Revision 3
with Changes Showing

Construction Management Plan

Rebuilding Today for a Better Tomorrow

March 2009
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<td>AGM</td>
<td>Assistant General Manager</td>
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<tr>
<td>BCDC</td>
<td>Bay Conservation and Development Commission</td>
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<td>BEM</td>
<td>Bureau of Environmental Management</td>
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<tr>
<td>CDFG</td>
<td>California Department Of Fish And Game</td>
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<td>CEQA</td>
<td>California Environmental Quality Act</td>
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<td>CM</td>
<td>Construction Management</td>
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<td>CMB</td>
<td>Construction Management Bureau</td>
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<td>CMIS</td>
<td>Construction Management Information System</td>
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<td>CPM</td>
<td>Critical Path Method</td>
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<td>CSI</td>
<td>Construction Specification Institute</td>
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<td>DRA</td>
<td>Dispute Review Advisor</td>
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<td>DRB</td>
<td>Dispute Review Board</td>
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<td>ECCM</td>
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<td>EMB</td>
<td>Engineering Management Bureau</td>
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<td>FAC</td>
<td>Forecasts At Completion</td>
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<td>FCA</td>
<td>Field Contracts Administrator</td>
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<td>FTC</td>
<td>Forecasts To Complete</td>
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<td>HLS</td>
<td>Homeland Security Department</td>
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<tr>
<td>IT</td>
<td>Information Technology</td>
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<td>MMRP</td>
<td>Mitigation Monitoring and reporting Plan</td>
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<td>M&amp;TE</td>
<td>Measuring And Test Equipment</td>
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<td>NCR</td>
<td>Non-conformance Report</td>
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<td>NEPA</td>
<td>National Environmental Policy Act</td>
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<td>NMFS</td>
<td>National Marine Fisheries Service</td>
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<td>NTP</td>
<td>Notice To Proceed</td>
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<td>O&amp;M</td>
<td>Operations and Maintenance Manuals</td>
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<td>OE</td>
<td>Office Engineer</td>
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<td>OSHA</td>
<td>Occupational Safety And Health Administration</td>
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<td>PCM</td>
<td>Program Construction Manager</td>
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<td>PCSB</td>
<td>Program Controls And Support Bureau</td>
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<tr>
<td>PE</td>
<td>Project Engineer</td>
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<td>PLA</td>
<td>Project Labor Agreement Administrator</td>
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<td>PMB</td>
<td>Project Management Bureau</td>
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<td>PO</td>
<td>Purchase Order</td>
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<td>PPPCM</td>
<td>Program, Project and Pre-Construction Management Consultant</td>
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<tr>
<td>QA</td>
<td>Quality Assurance</td>
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<td>QA/QC</td>
<td>Quality Assurance /Quality Control</td>
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<td>RCM</td>
<td>Regional Construction Manager</td>
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<td>REC</td>
<td>Regional Environmental Coordinator</td>
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Acronyms and Abbreviations (continued.)

RECM    Regional Environmental Compliance Manager
RFI     Request For Information
[Deleted : 5Mar09] RFD     Requests For Deviation
RFP     Request For Proposal
RFS     Requests For Substitution
ROW     Right-Of-Way
RPM     Regional Project Manager
RWQCB   California Regional Water Quality Control Boards
SFPUC   San Francisco Public Utilities Commission
SHPO    State Historic Preservation Office
USACE   US Army Corps Of Engineers
USFWS   US Fish And Wildlife Service
VECP    Value Engineering Change Proposal
WBS     Work Breakdown Structure
WSIP    Water System Improvement Program
WQB     Water Quality Bureau
Water System Improvement Program
Construction Management Plan

Section 1 – WSIP Organization

1.1 Introduction and Purpose

This Construction Management (CM) Plan and a referenced Procedures Manual establish the guidelines and uniform procedures and policies to be followed by the construction management organization for construction of the San Francisco Public Utilities Commission (SFPUC) Water System Improvement Program (WSIP). The vast scale of the program that will require numerous Construction Management Consultants, have led the SFPUC to define the expectations and an overall approach to managing the program.

The CM Plan provides guidance on what is expected regarding the various construction management functions and the roles and responsibilities of the organizational structure to provide a consistent management approach. A WSIP Construction Management Procedures Manual will define how the construction management functions are to be executed to integrate with the overall organization and the business practices of the SFPUC and achieve consistency. It is not the intent of this Construction Management Plan to describe in detail the process or all of the specific requirements of a particular construction management function; that will be the purpose of the CM Procedures Manual that will compliment this CM Plan and will be developed by the SFPUC. The SFPUC staff and the professional Construction Management Consultants who will manage construction for the SFPUC will be required to adopt this CM Plan in the process of developing Regional and Project CM Plans to fit the unique requirements of the regions and specific projects.

Section 1 of this Plan contains pertinent information on the WSIP program, the contracting strategy for construction management, the construction management organization, and organizational management. Section 1 also identifies the roles and responsibilities of various Consultant entities and construction management positions. Section 2 describes the general approach to all of the major functions and elements of construction management and its application to WSIP, including pre-construction functions.

It is essential that all WSIP project staff involved in, and responsible for, the development of Construction Contract Documents and specifications, read and become familiar with this CM Plan, to ensure the Contract Documents are developed to reflect the requirements of this Plan. The use of, and reliance on, this
CM Plan and the referenced Construction Management Procedures Manual shall not limit in any way the professional or contractual liability of the Construction Management Consultants.

1.2 Scope

The Construction Management Plan defines the scope of the WSIP, the Construction Management organization, the various CM functions, and the associated business processes, any standard tools the SFPUC has determined that will be used, and the roles and responsibilities of the entities that will be involved. The Plan also contains the most current project schedules (Appendix A) at the time of the publication of this Plan and any subsequent controlled revisions.

1.3 Description of the Water System Improvement Program

Built in the early to mid 1900’s, many parts of the system are nearing the end of their working life. In addition, crucial portions of the system cross over or are near three major earthquake faults in the Bay Area. The SFPUC, together with 28 wholesale customers, launched a $4.3 billion Water System Improvement Program to repair, replace, and seismically upgrade the system’s aging pipelines, tunnels, reservoirs, pump stations, storage tanks, and dams. The program will deliver key goals and levels of service for water quality, seismic reliability, delivery reliability, and water supply, including drought reliability through more than 75 San Francisco and regional projects, to be completed by the end of 2015. The WSIP is funded by a bond measure that was approved by San Francisco voters in November 2002 to repair, replace and seismically upgrade the Hetch Hetchy water system.

The WSIP management approach is organized by geographic regions plus a region for water supply projects. Appendix A is a phase level master schedule that lists projects organized by region. For construction management, the SFPUC has determined there will be ten (10) separate CM contracts. Six (6) contracts will be for regional management. Four (4) contracts will be specialty project contracts. For regional CM contracts, the Regional CM Consultant will be required to provide project specific construction management and regional coordination and management of their assigned projects.

The execution of each WSIP project is organized by nine (9) phases of implementation. A standard Work Breakdown Structure (WBS) is employed using P6 to schedule and budget each project. The phases of implementation are:

- Project Management
- Planning
- Environmental
• Right of Way
• Design
• Bid and Award
• Construction
• Construction Management
• Closeout

Some phases are consecutive, some are concurrent. Some projects may not include the Right of Way phase. Appendix A illustrates the application of the WBS and the project phases. Appendix A does not show the Project Management and Construction Management phases. The Project Management phase is concurrent with all other project phases and the Construction Management phase is concurrent with the Construction phase.

1.4 Construction Management Contracting Strategy

The SFPUC anticipates developing and issuing ten (10) separate contracts for Construction Management Services. Six (6) of these will be for WSIP regions (hereafter referred to as Regional CM contracts) and four will be for single projects (hereafter referred to as Specialty CM contracts).

Regional CM Contracts

• San Francisco Regional
• San Joaquin Regional
• Sunol Valley Regional
• Bay Division Regional
• Peninsula Regional
• Water Supply Projects

Specialty CM Contracts

• New Crystal Springs Bypass Tunnel Project
• Bay Division Reliability Upgrade – Tunnel Project
• New Irvington Tunnel Project
• Calaveras Dam Replacement Project

Descriptions and planned advertisement dates for each Construction Management contract are posted on the SFPUC website at http://sfwater.org/msc_main.cfm/MC_ID/15/MSC_ID/374

The regional contracts will include multiple projects of various types with varying schedules. Apart from the specialty project contracts listed above, not all projects included in a region may be assigned to a Regional CM Consultant. Some projects
are underway and will be fully staffed and completed by SFPUC staff. Very few projects will be fully staffed by the CM Consultants. SFPUC staff will be integrated into each project team organization and staff some of the construction management positions. This will be decided on a project by project basis by the SFPUC. This will vary from region to region and project to project. Each construction management Request for Proposals (RFPs) will identify which projects are included in the CM contract and which functions the CM Consultant and SFPUC will provide for each project.

1.5 WSIP Organization

Exhibit 1 depicts the WSIP program organization. Exhibit 2 depicts the WSIP construction management organization. Exhibit 3 is a generic project level organization for construction management. The project organizations will reflect the specific needs of each project, but all CM functions must be addressed. The WSIP organization is led by a Program Director, with two Deputy Directors. The Deputy Director of Pre-Construction is responsible for the implementation of WSIP projects through the Bid and Award phase. The Deputy Director of Construction is responsible for the implementation of WSIP projects from the start of the Construction phase through the Closeout phase. Regional Project Managers (RPMs) direct the management of each project within a region for all phases of implementation. The RPMs report to the Deputy Director of Pre-Construction through the Bid and Award phase, and to the Deputy Director of Construction for the Construction and Closeout phases.

The WSIP construction program will have 3 levels of Construction Management (CM) Consultants; a Program CM Consultant, Regional CM Consultants, and Specialty Project CM Consultants. Specialty Project CM Consultants will manage the Bay Division Reliability Upgrade Tunnel Project, The New Irvington Tunnel Project, the New Crystal Springs Bypass Tunnel Project, and the Calaveras Dam Replacement Project.
EXHIBIT 1

WSIP Program Organization Chart

General Manager

Assistant General Manager for Infrastructure

Labor Relations and Community Programs

Infrastructure Quality Assurance

WSIP Director

WSIP Controls Manager
WSIP Communications Director
WSIP ROW Manager
WSIP Shutdown Coordinator
Lead Client/Operations Representative

Pre-Construction Phases

Construction and Closeout Phases

Transition to Construction

WSIP Pre-Construction Deputy Director

WSIP Construction Deputy Director

Project Management Bureau

Project Controls and Support Bureau

Engineering Management Bureau

Construction Management Bureau

Contracts Management Bureau

Bureau of Environmental Management

Environmental Construction Compliance Manager

Regional Project Managers:
- San Francisco Local region
- San Joaquin Region
- Sunol Valley Region
- Bay Division Region
- Peninsula Region
- Water Supply Region

* Regional Project Managers report to the Deputy Director of Pre-Construction through Bid and Award Phase and to the Deputy Director of Construction during Construction and Closeout Phases.

(See Exhibit 2 for Construction Organization)
EXHIBIT 2

WSIP Construction Management Organization Chart

- Deputy Director of Construction
  - CM Operations Manager
  - PLA Administrator
  - Environmental Construction Compliance Manager
- Administrative Support
- Shutdown Coordinator
- Regional Project Manager
- Program Construction Manager
  - Program QA Manager
  - Program Contracts Manager
  - Program Safety Manager
  - Regional Safety Managers
  - Program Construction Controls Manager
- Regional Environmental Compliance Manager
- Regional Environmental Coordinator
- Public Outreach Specialist
- Project CM 1
- Project CM 2

[Change July08:added]
[Change Oct08:box relocated]
[Change Oct08:lines reconfigured]
EXHIBIT 3

WSIP Generic Project Level Organization Chart

For Construction Management

[Change July08: Added]

Regional Construction Manager

Project CM *

Project Engineer

Administrative/Document Control Specialist

Lead QA Inspector

Test and Startup Engineer

Environmental Inspector

QA Inspector

Material Testing/Surveying

Geotechnical Support

Field Contracts Administrator

Office Engineer

Construction Scheduler/Cost Control Specialist

Estimator

* Project CM for Specialty CM projects will report to the Regional Project Manager.
1.5.1 **Program Construction Manager (PCM) Consultant.** The SFPUC will utilize a consultant to provide programmatic oversight of construction management for the WSIP Program. The functional positions the PCM Consultant will provide are depicted in Exhibit 2. The main role of the PCM Consultant is to advise, assist, review and make recommendations to the Program Director and the Deputy Director of Construction on construction management plans, procedures, business processes and systems, and construction issues; and provide independent oversight of the construction management organizational effectiveness and compliance with program procedures. The objective of the PCM Consultant’s oversight is to maintain Program standardization, conformity and consistency throughout the duration of the WSIP. The PCM Consultant will report to the Deputy Director for Construction.

This CM Plan requires that Regional and Project CM Plans be developed that apply the approach and business processes defined by this Plan. (See Section 1.5.2) The PCM Consultant will review all project plans required by this CM Plan that are developed by the CM Consultants and/or SFPUC staff and provide comments to the RPMs, and monitor and audit compliance with the Plans and the WSIP Construction Management Procedures during construction.

The PCM Consultant will assist the SFPUC in implementing a Construction Management Information System (CMIS) to be used for the WSIP at the project, region and program level. The CMIS will be used by the SFPUC and every Consultant and Contractor working on the program. The CMIS will standardize the construction business processes and reporting requirements defined in this CM Plan. The PCM Consultant will be responsible to monitor the utilization of the CMIS and for its maintenance and improvement as needed.

Based on the information collected from each project through the CMIS, forecasts and trends, the PCM Consultant will review the overall Program Schedule, analyze schedule delays or problems, and suggest remedies and solutions. The PCM Consultant will also review project cost records, trends and forecasts, analyze potential cost overruns or problems, and suggest remedies and solutions.

When requested, the PCM Consultant will conduct constructability and schedule reviews to advise and recommend alternatives to save cost and time.
When requested, the PCM Consultant will coordinate with SFPUC Security Officers to advise on security compliance and suggest remedies to deficiencies.

When requested, the PCM Consultant will advise on technical construction and engineering issues and work quality issues and recommend remedies.

When requested, the PCM Consultant will review and analyze construction changes, claims and disputes.

1.5.2 **Construction Management (CM) Consultants.** To supplement the availability and experience of the SFPUC staff, consultants will be hired as described in Section 1.4. Regional CM Consultants will be responsible for the management and implementation of the project CM teams for the projects assigned in their respective regions. Each Regional CM Consultant will prepare a Regional CM Plan consistent with this WSIP CM Plan and the Construction Management Procedures. Regional CM Plans must address the plan for providing the Regional CM Office as specified by SFPUC, the staffing of the regional functions assigned to the Regional CM Consultant, and the processes for integrating the regional office organization into the business process and the overall CM organization. The Regional CM Consultant is responsible for the management of all CM staff assigned to the Regional Office and the project CM teams assigned to the Regional CM Consultant. The Regional CM Consultant leads the resolution of all major project issues, and ensures effective performance of the CM teams and compliance to all WSIP Plans and Procedures. The Regional CM Consultant is also responsible for assisting the RPM in coordination and inter-face with other projects not directly assigned to the Regional CM Consultant. The Regional CM Consultant reports to the RPM and is the point of contact with the RPM for the administration of the Regional CM Consultant contract, personnel issues and performance.

CM Consultants may be requested to provide constructability reviews of design deliverables and assist with the Bid and Award Phase of WSIP projects.

1.5.3 **Specialty Project CM Consultants.** Specialty CM Consultants will perform all the duties of the Project CMs that report to a Regional CM Consultant but will report directly to the RPM. In addition, the Project CM for a Specialty CM Consultant will be responsible for the CM contract management and administrative duties described in this CM Plan.
1.6 Roles and Responsibilities

The roles and responsibilities of positions within the WSIP organization related to the WSIP Construction Program are summarized below. More specific responsibilities will be defined in the WSIP Construction Management Procedures Manual. Not all positions will be required to be provided fulltime on every project, and for some projects can be combined, depending on the workload. If positions are combined, the appropriate qualifications for the combined functions must be provided.

1.6.1 **Assistant General Manager (AGM) for Infrastructure.** Manages the SFPUC Infrastructure Division. Reports to the General Manager. 

1.6.2 **Program Director.** Manages and directs all aspects of the execution and delivery of the WSIP, including policy, systems and procedures to support execution. Manages all staff, Consultants and Contractors involved in the WSIP through the WSIP organization. Reports to the AGM for Infrastructure.

1.6.3 **Environmental Construction Compliance Manager.** Oversees the effectiveness of environmental compliance monitoring during construction and post-construction. Develops procedures for environmental compliance monitoring and provides an audit function for the Bureau of Environmental Management (BEM) Manager on conformance to the procedures during construction. Tracks and resolves non-compliant actions, communicates with regulatory agencies, including providing mandatory compliance reports, and reviews and approves CEQA variance requests. The ECCM will be supported by other staff within BEM. Reports to the BEM Manager.

1.6.4 **Program Management Advisor.** Provides advice to the Program Director and the Deputy Program Directors in all aspects of the development and execution of the WSIP. Executes specific tasks assigned by the Program Director. Manages the Program, Project and Pre-Construction Management Consultant (PPPCM) contract and resources. Reports to the Program Director.

1.6.5 **Program Controls Manager.** Develops scheduling and cost control systems, processes, tools and resource planning for the program controls support of WSIP. Directs the efforts of staff and Consultants involved in the development and execution of the WSIP Program Controls System. Determines the flow of information from the CMIS to the WSIP Program Controls System and monitors the implementation of the CMIS to ensure it will support the WSIP Program Controls System. Reports to the Program Director.
1.6.6 **Deputy Director of Pre-Construction.** Manages all WSIP projects through the Bid and Award phase. Manages the RPMs and the project teams. Defines all processes and procedures related to project execution through the Bid and Award phase. Defines the resource requirements and manages the performance assessment of all assigned staff and Consultants. Collaborates with the Deputy Director of Construction for assignment and priorities of the RPMs. Reports to the Program Director.

1.6.7 **Deputy Director of Construction.** Manages the Construction and Closeout phases of all WSIP projects. Manages the RPMs during the Construction and Closeout phases and the construction management teams. Defines all processes and procedures related to project execution for the Construction and Closeout phases. Defines the resource requirements and manages the performance assessment of all assigned staff and Consultants. Collaborates with the Deputy Director of Pre-Construction for assignment and priorities of the RPMs. Reports to the Program Director.

1.6.8 **Regional Project Manager(s) (RPM).** Manages a group of WSIP projects, managing Project Managers through the Bid and Award phase; and Regional CMs and Project CMs for specialty projects during the Construction and Closeout phases of a project. Provides approvals or recommendations related to scope, budget and schedule of all assigned projects. Manages the coordination of all construction projects within an assigned region. Manages all activities related to pre-purchase of material and equipment by SFPUC until hand-off to the Project CMs. Reports to the Deputy Director of Pre-Construction through a project’s Bid and Award phase and to the Deputy Director of Construction through a project’s Construction and Closeout phases. Manages and administers the CM contracts assigned to his/her region.

1.6.9 **CM Operations Manager.** Supports the Deputy Director of Construction and the PCM in planning the logistics and resources for construction management, integration of construction management firms into the CM organization, and developing construction management procedures. Interfaces with the Construction Management Bureau Manager for resource utilization of SFPUC staff and provides operational support to the Deputy Director of Construction in the implementation of the construction management organization and mobilization of regional and project offices. Assists the RPM with project close-out. Reports to the Deputy Director of Construction.
1.6.10 **Project Labor Agreement Administrator (PLA)**. Manages the implementation of and compliance with the Project Labor Agreement for the WSIP. Participates in Pre-Bid and Pre-Construction meetings to explain the PLA requirements. Organizes and facilitates pre-job conferences in which work scopes are assigned to respective crafts. Administers grievance procedures on jurisdiction claims and other disputes. Coordinates local area employment programs as provided for in the PLA. Coordinates substance abuse testing. Provides support to Contractors and to signatory unions in the PLA implementation on individual projects. Reports to the Deputy Director of Construction.

1.6.11 **Shutdown Coordinator**. Develops shutdown plans for each system shutdown required to accommodate WSIP construction activities. Maintains the WSIP Master Shutdown Schedule, and defines, coordinates and updates requirements for shutdowns. Assures requirements are developed and defined during design and incorporated in the Contract Documents. Interfaces with Operations, user agencies, and Project CMs in the planning and execution of shutdowns during construction. Reports to the Deputy Director of Construction.

1.6.12 **Program CM (PCM)**. Supports and assists the Deputy Director of Construction in his/her overall functions and duties. Oversees the programmatic functions for construction management. Collaborates with the RCMs and Manager of Construction Management Bureau to develop and maintain resource plans to support construction management. Monitors and reviews budgets and forecasts for construction management. Monitors the WSIP Construction Program Master Schedule. Reviews Contractors proposed ways to accelerate delayed schedules, makes recommendations, and provides input on claims. Monitors participation in Dispute Review Boards (DRB). Identifies major issues and proposed solutions, and produces program level trend reports related to schedule and cost, quality assurance, safety and contracts administration to the WSIP Deputy Director for Construction. Reports to the Deputy Director of Construction.

1.6.13 **Program Quality Assurance (QA) Manager**. Develops the requirements, business processes, procedures and training for quality assurance applications during construction. Monitors and audits compliance by the project CM teams with quality assurance procedures and requirements and consistent enforcement of the contract terms related to quality. Assures necessary quality requirements are included in the Contract Documents to match the scope of the project. Provides input to resources planning and provides program level trend reports related to quality to the PCM. Reports to the PCM.
1.6.14 **Program Contracts Manager.** Develops the requirements, business processes procedures and training for the contracts administration function during construction. Monitors and audits contracts administration procedures and requirements and consistent enforcement of the contracts compliance by the project CM teams. Monitors projects to assure that prompt payment is maintained. Provides program level trend reports related to Field Contract Administration to the PCM. Reports to the PCM.

1.6.15 **Program Safety Manager.** Develops the requirements, business processes procedures and training for safety management and oversight during construction as set forth in the WSIP Safety Approach. Manages the performance and resources of the Regional Safety Managers assigned to the project CM teams, assuring compliance with program procedures and the WSIP Safety Approach and contract specifications related to safety. Reviews safety requirements in Contract Documents to match the scope of the project. Provides program level trend reports related to safety to the PCM. Reports to the PCM.

1.6.16 **Regional Safety Manager(s).** Conducts review of the Contractor’s and CM Consultant’s compliance with contract terms relating to safety as set forth in the WSIP Safety Approach. Maintains records of safety compliance and effectiveness and assists in the investigation of safety incidents. Reports to the Program Safety Manager.

1.6.17 **Program Construction Controls Manager.** Develops the Construction Management Information System (CMIS) for construction, and related business processes, procedures and report formats, to assure standardization and conformity for construction management throughout the WSIP. Conducts training and monitors and audits compliance by the project CM teams to procedures and processes related to schedule and cost control and the CMIS. Provides input on resources planning and provides Quality Assurance reviews of construction reports generated from the construction management organization. Reviews status updates developed by the Construction Schedule/Cost Specialists for input to the WSIP Program Control System. Provides input to the CM Consultant scopes and Construction Contract Documents for requirements for schedule submittals; performance monitoring and reporting; and provides support to the Shutdown Coordinator in identifying potential scheduling conflicts for system shutdowns. Monitors document and records control for claims and proper storage at project completion. Reports to the PCM.
1.6.18 **Regional Outreach Liaison(s).** Plans and implements public outreach efforts for projects assigned to a region. Facilitates construction execution by coordinating with all impacted residents and businesses, and project stakeholders. Reports to the RPM.

1.6.19 **Assistant Regional PMs [Change July: Added “s”] (Assistant RPM).** Supports the RPMs in their assigned duties. The Regional PM may delegate duties to the Assistant Regional PM as appropriate to ensure effective management and oversight of a region, including assisting with the management and administration of CM contracts assigned to a RPM. Reports to the RPM.

1.6.20 **Client/Operations Representative(s).** Provides operations support coordination between Operations and Maintenance, Water Quality, Resource Management and other SFPUC Operating entities during all project phases. Coordinates through the Project CMs with Contractors to manage the system shutdowns, including ensuring SFPUC Operations resources are planned and execute their duties in support of each system shutdown. Provides input for the development and review of Contractor’s test and startup plans and provides input to the review of submittals, as-built drawings; Requests for Substitution (RFS), [Deleted: 5Mar09 Requests for Deviation (RFD)], submittals, change requests, and Value Engineering Change proposals. Participates in inspections for substantial and final completion. Prepares Operations and Maintenance Plans for new facilities prior to final completion and turnover. Assists the Project CM in turnover of completed facilities to SFPUC for operation. Reports to the RPM.

1.6.21 **Regional CM(s) (RCM).** Directs the construction management organization for a region, including managing the Project CMs and regional implementation resources. Oversees the management of all assigned construction contracts to ensure compliance with all contract terms and conditions and the WSIP construction management plan and approach. Ensures forecasts and required reports are provided by the Project CMs to the RPMs for inclusion in the WSIP program controls system. Works closely with the RPM relative to regional budget and schedule issues. Monitors for timely processing of submittals, Requests for Information (RFI), Requests for Substitution (RFS), [Deleted: 5Mar09 Requests for Deviation (RFD)], Application for Payments and change orders. Resolves conflicts and problems arising in the projects between Contractors and Project CMs. If the RCM is a consultant, the RCM is also responsible to oversee the Regional CM contract including performance of CM staff; resource planning and hiring; and reporting. Reviews and approves the recommendations of Project CMs of change orders within the parameters of
the WSIP Change Approval Matrix and all recommendations for contractual actions against a Contractor. Assists the RPM in reviewing and developing strategies to address claims from Contractors. Leads and participates in constructability reviews assigned to the regional CM firm. Reports to the RPM.

1.6.22 **Regional Environmental Compliance Manager(s) (RECM)**. Integrates environmental responsibilities and requirements into the construction process; coordinates with the regional and project teams on environmental compliance issues; and implements the Mitigation Monitoring and Reporting Plan (MMRP). Manages and assigns Specialty Environmental Monitors and Environmental Inspectors; maintains quality and consistency of project environmental inspection reports; maintains quality and consistency of field inspections and monitoring; manages agency notifications and communications; assists the Project CM with variance request determinations; and reviews non-compliance and violation reports. Prepares biannual and annual compliance reports for agencies; and conducts Environmental Training of Contractor and Inspection staff. Provides Agency interface for noncompliance and violations, and coordinates resolution with SFPUC Environmental Construction Compliance Manager. Coordinates with SFPUC Bureau of Environmental Management (BEM) permitting managers regarding Interagency Permitting Task Force site visits. [Change Aug08:Added] Reports to the RCM. [Change July08:Deleted] [Change Aug08:Deleted For Specialty CM projects, this function will be provided by the Specialty CM Consultant and will report to the Project CM for specialty projects.]

1.6.23 **Regional Environmental Coordinator(s) (REC)**. Sets up and maintains environmental compliance records and files in coordination with SFPUC document controls requirements and the RECM. Prepares compliance reports, and maintains permit binders, and tracks variance requests. [Change Aug08:Added] Reports to the RECM. [Change July08:Deleted] [Change July08:Deleted For Specialty CM projects, this function will be provided by the Specialty CM Consultant and will report to the Project CM for specialty projects.]

1.6.24 **Project CM(s)**. Manages the project construction contracts as the “City Representative” as defined in the SFPUC Construction Contract Documents. Administers the construction contract; implements quality plans to assure all construction work is completed in conformance to the Contract Documents; implements environmental compliance requirements and procedures; manages schedules, costs, and change orders; assists with Public Outreach efforts; and maintains all construction documentation and records. Prime point of contact between the Contractor and the SFPUC and
external stakeholders. Supervises and directs the performance of the project CM team and ensures conformance to established policies and procedures for the management of the project. In this regard, the Project CM is responsible for all of the duties and responsibilities assigned to all members of the project team reporting to the Project CM. Reviews and recommends for approval all change requests. [Deleted : 5Mar09] Requests for Deviation (RFD). [Change July08:Deleted Value Engineering proposals] Value Engineering Change Proposals and Application for Payments. Determines and recommends when contractual action is necessary against a Contractor and elevates all such issues to the RCM and RPM. Approves schedule submittals, updates and revisions. Prepares monthly assessments of project status and reports to the [Change July08:Added] RCM. [Change July08:Deleted P] Supports and assists the Regional Safety Manager in the implementation of the WSIP Safety Approach. Assists the Shutdown Coordinator in coordinating with the Contractors to develop and implement project specific system shutdown plans during construction. Manages the use of the Project Engineers [Change July08:Added] and design support during construction. Develops and executes Project CM Plans that address all aspects of the WSIP CM Plan as applied to the specific project. Reports to the RCM.

1.6.24.1 Project CM(s) (for Specialty CM projects). Performs all of the duties of the Project CM. In addition, leads any constructability reviews assigned by the RPM and oversees the Specialty CM contract including performance of CM staff; resource planning and hiring; and reporting. Provides forecasting and reporting of Construction and Construction Management phases to the RPMs for inclusion in the WSIP Program Controls System. Reports to the RPM. [Change July08:Added] Wherever this CM Plan (and the CM Procedures) requires the Project CM to report to or provide information to the RCM, for Specialty CM projects the RCM is replaced by the RPM.

1.6.25 Administrative /Document Control Specialist(s). Provides clerical, administrative and document control/records management support to a project CM office and support to the Regional CM team. Establishes office procedures and manages the administrative functions of an office. Maintains project records, correspondence and filing system. Enters documents into the CMIS. Orders all supplies for the field office. Reports to the Project CM.

1.6.26 Field Contracts Administrator(s) (FCA). Provides support to the Project CM in the administration of the terms and conditions of the contract. Manages the contract change process including monitoring and tracking
changes and claims resolution and coordinates with the Project CM and Project Engineer on the identification of Change Requests to be incorporated into Change Orders. Manages the preparation of change orders, including preparing Record of Negotiations and maintaining the contract files. Reviews Application for Payments and project correspondence to the Contractor for conformance with contractual requirements. Reviews and responds to RFI's that request clarification of contractual requirements. Assists the Project CM in contractual closeout to ensure all administrative and contractual requirements are met. Reports to the Project CM.

1.6.27 QA Inspector(s). Assures that the construction work is performed and completed in accordance with the Contract Documents. Conducts periodical surveillance and inspection of the work, monitors the Contractor’s quality process, and coordinates field sampling and testing for verification of quality results as needed. Prepares daily inspection reports and other quality records, including deficiency and non-conformance notices. On each project, one QA Inspector will be designated a “lead” inspector for the project team to assist the project CM in planning for and coordinating all QA inspection activities, compiling all daily inspection records, reviewing field construction related submittals, inspecting all material and equipment arriving on site, monitoring resolution of all quality issues and leading the Substantial Completion and Final Completion inspections. Projects will be staffed with various specialty discipline QA inspectors as needed for the specific work activities. These disciplines may include civil, piping, welding, mechanical, electrical/instrumentation, structural and in-factory inspections. The designated Lead QA Inspector reports to the Project CM and all other QA Inspectors assigned to a project report to the designated Lead QA Inspector.

1.6.28 Office Engineer(s) (OE). Assists the Project CM in the administration of the construction management process. Manages the submittal and RFI processes, and Application for Payment process. Schedules and documents project meetings, and coordinates progress and safety reporting. Coordinates, documents, and provides receipt acceptance of SFPUC furnished equipment and materials from the Contractor and transfer to the SFPUC. Coordinates turnover of as-built record drawings, Operations & Maintenance Manuals, spare parts, and warranties to SFPUC Operations. Not all projects will justify a fulltime OE; on small projects, these responsibilities on those projects may be assigned to other project team members by the Project CM. Reports to the Project CM.
1.6.29 **Project Engineer(s).** Provides the interface with the Engineer of Record who develops the engineering design and Contract Documents for WSIP projects. The Engineer of Record can be the Engineering Management Bureau or Design Consultants or both, if project designs are developed jointly. The San Francisco Department of Public Works may also be involved as the Engineer of Record. Provides design support during construction, primarily through review of technical submittals, RFIs, RFSs, Requests for Deviation (RFD), and change orders and as requested by the Project CM for consultation or clarification of design issues. Participates in start-up and testing activities, final inspections and contract closeout activities. Reports to the Project CM. The Project Engineer is responsible for ensuring the appropriate technical support is provided when requested by the Project CM and for executing any WSIP CM Procedures requiring the Engineer of Record.

1.6.30 **Test and Startup Engineer(s).** Manages the SFPUC’s responsibilities for the support of the testing, startup and commissioning activities as required by the Contract Documents by implementing and deploying the requirements of unit/component tests; function and system tests; acceptance tests; and start-up tests. Reviews the Contractor’s test and Startup Plans and coordinates with SFPUC Operations, through the Client/Operations Representative, to minimize impacts on existing operating systems and facilities. Coordinates with the Contractor for vendor training and turnover. Reports to the Project CM.

1.6.31 **Environmental Inspector(s).** Inspects, evaluates, verifies and documents that construction activities are in compliance with environmental conditions and requirements contained in the California Environmental Quality Act (CEQA), National Environmental Policy Act (NEPA) documents (if applicable), Mitigation Monitoring and Reporting Plan (MMRP), federal, state and local permits and construction documents. Implements the MMRP and conducts daily or routine inspection of environmental parameters including: site cleanliness, exclusion fencing, erosion control features, hazardous material use and storage, excavations, earthwork, access and staging areas, equipment, materials, dust suppression practices, and noise abatement. Prepares daily Environmental Inspection Reports; Monthly Compliance Reports; reports required by the MMRP; non-compliance and violation reports; and Variance Request Forms. Report to the designated Lead QA Inspector.

1.6.32 **Specialty Environmental Monitor(s).** Inspects and monitors Contractor activities for compliance with environmental performance requirements in specific specialty (i.e., biology, hydrology, archaeology, historic and Native American issues, paleontology, arborist, etc.). Provides clearance of work.
areas for Threatened and Endangered species, prepares compliance reports, non-compliance and violation reports, and preservation and documentation (for cultural and paleontology resources). Conducts pre-construction surveys and evaluate field changes and proposed variances for wildlife and botanical issues. Reports to the Environmental Inspector.

1.6.33 **Construction Schedule/Cost Specialist(s).** Provides scheduling support to the Project CM during construction. Reviews and recommends for approval the Contractor’s baseline schedule and cost loaded Summary Schedule, and any revisions to those schedules. Provides time impact analysis for change orders and schedule claims analysis. Reviews Contractor’s monthly progress schedule update and compares it to the approved schedule and reported monthly progress. Prepares monthly update of the Summary Schedule according to the Contractor’s performance, schedule updates and Application for Payment requests, for the Project CM’s Monthly Construction Progress Report. Analyzes and monitors cost and schedule trends and provides an independent assessment of progress and forecast at completion of schedule and cost. Reports to the Project CM.

1.6.34 **Estimator(s).** Provides cost estimating support for the review and assessment of change requests and value engineering Change proposals. Reports to the Project CM.

1.6.35 **SFPUC Infrastructure Bureaus.** Provide technical and resource support to the WSIP Organization. These include:

**Project Management Bureau (PMB).** Provides SFPUC project management staff resources assigned to the WSIP organization as requested by the Deputy Directors. Works with the two WSIP Deputy Directors on resource planning to optimize use of SFPUC staff.

**Program Controls and Support Bureau (PCSB).** Provides SFPUC staff resources assigned to the WSIP organization as requested by the Deputy Directors. Works with the two WSIP Deputy Directors on resource planning to optimize use of SFPUC staff. Provides water system engineering functions. Develops the requirements, procedures and training for records management for WSIP. Monitors and enforces compliance with records management processes and procedures by the WSIP organization.

**Engineering Management Bureau (EMB).** Provides engineering planning and design and development of the Contract Documents for construction for WSIP projects, design support during construction as requested by the
Deputy Directors, and assists the Project Managers in management of design consultants. Prepares final as-built drawings. Works with the two WSIP Deputy Directors on resource planning to optimize use of City and SFPUC staff.

**Construction Management Bureau (CMB).** Provides SFPUC construction management staff resources assigned to the WSIP organization as requested by the Deputy Director of Construction. Works with the two WSIP Deputy Program Directors on resource planning to optimize use of SFPUC staff. Coordinates with other City departments to augment SFPUC construction management staff.

**1.6.36 Contracts Management Bureau.** Manages all procurement activities for the SFPUC, including contractor pre-qualification, the advertisement and bidding for construction contracting and the procurement of vendors and consultants. Processes payment requests from consultants, vendors and contractors for payment by the City Controller and monitors compliance with prompt payment provisions.

**1.6.37 Bureau of Environmental Management (BEM).** Directs the WSIP environmental review, permitting, and environmental compliance efforts prior to and during construction, and oversees/tracks the mitigation efforts during construction.

**1.6.38 [Change July08:Added] SFPUC Regional Construction Manager (City RCM).** Responsible for SFPUC construction management organization for a region, including assisting the RPM in managing the Consultant Regional Construction Manager RCCM, CCM and the City staff assigned to the construction phase of the contracts. Assist the RPMs in managing, administering, and coordinating the RCCM and CCM contracts within his assigned regions. Reviews, comments, and recommends approval/rejection of changes to scope, budget and schedule to the RPMs, based on the recommendations of the consultant RCCM, CCM and City Project CMs.

**[Change Oct08:Deleted Reviews and recommends approval to changes within scope, budget, and schedule to the RPMs, based on the recommendations of the consultant RCCM, RCM and City Project CMs.]** Serves as the liaison with the City Attorney on contracting issues and claims. Coordinates regional schedule, budget, and safety issues with the PM Consultant. Oversees the management of construction contracts managed by City forces. Responsible for the City CM staff and their integration with the Consultants teams, including performance, resource

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planning, and hiring. The City RCM reports to the RPM for all WSIP CM duties for the region.

1.6.39 [Change July08:Added] Public Relations Specialist. Resolve construction issues associated with large construction projects and a demonstrated ability to help minimize impacts and eliminate conflicts that may affect schedule and cost. Communicate construction issues such as access to businesses and homes, temporary road closures to motor vehicles and bicycles, traffic detours, noise and dust impacts, recurring complaints from residents and businesses, claims for property damage, crisis communications and construction site safety are all essential. Work with a multi-disciplinary team, providing day-to-day communications strategy and program support services. Provide additional resources on short notice if needed to assist with unforeseen events requiring communication/public affairs assistance.

1.7 Communication Policies and Organizational Procedures

Communication plays a vital role in the success of the WSIP. It is very important to develop and maintain all channels of communications between all WSIP stakeholders. The construction management staff must be fully integrated into the overall WSIP management organization and maintain strong relationships and open communications with the various project team members as well as with project consultants. Open channels of communications are of critical importance in matters such as engineering, contracts, legal, environmental issues, safety, health, quality, system shutdowns, construction operations, risk management, closeout and turnover to the operating department. Generally, lines of communication will follow the lines of the organization. The Project CM plays a crucial role in communication during construction. The construction management staff must direct any communications with outside agencies, Contractors, and SFPUC’s various Bureaus and Operations personnel through the Project CM to ensure a single and consistent message. Informal, and ongoing, communication between the Project CM, RCM and RPM are necessary; these 3 positions form the nucleus of the daily management of the projects during construction.

The role of construction management presents many challenges that require direct interface with many project participants. In particular, coordination and communication with the Project Engineer whether it is EMB or a Design Consultant, will be required to assure that technical support is obtained in a timely manner. [Change July08:Added] Ongoing communication with the RECM will also be vital to ensure changes that occur during construction do not violate requirements of the California Environmental Quality Act (CEQA). The CMIS is a vital communications tool. The business processes necessary to ensure the input of
accurate and timely data must be followed to maximize the use of this tool to communicate throughout the WSIP organization.

The CM organization and CM contracting strategy also pose unique communication challenges. The organization of the WSIP by geographic regions, the use of Specialty CM Consultants within a region, the schedule and physical interface between projects, and the relationships between system shutdowns will require that communication not only be vertical within, but horizontal across, the CM organization. Project CMs, RCMs, RPMs and RECMs, in particular, must constantly be aware of the relationship a specific project issue or event may have on other projects and be pro-active about communicating with counter-parts on other regions and projects to minimize any adverse impacts.

Open communication and coordination with the Contractors must be extensive throughout the construction period. **[Change July08:Added]** The Contract requires that the Project CM and the Contractor develop a Project Communication Plan. Weekly meetings will be scheduled with the Contractors to review short and long range plans, resolve potential problems, and coordinate the activities of all project participants with the construction schedule.

It will be important that written communication be relevant and clearly address an issue or decision so there are no misunderstandings that cause delays.
Section 2 – Construction Management Approach

Note: The Program CM (PCM), Program Quality Assurance (QA) Manager, Program Contracts Manager, Program Safety Manager, and Program Construction Controls Manager collectively provide oversight of the construction management implementation and process. For brevity, the term “PCM” in the following discussion of approach may be used to describe the involvement of any of these positions as appropriate to their respective functional areas of responsibility. Specific CM Procedures will more specifically define how each of these positions is involved.

2.1 Pre-Construction Phases

2.1.1 Program Construction Scheduling and Sequencing. The Program, Project and Pre-Construction Management (PPPCM) Consultant, working closely with SFPUC staff, developed level 2 construction sequencing schedules in late 2006, with the express purpose of testing the validity of the construction durations at that point in time and to identify system shutdowns required for each project. This exercise was not intended to take the place of the development of more detailed construction schedules by the Project Engineers during design. As the Project Engineers update the level 2 construction schedules, the SFPUC Project Managers are responsible for including the results in their monthly project forecasting requirements. This information is required to be incorporated into the project schedules and the Master Shutdown Schedule by PCSB and is critical to enabling an ongoing assessment of the Master Shutdown Schedule. Project CMs will review the Project Engineer’s construction schedules and sequences and provide input into the development of these schedules.

2.1.2 Constructability and Biddability Reviews. Following Notice to Proceed of each of the CM contracts, the Project CMs will provide constructability reviews of design package deliverables for their assigned projects. These reviews will be conducted for:

- Completeness of Design Documents for constructability
- Adequacy of Contractor’s construction compound area; Field Office, storage and lay down
- Incorporation of known underground and overhead interferences along project alignment
- Potential Health and Safety issues, if any
- Potential environmental issues, if any
- Potential community issues, if any
- Construction methods that may be specified that result in excessive costs
- Construction Schedule including shutdown constraints
• Identification of Inspection, Testing and Acceptance of Systems
• Materials delivery plan or method
• Potential conflicts within the Specifications
• Constructability impacts due to environmental requirements
  • [Change July08: Added Bullet] Completeness and integration of all parts of the Contract Documents for biddability.

The SFPUC Construction Management Bureau (CMB) will coordinate these reviews with the Project CMs. Review comments, in a format defined by SFPUC, are to be provided within 3 weeks of receipt of the design package.

2.1.3 Bid and Award Phase Assistance. The Project CMs may be requested to provide support for pre-bid meetings, and responses to questions submitted by bidders. This support will be [Change July08: Deleted requested and provided through] [Change July08: Added] as directed by the RPM.

2.1.4 Preparation of the CM RFPs, Interview and Selection. The SFPUC has published a schedule of procurement of the CM Consultants on the SFPUC website at http://sfwater.org/msc_main.cfm/MC_ID/15/MSC_ID/374. The SFPUC will manage all aspects of the procurement process, including determination of the makeup of the selection panel for each RFP. Each RFP will include the specific projects that will be assigned to the CM Consultants and a description of the CM functions to be staffed [Change July08: Deleted to] [Change July08: Added] by SFPUC personnel and by the CM Consultants will be included.

2.1.5 Construction Contracts Procurement Strategies and Bid Packaging. RPMs and Project Managers have conducted extensive analysis of procurement strategies and bid packaging for each WSIP project. This includes one design/build project, several contracts for SFPUC purchased equipment and material, and multiple contract packages for a single project. While some of this may be subject to change as project designs are finalized, the current plans will be reflected in the CM RFPs as they are advertised.

2.1.6 Construction Contracts Pre-Bid Conference. The SFPUC conducts a pre-bid conference during the advertisement for bids on all WSIP projects. This conference is scheduled and coordinated by the SFPUC Contracts Administration Bureau. The RPM, Project Engineer and the CM Consultants will provide support and assistance in conducting each conference. Pre-bid conferences generally will cover the following topics:

• Scope of work
• Addenda (if any)
2.1.7 Assistance with Permits and Rights-of-Way. It is anticipated that pre-
construction permits and lands and rights-of-way will be secured before the 
Notice to Proceed date for any construction contract. The SFPUC has a 
proactive approach to this, along with resources dedicated to permitting and 
right of way procurement. The Project CMs will provide assistance in the 
interpretation of permit requirements, development of special condition 
clauses in construction contracts for permit conditions, advice on the extent 
of temporary construction easement needs and coordinating with 
Contractors if work-arounds are needed to address any conflicts related to 
permit requirements or rights-of-way and easement needs during 
construction. It will be the Contractor’s responsibility to obtain many of the 
permits. The Project CMs will assist in reviewing Contract Documents 
before bidding for permit requirements and will monitor the Contractor’s 
schedules for obtaining permits.

2.1.8 Regional Offices. The Regional CM Consultants will be required to 
provide regional offices for their staff and SFPUC staff. The SFPUC has 
conducted an initial study to determine potential locations for regional 
offices, the regional positions requiring office space, office dimensions, and 
the office equipment required for each occupant. Each Regional CM RFP 
will define the location, office layout, occupants, and office equipment 
including a breakdown of office equipment that will be supplied by SFPUC 
and by the Regional CM Consultant. The provision for these offices is 
dependent on the collective schedules of the projects assigned to a Regional 
CM. The PCM and RCM will work with each RPM to establish the 
schedule for providing a regional office that promotes efficient management 
of the region.

2.1.9 Project Offices. The Contractors will be required to provide project offices 
for each CM team, to specifications that will be included in each 
construction contract. These requirements will be reviewed by the Project
CMs for specialty projects and the Project CMs and RCMs for Regional projects.

2.1.10 Environmental Mitigation Monitoring and Reporting Plan. The environmental consultant preparing the environmental review compliance documents is responsible for preparing a Mitigation Monitoring and Reporting Plan (MMRP) for each project prior to the start of construction. Section 2.2.12.1 describes this plan. The Project Engineer is responsible for coordinating with BEM to ensure the requirements of the MMRP are included in the Contract Documents.

2.1.11 Prepare and Submit Construction (CM) Management Plan. Regional and Project CM Plans are required for each WSIP project. Regional CM Plans are prepared by the RCM and submitted to the RPM. Project CM Plans are developed by the Project CMs and submitted to the RCM or the RPM if prepared for specialty CM projects. Regional and Project CM Plans shall not supersede this WSIP Construction Management Plan; rather, they complement this Plan and reflect the Project Specialty CM Consultants and Regional CM Consultants approach to implementing this CM Plan by addressing proposed project-specific and regional applications unique to a project and/or regional team structure. The Regional and Project CM Plans must address the functions and business processes defined by this CM Plan that are necessary for the operation of a regional or CM office, identify who will staff and perform each function, and how the WSIP Construction Management Procedures will be implemented. The Plans must incorporate all SFPUC staff assigned to fill certain positions and functions within a CM team. The Regional and Project CM Plans must provide specific organizational charts and personnel assignments. Other elements that are to be addressed include but not limited to:

- Safety
- Site security
- Delegation of responsibilities (significant for lead QA inspector, Office Engineer and RCM duties on specialty CM projects)
- Configuration control of approved Contract Documents
- Project Quality Assurance, including identification of materials testing consultants
- SFPUC pre-purchased material and equipment acceptance and turnover
- Organizational communications
- Project risk management
- Environmental mitigation and permit conditions monitoring and reporting
• Dewatering and discharge plans

2.1.12 [Text Added:5Mar09] **Prepare and Submit a Construction Management (CM) Safety Plan.** The Project CM will be required to submit to the RPM a copy of the final Project CM Safety Plan prior to the Construction Notice to Proceed date but in reasonable time to allow for review and comment by the Regional Safety Manager prior to the start of field construction activities. This Plan will address safety of the project CM team (i.e., CM employees and subconsultants) during the conduct of their activities. The format will be specified in the CM contract and CM Procedures. The Regional Safety Manager will conduct a limited review the Plan for conformance to the specification requirements, not for the means and methods used by the Project CM.

2.1.13 [Text Added:5Mar09] **Prepare and Submit a Construction Management (CM) Quality Assurance (QA) Plan.** The minimum requirements for the Project QA Plans will be defined in the WSIP CM Procedures. Project QA Plans will incorporate all WSIP QA standard procedures and documentation and include (but not limited to):

- Project Quality organization and authority,
- Field quality control procedures,
- Quality personnel experience qualifications and/or training,
- Independent materials testing firm(s) qualifications,
- Quality orientation training of site personnel,
- Contractor and subcontractor interface and coordination,
- Control of special processes,
- Type and frequency of materials testing verification,
- Control of measuring and test equipment,
- Control of deficiencies and non-conformances,
- Quality records/test data control,
- Quality reporting to the WSIP construction management staff.

Each Project CM is responsible for preparing a Project QA Plan for review by the Program QA Manager and approval by the RPM. The Project QA Plan must address how the Project CM will verify Contractor compliance with environmental requirements.

2.1.14 [Text Added:5Mar09] **Prepare and Submit a Risk Management Plan.** Each project will have risks associated with safety, cost, quality, schedule, environmental compliance, and operations. The Project CM is responsible for developing a project risk profile and plan for submittal to the RCM,
PCM and RPM for review. Each Risk Management Plan shall include a description of each risk, probability of occurrence, mitigation measures, an action plan for each mitigation measure, the methodology to measure the effectiveness of each measure, and the frequency of review and updating. The Contractors should be encouraged to participate in the development of these plans and in the mitigation action plans.

2.2 Construction Phase

2.2.1 Construction Management (CM) Plan Requirements. The Regional and Project CM Plans submitted by the CM Consultants during the pre-construction phase shall be managed and implemented during the lifetime of the CM Consultant contract period. CM Consultants shall not deviate, alter or change their submitted and approved CM Plan without the prior approval of the Regional Project Manager. [Deleted : 5Mar09 are required for each WSIP project. Regional CM Plans are prepared by the RCM and submitted to the RPM. Project CM Plans are developed by the Project CMs and submitted to the RCM or the RPM if prepared for specialty CM projects. Regional and Project CM Plans shall not supersede this WSIP Construction Management Plan; rather, they complement this Plan and reflect the Project Specialty CM Consultants and Regional CM Consultants approach to implementing this CM Plan by addressing proposed project specific and regional applications unique to a project and/or regional team structure. The Regional and Project CM Plans must address the functions and business processes defined by this CM Plan that are necessary for the operation of a regional or CM office, identify who will staff and perform each function, and how the WSIP Construction Management Procedures will be implemented. The Plans must incorporate all SFPUC staff assigned to fill certain positions and functions within a CM team. The Regional and Project CM Plans must provide specific organizational charts and personnel assignments. Other elements that are to be addressed include: Safety, Site security, Delegation of responsibilities (significant for lead QA inspector, Office Engineer and RCM duties on specialty CM projects), Configuration control of approved Contract Documents, Project Quality Assurance, including identification of materials testing consultants, SFPUC pre-purchased material and equipment acceptance and turnover, Organizational communications, Project risk management, Environmental mitigation and permit conditions monitoring and reporting, Dewatering and discharge plans.

2.2.2 Safety. Safety is the top priority of every member of the WSIP. The WSIP Safety Approach, available on the WSIP Construction Management Program webpage:
http://sfwater.org/detail.cfm/MC_ID/15/MSC_ID/374/C_ID/3814, sets forth the safety-related responsibilities for construction Contractors, CM Consultants, the Regional Safety Manager, the Program Safety Manager, and the SFPUC. Under the Safety Approach, construction Contractors will have full and total responsibility for site safety associated with construction and their operations, for the safety of their personnel and for ensuring a safe work environment for CM staff and visitors to the site. The SFPUC will comply with all legal and regulatory requirements for identifying pre-construction and construction site hazards, including safety requirements in construction and CM contracts, providing safety training for SFPUC staff and ensuring that SFPUC staff comply with safety requirements. The Program Safety Manager will coordinate with the SFPUC to develop the requirements for the WSIP Safety Approach. The Program Safety Manager will also participate in all investigations of safety incidents and maintain records of compliance and results of the WSIP Safety Program.

The project CM team will take a limited role in monitoring and observing the Contractor for compliance with the WSIP Safety Approach. The project CM team will not conduct safety inspections but should notify the contractor of any observed project safety hazards and require that corrective actions be initiated in a timely manner to ensure compliance with contract and regulatory requirements. The Contractor is responsible for selecting the appropriate corrective actions. The project CM team should not make any suggestions or provide guidance to the Contractor that could be construed as directing the means and methods of the Contractor.

[Change July08:Deleted However,] If any member of the project CM team observes a situation where there is imminent threat to life or limb, they should ensure that the Contractor takes immediate corrective action, and may direct the Contractor to stop the work involved. Should the Contractor fail to take action on an imminent danger to life and health concern after being advised of the unsafe condition, it is the responsibility of the Project CM to notify the Regional Safety Manager and the Program Safety Manager for further action. The Project CM is expected to demonstrate interest in safety by establishing a firm, positive attitude among its staff toward prevention of accidents.

It is important to emphasize that the construction Contractors will be fully and totally responsible for the construction means, methods, techniques and all construction safety in connection with a project. The project CM team shall not provide instructions or guidance to the Contractor that might be construed as directing the work unless an imminent threat to life or limb is observed by the project CM team.
2.2.2.1 **Contractor Safety Program.** The Contractor will be required to submit to the Project CM a copy of the Contractor’s final Site Specific Safety and Health Program (HASP), certified by the Contractor’s qualified safety professional and Project Manager, [Change July08:Deleted within 14 days of the Notice to proceed date but in reasonable time to allow for review and comment by the Program Safety Manager] [Change July08:Added 10 working days prior…] 10 working days prior to the start of site work activities. The submittal format will be specified in the Contract Documents. The Program Safety Manager will conduct a limited review of the Contractor’s [Change July08:Deleted Safety Program] [Change July08:Added] HASP for conformance to the specification requirements, not for the means and methods used by the Contractor. Neither the Project CM nor the Program Safety Manager shall participate in developing the Contractor’s [Change July08:Deleted Safety Program] [Change July08:Added] HASP. Other safety related submittals are defined in Section 00814 of the Contract Documents.

2.2.2.2 **CM Safety Plan Implementation.** The Project CM Safety Plans submitted by the CM Consultants during the pre-construction phase shall be managed and implemented during the lifetime of the CM Consultant contract period. CM Consultants shall not deviate, alter or change their submitted Project CM Safety Plan without the prior approval of the Regional Project Manager.

[Deleted : 5Mar09 The Project CM will be required to submit to the RPM a copy of the final Project CM Safety Plan. The Project CM will submit a copy of the final Project CM Safety Plan prior to the Construction Notice to Proceed date but in reasonable time to allow for review and comment by the Regional Safety Manager prior to the start of field construction activities. This Plan will address safety of the project CM team (i.e., CM employees and subconsultants) during the conduct of their activities. The format will be specified in the CM contract and CM Procedures. The Regional Safety Manager will conduct a limited review the Plan for conformance to the specification requirements, not for the means and methods used by the Project CM.]
2.2.2.3 **Accident Reporting and Safety Records.** Any OSHA recordable or lost time accident, no matter how minor, will immediately be brought to the attention of the Project CM, who will in turn notify the Regional Safety Manager. The Contractor must file a written report within 24 hours of the incident. The Regional Safety Manager will compile and maintain safety data of CM and Contractor work for monthly reporting to the Program Director, the Deputy Director of Construction, the Program Safety Manager, and the PCM.

2.2.3 **Construction Management Information System (CMIS).** The SFPUC, along with the Program, Project and Pre-Construction Management (PPPCM) Consultant, conducted an analysis of various management information systems for WSIP. The SFPUC has chosen Contract Manager/Expedition by Primavera for the CMIS. An implementation plan is being developed. This plan will include definition of business practices and processes for correspondence, submittals, [Change July08:Deleted Request for Information - Change Requests.][Deleted: 5Mar09 Requests for Deviation],[Change July08:Added] RFIs, [Deleted: 5Mar09 RFDs, Change Requests] Application for Payments, Quality Assurance records and document control that will support this CM Plan and the accompanying procedures. The plan will provide direction for configuring and implementing features and applications to meet the business practices and processes, and provide for training of SFPUC staff and the CM Consultants in the use of CMIS. The applications are anticipated to be introduced initially on the San Francisco/Local Program and be completed in 2008. It is the SFPUC’s intention to use the CMIS for processing of correspondence, submittals, [Change July08:Deleted Request for Information - Change Requests.][Deleted: 5Mar09 Requests for Deviation],[Change July08:Added] RFIs, [Deleted: 5Mar09 RFDs, Change Requests] Application for Payments, Meeting Minutes, and Action Items in an integrated manner that involves its use by the SFPUC, the Regional CM Consultants, the Specialty project CM Consultants, and the Contractors.

2.2.4 **CM Contracts Management.** The collective CM contracts represent a significant investment by the SFPUC, and therefore, a significant part of the WSIP budget. Project budgets for CM soft costs have been developed based on initial resource loading of each project based on schedule information available at the time the budgets were developed and assumptions regarding resource allocations and billing rates. CM Consultants are required to resource load their contracts and work tasks to the same level of detail (specific resources by project) for import into the WSIP Master Project Schedules in [Change July08:Deleted 3e] [Change July08:Added]P6.
order to provide adequate visibility and control of costs for construction management, each CM Consultant is required to invoice according to the WBS structure utilized for each project in [Change July08:Deleted] and provide monthly status reports to the RPMs. These reports will include the current status of expenditures and accruals, forecast costs to complete each task, forecast costs at completion of each task, a variance analysis and explanation, and major issues affecting the costs for the CM contract. Resource issues should also be discussed as they relate to upcoming needs of deviations from the initial Project CM Plans. These reports will not include status of the construction projects, except as necessary to explain impacts to the CM contracts.

The RPM is responsible for all regional and project CM Consultant contracts assigned to his/her region. CM Consultants will report to the RPM (or City RCM, if delegated) for all contract administration matters, including task orders, requests for staff substitution or addition, approval of monthly invoices, and monthly reporting of contract status and budget forecasts. The City RCM (supported by administrative staff from Infrastructure Administrative Services and Contracts Administration Bureau) will assist the RPM in managing CM Consultant contracts. The City RCM will review and recommend for RPM approval all CM Consultant task orders, task order revisions, and requests for staff substitutions and additions. The City RCM will also review CM Consultant contract invoices and make recommendations to the RPM for payment or non-payment.

The PCM will also monitor CM contract status reports for variances and trends.

2.2.5 Public Outreach. The SFPUC’s Public Information Office is responsible for all public outreach efforts for WSIP. That effort is continuous throughout project execution and varies according to the needs of each region and project. The Public Information Office will work with the Public Outreach Liaisons to prepare regional and project outreach plans and provide staff support for the outreach efforts. During construction a Regional Outreach Liaison is assigned to each Regional office and manages the outreach efforts for each project in that region. project CM teams and Contractors will support the outreach efforts as required. The Regional Outreach Liaisons will attend each weekly project meeting during construction to discuss ongoing efforts and special efforts that may be needed to deal with issues that arise during construction.
2.2.6 **Program Security.** The SFPUC Homeland Security (HLS) Department determines security requirements for the existing facilities and construction sites. The SFPUC will define the requirements and responsibilities for security for CM Consultants and Contractors. These requirements and responsibilities will be included in each contract. During construction, HLS will monitor and audit conformance to the requirements, assess the effectiveness of security measures, respond to security concerns or changing requirements that may arise and lead all investigations into security breaches that may occur. The HLS representative will interface directly with the RPM and with the Project CMs for project specific security issues during construction.

2.2.7 **Project Labor Agreement.** The SFPUC has negotiated and adopted a Project Labor Agreement (PLA) for the WSIP projects $5 million and greater. The purpose of the PLA is to insure against work stoppages of any nature and provide local construction workforce opportunities. All Contractors are required to work under the terms of the PLA. The PLA Administrator will be responsible for the oversight and management of this agreement on behalf of the SFPUC.

2.2.7.1 **Project Labor Plan.** Contractors will be required to prepare a project-specific plan addressing local workforce participation, recruitment and retention of apprentices, craft manpower requirements, and contingency plans to alleviate any craft shortages that might be experienced during construction. The Project Labor Plan identifies the responsible person to address and resolve the identified issues, as well as any grievances that might arise. The plans will be reviewed by the PLA Administrator and Project CM and approved by the RPM.

2.2.7.2 **Pre-Job Conference.** This is a required meeting under the terms and conditions of the PLA, which must occur prior to NTP. The purpose of the meeting is for the Contractor and subcontractors to inform interested construction unions of project particulars including work hours, safety & health, parking, peak craft workforce and jurisdictional assignment of respective scopes of work. If disagreement with one or more craft assignments should occur, the union and/or unions are required to file a written appeal with the Contractor and the PLA Administrator, which is then adjudicated as prescribed in the PLA. Substance abuse testing and local area employment considerations are also covered in the pre-job meetings. Participants include the PLA...
Administrator, SFPUC Labor Relations staff, project delivery staff, the Contractor and all named and/or known subcontractors, and signatory unions. The Contractor and all field subcontractors are required to submit to the PLA Administrator signed Letters of Assent before performing any work on the respective project. The pre-job conference is the responsibility of the Contractor with the PLA Administrator scheduling acceptable time/dates and providing minutes.

2.2.7.3 **Local Area Employment.** Under the PLA, consideration is given to local area workers seeking employment. Special emphasis is placed on enrolling local area residents in apprenticeship programs and providing employment opportunities on WSIP projects. The PCSB is responsible for providing program estimates for construction workforce demands, updated annually. During pre-construction PCSB staff will review engineering drawings and related documents at 95% complete to provide greater detail on craft workforce demand to support the project. This information will be forwarded to the PLA Administrator, who will be responsible for working with the prime contractor and subcontractors and the affected unions to identify opportunities for local area hiring. Should any issues arise with the program, the PLA Administrator shall be responsible for raising issues at the weekly progress meetings. Should the PLA Administrator require access to the job site and/or the Contractor or subcontractor during construction, the PLA Administrator shall first notify the Project CM and then provide written reports of any significant decision or exchange.

2.2.7.4 **Substance Abuse Testing.** Under the PLA, all new hires are required to pass a substance abuse test and be cleared for work. The Contractor is required to work with a pre-qualified third party administrator to implement this requirement. The PLA Administrator will coordinate this program. The requirement will be a standing agenda item at all pre-job meetings for general notification and pre-construction meetings to discuss any issues that might arise prior to implementation on the project. The Contractor is responsible for certifying that all workers on the job site have passed the pre-employment drug test and have been certified for work on the project. The PLA Administrator will provide quality assurance through periodic and routine audits of test results.
2.2.8 Construction Administration

2.2.8.1 Regional Office Mobilization/Demobilization. The Regional CM Consultants are responsible for providing and maintaining regional offices. The RPM will identify the locations, define the requirements, dictate the timing of mobilization of those offices, and include those requirements in the CM RFPs. Close coordination is required between the RCM, RPM (or designee) and the SFPUC Information Technology (IT) Department to ensure logistics are fully planned and the office infrastructure is in place when needed. The CM Operations Manager will assist the RPM in coordination with other SFPUC departments involved. The RPM will work with the Regional CM consultant to determine the optimal time to demobilize the regional office.

2.2.8.2 Project Office Mobilization/Demobilization. The Contractors are responsible for providing and maintaining project offices. The RPM and RCM will define the requirements of those offices and ensure the requirements are included in the Contract Documents. Close coordination is required between the Contractor, RPM, RCM, or specialty CM Consultant, and the SFPUC IT Department to ensure logistics are fully planned and the office infrastructure is in place when needed. The CM Operations Manager will assist the RPM and RCM in coordinating with the Contractor, the project CM teams and other SFPUC departments involved.

2.2.8.3 SFPUC Purchased Material and Equipment. The SFPUC has identified a number of projects that require one or more pre-purchase contracts for equipment and/or material to be used by the construction Contractors. The schedules for procurement, fabrication and delivery are the responsibility of the SFPUC Project Managers, working with the Project Engineers. These procurement schedules are required to be included in the Project Master Schedules in P6 and updated as necessary by the RPMs. The Project Engineers are responsible for defining the Quality Control requirements, the in-factory witness testing requirements and frequency, any storage requirements, and the delivery and turnover requirements by the vendors. These requirements must be integrated with the construction specifications developed by the Project Engineers. The Project CM may assist the Project Engineer as requested. The RPM will arrange for any needed in-factory inspections, through the PCM, the CM Consultant, a
The project CM team will manage the delivery of the equipment to the work site, the acceptance inspection upon delivery and the transfer to the Contractor, and maintain all records of inspections and turnover.

2.2.8.4 **Project Risk Management Plan.** The Project Risk Management Plan submitted by the CM Consultant during the pre-construction phase shall be managed and implemented during the lifetime of the CM Consultant contract period. [Deleted : 5Mar09] Each project will have risks associated with safety, cost, quality, schedule, environmental compliance, and operations. The Project CM is responsible for developing a project risk profile and plan for submittal to the RCM, PCM and RPM for review. Each Risk Management Plan shall include a description of each risk, probability of occurrence, mitigation measures, an action plan for each mitigation measure, the methodology to measure the effectiveness of each measure, and the frequency of review and updating. The Contractors should be encouraged to participate in the development of these plans and in the mitigation action plans. [Deleted : 5Mar09] The project CM team, along with the PCM, RPM and Contractor, will review these plans periodically, update the probability of occurrence, assess the status and effectiveness of each mitigation measure, and add new risks that may arise. The status of each Risk Management Plan will be included in the Project CMs monthly project status report to the RPM.

2.2.8.5 **Partnering.** The SFPUC has adopted formal partnering for each WSIP project. The extent of partnering may vary from project to project, but the RPM is responsible for defining the requirements for partnering in each construction contract. The RPM, Project CM and Contractor will collaborate to select a partnering facilitator, identify the project personnel who will be involved in each partnering session, and schedule the location and frequency of the sessions. The cost of partnering will be shared between the SFPUC and the Contractor as defined in the Contract Documents. The RPM will approve these Plans.

2.2.8.6 **Pre-Construction Conference.** Upon award of the contract, but prior to the commencement of work, a Preconstruction Conference will be scheduled by the Project CM. The primary purpose of the conference is to discuss administrative procedures, establish field communications, discuss project constraints (including environmental and permit conditions), and
discuss contractual and technical requirements. The agenda will distributed by the Project CM to all parties prior to the conference. The Project CM will conduct the conference with primary assistance from the RPM, the Field Contracts Administrator and Office Engineer. Other attendees should include the [Change July08:Deleted P] [Change July08:Added] RCM, the designated Lead QA Inspector, the Regional Safety Manager, the PLA Administrator, the Construction Schedule/Cost Specialist, the Project Engineer, the Regional Environmental Compliance Manager, the Client/Operations Representative, Regional Outreach Liaison, Shutdown Coordinator (if required), and any other staff considered essential to conducting the meeting. The Contractor’s attendees should include the Project Manager, Project Superintendent, Safety Manager, Quality Control Manager, Scheduler, and any other key personnel as determined by the Contractor. An attendance list for the meeting must be recorded on a sign-in roster. Senior SFPUC and program management staff are also encouraged to attend.

The following issues (but not limited to) should also be addressed and agreed upon at the Preconstruction Conference. The discussion of each item should include identification of the parties (SFPUC and Contractor) for the administrative and contractual requirements of each item.

- Introduction of attendees; relationships, roles and responsibilities
- Contract authority as it relates to both the SFPUC and the Contractor
- Contract administration process (work flow for submittals, approvals and documentation)
- Submittal requirements
- Application for Payment requirements, including HRC submittal requirements
- Change request requirements and other commercial items
- Contract technical requirements
- Project Labor Agreement (PLA) requirements (if applicable to the project) and other contract compliance requirements.
- Public Outreach
- Schedule requirements
- Contractor Safety Plan requirements
- QA/QC Plan requirements and handling of quality issues
• Environmental compliance requirements and permit conditions
• Coordination requirements with other projects.
• Security requirements
• System Shutdown Plans (as applicable to the project)
• Incentives (if included in the contract)
• Value Engineering Change Proposal (if included in the contract)
• Partnering
• Contractor’s presentation of its plans, methods, and schedules for accomplishing the work
• Interface with operations
• Dispute Review Board (DRB) (if applicable)

The Project CM is responsible for producing detailed minutes of the meeting. Feedback for corrections and clarifications are important to establish a clear record of the meeting.

2.2.8.7 **Construction Status Meetings (Weekly Progress Meetings)**

Construction Status Meetings provide a forum for timely collaborative discussion and issue resolution and provide documented responses to issues discussed. These meetings are an important component of a pro-active claim management strategy.

The Project CM must meet with the Contractor on a weekly basis to review short- and long-range plans, progress achieved to date, resolve potential problems, and coordinate the activities of all project participants with the construction schedule so that inspections, tests, and other items may be effectively scheduled.

The Project CM has the primary responsibility for conducting the Construction Status Meetings. He/she manages and sets the agenda for the meetings, produces meeting minutes and ensures distribution to all attendees.

The agenda for construction meetings should include (but not be limited to):

• Introduction of new attendees and their areas of responsibility
• Review of minutes of previous meetings and amend, if necessary
• Status of previous action items
• Project Schedule and progress of work and comparison with the latest approved baseline schedule
• Contractor’s invoice and payment status
• Safety Report, which should include a review of all safety incidents and near-misses that have occurred since the previous meeting. The Safety Report must also identify accidents and crafts involved and corrective methods to be initiated by the Contractor. The Safety Report shall include a review of the most frequent incidents and the corrective actions selected by the Contractor to eliminate their reoccurrence. No member of the project CM team shall give instructions to the Contractor regarding corrective actions that might be construed as directing the Contractor’s work.
• Project Labor Agreement issues
• Analysis of work accomplished since previous meeting, offsite fabrication status and issues, material delivery status and issues, actual and potential schedule slippage, problems arising from proposed changes, and other factors that might affect the work
• Discussion of upcoming work and the work sequence on the critical path and on the 4-week “window” schedule derived from the approved project schedule. The Project CM must discuss all activities in the 4-week schedule and document the Contractor’s responses regarding status. Discussion of corrective measures to maintain construction schedule
• Discussion of the Quality Program, including observations, problems, and performance. The discussion shall include Quality Assurance/Quality Control nonconformance report (NCR) status, including plans for closing all open NCR’s, and any outstanding quality reports, test results, or submittals
• Discussion of work coordination with other contracts, including actual and anticipated problems and delays
• Discussion of potential changed conditions, time extensions, and other relevant issues
• Status of Submittals and [Deleted : 5Mar09 and RFDs] RFIs
• Status of commercial issues, including status of change log.
• Environmental compliance issues, including pre-construction surveys needed
• Status of follow-up to any partnering sessions (as applicable)
• System Shutdowns (minimum 3 month lead time)
• Start Up (minimum of 6 month lead time).
• Lessons Learned
• Interfaces requirements with SFPUC Operations
• Public Affairs
• Housekeeping
• Other Business
• New action Items

The Project CM and Contractor will be responsible for ensuring the attendance at these meetings of any members of their respective project teams necessary for a full discussion of the items on the agenda. The Project CM is responsible for producing meeting minutes for distribution to all meeting attendees.

2.2.8.8 Contractor’s Application for Payment and Monthly Schedule Update. [Change July08: Deleted Progress Report]
Application for Payments shall be reviewed and processed in a timely manner, using acceptable cost control practices in accordance with contract requirements. The records maintained by the Project CM must be accurate and comprehensive to provide an audit trail at all times throughout the project.

The Contractor shall submit a Application for Payment for each pay period, accompanied by a Schedule Update and Summary Schedule to reflect the agreed upon percentage completion of the work, [Change July08: Deleted the Monthly Contractor’s Progress Report] and any outstanding test results, and inspection and monitoring reports. The progress report will contain the following information concerning progress as well as other information described in Section 2.2.11, “Project Controls”.

[Change July08: Added]
• Progress to date, measured as a percent complete and actual earned value, of each work activity and in total
• A plot of the plan and actual earned value curves for each level specified in the Contract Documents and in total along with a written analysis of budget, cost, and schedule status in narrative and report format. A narrative of any action taken by the Contractor to address any projected problems with schedule, budget, cost, manpower, quality and safety
• A listing of work activities behind schedule, work activities due to start within the next report period, critical path, items causing schedule delays or slippage, and the remedial
measures proposed to be taken to improve or maintain the schedule

The Application for Payment must indicate the percentages of completion and materials in storage for the payments that are requested. Appropriate supporting documentation must be included.

One of the initial submittals required by the Contractor is a detailed Schedule of Values. The Schedule of Values provides the basis for the Contractor’s progress measurement and must present all bid items in sufficient detail to allow accurate progress measurement and payment. The total of all items on the Schedule of Values must equal the award amount of the Contract and must correlate directly to the manner in which the construction schedule is organized and presented.

The Project CM has primary responsibility for implementing the Application for Payment procedures, verifying the accuracy of the Application for Payments submitted by the Contractor at the end of each monthly work period, negotiating agreement with the Contractor for quantities contained in the Application for Payments, and forwarding the Application for Payment to the RPM for approval along with a recommendation for payment. The Project CM maintains inspection reports, pay quantities records, and other supporting documentation required for any required audits.

The Construction Schedule/Cost Specialist assists the review by the Project CM by verifying progress reported by the Contractor and comparing it to the Schedule of Values, and verifying that approved changes are incorporated accurately in the Schedule of Values and the Application for Payment request.

The FCA maintains an Application for Payment file and assists the Project CM by reviewing the pay request for conformance to Contract requirements. The Office Engineer is responsible for the monthly review of the Contractor’s as-built drawings, which is a condition of payment.

The RCM monitors the Application for Payment process for each assigned project and resolves any payments conflicts that may arise between Contractors and Project CM.
The RPM is responsible for approving and processing the Application for Payment through the Contracts Administration Bureau and informing/notifying PCSB when submitted. PCSB is responsible for capturing the Application for Payment in the program database for monthly progress updating and WSIP quarterly reports.

2.2.8.9 **Submittal Management.** A submittal is any item required by the Contract Documents to be submitted or offered by the Contractor in accomplishing the Work. A submittal consists of a Submittal Transmittal cover from the Contractor and the data submitted for review. The Project Engineer is responsible for defining the required submittals in the construction documents before advertisement for bid. If the Project CM is available and under contract prior to bidding, he/she should assist the Project Engineer in developing the submittal requirements.

Submittals may include, but are not limited to, design drawings; calculations; shop and working drawings; certificates; installation or erection drawings; lists of material; operating instructions; catalog cuts; data sheets; brochures; samples; mock-ups; installation instructions; plans to accomplish certain portions of work; schedules; quality plans; safety/security management plans; geo-technical information and monitoring plans; safety plans; system shutdown plans; traffic control plans; utilities relocation and support; test schedules, plans and reports; operations and maintenance manuals; training plans; permits; environmental, hazardous waste and pollution control plans; progress reports; spare parts lists; O&M manuals; vehicle and engine lists and maintenance logs; pre-construction surveys; species relocation plan; construction water discharge plan; noise and vibration plan; re-vegetation plan; storm water pollution prevention plan; cultural resource monitoring and protection plans; neighborhood notification and community communication plans; nighttime lighting plans; and other items used to administer construction or perform the work.

All submittals are processed through the Project CM. The Administrative Document Control Specialist initially logs the submittal in the Submittal Log and attaches any hard copy backup transmittal information received from the Contractor. The Office Engineer performs an initial review for completeness and conformance to submittal requirements and determines who should perform the review. If the submittal does not conform to
contractual requirements it shall be immediately returned to the Contractor with reasons noted and documented in the Submittal Log.

Technical submittals that affect the design are to be reviewed by the Project Engineer. Other submittals may be reviewed by the Project CM, Construction Schedule/Cost Specialist, Regional Safety Manager, Field Contracts Administrator, Regional Environmental Compliance Manager, Shutdown Coordinator, Client/Operations Representative, Regional Outreach Liaison, or RPM as appropriate. Submittals returned to a Contractor with a status other than “Approved No Exception Noted” should note the reasons for revisions or rejection so that the Contractor knows what is required for approval and can shorten the number of cycles and the time required for approval of each submittal.

The Contractor prepares complete submittal packages in accordance with the Contract Documents. The Contractor prepares a Submittal Log and submits the Log with the Baseline CPM Schedule to the Project CM for review. Once approved, the Submittal Log is entered into the CMIS. The Contractor designates appropriate submission dates for all submittals, taking into account the submittal review times specified in the Contract Documents. These dates will allow the work to be accomplished in accordance with the accepted project schedule. Each submittal is required to be included in the Contractor’s final baseline schedule submittal. The Contractor and the Project CM will maintain their respective copies of the Submittal Log through construction.

Submittals require the Contractor to identify the appropriate Specification Section.

Responses will be coded in one of five ways as follows:

- No Exceptions Taken
- Make Corrections Noted
- Submit Specified Items(s)
- Revise and Resubmit
- Rejected
Submittals returned with “No Exceptions Taken” or “Make Corrections Noted” shall be considered as acceptable submittals provided the Contractor complies with the corrections noted. Any other coding, requires action by the Contractor to provide an acceptable submittal before any work is fabricated, manufactured, or constructed.

The Office Engineer will oversee the logging and routing of submittals and ensure that each submittal is reviewed, appropriately commented upon, and returned to the Contractor within the time set forth in the Contract Documents. He/she also ensures that the review of all submittals by the designated reviewer is timely. Timely review and complete documentation are important components of a pro-active claims management plan. The CM Procedures and Contract Documents will define the expected turn-around time for responding to submittals. Submittal Logs will be part of the CMIS and reports will be generated that highlight pending and overdue submittals (by the Contractor and the project team). These reports will be monitored by the PCM and RPM and action initiated as necessary.

2.2.8.10 Request for Information (RFI) Management. An RFI is a document transmitted to the Project CM by the Contractor that requests clarification, interpretation, information, or guidance concerning an aspect of the Contract Documents.

The Project CM is responsible for managing the Contractor’s RFIs, coordinating their review, verifying use of the correct format, and for tracking to ensure that the RFI is addressed in a timely manner. The Project CM establishes and maintains a RFI status tracking system in the CMIS and maintains RFI documents in a readily retrievable manner in the project records management system/CMIS.

The Contractor may submit an RFI at any time that clarification, guidance, or additional information concerning construction requirements is necessary. All RFIs are processed through the Office Engineer who performs an initial review for completeness and conformance to submittal requirements. If the submittal does not conform to contractual requirements it shall be immediately returned to the Contractor with reasons noted and documented in the RFI Log.
The Office Engineer will review the RFI to determine whether
the CM staff can address it in the field by referencing Contract
Documents. RFIs relating to the technical plans or specifications
that cannot be answered by the CM staff will be forwarded to the
Project Engineer. Other RFIs may be reviewed by the Project
CM, Field Contracts Administrator, Office Engineer,
Construction Schedule/Cost Specialist, Regional Safety
Manager, Regional Environmental Compliance Manager,
Shutdown Coordinator, Client/Operations Representative,
Regional Outreach Liaison, or RPM as appropriate.

Requirements for documenting RFIs will be specified in the
construction Contract Documents, and include:

- Address only one issue. Unrelated items should not be
  included in the same Request for Information.
- Identify the item of concern in a clear manner. Provide
  reference to drawing number, specification section,
  equipment nomenclature, referenced submittal, etc., to allow
  a complete understanding of the question.
- Specifically state what information is required and identify
  any concurrent delay or impact to the schedule pending
  receipt of response to the RFI.

Timely and complete responses to RFIs are important
components of a pro-active claims management plan. The CM
Procedures and Contract Documents will define the expected
turn-around time for responding to RFIs. The Project CM is
responsible for monitoring the response time for RFIs and
follow-up as needed to ensure that the RFIs are addressed
expeditiously as possible. RFI Logs will be part of the CMIS and
reports will be generated that highlight pending and overdue
responses. These reports will be monitored by the PCM and
RPM and action initiated as necessary.

2.2.8.11 Not in Use [Deleted : 5Mar09 Request for Deviation (RFD)
Management. An RFD is a document presented to the Project CM by the
Contractor that requests a deviation from some aspect of the construction
drawings, specifications, or contractual requirements [Change July08: Added],
including value engineering proposals. Granting RFDs will be at the sole
discretion of the SFPPUC and any resulting delays to the project are contractor-
caused delays. No time extensions will be allowed for RFDs. CEQA requires
that substantial changes in the project description be reviewed; therefore, if an
RFD will substantially change the project description a Request for Variance
must be prepared, reviewed and processed by the RECM. If the variance is major (as decided by the RECM) it requires approval by the ECCM. The ECCM will determine the appropriate procedure for approval, including supplemental environmental review and agency consultation, if necessary. A Request for Variance must also be prepared and approved if the Contractor proposes a change from the environmental requirements (standard construction measures, MMRP, and permit conditions). The Project CM is responsible for managing the Contractor’s RFDs, coordinating their review, verifying the correct format was used and for tracking to ensure the RFD is processed in a timely manner. The Project CM establishes and maintains the RFD status tracking system in the CMIS, and maintains RFD documents in a readily retrievable manner in the project records management system. If a RFD is approved the Contractor is required to prepare a Change Request. All RFDs are processed through the OE who performs an initial review for completeness and conformance to the requirements and, in consultation with the RECM, to determine if a potential Request for Variance is required. If the submittal does not conform to contractual requirements it shall be immediately returned to the Contractor with reasons noted and documented in the RFD Log. RFDs from technical plans or specifications are reviewed by the Project Engineer. Other RFDs may be reviewed by the Project CM, Field Contracts Administrator, Construction Schedule/Cost Specialist, Regional Safety Manager, Regional Environmental Compliance Manager, Shutdown Coordinator, Client/Operations Representative, Regional Outreach Liaison, or RPM as appropriate. Requirements for documenting RFDs will be specified in the Contract Documents, and include: Address only one issue. Unrelated items should not be included in the same RFD. Provide reference to drawing number, specification section, equipment nomenclature, referenced submittal, etc and a clear description of the deviation that is being requested. Provide a detailed cost and schedule impact proposal. Timely and complete responses to RFDs are an important component to a proactive claims management plan. The CM Procedures will define the expected turn-around time for responding to RFDs. The Project CM is responsible for monitoring the response time for RFDs and follow-up as needed to ensure RFDs are responded as expeditiously as possible. RFD Logs will be part of the CMIS and reports will be generated that highlight pending and overdue responses. These reports will be monitored by the PCM and RPM and action initiated as necessary.

2.2.8.12 Requests for Substitution (RFS) Management. [Deleted : 5Mar09 The Contract Documents may specify a specific manufacturer of a product or component of the work, or contain performance specs with a specific manufacturer identified “or equal”. The Contractor may be permitted to submit requests to substitute manufacturers for those named in the contract but only within 10 days after Notice of Award.] [Added : 5Mar09 The
A contractor may propose a change of a product, equipment or service required by the Contract Documents as a Request for Substitution even if the words “or equal” or “or approved equal” or similar references are used.

Fifty percent of any cost savings resulting from an accepted Request for Substitution will be credited to the City (Refer to Contract Specifications Section 01630).

Request for Substitution submitted by the contractor which will result in an increase in Contractor’s bid prices and/or Contract Time shall be rejected.

Request for Substitution will be considered if received within thirty-five (35) days after Notice of Award. If received more than thirty-five (35) days after award of the Contract RFS may be considered or rejected at the sole discretion of the City.

Such requests are required to use standard formats that are included in the Contract Documents. The RPM is responsible for reviewing such requests with the Project Engineer, and the Client/Operations Representative. Prompt disposition and response to RFSs are required with thorough documentation of the basis of the response. If a substitution is approved that results in cost savings the Contractor will be required to submit a deductive change order.

Requirements for documenting RFSs will be specified in the Contract Documents, and include:

- Address only one issue. Unrelated items should not be included in the same RFS.
- Provide reference to drawing number, specification section, equipment nomenclature, referenced submittal, etc and a clear description of the deviation that is being requested
- Provide a detailed cost and schedule impact proposal if the RFS is approved.

Timely and complete responses to RFSs are an important component to a pro-active claims management plan. The RPM is responsible for monitoring the response time for RFSs and follow-up as needed to ensure RFSs are responded as expeditiously as possible.
2.2.8.13 **Contract Drawing, Specification and Record Drawing Control.**

The Project CM is responsible for ensuring efficient control of contract drawings, specifications and record drawings. A copy of the Contract Documents will be maintained by the Project CM and constantly annotated to reflect all changes that have been approved. A protocol for correlating approved changes in the contracts file to the changes annotated on the Contract Documents are a requirement of the Project CM Plan. As-built “red-line” drawings will be required to be maintained by the Contractor and audited monthly by the project CM team. The Project Engineer will produce a final set of record drawings after the completion of construction, and before project closeout. A portion of the Contractor’s progress payments may be withheld if the Contractor can not successfully demonstrates consistency in producing progress as-built drawings in the manner stipulated in the Contract Documents.

2.2.8.14 **Claims Management.** [Change July08:Deleted A claim is a request or demand for adjustment of the contract price or the contract times, or both, based on assertions that the work actually required to be performed is different from work described by the Contract Documents. The contract describes the process for addressing disagreements between the Project CM and the Contractor about differing work. Disagreements often lead to claims.] [Change July08:Added] If the Contractor disputes any directive, determination, Proposed Change Order, Unilateral Change Order, payment, or other act by the Project CM or City impacting or potentially impacting the performance of the Work, the Contractor may submit a Notice of Potential Claim, followed by a Claim. The Contract Documents describe the process and the time required to file a claim and the form and content of a formal claims submittal.

The entire organization works together to prevent claims. A major part of this effort involves precluding and limiting contract changes. Claims management includes “prevention” that must start during the design phase and be continued through construction.

The principal means of preventing claims is development of properly conceived contractual terms that clearly assign risks to the parties best suited to deal with them, and complete, coordinated design drawings and specifications detailing the technical and operational requirements of the Contract.
Documents. During Contract Document reviews, the construction management staff will focus on these issues to begin the claims prevention measures before the inception of each contract.

The following actions are components of a pro-active claims management program:

- Ensure that detailed planning and scheduling of the work is accomplished by both the Contractor and the CM staff, including a baseline schedule that will help discourage submittal of time-related claims by accurately identifying critical work items and quantifying resource requirements planned for each item of work. The baseline schedule will also be used for monitoring concurrent delays and identifying problem areas for quick resolution. While the Contractor retains responsibility for means and methods, including how the work is scheduled, identifying deficiencies in the schedule, and carefully documenting those deficiencies, can prove useful in countering a claim at a later time.

- Carefully monitor and rapidly respond to correspondence, submittals, RFIs, and RFSs to identify potential problems and minimize the Contractor’s opportunities to claim delays.

- Pro-actively manage the procurement, fabrication, quality assurance and delivery of SFPUC pre-purchased equipment and material.

- Maintain open communication and an open mind when listening to the Contractor’s ideas or complaints and work with the Contractor to solve problems early.

- Participate proactively in “partnering” with the Contractor during the term of the contract. During a partnering session, a “dispute resolution ladder” should be developed to organize and empower staff settlement of problems or disagreements at the lowest organizational level possible.

- Participate in the early establishment of a Dispute Review Board (DRB) or Dispute Resolution Advisor (DRA). Bring deadlocked issues before the Board or Advisor in an expeditious manner to obtain an independent view of the claim. The Project CM team is responsible for preparing timely, persuasive and complete presentations to the Board or Advisor and for compiling evidence or other documentation, as appropriate.
• Maintain a “tough but fair” attitude with the Contractor to assure that the SFPUC is not taken advantage of and the Contractor is treated fairly, particularly on change orders issues.

• Maintain constant job “presence” at the worksite and in the offices to allow constant observation of the work and quick response to problems. Be as knowledgeable as the Contractor as to the “history” of the project and maintain thorough and comprehensive records to display a true picture of events or facts in order to fairly discuss and resolve potentially emerging disputes.

• Always beat any contractual deadlines for responding to the Contractor, but ensure the response is complete and adequate to protect the interests of the SFPUC.

Management of the claims process by the Project CM must be conducted in accordance with the provisions of the contract. The Project CM is responsible for the initial management of claims for his/her project. His/her first duty is to review a Notice of Potential Claim for conformance to the Contract Documents, for making all attempts to resolve the issue with the Contractor so as to avoid a formal claim and to advise the RCM (if a regional project) and the RPM of the receipt of a Notice of Potential Claim. The RPM is responsible for notifying the Deputy Director of Construction. Should a formal claim be submitted by the Contractor, the Project CM reviews the claim for conformance to the requirements of the Contract Documents, notifies the RCM/RPM and the lead in initiating discussions with the SFPUC CM team for responding to the claim. The Construction Schedule/Cost Specialist, Estimator, FCA, Inspectors and Project Engineer provide support in analyzing a claim and preparing a negotiation plan. The formal claim, along with a draft response and negotiation plan, along with supporting documentation, is presented to the RCM, PCM and RPM. Upon finalization of the negotiation plan, the Project CM and FCA will meet with the Contractor to discuss the claim.

The FCA is responsible for documenting all claims negotiations and maintaining record files as part of the contracts files.

2.2.8.15 Dispute Resolution Advisor (DRA) and Dispute Review Board (DRB). DRBs will be required for each WSIP construction contract with a value equal to or greater than $20 million. For
contract values of $10 million to under $20 million, a DRB is optional, but a Dispute Review Advisor (DRA) will be required. For contracts from $2 million to under $10 million, a DRA is required.

For contracts in the $10 million to under $20 million range, the RPM will determine before the contract is bid, whether a DRA or a DRB will be required. Specifications governing the establishment and use of DRAs and DRBs will be included in the Contract Documents.

A DRB will be comprised of an SFPUC nominee, a Contractor nominee, and a third member chosen by the two nominees. The DRB will visit the project for an update on progress at least 2 times per year, and more frequently if agreed to by the SFPUC and Contractor. Either party to the contract may initiate review of an issue by the DRB. The expenses for the DRB will be shared equally by the SFPUC and the Contractor.

A DRA will be comprised of a single nominee selected by the City and Contractor. The DRA will hold an initial meeting with the parties at the start of the project; subsequent meetings will be held only to hear disputes between the parties. Either party to the contract may initiate review of an issue by the DRA. The expenses for the DRA will be shared equally by the SFPUC and the Contractor.

2.2.8.16 Progress and Status Reporting. The Project CM and the Construction Schedule/Cost Specialist will measure the Contractor’s progress and performance using earned values based on the Contractor’s compliance with the scope of work, the approved resource loaded schedule, and the correct assessment of completion for any given activity. Project Construction Progress Reports are required to be submitted by the Project CM to the RPM each month. A reporting calendar is established by the PCM to ensure reporting is completed at the same time for all projects. The Project CM prepares the report and submits it to the RCM (or directly to the RPM for Specialty CM Projects). The RCM is responsible for reviewing each project report and forwarding all project reports with a summary of the overall progress for the region. A standard distribution list for each regional and specialty project report is established by the PCM.
Project Construction Progress Reports are intended to summarize the progress and major issues of a project; they are not intended to be a voluminous document. A standard format will be established by the PCM to include:

- Current status of the project safety plans and records.
- Progress planned and achieved thru the end of the reporting period.
- Schedule issues and forecast completion of schedule milestones.
- Cost and forecast of contract costs at completion.
- Summary of Quality issues.
- Summary of submittal and RFI [Deleted : 5Mar09 (RFD) requests.
- Change request status and summary of trends.
- Summary of environmental compliance.
- Public outreach activities.
- Outstanding issues that could affect cost, schedule, quality, coordination with other projects.

The CMIS and the cost loaded Summary Schedule, will be the primary repository, and source, of data for the Project Construction Progress Report. The Program Construction Controls Manager will develop the data requirements and business practices for the use of the CMIS. The CMIS will provide various status reports in various formats for different CM functional areas (such as change order logs, submittal logs, Quality non conformance logs, etc) that will be useful to Project CMs, RCMs and RPMs, and the PCM to monitor project issues and variances, and to use as attachments to the monthly reports. The PCM will define the formats of functional reports to ensure consistent content.

The project reporting process and business practices for the CMIS will be integrated with the procedures and requirements for WSIP Program Level reporting to ensure timely and consistent input from construction is provided.

2.2.8.17 Value Engineering Change Proposal. Value Engineering Change Proposal (VECP) [Deleted : 5Mar09 proposal] clauses [Change July08:Added] are [Deleted : 5Mar09 not] part of the WSIP construction contracts. [Change July08:Deleted These clauses encourage] [Change July08:Added] These clauses
Encourage Contractors [Deleted : 5Mar09] Contractors should be encouraged to propose changes to the contract design and/or specifications that would reduce the cost of the project and/or provide greater value. If accepted, the resulting cost savings are shared with the Contractor.

[Deleted : 5Mar09] [Change July08:Added] The procedures for Requests for Deviation accommodate value engineering proposals from the Contractor. [Change July08:Deleted Change added – Added : 5Mar09] VE proposals can be submitted to the Project CM at any time during construction, with supporting documentation. Project team members, including the RPM and the Project Engineer will review the proposal for merit. The Client/Operations Representative will be involved in the review if the change will affect operations of the facility or system. The Construction Schedule/Cost Specialist and Estimator will analyze the proposal for contract schedule and cost impacts. The SPFUC retains full authority to accept or deny a VE proposal. If a VE proposal is accepted, the Project CM will lead the negotiations with the Contractor to finalize the proposal and any schedule and cost impacts. An accepted VE proposal will be processed as a change to the contract.

2.2.8.18 SPFUC Operations and Maintenance Coordination

Coordination with the SPFUC Bureaus and Operations departments is an ongoing activity prior to construction, during construction and closeout. The Client/Operations Representative is the point of initial contact with SPFUC Operations. Operations will be involved in system shutdown planning and execution, [Deleted : 5Mar09] RFDs, change requests that affect the specifications or maintenance requirements of equipment, design changes to system or facility configurations, and schedule variances and recovery plans that impact system shutdowns of facility operations. Operations may also be requested to review certain submittals, spare parts lists and will participate in the Substantial Completion and Final Completion inspections.

The Project CM must work closely with the Client/Operations Representative or any Operations staff assigned to assist or coordinate any part of the work. The Project CM and RPM shall exercise sound judgment in the level of involvement of Operations during construction. Operations must respond timely to any requests by the project CM team to facilitate decision making and avoid delay claims by the Contractor.
SFPUC Operations will also be responsible for implementing post-construction environmental requirements after Final Completion.

2.2.8.19 **System Shutdown Management and Coordination.** The WSIP will require numerous system shutdowns to accomplish construction. Some are standalone shutdowns in the sense that they can be completed without impact to the operation of the overall system. Other shutdowns impact other parts of the operating system, as well as other concurrent or planned shutdowns. Some can be accomplished at any time; many are restricted to certain seasons of the year. All system shutdowns must be carefully planned and coordinated and the requirements and constraints must be fully defined in the Contract Documents by the Project Engineers. The Client/Operations Representative and the Shutdown Coordinator will review the final Contract Documents to ensure the shutdown requirements are adequately defined.

During the planning and design stages for the WSIP projects, the Shutdown Coordinator works in cooperation with the Project Managers to maintain and update a Master Shutdown Schedule. This schedule is provided each month by PCSB and is updated based on monthly project schedule forecasts provided by the Project Managers. If forecast construction Notice to Proceed dates change, the planned shutdowns may change, which could cause a ripple affect to other scheduled shutdowns. Project Engineers are required to provide detailed construction schedules during design. Any changes to scheduled shutdowns from these schedules must also be reported by the Project Managers and reflected in the Master Shutdown Schedule. The Shutdown Coordinator will report any monthly variances to the scheduled shutdowns to WSIP senior management.

The Shutdown Coordinator prepares summary shutdown data sheets to assist the Project Engineers in defining the requirements in the specifications, provide a basis for the Client/Operations Representative to plan for Operations resources for shutdowns, and provide information to member agencies that will be impacted by system shutdowns. The Project Managers, Project Engineers, SFPUC Operating Divisions and the Water Quality Bureau (WQB) all are responsible for providing input to the shutdown data sheets.
After each construction contract is awarded and Notice to Proceed (NTP) is issued to the Contractor, the Shutdown Coordinator, in cooperation with the Client/Operations Representative, Project CM and the Contractor will review the summary shutdown planning documents against the Contract Documents and the Contractors approved schedule to ensure that the latest information is reflected, the schedule supports the overall system restrictions and all the necessary resources will be available to accomplish the shutdown. The permitting requirements are also reviewed to ensure that all the necessary permits will be place to support the schedule.

The Project CM is responsible for monitoring the Contractors schedule for shutdown activities and reporting the planned dates for shutdowns each month in the Project Construction Progress Report. Any variances must be forwarded to the Shutdown Coordinator by the Project CM for review against the Master Shutdown Schedule for potential impacts to other projects.

Each shutdown will require a Shutdown Implementation Plan no later than 30 days prior to any shutdown. The plan will be the responsibility of the Shutdown Coordinator to prepare and submit to the RPM for approval, but it must be prepared in collaboration with the Client/Operations Representative and include the plan for all Operations support activities. It must be a comprehensive plan and include a detailed schedule for each shutdown, what activities need to be performed to shut the system down and dewater it, and re-fill, disinfect and bring the system back on line. The Plan will also identify what resources and equipment will be involved in each activity and how communications will be handled during a shutdown operation. No later than 30 days prior to each shutdown, the Contractor is required to submit a Contractor Shutdown Plan that identifies the exact need dates for the shutdown, what work the Contractor plans to perform and how he will sequence his work, how he will maintain the shutdown site and how de-watering will be handled and disposed of. The Project CM will schedule a pre-shutdown meeting with the Contractor, Shutdown Coordinator and Client/Operations Representative to confirm the status of the shutdown plans and the schedule for the work. A shutdown should be a separate item of discussion on each weekly construction progress meeting to ensure timely and cooperative execution.
The SFPUC Operating Division has the responsibility for performing each shutdown of the system or facility and may receive assistance from the Contractor as agreed prior to each shutdown. Once the system is shutdown and fully de-watered, the Client/Operations Representative will inform the Project CM who will coordinate lock-out tag-out (if applicable) and inform the Contractor to commence his/her work.

Upon completion of the Contractor’s work, the Project CM will notify the Client/Operations Representative that the work is complete and the system is ready to fill, disinfect and return to service.

The Shutdown Coordinator will produce a shutdown summary report including lessons learned items, which will assist with the succeeding shutdowns. The Shutdown Coordinator shall ensure that copies of the shutdown summary report including the lessons learned items are distributed to all project CM teams, RCMs and RPMs.

### 2.2.8.20 Testing and Startup

Testing, interconnection, and startup are complex portions of construction projects and are required for satisfactory completion of the contract and, therefore, will require thorough planning and proper execution. Testing and Startup is defined to include all tests, initial operations, and other activities related to providing a complete, operational, and functional Project as required for Substantial Completion. Testing and Startup includes all factory testing, functional testing, all performance testing, all commissioning and pre-commissioning activities, all manufacturer’s services, all certification of proper installation, and all troubleshooting, checkout, and shakedown activities. Providing the specified documentation supporting the performance of these activities and the documentation required to report test results is also considered part of Testing and Startup.

Each WSIP project will require some level of Testing and Startup. The requirements will vary by type of project and the facilities involved. The Project Engineer, in collaboration with the Client/Operations Representative, is responsible for defining the testing and startup requirements in each construction contract. The Project CM reviews the Contract Documents for testing and startup and provides a Test and Startup Engineer as
part of the project CM team. Depending on the extent of the work, and as specified by the Project Engineer, the Contractor may be required to provide a full-time Startup Manager as necessary to accomplish the work and submit testing and startup plans as defined submittals. The Contract Documents must include lead time requirements for these plans to ensure adequate time for development and review. The Test and Startup Engineer coordinates with the Contractor and the Client/Operations Representative to develop and review testing and startup plans, ensuring the appropriate support staff is available from the project CM team and SFPUC Operations.

Standard requirements for testing plan content, processes and documentation will be developed by the PCM in collaboration with SFPUC Operations. The Project Engineers will adapt and refine those standards to each construction contract.

Testing and Startup includes the following major functions, with related activities, as appropriate to the project requirements:

2.2.8.20.1 **In-Factory Tests and Source Inspections.** In-factory testing and source inspections are the verification that specific equipment components conform to the required performance specified by the Contract Documents before the equipment is delivered to the construction site.

2.2.8.20.2 **Functional Testing.** Component test and check out is the verification that each component is in compliance with the Contract Documents and is ready to perform its intended function. This is often referred to as “Operational Readiness Testing” and confirms that the installed components will function as intended.

Sub-system test and startup is the verification that a discrete group of related components is functioning as intended and is ready to perform its intended function as part of the overall system.

System test and startup is the operation and verification that all related components and sub-systems are functioning as intended and are ready
for performance testing, final commissioning and operation.

2.2.8.20.3 Performance Testing. Performance Testing is the verification step that the complete Work functions on an extended basis as defined by the Contract Documents. Successful performance testing is a requirement of Substantial Completion.

2.2.8.21 Spare Parts and Warranties. There are two types of spare parts usually required in every contract. The first type is required to be supplied by the manufacturer when any equipment is purchased. These are standard types of spare parts that are included in the equipment purchased price. The second type is required by some contracts to be purchased to cover certain number of years of usage. Spare parts are expected to be delivered before Certificate of Substantial Completion is issued. All spare parts should have a shelf life expectancy to exceed the time required by the contract. They all should be labeled and should be input into the inventory control system.

Project warranties are usually required to be submitted before the contract completion. The Contractor must provide all manufacturer warranties for the equipments supplied and the Contractor certificate of warranty for the project.

2.2.8.22 Acceptance and Closeout

2.2.8.22.1 Substantial Completion and Contractual Milestones. Standard requirements to achieve Substantial Completion will be specified in the Contract Documents. Any additional requirements unique to the project are required to be included in the Contract Documents by the Project Engineer and the RPM. The Project CM will review the final Contract Documents and provide input to these requirements. In general, Substantial Completion will be defined to include:

- Completion of all work required by the Contract Documents.
• Full operation of all components and systems of the work, including acceptance of all testing and startup requirements.
• Completion of all surface restoration. Closeout of all quality deficiencies and non-conformances.
• Delivery and acceptance of required spare parts, operations manuals, and vendor documentation.
• Completion of all required vendor training.

Contractual interim milestones will be defined by the Project Manager and Project Engineer as appropriate to each project and clearly described in the Contract Documents, including all requirements necessary to achieve the milestone. Contractual interim milestones should be applied judiciously to provide schedule control, when part of a project is required to be operational or fully restored before Substantial Completion, or to complete critical system shutdowns. It is important to carefully and completely define the work that is required to achieve a contractual interim milestone. Contractual interim milestones must be enforceable with Liquidated Damages. Incentives for early completion can be considered if there is a clear and definable benefit to the SFPUC.

[Change July08:Added] To facilitate efficient completion, the Project CM will convene a planning meeting with the Contractor when the work associated with Substantial Completion or an interim contractual milestone is approximately 90% complete. This objective of the meeting is to collaborate with the Contractor and discuss what requirements are needed to achieve the milestone.

Contractual interim milestone completion and Substantial Completion must be formally requested by the Contractor to the Project CM in accordance with the procedures set forth in the Contract Documents. The request by the Contractor will include a punch list prepared by
the Contractor. Upon receipt of a request, the Project CM will immediately mobilize project staff necessary to perform a formal inspection of the work. [Change July08: Deleted inspection must be documented and include a description of] [Change July08: Added] The Project CM will prepare a Punch List/Substantial Completion that documents any required work [Change July08: Deleted f] or submittals necessary for the Project CM to recommend acceptance. The Contractor is required to provide all the contractual requirements before a Notice of Substantial Completion is prepared by the Project CM. Approval of contractual interim milestones or Substantial Completion should not be granted unless all of the contractual requirements have been met.

If the Project CM determines that sufficient work has been completed to consider Substantial Completion, the Substantial Completion inspection [Change July08: Deleted also] will result in a [Change July08: Deleted p] Punch [Change July08: Deleted l] List/Final Completion prepared by the Project CM of all items of work that are required to be addressed by the Contractor before Final Completion will be granted. In some cases, a Contractor may request Substantial Completion before the work is sufficiently completed. In these cases, the Project CM should not attempt to prepare a punch list until the work is sufficiently completed. Caution must also be practiced when granting completion of an interim milestone that is early in the construction schedule. If extensive punch list items are needed, some leverage may be lost to force the Contractor to complete the punch list before Final Completion.

2.2.8.22.2 Final Completion. After Substantial Completion, the Contractor must meet additional requirements for Final Completion and release of final payment. These requirements will be defined in the Contract Documents to include successful
completion of all punch list items, demobilization from the project site, submittal of all required warranties, release of any subcontractor or vendor liens, and turnover of all remaining project documents required by the Contract Documents, including final as-built drawings.

The Project CM and FCA will assist the RPM in managing final completion of the contract.

### 2.2.8.23 Project Administration Closeout and Turnover

#### 2.2.8.23.1 Project History and Lessons Learned.

The Project CM is responsible for preparing and submitting to the RPM a Project History and Lessons Learned Report. This report will summarize the scope of the project, information about the Contractor, key subcontractors and key project CM personnel, a summary of the cost and/or schedule growth, major issues, and lessons learned. Lessons learned will be input by the RPM to the CMIS for access by all WSIP project participants. Lessons learned should not wait until the end of the project. They should be discussed at any time during construction when they become evident and posted to the CMIS for other project design and CM teams to use. Judgment must be exercised in documenting lessons learned when a particular issue may be subject to future claims.

#### 2.2.8.23.2 Project File Transfer.

Project files maintained in the Project CM and Regional CM offices will be reviewed, duplicates removed, indexed and delivered to the RPM, who will in turn, deliver the files to the Infrastructure Records Management for archiving. The CM Procedures will provide guidance on the SFPUC’s records retention policy, including electronic and hard copy files and documents that will be retained.

#### 2.2.8.23.3 Warranty Turnover to SFPUC.

The Contract Documents will specify warranties that are
required to be provided by the Contractor as a condition of Final Completion. The Project CM is responsible for monitoring the turnover of warranties and coordinating with the Contractor for the receipt of all warranties. Warranties will be formally submitted by the Project CM to the RPM.

2.2.9  **Quality Assurance/Quality Control (QA/QC)**

2.2.9.1  **Quality Control Requirements.** Quality Control (QC) is the element of Quality Management that focuses on verifying compliance with the requirements of the Contract Documents. The key aspects of verification are:

Verification is performed by individuals who are independent of, and at least as qualified as, those who produced the product or performed the work.

The criteria for acceptance are based on the internal (Contractor’s quality requirements) and external (contractual requirements).

The Contractor is responsible for Quality Control of the Work and for preparing a Quality Plan for the project for review by the Program QA Manager and the Project CM. The Program QA Manager will develop standard requirements for the Contractor’s Quality Plans. The minimum acceptable requirements for quality control testing will be specified by the Project Engineer in the specifications for each project.

2.2.9.2  **Quality Assurance Requirements.** Quality Assurance (QA) is the element of Quality Management that requires developing and implementing a system of processes and procedures that will enable the SFPUC WSIP team to provide confidence that the products and work meet the quality requirements of the Contract Documents. Quality Assurance requires continuous audit and surveillance to provide assurance that the quality program is working as planned. The Program QA Manager develops the minimum requirements and consistent procedures for the Quality Assurance system for the WSIP. Each Project CM will prepare a Project QA Plan that applies the program requirements to the specific needs and resources of the project for review by the RCM and Program QA Manager and approval by the RPM.
2.2.9.3 **Quality Assurance Inspection**

2.2.9.3.1 **Construction QA Inspections.** The Project CM is responsible for providing resources for QA inspection of the Contractor’s work. QA inspections will be conducted as defined in the Project QA Plan prepared by the Project CM commensurate with the type and sequencing of the work. QA inspection is to observe the work and verify the Contractor is complying with his Quality Control Plan and the requirements of the Contract Documents. QA inspectors will provide Daily Inspection Reports, document and inform the Contractor of quality deficiencies observed and prepare non-conformance notices when required. One QA inspector on each project will be designated as the “Lead QA Inspector”, who’s duties (in addition to performing QA inspection) will include assisting the Project CM with planning for QA inspections and resources, assessing the performance of the Project QA Plan, reviewing and compiling individual Daily Inspection Reports and monitoring the resolution and closeout of deficiencies and non-conformances.

2.2.9.3.2 **Quality Management of SFPUC Purchased Material and Equipment.** QC requirements for vendors providing SFPUC purchased material and equipment will be defined by the Project Engineer in each purchase order (PO). The RPM is responsible for developing the requirements for the Quality Plan required from each vendor for inclusion in each PO and for identifying the necessary QA resources to perform QA activities on behalf of the SFPUC. The Project CM should review each PO to confirm the quality requirements are addressed. A critical component of the Project QA Plan is inspection by the Project CM team of the equipment when it is delivered to the construction site, and documentation of turnover to the Contractor. These must be included in the...
Project CMs Project QA Plan if pre-purchased material or equipment is part of the project. The Project Engineer is also responsible for defining the requirements for site storage, [Change July08:Added]preventive maintenance, and acceptance inspection and verification by the Contractor in the construction contracts.

2.2.9.3.3 In-Factory Witness Testing and Source Inspections. In-Factory Witness Testing and Source Inspections may be required for SFPUC pre-purchased equipment and for Contractor furnished equipment. The RPM and Project Engineers are responsible for determining the extent of in-factory witness testing and source inspections required for a project, the inspection and testing requirements and the documentation required. In-Factory Witness Testing and Source Inspections may be performed by the SFPUC, the PCM Consultant, or the Project CM and must be fully defined in each Project QA Plan. The RPM will determine who will perform the witness testing or source inspection. Witness testing and source inspection records are to be included in the construction project files, regardless of when they originate or who within the overall project team is responsible for performing the witness testing or inspection.

2.2.9.4 Materials Testing. The Contractor is required to perform materials testing to conform to the requirements of the Contract Documents and providing records of all tests to the Project CM. The Project CM will perform periodic independent materials testing to verify the results by the Contractor or when systemic quality problems dictate independent testing is needed. The type and frequency of periodic tests will be defined in the Project QA Plan.

2.2.9.5 Survey Control. The Contractor is required to perform survey control during construction and provide records of all surveys to the Project CM. The Project CM will establish control monuments and may conduct surveys to verify the results by the Contractor as mutually agreed to by the RPM.
2.2.9.6 *Quality Records and Documentation*

2.2.9.6.1 *Contractor’s Quality Control Plan.* The Contractor’s Quality Control Plan and implementing procedures define the quality control measures, standards and processes required to ensure that all performed work meets specified quality requirements. The Contractor’s Quality Plan is required to demonstrate application of a four-phase inspection system:

- Preparatory Phase
- Initial Inspection
- Follow-up Inspection
- Final Inspection

The Quality Plan shall address the Quality organization and its relation with the Project organization, the qualifications of the Quality team, the reporting structure within the Contractor’s organization, the requirements for control by the Contractor, subcontractors and testing laboratories, receipt and control of vendor and Contractor data, preparation and use of inspection and test plans, quality assurance testing, acceptance inspections and tests, subsystem tests, integrated systems tests, use of measuring and test equipment, special processes, non-conformances and deviations, notification of hold points and witness tests, certified material test reports and daily inspection reports. The Manager of the Contractor’s Quality organization should not report to the Project Manager nor to the Project Superintendent, but to a principal in the Contractor’s home office. He should be given a letter of authority from a principal in the company to stop the work at any time he sees necessary to correct quality defects.

Inspection and test plans will include references to the specification or standard requiring the inspection or test, frequency of inspection or test,
and acceptance criteria. These plans will reference a test procedure or spell out the test procedure to be used, and define who is to perform the inspection or test.

A Daily Quality Report will be required to be prepared and submitted to the Project CM by the Contractor. This report will be issued each day and record daily progress with the following details:

- Acceptance status of work in progress.
- Applicable inspection phase and verification inspections performed.
- List of M&TE used for the QC inspection.
- Material received on the site.
- Compliance with environmental requirements.
- Nonconforming items.
- Personnel and subcontractors on the site.
- Special Inspection Reports (attached).
- Tests conducted with reports (attached).
- [Change July08:Added]Preventive Maintenance Log
- Other relevant information.

The minimum requirements for the Contractor’s Quality Plan will be defined in the Contract Documents by the PE. The Quality Plan is a submittal with specific schedule requirements that must be defined in the Contract Documents. Liquidated Damages should be included for lack of submittal of an acceptable Quality Plan. The Quality Plan will be reviewed and approved by the Project CM.

2.2.9.6.2 Project QA Plan. The Regional and Project CM Plans submitted by the CM Consultants during the pre-construction phase shall be managed and implemented during the lifetime of the CM Consultant contract period. CM Consultants shall not deviate, alter or change their submitted and approved Cm Plan without the prior approval of the Regional Project Manager.
The minimum requirements for the Project QA Plans will be defined in the WSIP CM Procedures. Project QA Plans will incorporate all WSIP QA standard procedures and documentation and include (but not limited to):

- Project Quality organization and authority.
- Field quality control procedures.
- Quality personnel experience qualifications and/or training.
- Independent materials testing firm(s) qualifications.
- Quality orientation training of site personnel.
- Contractor and subcontractor interface and coordination.
- Control of special processes.
- Type and frequency of materials testing verification.
- Control of measuring and test equipment.
- Control of deficiencies and non-conformances.
- Quality records/test data control.
- Quality reporting to the WSIP construction management staff. Each Project CM is responsible for preparing a Project QA Plan for review by the Program QA Manager and approval by the RPM. The Project QA Plan must address how the Project CM will verify Contractor compliance with environmental requirements.

2.2.9.6.3 [Change July08:Added] **Daily QA Inspection Reports.** Each QA Inspector and Environmental Inspector is required to record daily inspections and observations on Daily QA Inspection Reports. Recording information in a Daily Inspection Report establishes factual entries that may not otherwise be recalled and reconstructed at a later date and provides recorded evidence regarding the Contractor’s compliance with his QC Plan requirements.
Each QA Inspector and Environmental Inspector will prepare a Daily [Change July08:Added]QA Inspection Report for each day of work the QA Inspector is at a fabrication facility or on the construction site. The Lead QA Inspector will review all reports and compile them, along with any QC records provided by the Contractor for the work and any independent materials testing or survey results, in an overall “daily record” for entry into the CMIS. The Project CM is responsible for approving all Daily Inspection Reports and archiving them pursuant to WSIP document control requirements.

Daily [Change July08:Added]QA Inspection Reports shall be used to record the weather for the day, Contractor equipment and labor resources observed to be working, and all inspections performed, observations, significant daily events, problems and communications pertaining to the quality of the work. All entries shall be clear, concise and factual. Personal opinions are not to be recorded. Inspections shall be documented in detail recording how the work is being done, comparing the work to the Contract Documents and making a statement as to whether the work is in compliance with the Contract Documents, including environmental compliance requirements.

Daily [Change July08:Added]QA Inspection Reports shall include the following information:

- Project Name, Contract Number, Date and QA Inspector’s name.
- Weather conditions.
- Contractor’s name and resources (labor and equipment on each item of work inspected).
- Subcontractor and work being performed.
- Schedule activity for each item of work inspected.
- Hold or Witness points inspected.
• Observations of inspections and time of inspection, including out of sequence schedule activities observed.
• Description of deficiencies issued and/or corrected.
• NCR’s issued.
• Re-inspections of work resulting in closeout of non-conformances.

The QA Inspector must complete and submit the Daily Inspection Report before the end of his/her daily work shift.

2.2.9.6.4 Quality Deficiency and Non-Conformance Documentation. [Change July08: Added] [Quality deficiencies and Non-Conformances are defined as documentation, drawings, material, and equipment or Work not conforming to the specified requirements or procedures. A deficiency should be communicated to the Contractor at the time it is observed and documented in the Daily Inspection Report. When a deficiency is not corrected in a pre-established timely manner or when it can be expected to affect the progress of the work, the Project CM will issue a [Change July08: Added] Non-Conformance Notice [Change July08: Deleted Report] [Change July08: Deleted NCR] (NCN). The NCN records a breach of quality and, as such, is issued to the Contractor with a request for response within a reasonable time, usually within 5 days. The Contractor’s response must be meaningful and appropriate. Any proposed corrective action must be approved by the Project CM before implementation and may need to be discussed with the Project Engineer. Before covering or otherwise hiding by subsequent work activities, the QA Inspector will re-inspect the work and report on compliance with the corrective action plan.

2.2.10 Construction Contracts Management
2.2.10.1 **Change Management.** Proposed changes to the contract can be initiated by the SFPUC (through a Proposed Change Order) or the Contractor (through a Change Order Request). Change management is a process used to formalize the documentation, evaluation and approval or rejection of changes to the contract. The Project CM is responsible for managing the change management process in conformance with the requirements in the Contract Documents, leading the negotiation of cost and/or time impacts and providing recommendations for the disposition of changes. The FCA assists the Project CM in managing the change process, maintains all change management files and records of negotiations, and maintains the Change Log. The Project Engineer will support the preparation of owner requested changes and review of all technical changes. Other project CM team members, including the Construction Schedule/Cost Specialist, Estimator, Client/Operations Representative, the RECM and RCM will provide analysis and support as needed. Any changes that will result in CEQA variances must be reviewed by the RECM. Section 2.2.8.11 provides more detail on how CEQA variances must be considered and included in the review of changes to the contract. The SFPUC is responsible for the approval or rejection of all proposed changes, except that “no cost” and “no schedule” changes (Field Orders) may be approved by the Project CM. The timely resolution and thoroughness of documentation of each change is an important part of a pro-active claims management plan. The construction Contract Documents include requirements for the necessary documentation that must be used and accompany all changes.

2.2.10.2 **Change Processing.** Upon receipt of a Change Order Request (COR) from the Contractor or an Owner requested Proposed Change Order (PCO), the change will be added to the Change Log.
CORs [Change July08:Deleted and] [Change July08:Added] are reviewed by the FCA for conformance to the documentation requirements of the Contract Documents. If the COR [Change July08:Deleted request] is non-conforming, it will be returned to the Contractor via written correspondence explaining the reasons for non-conformance. [Change July08:Deleted The Change Log will be annotated to show when the request was returned to Contractor.] A PCO and conforming COR [Change July08:Deleted change request] will be [Change July08:Deleted summarized by the FCA on a Change Request Summary Form and] transmitted by the Project CM to the RPM for initial review and approval by the RPM to pursue negotiations. The RPM is responsible for verifying that a COR or PCO [Change July08:Deleted the Change Request] has been discussed with the RECM to determine if a potential CEQA variance will result. PCOs that are approved by the RPM will be transmitted to the Contractor with a request for a quotation of cost and/or time impacts. The [Change July08:Deleted is] review [Change July08:Deleted acceptance] of a COR or PCO [Change July08:Deleted change request] by the RPM may be limited to changes that exceed a certain threshold [Change July08:Deleted value] or affect a material change in the project description, but it is important to ensure that the approval authority (SFPUC) is given the opportunity to comment on the acceptability of a change [Change July08:Deleted Change Request] before time consuming negotiations are undertaken by the Project CM and the Contractor. [Change July08:Deleted A Change request that is rejected at this stage of the process will be formally documented to the Contractor by the Project CM.] [Change July08:Added] CORs and PCOs [Change July08:Deleted Change Requests] that are initially accepted by the RPM will be negotiated with the Contractor. The Project CM is responsible for keeping the RPM informed of the likely time and/or cost impact during negotiations to avoid surprises of the final results. While the SFPUC must retain authority for approving all changes to cost and schedule, rejecting a change after the Contractor has spent efforts to document and negotiate with the Project CM can have a detrimental effect on the working relationship between the project CM team and the Contractor.
2.2.10.3 Change Log. The FCA will maintain a log of all changes. The format of the Change Log will be specified in the CM Procedures to include tracking of sufficient steps in the change process through certification of a change order to ensure visibility of the status of each change at any point in time. The status of changes will be coded in one of four ways:

- Potential changes are changes that have been received, but negotiations have not been completed.
- Pending changes are changes that have been accepted and negotiated, but not yet certified by the City Controller.
- Approved changes are changes that have been certified.
- Rejected (or closed) changes are changes that have been rejected or otherwise withdrawn by the Contractor.

In addition, trends will be included on the Change Log, as determined by the Project CM, based on analysis by the Construction Schedule/Cost Specialist of potential variances to the contract cost or schedule that are not yet reflected in a proposed change.

The Change Log will also include an estimated cost and/or time impact. Trends will be converted to proposed changes or deleted as appropriate. Estimated costs and time impacts will be updated as changes are negotiated. Changes will be categorized by the Project CM according to the following categories:

- Owner Requests – any change initiated by the SFPUC
- Differing Site Conditions – new information not reasonably available during design, or considered “foreseeable” through due diligence on the part of the Contractor.
• Design Errors – changes due to errors or deficiencies in the design
• Design Omissions – omissions in the design that would have been included in the original bid, if known.
• Regulatory Requirements – changes mandated by regulatory agencies that are different than approved permit conditions at the time of bid.
• Other – changes required for all other reasons, including emergency work, adjustment of bid quantities, force majeure events, incentive payments, accepted Substitutions, [Deleted : 5Mar09 deviations,] and value engineering Change proposals.

Reports derived from the Change Log will be used for the monthly forecast to complete, to monitor the status of each [Change July08:Added] change [Change July08:Deleted request] within the overall process and to highlight changes [Change July08:Deleted request] that are not being processed in a timely manner. These reports are required to be submitted by the Project CM as part of the Project Construction Progress Report [Change July08:Deleted bi-weekly] and will be monitored by the PCM and RPM and action initiated as necessary.

2.2.10.4 Cost and Schedule Trending. Cost and schedule trending is a technique used for continuous monitoring of construction events that may affect cost or schedule. The objectives of trending are to:

• Provide early warning of potential cost or schedule impacts and the need for corrective action.
• Minimize unexpected cost and schedule fluctuations.
• Provide documentation for cost and schedule forecasting and project reports.
• Provide a history of cost and schedule evolution.

Any potential deviation from the approved schedule or contract amount, that is not yet [Change July08:Added] a potential [Change July08:Deleted proposed] change, is a trend. Trends may result from issues that are identified and tracked in the CMIS; [Deleted : 5Mar09 RFDs] [Change July08:Deleted or VE proposals] analysis of the rate of expenditure of unit price items or allowance items vs. progress; actual vs. planned schedule progress; or quality issues; in short,
anything that is occurring that is not yet a proposed change but that the Project CM believes has a high probability of becoming a change to the contract amount or schedule.

The responsibility for recognizing and reporting trends rests with all project CM personnel. Any project CM team member associated with the construction of any part of the project, who identifies or suspects a change from the approved schedule or cost or changes to previously identified trends, should promptly notify the Construction Schedule/Cost Specialist for analysis of impacts and the FCA for inclusion in the Trend Log.

To accomplish this, each project CM team member must know the scope of work and the budget for his/her area of responsibility.

The Project CM ensures that the project CM team is aware of and utilizes the trending system for early detection of cost or schedule variances. The FCA documents, updates, monitors and reports trends utilizing the Trend Log.

Whether a trend is included in the monthly forecast to complete in the Project Construction Progress Report will be determined by the Project CM.

2.2.10.5 **Time Adjustment Proposal.** If a COR or PCO involves an impact to the approved construction schedule, the Contractor will be required to include a Time Adjustment Proposal with the COR or PCO quotation. The Construction Schedule/Cost Specialist will review the impacts and provide an alternate impact analysis if required to support negotiation of the change. The Project CM and Construction Schedule/Cost Specialist are responsible for coordinating with other Project CMs to determine if a time impact will create an impact to another project. This is particularly important for impacts that affect planned system shutdowns. This coordination is also necessary for PCOs when the project team is developing a PCO.
2.2.10.6  **Cost Proposal.** If a COR or PCO requires a change that involves an impact to the contract cost, the Contractor will be required to submit a Cost Proposal with the COR or PCO quotation. The Estimator will review the cost impact and provide an alternate impact analysis if required to support negotiation of the change. For PCOs, the Estimator will prepare a cost impact analysis prior to the request for quotation being submitted to the Contractor, for use by the RPM to determine if the change should be submitted to the Contractor.

2.2.10.7  **Environmental Impact Analysis.** If a COR or PCO involves a material change to the project description and has the potential to change the project environmental requirements, the Project CM will review the change with the RECM for an initial impact analysis. The RECM will coordinate with the ECCM, who will review the change to determine if a CEQA variance will be required and to determine if a variance should be requested. If it is decided that a CEQA variance will be pursued, the change may be held in abeyance until the variance is received.
monthly schedule update incorporating the approved change. If negotiations are not successful and the RPM decides to proceed with the change, the FCA will prepare a Unilateral Change Order for City approval. An alternative to a Unilateral Change Order is agreement with the Contractor to proceed with the change on a Force Account basis.

2.2.10.9  **Claims Processing.** Claims will be processed in a similar manner as a change, except that upon receipt of a Notice of Potential Claim, the Project CM will immediately forward the notice to the RCM and RPM for discussion with WSIP senior management. An analysis of the merit of a claim is required from the Project CM. If a claim is determined to have merit, the RPM will lead the development of a negotiation plan. The PCM will assist as requested in determining merit and preparing the negotiation plan. The negotiation plan will identify who will lead the claims analysis efforts, who will be involved in the analysis, and who will lead the negotiations.

2.2.11  **Project Controls**

2.2.11.1  **Document Controls and Records Management.** Document Control and Records Management includes the indexing (or logging), filing, distribution, control and retrieval of all documentation of any kind that is received or generated during the construction of the project. Complete, thorough documentation is a cornerstone of claims avoidance and claims management. Because it is not possible to predict which part of the contract may be the subject of a claim, thorough documentation of every aspect of the contract is essential.

The CMIS will include a document control and records management module that all project CM teams will be required to use. The CM Procedures will codify the specific use of the CMIS and describe the indexing and filing format that must be used. The Program Construction Controls Manager will develop the CMIS application for document control and the procedures, and provide training to each project CM team in its use. Some of the project document types include:

| Submittals | Monthly Reports |
Requests for Information (RFI) | Change Orders
Inspectors’ Daily Reports | Meeting Agenda
[Deleted : 5Mar09 Requests for Deviation (RFD)] | Email Correspondence
Change Orders
Inspectors’ Daily Reports | Meeting Agenda
Meeting Minutes | Email Correspondence
[Deleted : 5Mar09 Requests for Deviation (RFD)] | Application for Payments
Change Orders
Inspectors’ Daily Reports | Agreements
Meeting Minutes | Drawings /Sets
[Deleted : 5Mar09 Requests for Deviation (RFD)] | Contractors
Transmittals | Punch Lists
[Deleted : 5Mar09 Requests for Deviation (RFD)] | Proposals
Contracts | PLA Records
[Deleted : 5Mar09 Requests for Deviation (RFD)] | Photos
Proposals | Environmental Compliance
[Deleted : 5Mar09 Requests for Deviation (RFD)] | Safety Records
Meeting Minutes | Plans /Records
[Deleted : 5Mar09 Requests for Deviation (RFD)] | Quality Records Warranties
Transmittals | Correspondence
[Deleted : 5Mar09 Requests for Deviation (RFD)] | Warranties
Contracts | Permits
[Deleted : 5Mar09 Requests for Deviation (RFD)] | Videos
Proposals | Monitoring and Inspection
[Deleted : 5Mar09 Requests for Deviation (RFD)] | Material Certifications
Photos | Plans
SFPUC Master Project Schedules. The Program Controls Manager maintains Master Project Schedules in P6 that include all phases of a project. Actual progress, earned value, cost, and forecast information is included in these master schedules. These schedules are the basic source of information for WSIP Monthly and Quarterly Reports. Data for the Construction and Construction Management phases of a project must be input with the appropriate level of detail to the Master Project Schedules. The cost loaded Summary Schedule required from the Contractor and statused by the Construction Schedule/Cost Specialist will be the basis of the summary level of detail for the construction phase that will be included in the Master Project Schedules. (See 2.2.11.5). The Program Controls Manager will identify, with the Project CM, the level of detail needed to be reported on a monthly basis for importing to P6. The
master project schedules. Depending on the CMIS’ eventual configuration and capability this may be accomplished directly from the CMIS. Regardless of the eventual source, Project CM is responsible for ensuring timely reporting and for the Quality Assurance of the data for the Master Project Schedule updates.

2.2.11.3 **SFPUC Pre-purchased Material and Equipment Schedules.** The RPM is responsible for developing the schedule for the pre-purchase of equipment and material by the SFPUC. Separate WBS level schedules [Change July08:Added] in P6 are required for each vendor. These schedules begin with activities during the design phase to produce the procurement plans and specifications, continue through the procurement phase, and include sufficient schedule detail for fabrication, testing and delivery. Pre-purchased material and equipment schedules are a part of the Master Project Schedules and must be fully integrated with the schedules for design, bidding and construction to ensure the design schedule supports the lead time requirements for the pre-purchased material or equipment, and the material and equipment will be delivered timely.

After construction NTP, the Project CM will monitor the schedule for pre-purchased material and equipment, incorporate reporting of progress into the [Change July08:Added] monthly Project Construction Progress Report, and provide any assistance requested by the RPM to expedite, inspect, witness test and manage the delivery and turnover to the Contractor.

2.2.11.4 **Schedule Management.** Schedule management is one of the most important construction management functions. How well the schedule is monitored, enforced, and documented is critical to claims avoidance and management. The Project CM, with assistance from the Construction Schedule/Cost Specialist and the QA Inspectors, is responsible for all aspects of schedule management. The Contractor’s schedule is used to establish the plan for the work, to monitor the Contractor’s progress and to plan and identify upcoming activities so that the project team can handle issues that may impede the Contractor’s progress. The Contractor “owns” the schedule, including the means and methods to execute the work. In addition to the prescribed requirements in the Contract Documents, schedule management will follow these general guidelines:
• The Project CM approves the format of the Contractor’s schedule, not its content. The means and methods by which a Contractor sequences and schedules the Work is the Contractor’s decision (unless otherwise specified in the Contract Documents). Format approval includes checking that the submittal meets the requirements of the Contract Documents, that all contractual milestones and shutdown requirements are met with reasonable durations for work activities, that all activities have predecessors and successors, that activities are reasonably resource loaded, and that the construction critical path is free floating without any artificially constrained activities. Observations regarding any work that appears have been omitted, scheduled out of sequence, or loaded with insufficient resources should be noted for the Contractor’s response.

• The Project CM must enforce the contractual requirements to establish a timely baseline schedule and preserve it unchanged.

• If changes to the baseline must be required, obtain a timely revision from the Contractor per the specification requirements.

• The Project CM and Contractor should update their completion percentages and activity durations using mutually agreed upon information.

• Changes to contract schedule milestones can only be authorized by the appropriate level of SFPUC management according to the WSIP Change Order Matrix of Approval.

• The Project CM must enforce all scheduling specifications and, if contractually allowed, recommend the withholding of all or part of the Contractor’s progress payment until all schedule provisions are satisfied.

• The Project CM must verify that the Contractor, as required by the Contract Documents, is maintaining accurate as-built information for schedule activities. The Daily Inspection Reports will note the actual start and finish of activities and the observation of any out of sequence work. Additionally, actual starts and completions must be noted on the Project CMs copy of the schedule to provide information for an as-built schedule.

• The Project CM must spend sufficient time at each weekly construction progress meeting to thoroughly discuss the 4 week look-ahead schedule, the status of each planned
activity, out of sequence work, schedule recovery, and concerns regarding sufficient resources to meet the schedule. The Construction Schedule/Cost Specialist will provide an analysis of the 4 week look-ahead schedule for conformance with the current approved schedule.

2.2.11.5 Contractor’s Schedule Requirements. The Contract Documents include the requirements for an acceptable construction baseline schedule, Summary Schedule, monthly updates, 4 week look-ahead schedules, recovery schedules and for incorporating changes. The specifications also identify the parameters of any contractual milestones, work constraints and system shutdown limitations that must be included in the Contractor’s schedule. The Project CM must enforce all the requirements of the schedule specifications.

Critical Path Method (CPM) scheduling software is required to be used by the Contractor. Where applicable, the activities in the schedule must correspond to the Construction Specification Institute’s (CSI) standard code of accounts. Supplemental coding should include area, responsibility, phase, and/or any other criteria that would enhance progress reporting. The highest level must correspond to the Project Work Breakdown Structure (WBS). Generally, each schedule activity shall describe a rational and specific work activity to allow effective control of the work in progress.

All activities within the schedule must be accurately cost loaded with a maximum monetary and time limit, and shall match, on an item by item basis, the Schedule of Values. The sum of the activities in the schedule shall equal the total contract value as bid.

Large materials and/or equipment items to be purchased by the Contractor shall have activities and/or milestones in the schedule indicating the delivery of individual items. These activities will be loaded with the cost of the material/equipment only. The cost of installing these materials and/or equipment shall be in separate activities.

Additional requirements include [Change July08: Added] equipment and manpower resource loading, scheduling of all contractual milestones and work restrictions, system shutdowns, Contractor required permits, and major submittals.
A cost loaded Summary Schedule of approximately 15 to 20 activities, that reflects the contractual milestones and system shutdown activities will be required from the Contractor. This summary schedule will be derived from the approved baseline schedule and any approved updates and revisions, be tied to the Schedule of Values, and will be used by the Project CM for reporting progress and forecasts to the WSIP Program Control System.

2.2.11.6 **Baseline Schedule Review and Approval.** The Contract Documents will specify the time frame after NTP for submission of a Baseline CPM Schedule by the Contractor. The Project CM will, with the assistance of the Construction Schedule/Cost Specialist, thoroughly review and document comments for the Contractor's response. Upon acceptance by the Project CM, the contractor's schedule will become the Accepted Baseline CPM Schedule. Timely review by the Project CM is required to avoid delay claims or the potential for the work proceeding without an approved schedule. Review and approval of the Contractor's schedule (or any updates) by the Project CM will not relieve the Contractor of responsibility for complying with the contract time requirements, adhering to those sequences of work indicated in, or required by the contract scope of work, or from completing any work within the durations specified in the Contract Documents. Lack of submittal of an acceptable baseline schedule or failing to submit a schedule update may result in withholding of payment.

2.2.11.7 **Monthly Schedule Updates.** The Contractor is required to submit updates to the Accepted Baseline CPM Schedule each month with the Application for Payment. The Project CM should not accept the Application for Payment if it is not accompanied by the schedule update. The monthly schedule update is reviewed by the Project CM and the Construction Schedule/Cost Specialist for accurate representation of progress of each activity, out of sequence work performed or planned, incorporation of approved changes, avoidance of any logic changes to improve the
Contractor’s claims negotiating position, and “recovery”
schedules, if necessary.

2.2.11.8 **Recovery Schedules.** If at any time the Contractor falls behind
the accepted schedule and cannot prosecute the work as planned
within the established timeframes, or if the accepted schedule no
longer represents the actual prosecution of the work, the
Contractor must, at the request of the Project CM, submit a
recovery schedule to revise the project approved baseline
schedule supported by a narrative explaining the work plan
intended to recover the lost time within the contract performance
period or interim milestone period. The revised schedule must
show the schedule impact before and after the revision. If a
recovery schedule is accepted by the Project CM, the Contractor
must incorporate the revisions into the baseline schedule.

2.2.11.9 **4 Week Look-Ahead Schedules.** 4-Week Look-Ahead
Schedules are required to be submitted each week by the
Contractor prior to the weekly progress meeting. These
schedules are a “fragnet” of the approved schedule that include
all activities from the past week and the upcoming 3 weeks.
Look-Ahead Schedules are reviewed by the Construction
Schedule/Cost Specialist to assure they match the approved
schedule and include all the necessary work activities from the
approved schedule. The Look-Ahead Schedule is discussed
thoroughly at the weekly progress meeting to ensure the project
CM team and the Contractor have the same expectations
regarding the work plan for the upcoming 3 week period and to
determine if any habitat or species pre-construction surveys are
required in advance of the Work that is scheduled.

2.2.11.10 **Revisions to the Approved Schedule.** Any variance or deviation
to the **[Change July08:Added]** Accepted Baseline **[Change July08:Deleted approved]** CPM Schedule, whether for
completed work, planned work, approved changes, or recovery
plans, require a revised schedule, and a revised Summary
Schedule, to be submitted by the Contractor. The Project CM
reviews any revised schedule submittals the same as the initial
baseline submittal. A thorough review is required with
comments and concerns documented to the Contractor for
response. If required to support the understanding of a complex
value engineering Change proposal or change order, the
Contractor shall submit a mini fragnet CPM schedule
demonstrating the effect to the near term and overall schedule.
2.2.11.11 **Schedule Analysis and Variance Reporting.** As part of the [Change July08:Added] [Change July08:Deleted M] monthly Schedule Update, [Change July08:Deleted Contractor’s Progress Report] the Contractor must prepare and submit a variance analyses identifying the source and cause of any significant variance and the Contractor’s plan to recover any significant impact to the schedule activity completion dates. Significant variances are those which may impact timely completion of an activity, delay completion of a milestone, or otherwise delay the project. Variance analyses shall be prepared against the current approved Contractor’s schedule.

A thorough, but concise discussion of the status of the schedule, and the variances, is a requirement of the Project [Change July08:Added] CMs Monthly Project Construction Progress Report. In addition, the Construction Schedule/Cost Specialist is responsible for determining the overall percent complete from an analysis of the schedule for input to the [Change July08:Deleted Monthly] Project Construction Progress Report and for statusing the Summary Schedule for input to the Master Project Schedule. The PCM will monitor schedule variance reports and report all concerns to the Deputy Director of Construction and the Program Director. The Project CM will be responsible for providing the results of discussions with the Contractor to mitigate any schedule variances.

2.2.11.12 **Construction Cost Control.** The Project CM is responsible for monitoring the costs of the project construction, identifying and tracking cost [Change July08:Added] changes and trends, and forecasting costs to complete. The initial basis for tracking and controlling the contract costs is the Contractor’s Schedule of Values. The Contract Documents specify the requirements for the Schedule of Values and the Project CM must review it for completeness, conformance to the requirements and integration with the Contractors approved schedule. Ongoing cost control includes a thorough review and assessment of the Contractor’s Application for Payment request against the progress achieved to avoid recommending “overpayment” for work not yet completed. The Project CM should discuss any concerns with the Contractor and attempt to reach a common agreement on how much will be paid each month.
Cost trends are developed by the Construction Schedule/Cost Specialist and used with the [Change July08:Added] Change Log by the Project CM to develop monthly forecasting of costs to complete. Cost trends can include evaluation of the Contractor’s rate of expenditure of unit price or allowance items against actual progress achieved, use of force account work, and potential liquidated damages. Trends must be well thought out to provide the most complete and accurate picture of the status of the project and the program.

Cost control is equally as important for the CM contracts and the same rigor is to be applied to documenting actual costs and forecasting costs to complete by the Project CM.

2.2.11.13 **Forecasting of Cost and Schedule.** Forecasting of cost and schedule of the construction contract and the CM contract is performed each month by the Project CM and reported to the RPM. Forecasting will be in the form of “forecasts to complete” (FTC). When added to the costs expended and progress achieved, a “forecast at completion” (FAC) is produced. FAC is the standard metric used in all WSIP reports to compare with approved budgets and schedule and earned value. Many of the processes and systems discussed earlier in [Change July08:Added] this [Change July08:Deleted that] CM Plan are an integral part of the forecasting process. Trends and changes form the basis for forecasting both schedule and cost to complete. All [Change July08:Added] potential and pending [Change July08:Deleted categories of] changes listed on the Change Log are included in the FTC. In addition, [Change July08:Deleted The] the Project CM is responsible for determining which trends from the Trend Log to also include in the FTC. [Change July08:Deleted at value to use for Proposed Changes and trends to include in the FTC.] Sound judgment is required so as not to under-estimate or over-estimate the FTC.

[Change July08:Added] For construction contracts, the Project CM is required to provide his/her assessment independent of what the Contractor may be reporting. For CM contracts, forecasts must be to the same level of WBS and resource detail as the approved contract scope of work. [Change July08:Deleted and resources,]
Negative variances are required to be explained with a recovery plan described.

Forecasts to complete will be used by the RPM as part of his/her input to the monthly update of the Master Project Schedule. The forecasts reported by the RPM should reflect his/her independent assessment of the input received from the Project CM. Formats for forecasting will be developed by the Program Controls Manager.

2.2.12 Environmental Compliance

For each WSIP project, an environmental review document will be prepared pursuant to the California Environmental Quality Act (CEQA). These documents are prepared under the direction of the San Francisco Planning Department and will identify specific mitigation measures that must be implemented during project construction and operations and will be summarized in the project Mitigation Monitoring Reporting Program (MMRP). Additionally, WSIP projects may be subject to the jurisdiction of regulating resource agencies, such as the USFWS, CDFG, and RWQCB. The SFPUC Bureau of Environmental Management Environmental (BEM) is responsible for obtaining required permits prior to construction.

Compliance with the environmental requirements specified in the MMRP and environmental permits is legally required during construction and operation of WSIP projects. It is the responsibility of BEM to work closely with the SFPUC Project Manager and the PE to ensure the requirements are included in the Contract Documents. Clear and complete definition of the requirements for environmental compliance is an important part of a proactive claims management plan. Environmental Compliance is critical to maintaining credible relationships with resource agencies and the public. Failure to comply with the project’s environmental compliance can result in project delays, shutdowns, and fiscal penalties.

2.2.12.1 Environmental Requirements. The environmental requirements found in the MMRP and all permit conditions will be incorporated in to the Contract Documents. A MMRP will be prepared for each WSIP during the environmental approval process. The MMRP is typically presented in a table format, and includes the mitigation measure number, the description of the mitigation measure, the responsible monitoring agency, the implementation schedule (pre, during, or post construction), a description of the supporting project-specific plans to ensure compliance, and success criteria.
The RECM, in coordination with the ECCM, is required to report to the Lead Environmental Agency on a regular basis to document compliance with the standard construction measures, the MMRP, and permit conditions. The types and frequency of reporting will be detailed in the CM Procedures. The ECCM will work with the RECM to compile the environmental requirements into tables to use for tracking compliance during construction and reporting. The Project CM is responsible for assuring the necessary documentation is provided to support the necessary environmental reporting.

2.2.12.2 Environmental Training. All Contractor personnel will be required to attend environmental training prior to working on the project. The RECM in coordination with the ECCM will develop training programs and materials and conduct the training.

2.2.12.3 Environmental Compliance Coordination During Construction. The CM Procedures will address coordination between BEM, the project CM team, and the Contractor. The ECCM is responsible for environmental compliance oversite. The RECM and REC work under the supervision of the RPM to assure environmental compliance during construction of all projects in their region. The RECM and REC are responsible to directly coordinate and inform the ECCM regarding compliance implementation on a daily basis. The Environmental Inspectors and Specialty Environmental Monitors work under the supervision of the Project CM to monitor environmental compliance during construction.

2.2.12.4 Supplemental Environmental Compliance Plans. Some environmental requirements in the MMRP and permit conditions call for project-specific plans that specify implementing procedures to meet the requirements.

Typical plans that the SFPUC and its environmental consultants will prepare as part of the pre-construction permitting effort may include, but are not limited to:

- Conceptual Revegetation/Restoration Plan,
- Draft Unanticipated Archaeological Discovery Plan,
- Historical Resources Protection Plan,
- Draft Groundwater Management,
- SFPUC Dewatering and Discharge Plan.
Many of these plans will be drafted for purposes of obtaining environmental permits. The draft plans will be included in the Contract Documents by the Project Engineer. The Contractor will be required to finalize the Plans prior to construction.

Typical plans the Contractor may be required to develop include, but are not limited to:

**Groundwater Management Plan:**
- Noise and Vibration Control Plan.
- Nighttime Lighting Plan.
- General Controlled-Detonation Plan.
- Frac-out Contingency Plan (for tunneling activities that use pressurized drilling fluids).
- Traffic Control Plan.
- Storm Water Pollution Prevention Plan.
- Final Revegetation/Restoration Plan (which specifies implementation procedures of the Conceptual Revegetation/Restoration Plan).
- Unanticipated Archaeological Discovery Plan.
- Contractor Dewatering and Discharge Plan.

Plans to be prepared by the Contractor will be identified in the Contract Documents. The Contract Documents must include schedule specific requirements for preparation and submittal of these plans to ensure they are approved prior to their respective need to support the construction schedule. The Project Engineer is responsible for working with BEM during development of the final bid documents to incorporate the necessary schedule requirements. The Project CM is responsible for monitoring the timely submittal of the Contractor’s plans. The ECCM is responsible and for obtaining timely review of the plans by the applicable agencies and the SFPUC.

Some of these plans may require review by regulatory agencies other than the SFPUC that may extend beyond typical submittal review times. For project-specific plans prepared by the Contractor, it is the responsibility of the Project CM to coordinate with the ECCM to have the plans reviewed and approved by outside agencies, as required.
2.2.12.5 **Construction Environmental Compliance Inspection and Monitoring.** The Contractor is responsible for complying with all federal, state, and local rules, regulations, requirements in the environmental review document, and resource agency permit conditions related to environmental protection. The Environmental Inspectors and Specialty Environmental Monitors are responsible for monitoring environmental compliance and assuring that the Contractor is in compliance with all environmental and regulatory requirements and to work with the Contractor to prevent delays in construction due to non-compliance violations. Environmental inspection and monitoring is part of the project Quality Assurance function and must be addressed in the Project QA Plan. Daily Inspection Reports must be provided by the Environmental Inspectors and Specialty Environmental Monitors for each day they are on the construction site. Monitoring is conducted to ensure permit conditions are met and that all daily environmental restrictions are complied with including, but not limited to:

- Dust-control and odor control mitigation measures are being implemented.
- Construction activities are in compliance with the erosion control plan and Storm Water Pollution Prevention Plan requirements.
- Construction noise and lighting levels are minimized.
- Sensitive habitats, wetlands, and surface waters are fenced and protected from construction activities.
- Wildlife is protected from construction activities, including being relocated, if necessary.
- Dewatering is managed to avoid adverse impacts to surface waters.
- Critical creek flows and surface and ground water quality are maintained.
- Hazardous spills are minimized and reported, if spills occur.
- Cultural or paleontology resources are protected during construction.
- Traffic controls reduce construction impacts on traffic in the affected area.
- Revegetation and restoration measures are implemented to stabilize the construction area and restore the area to the pre-construction condition.
The Environmental Inspectors will assist the Project CM in interpreting implementation of the environmental requirements and be pro-active in identifying, communicating and documenting environmental requirements and potential violations. The Specialty Environmental Monitors will conduct pre-construction surveys, monitor work in specified sensitive areas for specific resource protection, and conduct additional environmental surveys as needed for environmental approval of any changes or CEQA variances as necessary.

2.2.12.6 **Environmental Review of Changes.** When changes are proposed, the RECM will be responsible for coordinating with the EECM a review of the request to confirm compliance with environmental requirements. If a change will result in a CEQA variance, the EECM will determine the appropriate procedures for approval, including supplemental environmental review and agency consultation, if necessary. Approval of some variances may require review by the City of San Francisco Planning Department and/or regulatory agencies with jurisdiction over the proposed change.

2.2.12.7 **Environmental Compliance Documentation and Records.** The ECCM is responsible for establishing the requirements for tracking and documenting environmental compliance. The RECM will be responsible for implementing the tracking and documenting system. Documentation will include, but not be limited to, daily environmental inspection reports; monthly compliance reports; monitoring logs by the environmental specialists for biological, archaeological, paleontology monitoring; MMRP required reports; permit required reports; and reports on non-compliances and their resolution. The REC will maintain the record of all environmental compliance documentation throughout construction.

During construction closeout, the REC will compile the complete record of construction environmental compliance documentation and provide it to the Project CM for inclusion with the project files as part of project Closeout.

2.2.12.8 **Permit Compliance Monitoring.** The Project CM is responsible for monitoring the Contractor’s compliance with permit conditions, notifying the RPM of permit violations, preparing
documentation of inspections, reviewing Contractor submittals required by any permits, and preparing any reports required to regulatory agencies.

2.2.12.9 **Post Construction Activities.** During the warranty period, the SFPUC will monitor restored/revegetated areas to ensure that the success criteria identified in the construction specifications are met and to identify and implement any necessary remedial actions. After the warranty period, post-construction monitoring and maintenance is the responsibility of SFPUC Operations to ensure the success criteria in the project permits are met and to identify and implement any necessary remedial actions.

2.2.12.10 **Regulatory Agencies Inspections.** Regulatory agencies that issued project-specific permits will have oversight of the SFPUC’s compliance with the permit requirements. Regulators from these agencies may periodically conduct site visits to inspect the project for compliance. To the extent feasible, the RECM will coordinate these site visits with the regulators and the Project CM. However, these visits may be unannounced. Agencies that may conduct inspections include, but are not limited to:

- US Army Corps of Engineers (USACE)
- California Regional Water Quality Control Boards (RWQCB)
- US Fish and Wildlife Service (USFWS)
- California Department of Fish and Game (CDFG)
- California Air Quality Board
- Bay Area Air Quality Management District
- State Historic Preservation Office (SHPO)
- National Marine Fisheries Service (NMFS)
- Bay Conservation and Development Commission (BCDC)
APPENDIX A
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<td>CUW37401 Calaveras Reservoir Upgrades (Complete)</td>
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### June 2009 Revised WSIP Schedules - Phase Level

#### Project Name

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<tr>
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<td><strong>CUW38601 San Antonio Pump Station Upgrade</strong></td>
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<td><strong>Bay Division Region</strong></td>
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####Legend

- Project Mgmt
- Right-of-Way
- Construction Mgmt
- Program Mgmt
- Planning
- Design
- Environmental
- Bid & Award
- Closeout

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June 2009 Revised WSIP Schedules - Phase Level

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June 2009 Revised WSIP Schedules - Phase Level

Project Name | Start | Finish | Project Mgmt | Planning | Environmental | Right-of-Way | Design | Bid & Award | Construction Management | Construction | Closeout
---|---|---|---|---|---|---|---|---|---|---|---
CUW37801 Crystal Springs Pipeline No. 2 Replace | 15-Jan-04 A | 18-Jul-13 | 15-Jan-04 A | 18-Jul-13 |
Planning | 15-Jan-04 A | 19-Jan-07 A |
Environmental | 01-Apr-04 A | 31-Jan-11 |
Right of Way | 01-Sep-06 A | 24-Oct-11 |
Design | 01-Jan-07 A | 22-Oct-10 |
Bid & Award | 16-Sep-10 | 03-May-11 |
Construction Management | 04-May-11 | 22-Mar-13 |
Construction | 07-Jan-11 | 22-Mar-13 |
Close Out | 23-Oct-13 | 01-Apr-14 |
CUW37901 San Andreas Pipeline No. 3 Installation | 15-Jan-04 A | 25-May-12 | 15-Jan-04 A | 25-May-12 |
Planning | 15-Jan-04 A | 28-Apr-09 |
Environmental | 01-Apr-04 A | 28-Apr-09 |
Right of Way | 01-Aug-06 A | 13-Aug-09 |
Design | 01-May-05 A | 24-Mar-09 A |
Bid & Award | 25-Mar-09 A | 25-Sep-09 |
Construction Management | 28-Sep-09 | 26-Jan-12 |
Construction | 28-Sep-09 | 26-Jan-12 |
Close Out | 25-Mar-13 | 18-Jul-13 |
CUW359101 Baden and San Pedro Valve Lots Improve | 01-Jul-09 | 18-Dec-14 | 01-Jul-09 | 18-Dec-14 |
Planning | 01-Jul-09 | 02-Jul-10 |
Environmental | 01-Jul-09 | 13-Sep-12 |
Right of Way | 05-Oct-06 A | 21-Oct-08 A |
Design | 05-Oct-06 A | 31-Mar-08 A |
Bid & Award | 29-Mar-07 A | 12-Jan-09 A |
Construction Management | 29-Sep-08 A | 07-Apr-09 |
Construction | 06-Apr-09 | 25-Feb-11 |
Close Out | 28-Feb-11 | 24-Aug-11 |
CUW36702 Peninsula Pipelines Seismic Upgrade | 15-Sep-07 | 23-Mar-12 | 15-Sep-07 | 23-Mar-12 |
Planning | 15-Sep-07 | 25-Jan-10 |
Environmental | 11-Jan-10 | 13-Mar-12 |
Right of Way | 11-Jan-10 | 13-Mar-12 |
Design | 11-Feb-10 | 13-Mar-12 |
Bid & Award | 14-Feb-12 | 17-Jan-13 |
Construction Management | 18-Jan-13 | 25-Sep-14 |
Construction | 18-Jan-13 | 25-Sep-14 |
Close Out | 18-Mar-14 | 18-Dec-14 |
San Francisco Regional Region | 31-Mar-00 A | 08-Sep-14 | 31-Mar-00 A | 08-Sep-14 |
Project Management | 01-Jan-03 A | 08-Sep-14 |
Planning | 01-Jan-03 A | 31-Jan-08 A |
Environmental | 15-Oct-07 A | 26-Sep-11 |
Right of Way | 07-Apr-08 A | 04-Nov-11 |
Design | 02-Jan-08 A | 01-Dec-11 |
Bid & Award | 11-Mar-09 A | 01-Jan-12 |
Construction Management | 06-Mar-08 A | 14-Mar-14 |
Construction | 01-Jul-03 A | 14-Mar-14 |
Close Out | 17-Mar-14 | 08-Sep-14 | Finalized on 06/26/09

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