Properties

Mitigation Measure 4.7-4d, Historic Resources Survey and Redesign

Mitigation Measure 4.7-4e, Historic Resources Protection Plan

Mitigation Measure 4.7-4f, Preconstruction Surveys and Vibration Monitoring

Impact 4.7-4 – Cultural Resources: Impacts on the historical significance of individual facilities resulting from demolition or alteration. Potentially significant and unavoidable cultural resource impacts were identified in association with the following facility improvement projects: SV-2, SV-4, PN-2, and PN-4. (DEIR, pp. 4.7-76 to 4.7-82, 6-4 to 6-6, 6-26 to 6-30.)

Mitigation Measure 4.7-4a, Alternatives Identification and Resource Relocation

Mitigation Measure 4.7-4b, Historical Resources Documentation

Mitigation Measure 4.7-4c, Secretary of the Interior’s Standards for Treatment of Historic Properties

Mitigation Measure 4.7-4d, Historic Resources Survey and Redesign

Mitigation Measure 4.7-4e, Historic Resources Protection Plan

Mitigation Measure 4.7-4f, Preconstruction Surveys and Vibration Monitoring

3. Noise and Vibration

Impact 4.10-1 –Noise: Disturbance from temporary construction-related noise increases. Potentially significant and unavoidable noise impacts were identified in association with all of the facility improvement projects. (DEIR, pp. 4.10-10 to 4.10-23, 6-4 to 6-6, 6-39 to 6-41.)

Mitigation Measure 4.10-1a, Noise Controls

Mitigation Measure 4.10-1b, Vacate SFPUC Caretaker’s Residence at Tesla Portal

Impact 4.10-2 – Noise: Temporary noise disturbance along construction haul routes. Potentially significant and unavoidable noise impacts were identified in association with the following facility improvement projects: SJ-1, SJ-3, SJ-5, BD-1, BD-2, PN-3, SF-1, SF-2, and SF-3. (DEIR, pp. 4.10-23 to 4.10-26, 6-41 to 6-42.)

Mitigation Measure 4.10-2a, Limit Hourly Truck Volumes

Mitigation Measure 4.10-2b, Restrict Truck Operations

Impact 4.10-3 –Vibration: Disturbance due to construction-related vibration. Potentially significant and unavoidable vibration impacts were identified in association with the following facility improvement projects: SJ-3, SV-3, BD-1, BD-2, SF-1, SF-2, and SF-3. (DEIR, pp. 4.10-27 to 4.10-33, 6-42.)

Mitigation Measure 4.10-3a, Vibration Controls to Prevent Cosmetic or Structural Damage

Mitigation Measure 4.10-3b, Limit Vibration Levels at or Below Vibration Perception Threshold

Mitigation Measure 4.10-3c, Limit Tunnel-Related Detonation to Daylight Hours

4. Collective Facilities Impacts

Impact 4.16-1a – Collective temporary and permanent impacts on existing land uses in the vicinity of the proposed facility site. Potentially significant and unavoidable collective land use impacts were identified in association with the following facility improvement project regions: Bay Division Region. (DEIR, pp. 4.16-8 to 4.16-11, 6-32.)

Mitigation Measure 4.16-1a, Construction Coordination at Irvington Portal

Impact 4.16-4 – Collective loss of sensitive biological resources. Potentially significant and unavoidable collective biological resource impacts were identified in association with the following facility improvement project regions: Sunol Valley Region and Peninsula Region. (DEIR, pp. 4.16-16 to 4.16-19, 6-11 to 6-21.)

Mitigation Measure 4.6-1a, Wetlands Assessment

Mitigation Measure 4.6-1b, Compensation for Wetlands and Other Biological Resources

Mitigation Measure 4.6-2, Habitat Restoration/Tree Replacement

Mitigation Measure 4.6-3a, Protection Measures During Construction for Key Special-Status Species and Other Species of Concern

Mitigation Measure 4.6-3b, Standard Mitigation Measures for Specific Plants and Animals

Mitigation Measure 4.16-4b, Coordination of Construction Staging and Access

Impact 4.16-5 – Collective increase in impacts related to archaeological, paleontological and historical resources. Potentially significant and unavoidable collective cultural resource impacts were identified in association with the following facility improvement project regions: Sunol Valley Region and Peninsula Region. (DEIR, pp. 4.16-19 to 4.16-22, 6-26 to 6-30.)

Mitigation Measures 4.7-4a, Alternatives Identification and Resource Relocation

Mitigation Measure 4.7-4b, Historical Resources Documentation

Mitigation Measure 4.7-4c, Secretary of the Interior's Standards for Treatment of Historic Properties

Mitigation Measure 4.7-4d, Historic Resources Survey and Redesign

Mitigation Measure 4.7-4e, Historic Resources Protection Plan

Mitigation Measure 4.7-4f, Preconstruction Surveys and Vibration Monitoring

Impact 4.16-6 – Collective impact from multi-regional effects on traffic, transportation, and circulation were identified as potentially significant and unavoidable due to multiple roadways affected by construction activities within one or more regions and/or when construction vehicles use regional roadways. (DEIR, pp. 4.16-23 and 6-32)

Mitigation Measure 4.16-6a, SFPUC WSIP Projects Construction Coordinator

Impact 4.16-7 – Collective impact from multi-regional effects on air quality was identified as potentially significant and unavoidable due to residual contributions to ozone and particulate matter emissions during construction. (DEIR, pp. 4.16-26, 6-34 to 6-38)

Mitigation Measure 4.16-7a, Dust and Exhaust Control Measures for All WSIP Projects

Impact 4.16-8 – Collective increases in construction-related and operational noise. Potentially significant and unavoidable collective noise impacts were identified in association with the following facility improvement project regions: San Joaquin Region, Bay Division Region, Peninsula Region and San Francisco Region. (DEIR, pp. 4.16-30 to 4.16-33, 6-42 to 6-43.)

Mitigation Measure 4.10-1a, Noise Controls

Mitigation Measure 4.10-1b, Vacate SFPUC Caretaker’s Residence at Tesla Portal

Mitigation Measure 4.10-2a, Limit Hourly Truck Volumes

Mitigation Measure 4.10-2b, Restrict Truck Operations

Mitigation Measure 4.16-8a, Limiting Hourly Truck Volumes and Restricting Truck Operations on Haul Routes for Multiple WSIP Projects

Mitigation Measure 4.16-8b, Vacate Land Manager’s Residence for All Projects in Sunol Valley Region

5. Cumulative Facilities Impacts

Impact 4.17-5 – Cumulative increase in impacts on archaeological, paleontological, and historical resources. Potentially significant and unavoidable cumulative cultural resource impacts were identified in association with all of the following facility improvement project regions. (DEIR, pp. 4.17-52 to 4.17-53, 6-26 to 6-30.)

Mitigation Measure 4.7-4a, Alternatives Identification and Resource Relocation

Mitigation Measure 4.7-4b, Historical Resources Documentation

Mitigation Measure 4.7-4c, Secretary of the Interior’s Standards for Treatment of Historic Properties

Mitigation Measure 4.7-4d, Historic Resources Survey and Redesign

Mitigation Measure 4.7-4e, Historic Resources Protection Plan

Mitigation Measure 4.7-4f, Preconstruction Surveys and Vibration Monitoring

Impact 4.17-6 – Cumulative traffic increases on local and regional roads. Potentially significant and unavoidable cumulative traffic impacts were identified in association with all of the following facility improvement project regions. (DEIR, pp. 4.17-54 to 4.17-57, 6-33.)

Mitigation Measure 4.8-1a, Traffic Control Plan Measures

Mitigation Measure 4.8-1b, Coordination of Individual Traffic Control Plans

Mitigation Measure 4.16-6a, SFPUC WSIP Projects Construction Coordinator

Mitigation Measure 4.16-6b, Combined San Joaquin Traffic Control Plan

Mitigation Measure 4.16-6c, Combined Sunol Valley Traffic Control Plan

Mitigation Measure 4.17-6, SFPUC WSIP Projects Construction Coordinator – Other Agencies

Impact 4.17-7 – Cumulative increases in construction and/or operational emissions in the region. Potentially significant and unavoidable cumulative air quality impacts were identified in

association with all of the following facility improvement project regions. (DEIR, pp. 4.17-57 to 4.17-59, 6-34 to 6-38.)

Mitigation Measure 4.9-1a, SJVAPCD Dust Control Measures
Mitigation Measure 4.9-1b, SJVAPCD Exhaust Control Measure
Mitigation Measure 4.9-1c, BAAQMD Dust Control Measures
Mitigation Measure 4.9-1d, BAAQMD Exhaust Control Measures
Mitigation Measure 4.11-2, Waste Reduction Measures
Mitigation Measure 4.15-2, Incorporation of Energy Efficient Measures
Mitigation Measure 4.16-7a, Dust and Exhaust Control Measures for All WSIP Projects
Mitigation Measure 4.17-6, SFPUC WSIP Projects Construction Coordinator – Other Agencies

Impact 4.17-8 – Cumulative increases in construction-related and operational noise. Potentially significant and unavoidable cumulative noise impacts were identified in association with all of the following facility improvement project regions. (DEIR, pp. 4.17-59 to 4.17-60, 6-43.)

Mitigation Measure 4.10-2a, Limit Hourly Truck Volumes
Mitigation Measure 4.10-2b, Restrict Truck Operations
Mitigation Measure 4.17-8, Coordination of Truck Traffic on Local Streets

V. EVALUATION OF PROGRAM ALTERNATIVES

This Section describes the Phased WSIP Variant as well as the Program Alternatives and the reasons for approving the Phased WSIP Variant and for rejecting the Alternatives. This Article also outlines the Phased WSIP Variant's purposes and provides a context for understanding the reasons for selecting or rejecting alternatives.

CEQA mandates that an EIR evaluate a reasonable range of alternatives to the Project or the Project location that generally reduce or avoid potentially significant impacts of the Project. CEQA requires that every EIR also evaluate a "No Project" alternative. Alternatives provide a basis of comparison to the Project in terms of their significant impacts and their ability to meet Program objectives. This comparative analysis is used to consider reasonable, potentially feasible options for minimizing environmental consequences of the Project.

A. Reasons for Selection of the 2018 Phased Project Variant

The overall goals of the Phased WSIP Variant for the regional water system are to:

- Maintain high-quality water and a gravity-driven system
- Reduce vulnerability to earthquakes
- Increase delivery reliability
- Meet customer water supply needs through 2018
- Enhance sustainability
- Achieve a cost-effective, fully operational system

The SFPUC staff recommended this Variant in order to fully implement all proposed WSIP facility improvement projects to insure that the public health, seismic safety and delivery reliability goals of the WSIP are achieved as soon as possible while phasing implementation of a water supply program to meet projected water purchases through 2030. Deferring a decision on the 2030 water supply element of the WSIP until 2018 allows the SFPUC and its wholesale customers to focus first on implementing additional local recycled water, groundwater and demand management actions while minimizing additional diversions from the Tuolumne River. Under the Phased WSIP Variant, the SFPUC would establish an interim mid-term planning horizon – 2018. By adopting this Variant, the SFPUC is deferring a decision regarding long-term water supply until 2018 in light of then-current information and updated analysis. Because it remains at present unclear whether in 2018 the SFPUC will approve a water supply scenario for 2030 with adverse environmental effects beyond those associated with the Phased WSIP Variant, the Phased WSIP Variant may, in the long run, have a lesser level of environmental effect than the original WSIP. All non-water supply related WSIP goals and level of service objectives would be achieved under this Variant and all individual WSIP facility improvement projects proposed in the original WSIP would be constructed.

It is necessary to implement all of the WSIP facility improvement projects in order to achieve the program goals of the Phased WSIP Variant, as set forth in Section I of these findings, above. The Phased WSIP Variant is superior to the Alternatives in achieving the urgent goals of the WSIP; it allows the SFPUC to meet its water quality, seismic safety and water delivery reliability goals while minimizing effects on the SFPUC watersheds through 2018. The Phased WSIP Variant also focuses efforts on conservation, recycling and groundwater projects before deciding whether to increase deliveries from the watersheds.

As discussed above, impacts from Phased WSIP Variant would be less than those for the original WSIP because (1) the impact on Tuolumne River would be less and likely of shorter duration, and (2) certain impacts in the Pilarcitos watershed and in the Alameda Creek watersheds would not occur with Phased WSIP Variant.

B. Alternatives Rejected and Reasons for Rejection

The Commission rejects the Alternatives set forth in the Final PEIR and listed below because the Commission finds that there is substantial evidence, including evidence of economic, legal, social, technological, and other considerations described in this Section in addition to those described in Section VII below under CEQA Guidelines 15091(a)(3), that make infeasible such Alternatives. In making these determinations, the Commission is aware that CEQA defines “feasibility” to mean “capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, legal, and technological factors.” The Commission is also aware that under CEQA case law the concept of “feasibility” encompasses (i) the question of whether a particular alternative promotes the underlying goals and objectives of a project. and (ii) the question of whether an alternative is “desirable” from a policy standpoint to the extent that desirability is based on a reasonable balancing of the relevant economic, environmental, social, legal, and technological factors.

In addition, adoption of the Phased WSIP Variant will reduce many of the water supply impacts associated with increased diversions until at least 2018, and the additional water conservation,

recycling and groundwater projects will have the effect of reducing the projected demand for water to be diverted from the SFPUC watersheds through 2018 and beyond. Some of the alternatives are less effective in reducing environmental impacts associated with water supply than the Phased WSIP Variant and are not environmentally superior to the Phased WSIP Variant because they do not attempt to reduce projected demand for water but would look to development of alternative sources of water, each of which has environmental effects. While some of the other alternatives would avoid or lessen certain WSIP impacts, they would also result in substantial additional impacts that the Phased WSIP Variant would not generate, because these alternatives would require substantial additional major facilities and affect other environmental resources in different geographic locations in addition to those affected by the Phased WSIP Variant. There would thus be no basis under CEQA for selecting a particular alternative where this is the case. The Phased WSIP Variant also incorporates elements of three alternatives, the No Purchase Request Alternative, the Aggressive Conservation/Water Recycling and Groundwater Alternative, and the Modified WSIP Alternative, as described below. Therefore, the Commission is not rejecting those alternatives in their entirety.

1. No Program Alternative

Under the No Program Alternative, the SFPUC would implement only those facility improvement projects driven by regulatory requirements or existing agreements with regulatory agencies. The system would meet the water quality goals of the WSIP, but it would fail to meet the seismic and delivery reliability goals and would have limited ability to serve the increase in customer purchase requests through 2018, as both the magnitude and frequency of rationing would increase in response to droughts. The SFPUC would endeavor to meet increasing customer purchase requests by diverting additional Tuolumne River water only when available. It would not secure an additional dry-year supply transfer of Tuolumne River water, implement the Westside Basin groundwater conjunctive-use program, or develop the proposed recycled water and groundwater projects in San Francisco or the wholesale customer service area. The wholesale customers may decide to pursue supplemental supply sources and/or conservation measures to make up for the reduced reliability and the supply shortfall under this alternative, but this would occur outside of and independent of the WSIP. Compared to the Phased WSIP Variant, this alternative would develop less in terms of new water supplies for the regional system and would implement far fewer of the proposed facility improvement projects. (DEIR, pages 9-23 to 9-40.)

Although it appears that fewer facility improvement projects would be implemented under the No Program Alternative and that, as a result, there would be fewer facility construction and operation impacts, it is expected that there would be much more emergency facility repair and replacement projects under this alternative as the system continues to age without proactive improvement. Ultimately, through required repair and replacement efforts, a similar level of facility improvement projects as that proposed under the Phased WSIP Variant might have to be conducted under the No Program Alternative, resulting in much of the same facility impacts as the Phased WSIP Variant; however, these repair and replacement projects would likely occur over a longer period of time and in a less coordinated and comprehensive manner. In addition, implementing system improvements through a piecemeal and largely emergency response approach could result in greater environmental impacts and less mitigation for such impacts;

when projects are implemented under emergency conditions, they often require little or no environmental review (see Pub. Resources Code, § 21080, subds. (b)(2), (b)(4)) and thus could be implemented without the same level of mitigation and mitigation compliance monitoring that would be required for the Phased WSIP Variant. Furthermore, piecemeal implementation could also increase the cumulative effects of multiple, sequential facility repair and replacement projects throughout the system.

The Commission rejects this Alternative because it will not meet the fundamental and most pressing needs of the water system – to improve the seismic safety and reliability of the water system as a means of saving human life and property under a catastrophic earthquake scenario or even a disaster scenario not rising to the level of catastrophic. As the system ages, its reliability decreases and the risk of failure increases. The 167-mile-long system crosses five active earthquake faults. Many of the SFPUC regional water system components are located on or in the immediate vicinity of major earthquake faults. Due to the age of the system, many facilities do not meet modern seismic standards. In order to implement a feasible asset management program in the future that will provide continuous maintenance and repairs to facilities, the regional water system requires redundancy (i.e., backup) of some critical facilities necessary to meeting day-to-day customer water supply needs. Without adequate redundancy of critical facilities, the SFPUC has limited operational flexibility in the event of an emergency or a system failure, as well as constraints on conducting adequate system inspection and maintenance. This Alternative would place the water system at significant risk to seismic hazards, increased facility failures, and increased supply shortages on a day-to-day basis, as well as result in prolonged service disruptions to many customers in the event of an earthquake or other emergency due to inadequate facility redundancy and operational flexibility. This Alternative is rejected as infeasible because it meets none of the vitally important Program objectives.

2. No Purchase Request Increase Alternative

As described in the PEIR, the No Purchase Request Increase Alternative is designed to serve wholesale customers only the amount of water required under the existing Master Water Sales Agreement between the City and County of San Francisco and each of the wholesale customers through 2030. Under the No Purchase Request Increase Alternative, the SFPUC would implement all of the proposed WSIP facility improvement projects. It is expected that the wholesale customers would pursue supplemental supply sources and/or conservation measures to make up the supply shortfall under this alternative, but this would occur outside of and independent of the WSIP. This alternative was included in the alternatives analysis in an effort to avoid or minimize the potential growth-inducing effects and secondary effects of growth associated with providing more water to the regional customers, and the PEIR evaluates the effects of this water supply approach on the SFPUC watersheds.

This Commission acknowledges that the Phased WSIP Variant is similar to this Alternative through the 2018 planning period. However, unlike the No Purchase Request Alternative, the Phased WSIP Variant includes financial incentives to induce the wholesale customers to limit water use and thus minimize increases in diversions from the SFPUC watersheds or other locations, and instead, emphasizes the development of alternative sources of water, including

conservation measures, recycling projects and local groundwater development. This Commission adopts those portions of the No Purchase Request Increase Alternative that are the same as those included within the Phased WSIP Variant and rejects the remaining aspects of the No Purchase Request Increase Alternative as infeasible, as they do not incorporate the mitigation measures, the financial incentives or the re-evaluation of the customer demands in 2018. The Commission finds that the Phased WSIP Variant is similar to this Alternative, but the Variant provides a mechanism to re-evaluate the long term water demands and the need to divert more water from the SFPUC watersheds in 2018. The Phased WSIP Variant also provides that the SFPUC and the customers will develop the most effective and financially feasible methods of providing recycled water and implementing conservation measures as a priority in the next ten years.

To the extent that the No Purchase Request Increase Alternative would fail to increase SFPUC water deliveries through 2030 and not just through 2018, the Commission rejects the alternative as infeasible for that reason alone. It is foreseeable that, within the next 22 years, the population and economic trends within the SFPUC service area will create a substantial demand for new water supplies, even with aggressive conservation efforts. Under the Phased WSIP Variant, the SFPUC would wait until 2018 to determine whether and how to address demands arising between 2018 and 2030. This latter approach is more realistic and responsible from a public policy standpoint, in that it (i) acknowledges the likelihood of increasing customer demands between 2018 and 2030 and (ii) does not essentially force existing SFPUC customers to seek other sources for their needed new long-term water supplies, some of which may be more environmentally damaging than increasing the yield from the SFPUC system from averages of 265 mgd annually to an average of 300 mgd annually. Compared with the No Purchase Increase Alternative, the Phased WSIP Variant delays a decision on supply needs between 2018 and 2030 for a decade in order to give SFPUC customers the chance to maximize their conservation efforts and identify any available, environmentally sustainable source alternatives, while not making any irrevocable decision to deny SFPUC supply increases after 2018. In short, after balancing competing policy considerations and the extent to which the No Purchase Request Increase Alternative would address the SFPUC's long-term water supply objective, the Commission rejects as infeasible within the meaning of CEQA those portions of the No Purchase Request Increase Alternative not included within the Phased WSIP Variant.

3. Aggressive Conservation/Water Recycling and Local Groundwater Alternative

As described in the PEIR, under this alternative, the SFPUC would implement all of the proposed WSIP facility improvement projects, but would endeavor to serve the projected increase in customer purchase requests through 2030 using only additional conservation, water recycling, and local groundwater projects. It does not appear feasible, however, to fully meet the 2030 purchase requests with reasonably foreseeable conservation, recycled water, and groundwater projects within the service area. Therefore, under the Aggressive Conservation/Water Recycling and Local Groundwater Alternative, the SFPUC would have to either: (a) limit future customer purchase deliveries to the level that can be met, short of the 2030 requests (approximately 294 mgd under the most optimistic scenario instead of 300 mgd average annual) and increase the level of rationing to 25 percent or more during droughts, or (b) provide a supplemental supply to make up the delivery shortfall to meet the 300 mgd.

The Phased WSIP Variant incorporates the most important elements of this Alternative through 2018. The Variant establishes financial incentives to induce the wholesale customers to develop conservation, recycled water and groundwater projects and thus limit deliveries from the SFPUC watersheds to an average annual 265 mgd. The Phased WSIP Variant allows the SFPUC to re-evaluate water demands and the efficacy of the conservation, recycling and groundwater programs in 2018. In the Phased WSIP Variant, the SFPUC will implement 10 mgd of conservation, recycling and groundwater projects in San Francisco, and the wholesale customers will develop an additional 10 mgd of conservation, recycling and groundwater projects in the wholesale customer service area. This Commission rejects this Alternative insofar as it makes a water supply decision to attempt to meet demand of 300 mgd through 2030 (although it may be ineffective in meeting that demand and force customers to seek water from other entities); instead, the Phased WSIP Variant focuses the SFPUC and the customers on implementation of conservation, recycling and local groundwater projects before 2018. The SFPUC will then re-evaluate the water supply decision in 2018.

To the extent that the Aggressive Conservation/Water Recycling and Local Groundwater Alternative does not include sufficient supplies to deal with foreseeable customer demand through 2030, the Commission rejects those portions of the Aggressive Conservation/Water Recycling and Local Groundwater Alternative not included within the Phased WSIP Variant as infeasible for that reason alone. Under the Phased WSIP Variant, unlike the Aggressive Conservation/Water Recycling and Local Groundwater Alternative, the SFPUC has not refused to supply the amounts of water predicted to be needed by customers in 2030, but rather has delayed any such decision until 2018. The Phased WSIP Variant thus has the virtues of being more realistic and responsible from a public policy standpoint, in that it (i) acknowledges the likelihood of increasing customer demands between 2018 and 2030 and (ii) does not essentially force existing SFPUC customers to seek other sources for their needed new long-term water supplies, some of which may be more environmentally damaging than increasing the yield from the SFPUC system to the levels predicted to be needed in 2030. Compared with the Aggressive Conservation/Water Recycling and Local Groundwater Alternative, the Phased WSIP Variant delays a decision on supply needs between 2018 and 2030 for a decade in order to give all SFPUC customers the chance to maximize their conservation efforts and identify any available, environmentally sustainable source alternatives, while not making any irrevocable decision to deny SFPUC supply increases after 2018. In short, after balancing competing policy considerations and the extent to which the Aggressive Conservation/Water Recycling and Local Groundwater Alternative would address the SFPUC's long-term water supply objective, the Commission rejects as infeasible within the meaning of CEQA those portions of the Aggressive Conservation/Water Recycling and Local Groundwater Alternative not included within the Phased WSIP Variant.

4. Lower Tuolumne River Diversion Alternative

As described in the PEIR, under the Lower Tuolumne River Diversion Alternative, the SFPUC would implement all of the proposed facility improvement projects and would serve the projected increase in customer purchase requests through 2030 through diversions from the lower Tuolumne River near its confluence with the San Joaquin River, assuming it could reach

agreement with TID and MID. This alternative would include construction and operation of additional conveyance and treatment facilities to divert, transport, treat, and blend the new supply into the regional system. This Alternative represented an alternative source of supply and was evaluated to address impacts on the Tuolumne River and related resources.

This Commission rejects this Alternative as infeasible. The ability to implement this Alternative is uncertain, given the number of agreements and approvals that would be required to construct the diversion and treatment facilities. Because the Phased WSIP Variant proposes to limit sales of water from the SFPUC watersheds to 265 mgd through 2018, the effects on the Tuolumne River would be substantially less since much less water would be diverted from the Tuolumne River watershed. Through 2018, the Phased WSIP Variant will divert an average annual 2 mgd more than SFPUC currently diverts from the Tuolumne River to meet its delivery and drought reliability objectives. There will be no need to construct additional conveyance and treatment facilities to divert, transport, treat, and blend the new supply into the regional system and incur the financial or the environmental costs that such construction will necessitate, as analyzed by the SFPUC in its Report (SFPUC, Water Supply Options, 2007 [Appendix C, *WSIP Alternative Water Supply Option 3*, prepared by SFPUC and Parsons, June 2006]).

The analysis in the Draft PEIR concluded that the environmental impacts of this alternative would result in greater impacts on the Tuolumne River resources than the original WSIP or the Phased WSIP Variant. This Alternative would not meet the SFPUC's most basic objective of maintaining a gravity-driven system. This Alternative would require construction of pumping and treatment facilities in order to divert water from the lower Tuolumne River. This Alternative will result in far more impacts than the Phased WSIP Variant on the watershed and its resources, including fisheries, due to the construction and operation of the facilities that must be constructed to implement this Alternative. The Phased WSIP Variant is superior to this Alternative because the Phased WSIP Variant focuses first on developing more conservation, water recycling and groundwater projects before determining to divert more water from the Tuolumne River on a long-term, extended basis. Therefore, there should be no need to construct a diversion structure prior to 2018.

In short, after balancing competing policy considerations and the extent to which the Lower Tuolumne River Diversion Alternative would result in greater environmental impacts and address the SFPUC's long-term water supply objective, the Commission rejects the Lower Tuolumne River Diversion Alternative as infeasible within the meaning of CEQA.

5. Year-round Desalination at Oceanside Alternative

As described in the PEIR, under the Year-round Desalination at Oceanside Alternative, the SFPUC would implement all of the proposed WSIP facility improvement projects and would construct a 25-mgd desalination plant in San Francisco to serve the projected increase in customer purchase requests through 2030. This alternative would not involve increased levels of diversions from the Tuolumne River. The desalination plant would provide year-round supplies during all hydrologic year types to blend into the regional system at the Sunset Reservoir in San Francisco. Compared to the originally proposed WSIP, this alternative represents an alternative source of supply and was evaluated to address the potential impacts on the Tuolumne River,

Alameda Creek, and Peninsula watersheds, including Pilarcitos Creek, and related resources. (DEIR, pp. 9-66 to 9-74.) Compared to the Phased WSIP Variant, it provides a supply of water that is not yet needed but has significant environmental effects of its own, as discussed below.

This Commission rejects this Alternative as infeasible at this time for the following reasons. Construction and operation of a desalination facility raises unresolved environmental issues, including questions about protecting aquatic resources, water quality and brine disposal issues. The plant would require significant increases in long-term energy use compared to the Phased WSIP Variant. Because in California today, such energy generation typically involves the use of fossil fuels, the energy demands of a desalination facility will exacerbate global climate change by increasing emissions of greenhouse gases (GHGs), in contravention of state policy as embodied in the California Global Warming Solutions Act of 2006, also known as AB 32. This Alternative is also likely to be quite costly for the SFPUC, as analyzed by the SFPUC in its Report (SFPUC, *Water Supply Options, 2007* [Appendix C, *WSIP Alternative Water Supply Option 3*, prepared by SFPUC and Parsons, June 2006). Feasibility of the desalination plant is also uncertain at this time; it would require numerous additional permits and approvals from, among other agencies, the California Department of Health Services, the U.S. Army Corps of Engineers, the RWQCB and the California Coastal Commission. It is unlikely that this facility can be approved and constructed in time to meet demand projections in the next 10 years. Thus the Phased WSIP Variant is not only more feasible from technological and timing perspectives but also will have fewer environmental impacts because of its focus on conservation, recycling and local groundwater projects. Instead, this Commission believes that efforts should be made to implement conservation measures, recycling projects and groundwater projects to meet additional water supply demands in the relative short term; following those efforts, demand for water supply can be reassessed in 2018.

In short, after balancing competing policy considerations and the extent to which the Year-round Desalination at Oceanside Alternative would add a great deal of complexity and uncertainty to the satisfaction of the SFPUC's long-term water supply objective, the Commission rejects the Year-round Desalination at Oceanside Alternative as infeasible within the meaning of CEQA.

6. Regional Desalination for Drought Alternative

As described in the PEIR, under the Regional Desalination for Drought Alternative, the SFPUC would implement all of the proposed WSIP facility improvement projects and would partner with other Bay Area water agencies to construct and operate a regional desalination plant that would provide the SFPUC with supplemental supply during drought years. Compared to the originally proposed WSIP, this alternative represents an alternative source of water supply and was evaluated to address the potential impacts on the Tuolumne River.

This Commission does not fully reject this Alternative because the SFPUC is currently exploring a regional desalination plant for drought, as a partial long-term solution to water supply and demand. The SFPUC is participating in the development of feasibility studies and pilot testing to determine the viability of the regional desalination plant. If found to be feasible, the SFPUC would contribute funds towards environmental review, project construction and operation of the plant. Development of this Alternative would require construction of multiple components,

cooperation agreements with other agencies, and local, state and federal regulatory approvals. There are many unresolved environmental issues, including questions about protecting aquatic resources, water quality and brine disposal issues. The plant would require significant increases in long-term energy use compared to the Phased WSIP Variant. Because in California today, such energy generation typically involves the use of fossil fuels, the energy demands of a desalination facility will exacerbate global climate change by increasing GHG emissions, in contravention of state policy as embodied in AB 32. Depending on the agreements with other participating agencies, this Alternative could also be quite costly for the SFPUC as analyzed by the SFPUC in the Bay Area Regional Desalination Project Pre-feasibility Study, Final Report, prepared by URS Corporation, 2003. While the desalination may provide a partial solution to diverting more water from the SFPUC watersheds, it does not appear to be environmentally superior to the Phased WSIP Variant through 2018. Instead, this Commission believes that a combination of efforts to be made under the Phased WSIP Variant to limit deliveries from the SFPUC watersheds to approximately 265 mgd, average annual, as well as implementation of conservation measures, recycled water projects and groundwater projects to meet additional water supply demands in the relative short term, presents a better approach to water system management. In the near-term, this Commission considers this Alternative to be infeasible to fulfill dry year or drought water supply needs because of the potential financial and environmental costs and the uncertainty regarding the SFPUC's ability to secure all necessary agreements and approvals to implement the Alternative. This Alternative proposes a desalination facility that is in the beginning stages of feasibility analyses, and many issues remain to be resolved.

After balancing competing policy considerations and the extent to which the Regional Desalination for Drought Alternative would add a great deal of complexity and uncertainty to the satisfaction of the SFPUC's long-term water supply objective, the Commission presently rejects the Regional Desalination for Drought Alternative as infeasible within the meaning of CEQA. In doing so, however, the SFPUC is by no means closing the door permanently on eventual participation in a regional desalination facility. As part of its assessment in 2018 as to whether to increase Tuolumne River diversions to meet anticipated 2030 demand in its service area, the SFPUC will assess any progress the region has made towards putting in place, on a timely basis and under acceptable environmental conditions, a facility for desalinating seawater as a source of supplemental water supply during droughts. Any such facility is simply too ill-defined and uncertain at present to be adopted at this time.

7. Modified WSIP Alternative

The Modified WSIP Alternative would implement all of the proposed facility improvement projects, but would modify proposed system operations to minimize environmental effects. This alternative would include as part of its "Project description" the implementation of key mitigation measures identified for the originally proposed WSIP in the PEIR, including acquiring a water transfer of conserved water as a supplemental dry-year source, implementing a minimum instream flow requirement for resident fish in a portion of Alameda Creek, incorporating mitigation measures to address impacts in the Pilarcitos Creek watershed, managing the inundation levels at Crystal Springs Reservoir to preserve upland habitat to the extent possible, and increasing recycled water, conservation, and local groundwater in partnership with

wholesale customers. It also requires that any additional water diverted from the upper Tuolumne River must be offset by conservation efforts for water to be released to the lower Tuolumne River. This Alternative proposes to divert an average annual 15 mgd additional water from the Tuolumne River between Hetch Hetchy and Don Pedro Reservoirs compared to existing conditions. This alternative was evaluated to address the impacts identified for the originally proposed WSIP on the Tuolumne River, Alameda Creek, and Peninsula watersheds, including Pilarcitos Creek and Crystal Springs Reservoir, and related resources. (DEIR, pp. 9-78 to 9-84; C&R Section 14.10.)

Water supply sources in both the Modified WSIP Alternative and the Phased WSIP Variant are similar, but differ in a few respects. First, the Modified WSIP Alternative proposes to divert an additional annual average of 15 mgd from the upper Tuolumne River compared to existing conditions through 2030 and thus would result in diverting more water from the Tuolumne River than would occur under the Phased WSIP Variant through 2018. Under the Modified WSIP Alternative, water would be diverted at Hetch Hetchy Reservoir to meet 2030 demand. That diversion would result in reduced inflow to Don Pedro Reservoir, which, under this Alternative, would be offset by reduced outflow from Don Pedro because of conservation measures undertaken by MID or TID (and/or in the service area of another nearby water agency). Water releases from Don Pedro Reservoir to the lower Tuolumne River thus would be similar to existing conditions under the Modified WSIP Alternative. The Phased WSIP Variant proposes long-term increases in diversions of about 2 mgd, average annual, from the Tuolumne River to meet the Program's reliability and drought rationing objectives and would maintain total deliveries to customers from the watersheds at 265 mgd, average annual. In the short term, the Phased WSIP Variant may result in the need to deliver more than a total of 265 mgd, average annual, to customers for a limited period while local conservation, recycling and groundwater programs are being implemented. Where the Phased WSIP Variant diverts more than an average annual of 265 mgd from the watersheds, mitigation measures will be implemented for the Lower Tuolumne River.

Second, the approach to the dry-year transfer is slightly different for the Modified WSIP Alternative and the Phased WSIP Variant. The Westside Groundwater Basin conjunctive use program would provide a supplemental dry-year water supply source for both the Phased WSIP Variant and the Modified WSIP Alternative. The dry-year water transfer from TID and MID under the Modified WSIP Alternative would be a transfer made only from conserved water (approximately 17.5 mgd average over the design drought). The Phased WSIP Variant does not rule out the possibility of using conserved water only, and includes preferred mitigation measure 5.3.6-4a to be implemented if average annual deliveries of water from the watersheds exceeds 265 mgd, but it does not require that dry-year transfers be conserved water only (approximately 2 mgd average over the design drought). Thus, the substantially reduced size of the dry-year transfer under the Phased WSIP Variant compared to the Modified WSIP Alternative combined with the urgency of undertaking the improvements and increasing reliability through implementation of the dry year supply measures make it difficult to require that no transfer occur without equal and balancing conservation measures in MID/TID service area at this time.

Third, the Phased WSIP Variant proposes more conservation, recycling and groundwater programs than the Modified WSIP Alternative. Both the Alternative and the Variant assume 10 mgd of conservation, recycling and groundwater programs in San Francisco. While the Modified WSIP Alternative commits to 5 – 10 mgd of additional conservation, recycling and groundwater programs in the wholesale customer area through 2030, the Phased WSIP Variant requires that a minimum of 10 mgd of additional conservation, recycling and groundwater programs be implemented in the wholesale customer area by 2018.

The Modified WSIP Alternative would result in more impacts on the upper Tuolumne River watershed than the Phased WSIP Alternative, but possibly fewer impacts on the lower Tuolumne River watershed if under the Phased WSIP Variant, average annual deliveries from the watersheds were to exceed 265 mgd in the short-term. The Modified WSIP Alternative would lessen but not entirely eliminate impacts on the lower Tuolumne River, but the impacts would be considered less than significant. (See C&R, Section 14.10, pages 14.10-2 – 14.10-26.) As long as average annual deliveries from the watersheds do not exceed 265 mgd under the Phased WSIP Variant, impacts on the lower Tuolumne River would be considered less than significant; mitigation measures will be implemented any time the SFPUC's average annual deliveries from the watersheds exceed an average annual total of 265 mgd.

In the Alameda Creek watershed, the impacts of the Phased WSIP Variant and the Modified WSIP Alternative are essentially the same. The SFPUC has already incorporated the Alameda Creek bypass flows between the Alameda Creek Diversion Dam and the confluence with Calaveras Creek as protective measures under the Calaveras Dam Replacement project (SV-2), and is adopting now the mitigation measures proposed for the Alameda Creek watershed, so the Modified WSIP Alternative and the Phased WSIP Variant result in similar impacts in the Alameda Creek watershed.

The Modified WSIP Alternative incorporated as part of its "project description" four mitigation measures proposed for operations at Pilarcitos Reservoir and Stone Dam to reduce identified significant impacts of the originally proposed WSIP in the Pilarcitos Creek watershed to a less than significant level. The Phased WSIP Variant would not have any significant impacts in the Pilarcitos watershed through 2018 because operations would be similar to existing conditions. The impacts of the Modified WSIP Alternative and the Phased WSIP Variant are fairly similar; the Phased WSIP Variant avoids the significant impacts, and the Modified WSIP Alternative incorporates mitigation measures to reduce the significant impacts to a less than significant level.

The Final PEIR concluded that impacts of the proposed Crystal Springs Reservoir operations would be potentially significant and unavoidable for both the Modified WSIP Alternative and the Phased WSIP Variant with respect to Impact 5.5.5-1, effects on trout spawning habitat along Laguna and San Mateo Creeks. The impacts would be reduced with implementation of mitigation measures, but impacts would remain potentially significant under both scenarios. Both scenarios assume that the impacts and mitigation measures will be re-evaluated in detail at the project level and refined as part of the environmental review of the Lower Crystal Springs Dam Improvements project (PN-4). Impacts on terrestrial biological resources in upper and lower Crystal Springs Reservoirs are significant and mitigable for both the Phased WSIP Variant

and the Modified WSIP Alternative, although the impacts may be slightly less under the Modified WSIP Alternative.

The Modified WSIP Alternative includes implementation of potentially fewer long-term conservation, water recycling and local groundwater projects within the regional service area than under the Phased WSIP Variant. While construction of these facilities would cause temporary construction disruption and related environmental impacts, long-term implementation of these regional conservation, water recycling, and local groundwater projects would offset impacts of the operational modifications proposed under the Modified WSIP Alternative on the Tuolumne River. Compared to the Phased WSIP Variant, the Modified WSIP Alternative would result in approximately the same impacts on land use, air quality, noise, traffic, and energy in urban environments (expected to be largely mitigable). Both the Phased WSIP Variant and the Modified WSIP Alternative will result in fewer and significantly less severe impacts on biological and fishery resources in natural habitats than the originally proposed WSIP.

The Modified WSIP Alternative was identified as the environmentally superior alternative in the Draft PEIR for the 2030 planning horizon. It would reduce key impacts of the originally proposed WSIP on natural resources along the lower Tuolumne River, in Alameda and Pilarcitos Creeks, and in/around Crystal Springs and Pilarcitos Reservoirs, but it would continue to meet the WSIP's primary goals and objectives. Like the Phased WSIP Variant, this alternative would maximize the use of existing facilities and the largely gravity-driven system without also requiring the construction of additional major facilities called for under many other alternatives, or substantially increasing the energy demand of the system or need for pumping. This Alternative will have more impacts on the upper Tuolumne River, and possible less on the Lower Tuolumne River. It is not entirely clear that the Modified WSIP Alternative is substantially environmentally superior to the Phased WSIP Variant and does not provide a strong basis for selecting this Alternative.

This Commission finds that the Phased WSIP Variant is substantially similar to this Alternative in that it includes essentially the same elements relevant through 2018. The Commission rejects this Alternative insofar as it makes a decision through 2030; instead, the Phased WSIP Variant focuses the SFPUC and the customers on implementation of conservation, recycling and groundwater projects before 2018. The SFPUC will then re-evaluate the water supply decision in 2018. The Modified WSIP Alternative incorporates as part of the program most of the mitigation measures proposed for the original WSIP in the PEIR. Because this Commission is adopting all relevant mitigation measures as part of this Phased WSIP Variant approval, most of the impacts of the two approaches are similar.

The feasibility of this Alternative is not easily confirmed because of its reliance on MID and TID and/or another water supplier for conserved water of 15 mgd average annual, as well as the dry year transfer. If the SFPUC could not procure conserved water from the MID, TID or another water supplier, then no additional diversions from the Tuolumne River could occur under this Alternative. Such an outcome would push the Alternative in the direction of the No Purchase Request Increase Alternative, and the impacts of this Alternative would thus become similar to the No Purchase Request Increase Alternative.

After balancing competing policy considerations, including the extent to which those components of the Modified WSIP Alternative not included in the Phased WSIP Variant would delay resolution of key issues relating to the TID-MID dry-year “conserved water” transfer and operating criteria at Crystal Springs Reservoir, the Commission presently rejects as infeasible within the meaning of CEQA those components the Modified WSIP Alternative not included within the Phased WSIP Variant. In doing so, however, the SFPUC recognizes that mitigation measure 5.3.6-4a is the preferred mitigation measure and should be undertaken as part of the Phased WSIP Variant. The SFPUC is by no means closing the door on the possibility of an dry-year “conserved water” transfer from TID and MID. Whether the SFPUC will ultimately be able to implement the dry year transfer of conserved water will depend on complex negotiations, regulatory issues, cost considerations, and other issues that may or may not be possible for the various agencies involved to resolve within a reasonable time frame or during implementation of the Phased WSIP Variant.

VII. STATEMENT OF OVERRIDING CONSIDERATIONS

Pursuant to CEQA section 21081 and CEQA Guideline 15093, the Commission hereby finds, after consideration of the Final PEIR and the evidence in the record, that each of the specific overriding economic, legal, social, technological and other benefits of the Program as set forth below independently and collectively outweighs these significant and unavoidable impacts and is an overriding consideration warranting approval of the Program. Any one of the reasons for approval cited below is sufficient to justify approval of the Program. Thus, even if a court were to conclude that not every reason is supported by substantial evidence, the Commission will stand by its determination that each individual reason is sufficient. The substantial evidence supporting the various benefits can be found in the preceding findings, which are incorporated by reference into this Section, and in the documents found in the Record of Proceedings, as defined in Section I.

On the basis of the above findings and the substantial evidence in the whole record of this proceeding, the Commission specially finds that there are significant benefits of the proposed Program to support approval of the Phased WSIP Variant in spite of the unavoidable significant impacts, and therefore makes this Statement of Overriding Considerations. The Commission further finds that, as part of the process of obtaining Program approval, all significant effects on the environment from implementation of the Phased WSIP Variant have been eliminated or substantially lessened where feasible. All mitigation measures proposed in the PEIR for this Variant are adopted as part of this approval action. Furthermore, the Commission has determined that any remaining significant effects on the environment found to be unavoidable are acceptable due to the following specific overriding economic, technical, legal, social and other considerations.

The Phased WSIP Variant has the following benefits:

1. Implementation of facility improvement projects will reduce vulnerability to earthquakes. Improvements are designed to meet current seismic standards. The regional water system is a critical and vulnerable link in the City’s and wholesale customer’s ability to survive after a major earthquake and to maintain access to critically needed water supplies. Not only will water be

necessary for human consumption, but will provide emergency water supply after an earthquake to protect the public health and safety. The SFPUC will be able to meet the fundamental and most pressing needs of the water system – to improve the seismic safety and reliability of the water system as a means of saving human life and property under a catastrophic earthquake scenario or even a disaster scenario not rising to the level of catastrophic. As the system ages, its reliability decreases and the risk of failure increases. The 167-mile-long system crosses five active earthquake faults. Facilities located near these points of intersection are at risk of failure in the event of a major earthquake, an event considered likely in the next 30 years. Due to the age of the system, many facilities do not meet modern seismic standards. A failure of the water system could leave some customers without water for 10 – 30 days, and in some instances as long as 60 days. Alternative supplies will be limited. Many communities have only a few days of locally stored reserves in tanks and small reservoirs, most of which would be depleted within the first 48-72 hours of an emergency to meet the initial spike in demand for emergency services. Potential economic losses to the region from a water supply interruption as well as incremental damage from lack of adequate water supply to suppress post-quake fires would likely total tens of billions of dollars. The SFPUC system is a critical regional asset providing an essential service and commodity to the Bay Area economy. Its deteriorating condition places the regional economy and the welfare of millions of Bay Area residents at risk. Effecting the necessary repairs and improvements to assure the water system’s continued reliability, and developing it as part of a larger, integrated water security strategy, is critical to the Bay Area’s economic security, competitiveness and quality of life. (See “Hetch Hetchy Water and the Bay Area Economy”, Bay Area Economic Forum 2002)

2. The SFPUC will be able to deliver basic service to the three regions in the service area (East/South Bay, Peninsula, and San Francisco) within 24 hours after a major earthquake.
3. The SFPUC will be able to restore facilities to meet projected average-day demand within 30 days after a major earthquake.
4. The Program reduces the physical, social, and economic impacts associated with the potential rupture of the existing system including, but not limited to, public health and safety, flooding, erosion, biological impacts, traffic interruption, and property damage.
5. The Program supports the economic vitality of the Region by fulfilling the water demands under emergency conditions.
6. The Water system will maintain high-quality water and a gravity-driven system, allowing the SFPUC to continue to provide clean, unfiltered water originating from Hetch Hetchy Reservoir and filter all other surface water sources.
7. Improvements are designed to meet current and foreseeable future federal and state water quality requirements.
8. The Phased WSIP Variant promotes on-going monitoring of watershed areas, limiting diversions while exploring all options and demand by 2018 – the dynamic nature of information and technology weighs in favor of making a decision on water supply only through 2018.

9. The Program will increase delivery reliability and improve the ability to maintain the water system, providing operational flexibility to allow planned maintenance shutdown of individual facilities without interrupting customer service, operational flexibility to minimize the risk of service interruption due to unplanned facility upsets or outages, and operational flexibility and system capacity to replenish local reservoirs as needed. In order to implement a feasible asset management program in the future that will provide continuous maintenance and repairs to facilities, the regional water system requires redundancy (i.e., backup) of some critical facilities necessary to meeting day-to-day customer water supply needs. Without adequate redundancy of critical facilities, the SFPUC has limited operational flexibility in the event of an emergency or a system failure, as well as constraints on conducting adequate system inspection and maintenance. Failure to implement the Program would place the water system at significant risk to seismic hazards, increased facility failures, and increased supply shortages on a day-to-day basis, as well as result in prolonged service disruptions to many customers in the event of an earthquake or other emergency due to inadequate facility redundancy and operational flexibility.

10. The SFPUC can meet the estimated average annual demand under the conditions of one planned shutdown of a major facility for maintenance concurrent with one unplanned facility outage.

11. The SFPUC can meet customer water supply needs; the Phased WSIP Variant would serve 265 mgd of retail and wholesale customer purchases from the SFPUC watersheds, and meet or offset the remaining 20 mgd through conservation, recycled water, and groundwater in the retail and wholesale service areas. Ten mgd of this would be met, as proposed under the WSIP, through conservation, recycled water, and groundwater projects in San Francisco, and 10 mgd would be met through local conservation, recycled water and groundwater in the wholesale service area.

12. The Phased WSIP Variant can meet dry-year delivery needs through 2018 while limiting rationing to a maximum 20 percent system-wide reduction in water service during extended droughts.

13. The Phased WSIP Variant diversifies water supply options during non-drought and drought periods.

14. The Phased WSIP Variant will substantially improve use of new water sources and drought management, including use of groundwater, recycled water, conservation, and transfers.

15. The Program will enhance sustainability in all system activities, including management of natural resources and physical systems to protect watershed ecosystems and to protect public health and safety.

16. The Phased WSIP Variant will achieve a cost-effective, fully operational system, ensuring cost-effective use of funds, and maintaining a gravity-driven system.

17. The water system will continue to provide a source of clean energy and require a low level of energy to run the system, both of which help maintain and minimize GHG emissions associated with water and power utility services.

18. The PEIR identified climate change as a factor that may affect regional water system operations due to potential changes in precipitation that originates as rainfall or snowmelt in the Tuolumne watershed, and the magnitude of rain events in the local system watersheds. Understanding and adapting to climate change as it affects watershed ecosystems will be an ongoing task for regional water system operators, but the science underlying the changes may be better known in 2018 than it is today. The Phased WSIP Variant will allow the SFPUC to benefit from a better understanding of the science and potential effects of climate change when it evaluates whether to increase water supply deliveries in 2018.

19. The PEIR identified at least three watersheds where increases in instream releases may be required by regulatory changes or in conformance with SFPUC stewardship goals, with corresponding reductions in regional water system yield. By 2018 most of these regulatory requirements or stewardship programs will have been implemented, thereby clarifying the reliability and yield of the regional water system. The Program gives the SFPUC the flexibility to take into consideration these issues when it evaluates whether to increase water supply deliveries in 2018.

To accomplish all of the SFPUC's objectives, it must move forward with the WSIP facility improvement projects as proposed, to improve seismic and water delivery reliability, to meet current and future water quality regulations, to provide for additional system conveyance for maintenance and delivery reliability, and to meet water supply reliability goals for 2018 and possibly beyond. Like all water utilities, the SFPUC must consider current needs as well as possible future changes and unplanned outages, and design a system that achieves a balance among the numerous objectives, functions and risks a water supplier must face. As prudent water managers, the SFPUC must make decisions about how to manage its water system effectively. Approval of the Phased WSIP Variant will allow the SFPUC to accomplish these many goals.

Having considered these benefits, including the benefits discussed in Section I above, the Commission finds that the benefits of the Program outweigh the unavoidable adverse environmental effects, and that the adverse environmental effects are therefore acceptable.

October 30, 2008

Final
Program Environmental Impact Report
Volume 1 of 8

For the
San Francisco Public Utilities Commission's
**WATER SYSTEM
IMPROVEMENT PROGRAM**

San Francisco Planning Department File No. 2005.0159E
State Clearinghouse No. 2005092026

Draft PEIR Publication Date: June 29, 2007

Draft PEIR Public Hearing Dates:

September 5, 2007 in Sonoma

September 6, 2007 in Modesto

September 18, 2007 in Fremont

September 19, 2007 in Palo Alto

September 20, 2007 in San Francisco

October 11, 2007 in San Francisco

Draft PEIR Public Comment Period: June 29, 2007 through October 15, 2007

Comments and Responses Publication Date: September 30, 2008

Final PEIR Certification Date: October 30, 2008

City and County of San Francisco
San Francisco Planning Department

TABLE OF CONTENTS

SFPUC Water System Improvement Program Program Environmental Impact Report

| | <u>Page</u> |
|---|-------------|
| Volume 1 | |
| Glossary | xvii |
| Summary | S-1 |
| S.1 Introduction and Purpose of the PEIR | S-1 |
| S.2 Program Description | S-2 |
| S.3 Environmental Effects | S-24 |
| S.4 Areas of Controversy and Issues to be Resolved | S-64 |
| S.5 Required Actions and Approvals | S-70 |
| S.6 WSIP Variants | S-71 |
| S.7 Alternatives to the Proposed Program | S-73 |
| 1. Introduction | 1-1 |
| 1.1 Introduction | 1-1 |
| 1.2 Purpose of the PEIR | 1-1 |
| 1.3 CEQA Process | 1-3 |
| 2. Existing Regional Water System | 2-1 |
| 2.1 System Overview | 2-1 |
| 2.2 Regional Water System Facilities | 2-2 |
| 2.3 Water System Operations and Maintenance | 2-16 |
| 2.4 Regulatory Requirements | 2-31 |
| 2.5 Institutional Considerations | 2-35 |
| 2.6 References | 2-46 |
| 3. Program Description | 3-1 |
| 3.1 Introduction | 3-1 |
| 3.2 Regional Location | 3-3 |
| 3.3 Need for and Objectives of the Program | 3-5 |
| 3.4 Background and Development of the WSIP | 3-10 |
| 3.5 Proposed Levels of Service to Achieve Program Objectives | 3-25 |
| 3.6 Proposed Water Supply Sources | 3-33 |
| 3.7 Proposed System Operations Strategy | 3-39 |
| 3.8 Proposed Facility Improvement Projects | 3-48 |
| 3.9 Construction Scenarios for Facility Types | 3-73 |
| 3.10 Standard Construction Measures and GHG Reduction Actions | 3-79 |
| 3.11 Proposed Construction Schedule | 3-82 |
| 3.12 WSIP-Related Activities | 3-83 |
| 3.13 Required Actions and Approvals | 3-86 |
| 3.14 References | 3-88 |

Volume 2 (bound separately)**4. WSIP Facility Projects – Setting and Impacts**

| | | |
|------|---|--------|
| 4.1 | Overview | 4.1-1 |
| 4.2 | Plans and Policies | 4.2-1 |
| 4.3 | Land Use and Visual Quality | 4.3-1 |
| 4.4 | Geology, Soils, and Seismicity | 4.4-1 |
| 4.5 | Hydrology and Water Quality | 4.5-1 |
| 4.6 | Biological Resources | 4.6-1 |
| 4.7 | Cultural Resources | 4.7-1 |
| 4.8 | Traffic, Transportation, and Circulation | 4.8-1 |
| 4.9 | Air Quality | 4.9-1 |
| 4.10 | Noise and Vibration | 4.10-1 |
| 4.11 | Public Services and Utilities | 4.11-1 |
| 4.12 | Recreational Resources | 4.12-1 |
| 4.13 | Agricultural Resources | 4.13-1 |
| 4.14 | Hazards | 4.14-1 |
| 4.15 | Energy Resources | 4.15-1 |
| 4.16 | Collective Impacts Related to WSIP Facilities | 4.16-1 |
| 4.17 | Cumulative Effects | 4.17-1 |

Volume 3 (bound separately)**5. WSIP Water Supply and System Operations – Setting and Impacts**

| | | |
|-------|--|---------|
| 5.1 | Overview | 5.1-1 |
| 5.1.1 | Introduction | 5.1-1 |
| 5.1.2 | Chapter Organization | 5.1-4 |
| 5.1.3 | Proposed Water Supply Option and System Operations | 5.1-4 |
| 5.1.4 | Approach to the Analysis | 5.1-7 |
| 5.1.5 | Impact Significance Determination | 5.1-18 |
| 5.2 | Plans and Policies | 5.2-1 |
| 5.2.1 | Overview | 5.2-1 |
| 5.2.2 | Regulatory Framework | 5.2-1 |
| 5.2.3 | Relevant Plans, Policies, and Planning Actions | 5.2-14 |
| 5.2.4 | Plan Consistency Evaluation | 5.2-27 |
| 5.3 | Tuolumne River System and Downstream Water Bodies | 5.3.1-1 |
| 5.3.1 | Stream Flow and Reservoir Water Levels | 5.3.1-1 |
| 5.3.2 | Geomorphology | 5.3.2-1 |
| 5.3.3 | Surface Water Quality | 5.3.3-1 |
| 5.3.4 | Surface Water Supplies | 5.3.4-1 |
| 5.3.5 | Groundwater | 5.3.5-1 |
| 5.3.6 | Fisheries | 5.3.6-1 |
| 5.3.7 | Terrestrial Biological Resources | 5.3.7-1 |
| 5.3.8 | Recreational and Visual Resources | 5.3.8-1 |
| 5.3.9 | Energy Resources | 5.3.9-1 |
| 5.4 | Alameda Creek Watershed Streams and Reservoirs | 5.4.1-1 |
| 5.4.1 | Stream Flow and Reservoir Water Levels | 5.4.1-1 |
| 5.4.2 | Geomorphology | 5.4.2-1 |
| 5.4.3 | Surface Water Quality | 5.4.3-1 |

Page**Volume 3 (continued)**

| | |
|---|---------|
| 5. WSIP Water Supply and System Operations – Setting and Impacts | |
| (continued) | |
| 5.4.4 Groundwater | 5.4.4-1 |
| 5.4.5 Fisheries | 5.4.5-1 |
| 5.4.6 Terrestrial Biological Resources | 5.4.6-1 |
| 5.4.7 Recreational and Visual Resources | 5.4.7-1 |
| 5.5 San Francisco Peninsula Streams and Reservoirs | 5.5.1-1 |
| 5.5.1 Stream Flow and Reservoir Water Levels | 5.5.1-1 |
| 5.5.2 Geomorphology | 5.5.2-1 |
| 5.5.3 Surface Water Quality | 5.5.3-1 |
| 5.5.4 Groundwater | 5.5.4-1 |
| 5.5.5 Fisheries | 5.5.5-1 |
| 5.5.6 Terrestrial Biological Resources | 5.5.6-1 |
| 5.5.7 Recreational and Visual Resources | 5.5.7-1 |
| 5.6 Westside Groundwater Basin Resources | 5.6-1 |
| 5.6.1 Setting | 5.6-1 |
| 5.6.2 Impacts | 5.6-22 |
| 5.7 Cumulative Projects and Impacts Related to WSIP Water Supply and System Operations | 5.7-1 |
| 5.7.1 Introduction and Approach | 5.7-2 |
| 5.7.2 Cumulative Effects on the Tuolumne River System and Downstream Water Bodies | 5.7-5 |
| 5.7.3 Cumulative Effects on Alameda Creek Watershed Streams and Reservoirs | 5.7-52 |
| 5.7.4 Cumulative Effects on San Francisco Peninsula Streams and Reservoirs | 5.7-67 |
| 5.7.5 Cumulative Effects on Westside Groundwater Basin Resources | 5.7-84 |
| 5.7.6 Climate Change and Global Warming | 5.7-92 |

Volume 4 (bound separately)

| | |
|---|------------|
| 6. Mitigation Measures | 6-1 |
| 6.1 Introduction | 6-2 |
| 6.2 SFPUC Construction Measures | 6-4 |
| 6.3 Mitigation Measures to Minimize Facility Impacts | 6-7 |
| 6.4 Mitigation Measures to Minimize Water Supply and System Operations Impacts | 6-47 |
| 6.5 Impacts of Mitigation Measures | 6-60 |
| 6.6 Summary of Tables of All Impacts and Mitigation Measures | 6-64 |
| 7. Growth-Inducement Potential and Indirect Effects of Growth | 7-1 |
| 7.1 Overview and Summary | 7-1 |
| 7.2 SFPUC Regional Water System: Customers and Water Demand Projections | 7-9 |
| 7.3 Growth Inducement Analysis | 7-19 |
| 7.4 Indirect Effects of Growth | 7-59 |

Volume 4 (continued)

| | |
|--|-------------|
| 8. WSIP Variants and Impact Analysis | 8-1 |
| 8.1 Overview | 8-1 |
| 8.2 WSIP Variant 1 – All Tuolumne | 8-7 |
| 8.3 WSIP Variant 2 – Regional Desalination for Drought | 8-10 |
| 8.4 WSIP Variant 3 – 10% Rationing | 8-33 |
| 8.5 All Variants – Impacts of Water Supply and System Operations | 8-36 |
| 8.6 Comparison of the Proposed Program and Variants | 8-77 |
| 9. CEQA Alternatives | 9-1 |
| 9.1 Introduction | 9-1 |
| 9.2 Alternatives Analysis | 9-4 |
| 9.3 Comparison of Alternatives | 9-84 |
| 9.4 Alternatives Identification and Screening | 9-97 |
| 9.5 Alternative Concepts Considered But Rejected | 9-117 |
| 9.6 References | 9-128 |
| 10. Impact Overview | 10-1 |

Volume 5 (bound separately)**Appendices**

| | |
|---|-----|
| A. Notice of Preparation / Scoping Report | A-1 |
| B. WSIP Initial Study Checklist | B-1 |
| C. WSIP Facility Improvement Project Information | C-1 |
| D. Biological Resources: Special Status Species in Alameda and Peninsula Watersheds | D-1 |
| E. Growth Inducement Potential and Supporting Information | E-1 |
| F. Noise and Traffic Background Data | F-1 |
| G. Hazardous Materials | G-1 |
| H. Modeling Analysis – Water Supply and System Operations | H-1 |
| H1. Hydrologic Modeling Report | |
| H2. Hydrologic Modeling – Supporting Information | |
| H3. Temperature Modeling Report | |
| I. Report Preparers | I-1 |

Volume 6 – Comments (bound separately)

| | |
|---|-------------|
| 11. Introduction to Comments and Responses | 11-1 |
| 11.1 Purpose of the Final Environmental Impact Report | 11-1 |
| 11.2 Environmental Review Process | 11-2 |
| 11.3 Report Organization | 11-3 |
| 11.4 Organization of Comments and List of Commenters | 11-3 |

Page**Volume 6 (continued)**

| | |
|----------------------------------|--------|
| 12. Comment Letters | |
| 12.1 Federal Agencies | 12.1-1 |
| 12.2 State Agencies | 12.2-1 |
| 12.3 Local and Regional Agencies | 12.3-1 |
| 12.4 Groups | 12.4-1 |
| 12.5 Citizens | 12.5-1 |
| 12.6 Public Hearing Transcripts | 12.6-1 |
| 12.7 Form Letters | 12.7-1 |

Volume 7A – Responses (*bound separately*)

| | |
|---|-------------|
| 13. Introduction to Responses and WSIP Revisions | 13-1 |
| 13.1 Overview of Responses to Comments | 13-1 |
| 13.2 Program Description Changes Affecting System Operations | 13-3 |
| 13.3 Updated Water System Assumptions and Modeling | 13-6 |
| 13.4 Phased WSIP Variant | 13-8 |
| 14. Master Responses | 14-1 |
| 14.1 Master Response on WSIP Purpose and Need | 14.1-1 |
| 14.2 Master Response on Demand Projections, Conservation, and Recycling | 14.2-1 |
| 14.3 Master Response on Proposed Dry-Year Transfer | 14.3-1 |
| 14.4 Master Response on PEIR Appropriate Level of Analysis | 14.4-1 |
| 14.5 Master Response on Water Resources Modeling | 14.5-1 |
| 14.6 Master Response on Upper Tuolumne River Issues | 14.6-1 |
| 14.7 Master Response on Lower Tuolumne River Issues | 14.7-1 |
| 14.8 Master Response on Delta and San Joaquin River Issues | 14.8-1 |
| 14.9 Master Response on Alameda Creek Fishery Issues | 14.9-1 |
| 14.10 Master Response on Modified WSIP Alternative | 14.10-1 |
| 14.11 Master Response on Climate Change | 14.11-1 |
| 14.12 References | 14.12-1 |
| 15. Responses to Individual Comments | 15-1 |
| 15.1 Federal Agencies | 15.1-1 |
| 15.2 State Agencies | 15.2-1 |
| 15.3 Local and Regional Agencies | 15.3-1 |

Volume 7B – Responses (*bound separately*)

| | |
|---|-------------|
| 15. Responses to Individual Comments (continued) | |
| 15.4 Groups | 15.4-1 |
| 15.5 Citizens | 15.5-1 |
| 15.6 Form Letters | 15.6-1 |
| 15.7 References | 15.7-1 |
| 16. Staff-Initiated Text Changes | 16-1 |
| 16.1 Introduction | 16.1-1 |
| 16.2 Text Revisions | 16.1-1 |

Volume 8 – Appendices (*bound separately*)

| | |
|---|-----|
| J. Draft PEIR Notification and Public Hearing Materials | J-1 |
| J1. PEIR Hearing Summary | |
| J2. Draft PEIR Mailing List | |
| J3. PEIR NOA and Meeting Notification | |
| J4. Draft PEIR Legal Notices and Display Ads | |
| K. Attachment Log | K-1 |
| L. Form Letter 1 Submittals | L-1 |
| M. Comment Letters Received After December 31, 2007 | M-1 |
| N. Technical Memorandum- Estimation of Flow Changes in Lower Alameda Creek with Implementation of the WSIP | N-1 |
| O. Hydrologic Modeling – Additional Supporting Information | O-1 |
| O1. Updated HH/LSM Assumptions and Results—Proposed WSIP | |
| O2. Updated HH/LSM Assumptions and Results—Modified WSIP Alt. | |
| O3. Updated HH/LSM Assumptions and Results—Phased WSIP Variant | |
| O4. Analysis of WSIP upon the San Joaquin River and the Sacramento-San Joaquin Delta | |

| | <u>Page</u> | |
|------------------------|--|--------------------|
| List of Figures | | |
| S.1 | Overview of SFPUC Regional System and Water Supply Watersheds | S-3 |
| S.2 | SFPUC Water Service Area and San Francisco and SFPUC Wholesale Customers | S-4 <i>Revised</i> |
| S.3 | Annual Average Historical and Projected Customer Purchase Requests | S-5 <i>Revised</i> |
| S.4 | WSIP Water Supply Sources, Nondrought Years | S-8 |
| S.5 | WSIP Water Supply Sources, Drought Years | S-9 |
| S.6a | Location of WSIP Facility Improvement Projects – Sunol Valley, Bay Division, Peninsula, and San Francisco Regions | S-19 |
| S.6b | Location of WSIP Facility Improvement Projects – San Joaquin Region | S-20 |
| S.6c | Location of WSIP Facility Improvement Projects – Hetch Hetchy Region | S-21 |
| S.7 | Preliminary WSIP Construction Schedule | S-23 |
| 2.1 | SFPUC Regional Water System | 2-3 |
| 2.2 | Alameda Watershed Facilities | 2-9 |
| 2.3 | Peninsula Watershed Facilities | 2-13 |
| 2.4 | Existing Water Supply Sources, Typical Years | 2-18 |
| 2.5 | Existing Water Supply Sources, Dry Years | 2-19 |
| 2.6a | Schematic Diagram of Regional System Facilities Linkages, Hetch Hetchy to Tesla | 2-21 |
| 2.6b | Schematic Diagram of Regional System Facilities Linkages, Tesla to San Francisco | 2-22 |
| 2.7 | Tuolumne River Features Below Hetch Hetchy Reservoir | 2-38 |
| 3.1 | SFPUC Water System, Regional Location Map | 3-4 |
| 3.2 | SFPUC Water Service Area – San Francisco and SFPUC Wholesale Customers | 3-6 <i>Revised</i> |
| 3.3 | WSIP Water Supply Sources, Nondrought Years | 3-35 |
| 3.4 | WSIP Water Supply Sources, Drought Years | 3-37 |
| 3.5a | Location of WSIP Facility Improvement Projects – Sunol Valley, Bay Division, Peninsula, and San Francisco Regions | 3-57 |
| 3.5b | Location of WSIP Facility Improvement Projects – San Joaquin Region | 3-58 |
| 3.5c | Location of WSIP Facility Improvement Projects – Hetch Hetchy Region | 3-59 |
| 3.6 | Proposed WSIP Construction Schedule | 3-62 |
| 4.1-1 | Guide to Names and Numbers of WSIP Facility Improvement Projects | 4.1-4 |
| 4.2-1a | WSIP Projects Jurisdictions and Major Roadways | 4.2-11 |
| 4.2-1b | WSIP Projects Jurisdictions and Major Roadways | 4.2-12 |
| 4.3-1a | Major Land Uses | 4.3-3 |
| 4.3-1b | Major Land Uses | 4.3-4 |
| 4.4-1a | Major Faults in the Vicinity of the SFPUC Regional Water System | 4.4-7 |
| 4.4-1b | Major Faults in the Vicinity of the SFPUC Regional Water System | 4.4-8 |
| 4.5-1a | Major Streams and Rivers | 4.5-3 |
| 4.5-1b | Major Streams and Rivers | 4.5-4 |
| 4.6-1a | Habitat Types in the WSIP Study Area | 4.6-3 |
| 4.6-1b | Habitat Types in the WSIP Study Area | 4.6-4 |
| 4.6-1c | Habitat Types in the WSIP Study Area | 4.6-5 |
| 4.6-2a | Critical Habitats in the WSIP Study Area | 4.6-27 |
| 4.6-2b | Critical Habitats in the WSIP Study Area | 4.6-28 |
| 4.6-2c | Critical Habitats in the WSIP Study Area | 4.6-29 |
| 4.7-1a | Archaeological Sensitivity and Potential for Paleontological Resources in the WSIP Study Area | 4.7-49 |

| | <u>Page</u> |
|---|----------------|
| List of Figures (continued) | |
| 4.7-1b Archaeological Sensitivity and Potential for Paleontological Resources in the WSIP Study Area | 4.7-50 |
| 4.12-1a Parks and Recreational Resources | 4.12-3 |
| 4.12-1b Parks and Recreational Resources | 4.12-4 |
| 4.12-1c Parks and Recreational Resources | 4.12-5 |
| 4.16-1 Location and Years of Potentially Overlapping WSIP Construction Activities | 4.16-3 |
| 4.17-1a Major Projects in WSIP Project Area with Potential for Cumulative Impacts | 4.17-41 |
| 4.17-1b Major Projects in WSIP Project Area with Potential for Cumulative Impacts | 4.17-42 |
| 5.1-1 Overview of Water Supply Watersheds in the SFPUC Regional Water System | 5.1-2 |
| 5.1-2 Annual Average Historical and Projected Future Customer Purchase Requests | 5.1-6 |
| | <i>Revised</i> |
| 5.1-3 Approach to Impact Analysis on Water Resources | 5.1-8 |
| 5.1-4 Water Supply Sources and Shortages – Existing Conditions | 5.1-19 |
| 5.1-5 Water Supply Sources and Shortages – 2030 WSIP Conditions | 5.1-20 |
| 5.2-1 Tuolumne River, Wild and Scenic River Designation | 5.2-9 |
| 5.3.1-1a Tuolumne River Watershed, Headwaters to Don Pedro Reservoir | 5.3.1-3 |
| 5.3.1-1b Tuolumne River Watershed, Don Pedro Reservoir to San Joaquin River | 5.3.1-4 |
| 5.3.1-2 Tuolumne River Schematic Showing Water and Hydropower Facilities | 5.3.1-6 |
| 5.3.1-3 Hetch Hetchy Reservoir, Historical Water Levels, 1989 to 2005 | 5.3.1-7 |
| 5.3.1-4 Lake Lloyd, Historical Water Levels, 1989 to 2005 | 5.3.1-9 |
| 5.3.1-5 Lake Eleanor, Historical Water Levels, 1989 to 2005 | 5.3.1-10 |
| 5.3.1-6 Don Pedro Reservoir, Historical Water Levels, 1989 to 2005 | 5.3.1-11 |
| 5.3.1-7 San Joaquin River Watershed | 5.3.1-15 |
| 5.3.1-8 Average Monthly Storage Volume, Hetch Hetchy Reservoir | 5.3.1-22 |
| 5.3.1-9 Hetch Hetchy Storage and Releases to the Tuolumne River | 5.3.1-23 |
| 5.3.1-10 Hetch Hetchy Reservoir Storage and Inflow, Calendar Year 1999 | 5.3.1-28 |
| 5.3.1-11 Average Monthly Storage Volume, Don Pedro Reservoir | 5.3.1-31 |
| 5.3.1-12 Don Pedro Storage and La Grange Releases to the Tuolumne River | 5.3.1-33 |
| 5.3.1-13 Don Pedro Reservoir Storage and Inflow, Calendar Year 2000 | 5.3.1-37 |
| 5.3.3-1 Tuolumne River Water Temperature at River Mile 43.4 | 5.3.3-4 |
| 5.3.3-2 Typical Summertime Water Temperature Gradient in Hetch Hetchy and Don Pedro Reservoirs | 5.3.3-5 |
| 5.3.3-3 Longitudinal Profile of Simulated Mean Daily Water Temperature from La Grange Dam to San Joaquin River, June 1993 | 5.3.3-18 |
| 5.3.3-4 Longitudinal Profile of Simulated Mean Daily Water Temperature from La Grange Dam to San Joaquin River, June 1999 | 5.3.3-19 |
| 5.3.8-1 Principal Recreational Resources Tuolumne River System | 5.3.8-2 |
| 5.3.8-2 Whitewater Rafting Condition Thresholds for the Cherry Creek Run | 5.3.8-6 |
| 5.3.8-3 Whitewater Rafting Condition Thresholds for the Lumsden Run | 5.3.8-8 |
| 5.3.8-4 Example of a Pulse and Release for Whitewater Recreation | 5.3.8-9 |
| 5.3.8-5 Don Pedro Reservoir Annual Visitation | 5.3.8-17 |
| 5.3.8-6 Don Pedro Reservoir Average Annual Reservoir Depth and Recreational Uses | 5.3.8-26 |
| 5.4.1-1 Alameda Creek Drainage Areas | 5.4.1-2 |
| 5.4.1-2 Alameda Watershed Facilities | 5.4.1-5 |
| 5.4.1-3 Calaveras Reservoir, Historical Water Levels, 1998 to 2006 | 5.4.1-8 |
| 5.4.1-4 San Antonio Reservoir, Historical Water Levels, 1998 to 2006 | 5.4.1-15 |

| | <u>Page</u> | | |
|------------------------------------|--|-----------|----------------|
| List of Figures (continued) | | | |
| 5.4.1-5 | Calaveras Storage and Releases to Calaveras Creek | 5.4.1-20 | |
| 5.4.1-6 | Reservoir Storage Volume, Annual Average Calaveras Reservoir | 5.4.1-21 | |
| 5.4.1-7 | Chronological Modeled Release of Water below Calaveras Dam | 5.4.1-23 | |
| 5.4.1-8 | Flows in Alameda Creek below the Diversion Dam | 5.4.1-26 | |
| 5.4.1-9 | Alameda Creek Above and Below Diversion Dam – Flow Rates Upstream and Downstream of Tunnel during “Wet” Water Years | 5.4.1-28 | |
| 5.4.1-10 | Alameda Creek Above and Below Diversion Dam – Flow Rates Upstream and Downstream of Tunnel during “Above-Normal” Water Years | 5.4.1-29 | |
| 5.4.1-11 | Alameda Creek above and below Diversion Dam – Real-Time Flow Rates vs. Daily Mean Flows | 5.4.1-30 | |
| 5.4.1-12 | Alameda Creek below Calaveras Creek Confluence | 5.4.1-31 | |
| 5.4.1-13 | Flow in Alameda below the Calaveras Creek Confluence | 5.4.1-34 | |
| 5.4.1-14 | Chronological Operation of San Antonio Reservoir | 5.4.1-37 | <i>Revised</i> |
| 5.4.1-15 | San Antonio Reservoir Releases to San Antonio Creek | 5.4.1-38 | |
| 5.4.1-13 | Chronological Flows in Alameda Creek at the Confluence with San Antonio Creek | 5.4.1-41 | |
| 5.4.3-1 | Temperature Profiles for Calaveras Reservoir, 1998 | 5.4.3-2 | |
| 5.4.4-1 | Sunol Groundwater Basin Groundwater Elevations and Flow Directions | 5.4.1-3 | |
| 5.4.5-1 | Potential Barriers to Fish Migration in Alameda Creek Watershed | 5.4.5-8 | |
| 5.5.1-1 | Peninsula Watersheds and Drainages | 5.4.1-2 | |
| 5.5.1-2 | Peninsula Watershed Facilities and Flow Locations Analyzed | 5.5.1-3 | |
| 5.5.1-3 | San Andreas Reservoir, Historical Water Levels, 1998 to 2006 | 5.5.1-6 | |
| 5.5.1-4 | Crystal Springs Reservoir, Historical Water Levels, 1998 to 2006 | 5.5.1-7 | |
| 5.5.1-5 | Pilarcitos Creek Watershed | 5.5.1-8 | |
| 5.5.1-6 | Pilarcitos Reservoir, Historical Water Levels, 1998 to 2006 | 5.5.1-10 | |
| 5.5.1-7 | Reservoir Storage Volume, Annual Average Crystal Springs Reservoir | 5.5.1-15 | |
| 5.5.1-8 | Crystal Springs Storage and Release to San Mateo Creek | 5.5.1-17 | |
| 5.5.1-9 | Reservoir Storage Volume, Annual Average San Andreas Reservoir | 5.5.1-18 | <i>Revised</i> |
| 5.5.1-10 | Pilarcitos Reservoir Storage and Stream Release | 5.5.1-20a | <i>New</i> |
| 5.6-1 | Westside Groundwater Basin Monitoring Network and Major Production Wells | 5.6-2 | |
| 5.6-2 | Regional Cross Section through Westside Groundwater Basin | 5.6-3 | |
| 5.6-3 | Historical Pumping in South Westside Groundwater Basin | 5.6-7 | |
| 5.6-4 | Recent Municipal Pumping in Westside Groundwater Basin | 5.6-9 | |
| 5.6.5 | Contours of Equal Groundwater Elevations, Shallow Aquifer, Spring 2005 | 5.6-11 | |
| 5.6.6 | Contours of Equal Groundwater Elevations Primary Production Aquifer, Spring 2005 | 5.6-12 | |
| 5.6.7 | Long-Term Lake Level Hydrograph Lake Merced (South Lake) | 5.6-14 | |
| 5.7-1 | Current and Unimpaired Average Monthly Flows in the Tuolumne River below Hetch Hetchy Reservoir | 5.7-25 | |
| 5.7-2 | Current and Unimpaired Average Monthly Flows in the Tuolumne River below La Grange Dam | 5.7-35 | |
| 5.7-3 | Future Projects in the Alameda Creek Watershed Considered in the Cumulative Analysis | 5.7-55 | <i>Revised</i> |
| 5.7-4 | Future Projects in the Peninsula Watershed Considered in the Cumulative Analysis | 5.7-71 | <i>Revised</i> |
| 5.7.5 | Projected Decreases in Snow Pack in the Hetch Hetchy Watershed Due to Climate Change, 2000 to 2050 | 5.7-95 | |
| 7.1 | SFPUC Water Service Area – San Francisco and SFPUC Wholesale Customers (Revised) | 7-10 | |

List of Figures (continued)

| | | |
|---------|---|----------|
| 7.2 | City/County Jurisdictions Served by SFPUC and its Wholesale Customers | 7-11 |
| 7.3 | Total SFPUC Water System Demands: Historical and Projected Water Purchases | 7-17 |
| 8.1 | Potential Sites for Regional Desalination Plant | 8-20 |
| 8.2 | Location of Regional Desalination Project Pilot Plant | 8-21 |
| 9.1 | Lower Tuolumne River Diversion Alternative | 9-61 |
| 9.2 | Year-Round Desalination at Oceanside Alternative | 9-67 |
| 13.1 | SFPUC Regional System Water Deliveries – Five Year Rolling Average | 13-17 |
| 14.2-1 | ABAG Employment and Population Projections for the Four-County Area | 14.2-11 |
| 14.2-2 | Historical Gross Per-Capita Demand – SFPUC Customers | 14.2-20 |
| 14.9-1 | Location of USGS Gages and Contributing Watersheds for Lower Alameda Creek | 14.9-16 |
| 14.9-2 | Comparison of the Average Monthly Flow Contribution from ADLL and Upper Alameda Creek at Niles, WY 2000-2007 | 14.9-18 |
| 14.9-3 | Comparison of Average Monthly Flow at the Niles Gage, Recorded Flow versus WSIP Proposed Program | 14.9-22 |
| 14.9-4 | Existing and Future Habitat Conditions for Steelhead on Alameda Creek | 14.9-40 |
| 14.11-1 | Modeled Shift in Runoff to Hetch Hetchy Reservoir Comparing Historical Patterns with a Global Warming Scenario of 15 °C Increase in Temperature | 14.11-20 |
| 14.11-2 | Relationship between Area and Elevation for the Tuolumne, Mokelumne, and Feather River Basins | 14.11-21 |
| 15.2-1 | Flow Conditions at Diversion Dam under Various Operational Scenarios—pre- vs. post-DSOD restrictions | 15.2-29 |

List of Tables

| | | |
|-----|---|------|
| S.1 | WSIP Goals and Objectives | S-7 |
| S.2 | WSIP Facility Improvement Projects | S-11 |
| S.3 | Summary of WSIP Facility Construction and Operation Impacts | S-27 |
| S.4 | Summary of Facility Mitigation Measures by Impact | S-33 |
| S.5 | Summary of Water Supply Impacts and Mitigation Measures – Tuolumne River System and Downstream Water Bodies | S-48 |
| S.6 | Summary of Water Supply Impacts and Mitigation Measures – Alameda Creek Watershed | S-52 |
| S.7 | Summary of Water Supply Impacts and Mitigation Measures – Peninsula Watersheds | S-56 |
| S.8 | Summary of Water Supply Impacts and Mitigation Measures – Westside Groundwater Basin | S-59 |
| S.9 | Summary of Water Supply Impacts and Mitigation Measures – Cumulative Water Supply | S-61 |
| 2.1 | Major Facilities in the Regional Water System | 2-5 |
| 2.2 | Existing Capacity of Major Facilities in the Regional Water System | 2-6 |
| 2.3 | SFPUC Water Resources Policies Related to the WSIP | 2-45 |
| 3.1 | SFPUC Regional Water System Customers | 3-7 |
| 3.2 | WSIP Goals and Objectives | 3-9 |
| 3.3 | Summary of Water Supply Assumptions and 2030 Demand Projections | 3-18 |
| 3.4 | Summary of SFPUC 2030 Purchase Estimates | 3-19 |
| 3.5 | Existing and Proposed Regional System Levels of Service | 3-26 |
| 3.6 | System Assessment for Seismic Reliability Levels of Service | 3-29 |
| 3.7 | System Assessment for Delivery Reliability Levels of Service | 3-31 |

| | <u>Page</u> | |
|-------|--|--------|
| 3.8 | Major Water Transmission Facilities for Initial Maintenance Program | 3-47 |
| 3.9 | Predictive and Preventative Maintenance Goals | 3-47 |
| 3.10 | WSIP Facility Improvement Projects | 3-49 |
| 3.11 | WSIP Facility Improvement Projects – Affected Jurisdictions | 3-60 |
| 3.12 | WSIP Facility Improvement Projects – Construction and Operations Assumptions | 3-63 |
| 3.13 | Habitat Reserve Program – Preliminary List of Habitat Types and Mitigation Sites | 3-85 |
| 4.2-1 | Summary of General Plan Policies of Other Jurisdictions by CEQA Resource Topic | 4.2-13 |
| 4.2-2 | Significance Criteria Related to Consistency with Plans and Policies by CEQA Resource Topic | 4.2-14 |
| 4.3-1 | Potential Impacts and Significance– Land Use and Visual Resources | 4.3-10 |
| 4.3-2 | Schools Located near Proposed WSIP Project Sites – Preliminary List | 4.3-14 |
| 4.3-3 | Potential Land Acquisition Required Outside of SFPUC Right-of-Way | 4.3-22 |

| | <u>Page</u> |
|-----------------------------------|--|
| List of Tables (continued) | |
| 4.3-4 | Potential Permanent Visual Impacts from WSIP Projects 4.3-30 |
| 4.4-1 | Significant Active and Potentially Active Faults 4.4-9 |
| 4.4-2 | Significant Historical Earthquakes 4.4-10 |
| 4.4-3 | Modified Mercalli Scale for Earthquake Intensity 4.4-11 |
| 4.4-4 | Potential Impacts and Significance – Geology, Soils, and Seismicity 4.4-24 |
| 4.4-5 | Approximate Ground Motions Expected in Each Region 4.4-36 |
| 4.4-6 | Major Soil Types for San Joaquin Region Projects 4.4-43 |
| 4.4-7 | Major Soil Types for Sunol Valley Region Projects 4.4-44 |
| 4.4-8 | Major Soil Types for Bay Division Region Projects 4.4-45 |
| 4.4-9 | Major Soil Types for Peninsula Region Projects 4.4-46 |
| 4.4-10 | Major Soil Types for San Francisco Region Projects 4.4-47 |
| 4.5-1 | Designated Beneficial Uses 4.5-10 |
| 4.5-2 | Section 303(d) List of Impaired Water Bodies 4.5-11 |
| 4.5-3 | Potential Impacts of Significance – Hydrology and Water Quality 4.5-22 |
| 4.6-1 | Pertinent Local Vegetation Ordinances 4.6-34 |
| 4.6-2 | Potential Impacts of Significance – Biological Resources 4.6-40 |
| 4.6.3 | Estimated Project Acreage and Potential Occurrence, by Project, of Terrestrial Habitats and Key Special-Status Species 4.6-41 |
| 4.7-1 | Potential Impacts and Significance – Cultural Resources 4.7-46 |
| 4.7-2 | Potential for Paleontological Impacts 4.7-51 |
| 4.7-3 | Potential for Archaeological Impacts 4.7-58 |
| 4.7-4 | Historic Architectural Resources Impact Potential on Regional Water System Facilities 4.7-64 |
| 4.8-1 | Daily Traffic Volumes on Regional Roadways in the WSIP Regions 4.8-2 |
| 4.8-2 | Potential Impacts and Significance – Traffic, Transportation, and Circulation 4.8-9 |
| 4.9-1 | San Joaquin Valley Air Basin Ambient Air Quality Monitoring Summary (2001–2005) 4.9-4 |
| 4.9-2 | Bay Area Air Basin Ambient Air Quality Monitoring Summary (2001–2005) 4.9-7 |
| 4.9-3 | State and Federal Ambient Air Quality Standards and Attainment Status 4.9-10 |
| 4.9-4 | Potential Impacts of Significance – Air Quality 4.9-22 |
| 4.9-5 | WSIP Construction-related Air Pollutant Emissions 4.9-24 |
| 4.9-6 | Offsite Diesel Particulate Matter Emissions 4.9-29 |
| 4.10-1 | Typical Sound Levels Measured in the Environment 4.10-2 |
| 4.10-2 | Pertinent Ordinance Time Limits and Noise Standards 4.10-7 |
| 4.10-3 | Potential Impacts and Significance – Noise and Vibration 4.10-11 |
| 4.10-4 | Noise Levels and Abatement Potential of Construction Equipment Noise at 25, 50, and 100 feet (in dBA) 4.10-12 |
| 4.10-5 | Vibration Levels for Construction Equipment at 25, 50, and 100 Feet 4.10-28 |
| 4.11-1 | SFPUC Regional Water System Customers 4.11-2 |
| 4.11-2 | Law Enforcement and Fire Protection Service Providers within the WSIP Study Area 4.11-4 |
| 4.11-3 | Active Landfills within the WSIP Study Area 4.11-6 |
| 4.11-4 | Summary of Impacts – Public Services and Utilities 4.11-11 |
| 4.11-5 | WSIP Spoil Estimates and Disposal Site Information 4.11-17 |
| 4.12-1 | Potential Impacts and Significance – Recreational Resources 4.12-19 |
| 4.12-2 | Public Parks and Recreation Facilities in the Project Vicinity 4.12-22 |
| 4.13-1 | Value of Agricultural Production in WSIP Study Area Counties, 2003 4.13-1 |
| 4.13-2 | Important Farmland Acreage in WSIP Study Area Counties, 2002 4.13-2 |
| 4.13-3 | Potential Impacts and Significance – Agricultural Resources 4.13-11 |

| | <u>Page</u> |
|--|-------------|
| List of Tables (continued) | |
| 4.14-1 Potential Impacts and Significance – Hazards | 4.14-15 |
| 4.15-1 Potential Impacts and Significance – Energy Resources | 4.15-7 |
| 4.15-2 Estimated Annual Operational Energy Demand, 2030 | 4.15-12 |
| 4.16-1 WSIP Projects with Potential Construction Overlap | 4.16-4 |
| 4.16-2 Potential Collective Impacts and Significance – by Region | 4.16-9 |
| 4.17-1 Cumulative Projects and Impacts Related to WSIP Facilities in the San Joaquin Region | 4.17-3 |
| 4.17-2 Cumulative Projects and Impacts Related to WSIP Facilities in the Sunol Valley Region | 4.17-8 |
| 4.17-3 Cumulative Projects and Impacts Related to WSIP Facilities in the Bay Division Region | 4.17-14 |
| 4.17-4 Cumulative Projects and Impacts Related to WSIP Facilities in the Peninsula Region | 4.17-21 |
| 4.17-5 Cumulative Projects and Impacts Related to WSIP Facilities in the San Francisco Region | 4.17-28 |
| 4.17-6 Other SFPUC Systemwide Cumulative Projects and Impacts Related to WSIP Facilities | 4.17-36 |
| 4.17-7 Cumulative Projects with Overlapping Construction Schedules | 4.17-38 |
| 4.17-8 Summary of Cumulative Facilities Impacts | 4.17-47 |
| 5.1-1 Modeling Assumptions Used in the CEQA Analysis | 5.1-12 |
| 5.1-2 HH/LSM Output Parameters | 5.1-15 |
| 5.2-1 Applicable Federal, State, and Local Statutes and Agreements | 5.2-3 |
| 5.2-2 Summary of General Plan Policies of Counties with Surface Water and Groundwater Resources Potentially Affected by the Proposed WSIP Water Supply and System Operations | 5.2-26 |
| 5.3.1-1 Mean Monthly Stream Flows at Selected Locations on Waterways Potentially Affected by the WSIP | 5.3.1-12 |
| 5.3.1-2 Schedule of Average Daily Minimum Required Releases to Support Fisheries below O'Shaughnessy Dam | 5.3.1-13 |
| 5.3.1-3 Minimum Instream Flow Requirements – Tuolumne River at La Grange Bridge | 5.3.1-14 |
| 5.3.1-4 Summary of Impacts – Stream Flow in the Tuolumne River System and Downstream Waterbodies | 5.3.1-21 |
| 5.3.1-5 Estimated Average Monthly Flows for the Tuolumne River below O'Shaughnessy Dam under Various Conditions | 5.3.1-26 |
| 5.3.1-6 Estimated Average Monthly Flows for the Tuolumne River below La Grange under Various Conditions | 5.3.1-35 |
| 5.3.2-1 Summary of Impacts – Geomorphology of the Tuolumne River System and Downstream Waterbodies | 5.3.2-6 |
| 5.3.3-1 Summary of Temperature Data, Hetch Hetchy Reservoir | 5.3.3-2 |
| 5.3.3-2 Maximum Summer–Fall Water Temperatures in the Tuolumne River from La Grange Dam to Modesto 1996–2004 | 5.3.3-3 |
| 5.3.3-3 Water Quality Data Summary, San Joaquin River at Vernalis above Normal (2000)/Dry (2002) | 5.3.3-6 |
| 5.3.3-4 Water Quality Characteristics at Selected Stations within the Delta | 5.3.3-8 |
| 5.3.3-5 Water Quality Data Summary, Banks Pumping Plant Above Normal (2000)/Dry (2002) | 5.3.3-8 |
| 5.3.3-6 Pertinent Water Quality Objectives for the San Joaquin River Basin | 5.3.3-10 |
| 5.3.3-7 Section 303(d) List of Impaired Water Bodies | 5.3.3-11 |

| | <u>Page</u> |
|---|-------------|
| List of Tables (continued) | |
| 5.3.3-8 Summary of Impacts – Surface Water Quality in the Tuolumne River System and Downstream Waterbodies | 5.3.3-14 |
| 5.3.3-9 Average Flows for Conditions Where Water Temperatures Could Be Adversely Affected (Tuolumne River below Hetch Hetchy) | 5.3.3-16 |
| 5.3.3-10 Comparison of Storage, Cool Water Pool Volumes, and Depth to Thermocline for Don Pedro Reservoir under Existing Conditions and with the WSIP | 5.3.3-17 |
| 5.3.4-1 Flow and Water Quality Objectives for San Joaquin River at Vernalis | 5.3.4-3 |
| 5.3.4-2 Flow Objectives for Sacramento-San Joaquin Delta | 5.3.4-4 |
| 5.3.4-3 Summary of Impacts – Surface Water Supplies of Downstream Users | 5.3.4-5 |
| 5.3.4-4 Average Monthly Changes in Tuolumne River Flow below La Grange Dam Attributable to the WSIP | 5.3.4-7 |
| 5.3.4-5 Recorded San Joaquin River Flow at Vernalis (1969 – 2002) | 5.3.4-8 |
| 5.3.5-1 Summary of Impacts – Groundwater Bodies in the Tuolumne River Watershed | 5.3.5-4 |
| 5.3.6-1 Fish Species Known to Inhabit Tuolumne River Tributaries, Hetch Hetchy and Don Pedro Reservoirs, Lake Lloyd, and Lake Eleanor | 5.3.6-5 |
| 5.3.6-2 Tuolumne River Spawning Survey Summary | 5.3.6-15 |
| 5.3.6-3 Non-Salmonid Species Present in the Lower Tuolumne River | 5.3.6-19 |
| 5.3.6-4 Summary of Impacts – Fisheries in the Tuolumne River System and Downstream Waterbodies | 5.3.6-25 |
| 5.3.7-1 Potential for Occurrence of Key Special-Status Plants and Plant Species of Concern in the WSIP Tuolumne Watershed Program Area | 5.3.7-6 |
| 5.3.7-2 Potential for Occurrence of Key Special-Status Animals and Animal Species of Concern in the WSIP Tuolumne Watershed Program Area | 5.3.7-7 |
| 5.3.7-3 Summary of Impacts – Terrestrial Biological Resources in the Tuolumne River Watershed | 5.3.7-19 |
| 5.3.8-1 Whitewater Rafting Condition Thresholds for the Cherry Creek Run | 5.3.8-6 |
| 5.3.8-2 Whitewater Rafting Condition Thresholds for the Lumsden Run | 5.3.8-7 |
| 5.3.8-3 Annual Boater Use on the Tuolumne River (1984–2005) | 5.3.8-11 |
| 5.3.8-4 Private Boater Use by Month (1990–2002) | 5.3.8-13 |
| 5.3.8-5 Summary of Impacts – Recreational and Visual Resources in the Tuolumne River System | 5.3.8-22 |
| 5.3.8-6 Estimated Average Monthly Flows in the Tuolumne River Immediately below the Cherry Creek Confluence under Various Conditions | 5.3.8-29 |
| 5.3.8-7 Flow in the Tuolumne River Immediately below the Cherry Creek Confluence under Existing Conditions | 5.3.8-30 |
| 5.3.8-8 Flow in the Tuolumne River Immediately below the Cherry Creek Confluence with the WSIP | 5.3.8-31 |
| 5.3.9-1 Summary of Impacts – Energy Resources along Tuolumne River System | 5.3.9-2 |
| 5.4.1-1 Areas of Alameda Creek Sub-Watersheds in the WSIP Study Area | 5.4.1-4 |
| 5.4.1-2 Historical Calaveras Reservoir Spillway Releases (Uncontrolled) | 5.4.1-10 |
| 5.4.1-3 Approximate Calaveras Cone Valve Releases Since 2001 (Controlled) | 5.4.1-11 |
| 5.4.1-4 Historical Record of Alameda Creek Flow above the Diversion Dam | 5.4.1-12 |
| 5.4.1-5 Alameda Creek Number of Days Exceeding 650 cfs Flow, Measures above the Diversion Dam – 1997 to 2007 | 5.4.1-13 |
| 5.4.1-6 Summary of Impacts – Stream Flow in Alameda Creek Watershed Streams and Reservoirs | 5.4.1-18 |
| 5.4.1-7 Estimated Average Monthly Releases from Calaveras Reservoir to Calaveras Creek | 5.4.1-24 |

| | <u>Page</u> | |
|-----------------------------------|---|-----------|
| List of Tables (continued) | | |
| 5.4.1-8 | Estimated Average Monthly Flow in Alameda Creek below the Calaveras Creek Confluence | 5.4.1-32 |
| 5.4.1-9 | Minimum Flows below the Confluence of Alameda and Calaveras Creeks | 5.4.1-33 |
| 5.4.1-10 | Estimated Average Monthly Releases from San Antonio Reservoir to San Antonio Creek | 5.4.1-40 |
| 5.4.1-11 | Estimated Average Monthly Flow in Alameda Creek below San Antonio Creek Confluence | 5.4.1-42 |
| 5.4.2-1 | Summary of Impacts – Geomorphology of Alameda Creek Watershed | 5.4.2-3 |
| 5.4.3-1 | Summary of Water Quality in Calaveras Reservoir | 5.4.3-3 |
| 5.4.3-2 | Summary of Water Quality in San Antonio Reservoir | 5.4.3-4 |
| 5.4.3-3 | Summary of Temperature Data, Alameda Creek near Sunol, 1997–2005 | 5.4.3-5 |
| 5.4.3-4 | Summary of TDS Data, Alameda Creek near Sunol, 1997–2005 | 5.4.3-6 |
| 5.4.3-5 | Alameda Drainage Water Quality Regulations | 5.4.3-7 |
| 5.4.3-6 | Summary of Impacts – Surface Water Quality in Alameda Creek Watershed Streams and Reservoirs | 5.4.3-7 |
| 5.4.4-1 | Summary of Impacts – Groundwater Bodies in Alameda Creek Watershed | 5.4.4-6 |
| 5.4.5-1 | Fish Species Observed in the Alameda Creek Watershed | 5.4.5-13 |
| 5.4.5-2 | Summary of Impacts – Fisheries in Alameda Creek Watershed Streams and Reservoirs | 5.4.5-17 |
| 5.4.6-1 | Potential for Occurrence of Natural Communities in the Alameda Watershed WSIP Program Area | 5.4.6-4 |
| 5.4.6-2 | Potential for Occurrence of Key Special-Status Plants and Plant Species of Concern in the WSIP Alameda Watershed Program Area | 5.4.6-7 |
| 5.4.6-3 | Potential for Occurrence of Key Special-Status Animals and Animal Species of Concern in WSIP Alameda Watershed Program Area | 5.4.6-8 |
| 5.4.6-4 | Summary of Impacts – Terrestrial Biological Resources in the Alameda Creek Watershed | 5.4.6-15 |
| 5.4.7-1 | Summary of Impacts – Recreational and Visual Resources in the Alameda Creek Watershed | 5.4.7-5 |
| 5.5.1-1 | Summary of Impacts – Stream Flow in San Francisco Peninsula Streams | 5.5.1-14 |
| 5.5.2-1 | Summary of Impacts – Geomorphology of San Francisco Peninsula Streams and Reservoirs | 5.5.2-3 |
| 5.5.3-1 | Water Quality in San Mateo Creek below Crystal Springs Reservoir | 5.5.3-3 |
| 5.5.3-2 | Summary of Impacts – Water Quality of San Francisco Peninsula Streams and Reservoirs | 5.5.3-5 |
| 5.5.4-1 | Summary of Groundwater Quality Parameters, Lower Pilarcitos Creek Basin | 5.5.4-2 |
| 5.5.4-2 | Summary of Impacts – Groundwater Bodies in Peninsula Watershed | 5.5.4-2 |
| 5.5.5-1 | Summary of Impacts – Fisheries in San Francisco Peninsula Streams and Reservoirs | 5.5.5-6 |
| 5.5.1.2 | Average Monthly Changes in Pilarcitos Creek Flow below Pilarcitos Reservoir Attributable to the WSIP | 5.5.1-20b |
| 5.5.6-1 | Potential for Occurrence of Natural Communities in and near the WSIP in the Peninsula Watershed | 5.5.6-3 |
| 5.5.6-2 | Key Special-Status Plants and Plant Species of Concern in the WSIP Peninsula Watershed Operational Area | 5.5.6-6 |

| | <u>Page</u> |
|---|-------------|
| List of Tables (continued) | |
| 5.5.6-3 Key Special-Status Animals and Animal Species of Concern in the WSIP Peninsula Watershed Operational Area | 5.5.6-7 |
| 5.5.6-4 Summary of Impacts – Terrestrial Biological Resources in the Peninsula Watershed | 5.5.6-14 |
| 5.5.7-1 Summary of Impacts – Recreational and Visual Resources in the Peninsula Watershed | 5.5.6-5 |
| 5.6-1 Summary of Impacts – Westside Groundwater Basin | 5.6-23 |
| 5.7-1 Projects Which May Contribute to Cumulative Effects | 5.7-14 |
| 5.7-2 Summary of Cumulative Impacts in the Tuolumne River System and Downstream Water Bodies Related to WSIP Water Supply and System Operations | 5.7-23 |
| 5.7-3 Estimated Flood Peaks in the Tuolumne River below Hetch Hetchy Reservoir | 5.7-26 |
| 5.7-4 Hetch Hetchy Reservoir Modeled Minimum Stream Releases with Discretionary Flow Fishery Releases | 5.7-30 |
| 5.7-5 Cumulative Effects on the Tuolumne River between Hetch Hetchy and Don Pedro Reservoirs | 5.7-33 |
| 5.7-6 Estimated Flood Peaks in the Tuolumne River below La Grange Dam | 5.7-35 |
| 5.7-7 Flow in the Tuolumne River below La Grange Dam – Existing Condition Plus Infiltration Gallery Project | 5.7-40 |
| 5.7-8 Flow in the Tuolumne River below La Grange Dam – Existing Condition Plus Infiltration Gallery Project | 5.7-41 |
| 5.7-9 Cumulative Effects on the Tuolumne River between La Grange Dam and the San Joaquin River | 5.7-43 |
| 5.7-10 Flow in the Tuolumne River below La Grange Dam – WSIP Plus Infiltration Gallery Project | 5.7-44 |
| 5.7-11 Flow in the Tuolumne River below La Grange Dam – WSIP Plus Infiltration Gallery Project | 5.7-45 |
| 5.7-12 Cumulative Effects on the San Joaquin River, Stanislaus River, and Delta | 5.7-50 |
| 5.7-13 Future Projects in the Alameda Creek Watershed Considered in the Cumulative Analysis | 5.7-57 |
| 5.7-14 Summary of Cumulative Impacts in the Alameda Creek Watershed Related to WSIP Water Supply and System Operations | 5.7-61 |
| 5.7-15 Cumulative Effects on the Alameda Creek Watershed | 5.7-65 |
| 5.7-16 Future Projects in the Peninsula Watershed Considered in the Cumulative Analysis | 5.7-68 |
| 5.7-17 Summary of Cumulative Impacts in the Peninsula Watershed Related to WSIP Water Supply and System Operations | 5.7-74 |
| 5.7-18 Cumulative Effects on the San Mateo Creek Watershed | 5.7-79 |
| 5.7-19 Cumulative Effects on the Pilarcitos Creek Watershed | 5.7-83 |
| 5.7-20 Summary of Cumulative Impacts in the Westside Groundwater Basin Related to WSIP Water Supply and System Operations | 5.7-89 |
| 5.7-21 Annotated Bibliography on Climate Change/Global Warming | 5.7-93 |
| 6.1 Mitigation Measures for Key Special-Status Species | 6-14 |
| 6.2 (Measure 4.6-3b) Standard Programmatic Biological Resources Mitigation Measures | 6-16 |
| 6.3 Impact and Mitigation Summary for Facility Construction and Operation of San Joaquin Region Projects | 6-65 |

| | <u>Page</u> |
|-----------------------------------|--|
| List of Tables (continued) | |
| 6.4 | Impact and Mitigation Summary for Facility Construction and Operation of Sunol Valley Region Projects 6-84 |
| 6.5 | Impact and Mitigation Summary for Facility Construction and Operation of Bay Division Region Projects 6-106 |
| 6.6 | Impact and Mitigation Summary for Facility Construction and Operation of Peninsula Region Projects 6-126 |
| 6.7 | Impact and Mitigation Summary for Facility Construction and Operation of San Francisco Region Projects 6-147 |
| 6.8 | Summary of Collective Impacts and Mitigation Related to WSIP Facilities 6-166 |
| 6.9 | Summary of Cumulative Impacts and Mitigation Related to WSIP Facilities 6-169 |
| 6.10 | Impact and Mitigation Summary for the Tuolumne River System and Downstream Water Bodies Related to Water Supply and System Operations 6-171 |
| 6.11 | Impact and Mitigation Summary for Alameda Creek Watershed Streams and Reservoirs Related to Water Supply and System Operations 6-176 |
| 6.12 | Impact and Mitigation Summary for the San Francisco Peninsula Streams and Reservoirs Related to Water Supply and System Operations 6-181 |
| 6.13 | Impact and Mitigation Summary for Westside Groundwater Basin Resources 6-185 |
| 6.14 | Summary of Cumulative Impacts and Mitigation Related to WSIP Water Supply and System Operations on the Tuolumne River, Alameda Creek, and Peninsula Watersheds 6-187 |
| 6.15 | Summary of Cumulative Impacts and Mitigation Related to WSIP Water Supply and System Operations for Westside Groundwater Basin 6-189 |
| 7.1 | Jurisdictions Served by SFPUC Wholesale Customers 7-12 |
| 7.2 | Summary of 2030 Demand Projections, Water Supply Assumptions, and SFPUC Purchase Estimates 7-15 |
| 7.3 | Summary of Base-Year and Projected 2030 Demand and Purchase Estimates 7-18 |
| 7.4 | Employment and Population Projections Used for Water Demand Estimates 7-20 |
| 7.5 | Employment and Population Projections Used for Water Demand Estimates: Summary by County 7-21 |
| 7.6 | Comparison of Employment Projections: SFPUC Customers and ABAG <i>Projections 2005</i> (Summary by County) 7-24 |
| 7.7 | Comparison of Population Projections: SFPUC Customers and ABAG <i>Projections 2005</i> (Summary by County) 7-26 |
| 7.8 | Comparison of Water Demand Population Estimates and General Plan Population Estimates 7-27 |
| 7.9 | Comparison of Water Demand Employment Estimates and General Plan Employment Estimates 7-30 |
| 7.10 | Percent Change in Population, Employment, and Water Demand 2001–2030 7-33 |
| 7.11 | Significant Impacts Associated with Planned Growth in the Program Area 7-65 |
| 7.12 | Key Overriding Considerations for Significant Unavoidable Impacts of Planned Growth and Development 7-68 |
| 8.1 | Summary Description of the WSIP Variants 8-3 |
| 8.2 | WSIP Variants – Tuolumne River Diversions and Level of Service Performance 8-5 |
| 8.3 | Summary of Facility Construction and Operation Impacts for WSIP Variants 8-11 |

| | <u>Page</u> |
|-----------------------------------|--|
| List of Tables (continued) | |
| 8.4 | Preliminary Permits and Approvals for the Bay Area Regional Desalination Project 8-23 |
| 8.5 | Summary of Water Supply and System Operations Impacts for the WSIP Variants Compared to Existing Conditions – Tuolumne Watershed 8-38 |
| 8.6 | Summary of Water Supply and System Operations Impacts for the WSIP Variants Compared to Existing Conditions – Alameda Watershed 8-51 |
| 8.7 | Summary of Water Supply and System Operations Impacts for the WSIP Variants Compared to Existing Conditions – Peninsula Watershed 8-60 |
| 8.8 | Summary of Water Supply and System Operations Impacts for the WSIP Variants Compared to Existing Conditions – Westside Groundwater Basin 8-67 |
| 8.9 | Summary of Water Supply and System Operations Impacts for the WSIP Variants Compared to Existing Conditions – Cumulative Water Supply Impacts 8-69 |
| 8.10 | Comparison of Impacts – Proposed Program and WSIP Variants 8-78 |
| 9-1 | WSIP Goals and Objectives 9-3 |
| 9-2 | Existing and Proposed Regional System Levels of Service 9-4 |
| 9-3 | Selected Alternatives for CEQA Analysis 9-7 |
| 9-4 | Description of CEQA Alternatives 9-11 |
| 9-5 | Average Annual Tuolumne River Diversions and Drought-Year Shortages for the CEQA Alternatives (2030) 9-13 |
| 9-6 | Summary of Ability Of Alternatives to Meet Program Objectives 9-14 |
| 9-7 | Summary of Significant Water Supply and System Operations Impacts for CEQA Alternatives – Tuolumne River Watershed 9-17 |
| 9-8 | Summary of Significant Water Supply and System Operations Impacts for CEQA Alternatives – Alameda Watershed 9-18 |
| 9-9 | Summary of Significant Water Supply and System Operations Impacts for CEQA Alternatives – Peninsula Watershed 9-20 |
| 9-10 | Summary of Potential Impacts and Mitigation Strategies Associated with Representative Water Supply Acquisition Projects 9-35 |
| 9-11 | Regional Recycled Water, Groundwater, and Conservation Projects Included in the Aggressive Conservation/Water Recycling and Local Groundwater Alternative 9-50 |
| 9-12 | Summary of Potential Impacts and Mitigation Strategies for Recycled Water and Groundwater Projects 9-56 |
| 9-13 | Strategies to Avoid or Lessen Significant Impacts and Preliminary Screening 9-104 |
| 9-14 | Alternative Concepts Raised during PEIR Scoping Process and Preliminary Screening 9-106 |
| 11.1 | Commenter Categories and Abbreviations 11-4 |
| 11.2 | Federal Agencies that submitted Comments on the Draft PEIR 11-5 |
| 11.3 | State Agencies that Submitted Comments on the Draft PEIR 11-5 |
| 11.4 | Local and Regional Agencies that Submitted Comments on the Draft PEIR 11-6 |
| 11.5 | Special Interest Groups that Submitted Comments on the Draft PEIR 11-10 |
| 11.6 | Citizens Who Submitted Comments on the Draft PEIR 11-14 |
| 11.7 | Citizens Who Submitted Form Letter Comments on the Draft PEIR 11-20 |
| 11.8 | Citizens Who Telephoned SFPUC General Manager's Office 11-25 |
| 13.1 | SFPUC Average Annual Water Deliveries under the Phased WSIP Variant 13-11 |
| 13.2 | Description of Phased WSIP Variant in Comparison to WSIP and No Purchase Request Increase Alternative (<i>Similar to Draft PEIR Table 9.4</i>) 13-13 |

| | <u>Page</u> | |
|-----------------------------------|---|---------|
| List of Tables (continued) | | |
| 13.3 | Average Annual Tuolumne River Diversions and Drought-Year Shortages for the Selected Alternatives (<i>Similar to draft PEIR Table 9.5</i>) | 13-15 |
| 13.4 | SFPUC Wholesale Customers – Supply Sources | 13-19 |
| 13.5 | Summary of 2030 Demand Projections, Water Supply Assumptions, and SFPUC Purchase Estimates | 13-20 |
| 13.6 | Potential Regional Recycled Water, Groundwater, and Conservation Projects (<i>Same as Draft PEIR Table 9.11</i>) | 13-24 |
| 13.7 | Summary of Ability of Alternatives to Meet Program Objectives (<i>Similar to Draft PEIR Table 9.6</i>) | 13-27 |
| 13.8 | Summary of Potential Impacts and Mitigation Strategies Associated with Representative Water Supply Acquisition Projects (<i>Similar to PEIR Table 9.10</i>) | 13-31 |
| 13.9 | Summary of Potential Impacts and Mitigation Strategies for Recycled Water and Groundwater Projects (<i>Same as Draft PEIR Table 9.12</i>) | 13-34 |
| 13.10 | Summary of Significant Water Supply and System Operations Impacts for Phased WSIP Variant – Tuolumne River Watershed | 13-35 |
| 13.10 | Summary of Significant Water Supply and System Operations Impacts for Phased WSIP Variant – Alameda Creek Watershed | 13-37 |
| 13.12 | Summary of Significant Water Supply and System Operations Impacts for Phased WSIP Variant – Peninsula Watershed | 13-39 |
| 14.1-1 | Delivery within 24 Hours after a Major Earthquake | 14.1-13 |
| 14.1-2 | Percent of Turnouts That Would Receive Water within 24 Hours after a Major Earthquake | 14.1-14 |
| 14.1-3 | Post-Earthquake Recovery: Delivery 30 Days Following a Major Earthquake | 14.1-14 |
| 14.1-4 | Key WSIP Projects for Seismic Reliability | 14.1-15 |
| 14.2-1 | ABAG Projections of Employment in 2025 and 2030: Summary Comparison | 14.2-6 |
| 14.2-2 | Comparison of Projected Employment Growth (New Jobs): Projections 2005 and Projections 2002 | 14.2-7 |
| 14.2-3 | Difference in Existing and Projected Total Employment: Projections 2005 Minus Projections 2002 | 14.2-8 |
| 14.2-4 | ABAG Projections of Employment and Population in 2025: Summary Comparison | 14.2-9 |
| 14.2-5 | Summary of 2030 Water Savings Due to Existing and Proposed Conservation | 14.2-27 |
| 14.2-6 | Description of Existing and Proposed/Planned Best Management Practices and Conservation Measures – Wholesale and Retail Customers | 14.2-31 |
| 14.2-7 | Existing and Proposed Conservation Measures and Best Management Practices – SFPUC Retail Service Area | 14.2-33 |
| 14.2-8 | Existing and Planned Conservation Measures and Best Management Practices – SFPUC Wholesale Customers | 14.2-35 |
| 14.2-9 | Total Estimated 2030 Water Savings from Conservation and Recycling | 14.2-37 |
| 14.2-10 | Per-Capita Water Use by Hydrologic Region – 1995 | 14.2-41 |
| 14.2-11 | Total Urban and Residential Per-Capita Water Use by Hydrologic Region – 2000 | 14.2-41 |
| 14.2-12 | Weighted Average Residential Per-Capita Demand Wholesale Customer Service Area, 2001 and 2030 | 14.2-42 |
| 14.2-13 | Submittals Containing Comments on Water Demand Projections, Conservation, and Recycling Addressed in this Master Response | 14.2-52 |

| | <u>Page</u> |
|--|-------------|
| List of Tables (continued) | |
| 14.4-1 Permits, Approvals, and Early Coordination with Other Agencies that May Be Required (Revised Draft PEIR Table C.6) | 14.4-7 |
| 14.5-1 Average Annual Customer Purchase Requests from the Regional System | 14.5-15 |
| 14.5-2 Source of Customer Deliveries from the Regional System | 14.5-15 |
| 14.19-1 Average Monthly Percentage of Watershed Contributions at the Niles Gage Hydrologic Years 2000-2007 | 14.9-17 |
| 14.9-2 Summary of Flow Contributions at the Niles Gage Hydrologic Years 2000-2007 | 14.9-19 |
| 14.9-3 HH/LSM Calculated Flow Reductions in Alameda Creek below the San Antonio Creek Confluence | 14.9-20 |
| 14.9-4 Comparison of Recorded and Calculated Flows in Alameda Creek at Welch Gage | 14.9-20 |
| 14.9-5 Comparison of Average Monthly Flow at the Niles Gage, Recorded Flow versus Calculated Flow under the WSIP | 14.9-21 |
| 14.9-6 Summary of Alameda Creek Steelhead Habitat Use and Condition under Future Cumulative without WSIP and Future Cumulative with WSIP Scenarios | 14.9-35 |
| 14.10-1 Comparison of Proposed Program and Modified WSIP Alternative (<i>Similar to Draft PEIR Table 9.4</i>) | 14.10-4 |
| 14.10-2 Crystal Springs Reservoir Water Surface Elevation and Storage Capacity | 14.10-8 |
| 14.10-3 Average Annual Tuolumne River Diversions and Drought-Year Shortages for the Modified WSIP Alternative | 14.10-14 |
| 14.10-4 Summary of Significant Water Supply and System Operations Impacts for the WSIP and Modified WSIP Alternative – Tuolumne River Watershed | 14.10-17 |
| 14.10-5 Summary of Significant Water Supply and System Operations Impacts for the WSIP and Modified WSIP Alternative – Alameda River Watershed | 14.10-19 |
| 14.10-6 Summary of Significant Water Supply and System Operations Impacts for the WSIP and Modified WSIP Alternative – Peninsula Watershed | 14.10-21 |
| 14.11-1 Climate Change Science References | 14.11-7 |
| 14.11-2 Selected Climate Change Policy and Guidance References | 14.11-12 |
| 14.11-3 Climate Change Variables and the SFPUC Regional Water System | 14.11-24 |