1.0 INTRODUCTION

This report summarizes results of field inspections conducted during construction of the Muscoy Operable Unit (OU) 19th Street Groundwater Treatment Plant (19th Street Plant) and the Encanto Park Booster Pump Station (EPBPS). The inspections were performed by URS Group, Inc. (URS) for the United States Environmental Protection Agency (EPA) under Contract No. 68-W-98-225 and Work Assignment No. 069-RARA-09J5.

1.1 BACKGROUND

During a groundwater investigation in 1980, the California Department of Health Services (DHS) discovered chlorinated solvents in municipal supply wells within the northern San Bernardino/Muscoy region of San Bernardino. Several investigations were conducted to locate potential source(s) of contamination. On March 30, 1989, EPA placed this region on the National Priorities List, thereby releasing federal funds for cleanup of the region, now identified as the Newmark Groundwater Contamination Superfund Site (site). The principal contaminants identified by site investigations were trichloroethene (TCE) and tetrachloroethene (PCE). Reported contaminant concentrations exceeded federal and California maximum contaminant levels (MCLs) for drinking water in several municipal wells within the San Bernardino and Muscoy areas, including the Newmark Municipal Wellfield.

A remedial investigation and a feasibility study were performed for the site between 1989 and 1994. As part of the Newmark OU remedial design (RD) and remedial action (RA), groundwater treatment systems and extraction wellhead facilities were installed and are currently operating. Design details of these facilities are presented in separate design documents. The Muscoy OU is currently in the RA phase, and this document is part of the RA effort for the Muscoy OU.

1.2 PROJECT DESCRIPTION

The Muscoy Plume OU RA includes construction of 24 liquid-phase granular activated carbon (GAC) vessels operating in 12 parallel pairs to treat a design total of 11,600 gallons per minute (gpm) of contaminated groundwater. The treatment system is located on W. 19th Street (19th Street Plant). The GAC vessels remove organic content from groundwater that is pumped to the plant through a system of pipelines, then is pumped through the vessels. After treatment at the 19th Street Plant, the treated water is conveyed through existing City of San Bernardino Municipal Water Department (SBMWD) transmission pipelines. Excess treated water is provided to the San Bernardino Valley Municipal Water District (SBVMWD) through a new connection and pump station located near Encanto Park on W. 9th Street (Encanto Park Booster Pump Station). The 19th Street Plant treats water that is at the leading edge of the contaminated groundwater plume.

The scope of work included construction of concrete pads, installation of site pipelines and electrical lines, grading, paving, and landscaping. El-Co Construction, Inc. (El-Co) was subcontracted by URS to complete the scope of work. GAC vessel fabrication and installation were completed under a separate contract. The construction activities for the GAC vessel installation are summarized in the *Draft Construction Inspection Report - Muscoy Plume Operable Unit Remedial Action - Granular Activated Carbon Vessels*, dated October 2005 (URS, 2005). URS was the prime contractor, responsible for performing construction management and inspection services.

2.0 CONSTRUCTION SUMMARY

2.1 MONTHLY SUMMARIES

Field construction activities began with the mobilization of personnel, equipment, trailer and temporary facilities to the 19th Street Plant project site in March 2004. Construction activities continued through the completion of the 19th Street Plant and the EPBPS and final inspection and acceptance of the 19th Street Plant on July 28, 2005 and of the EPBPS on October 11, 2005. The following monthly summaries describe the construction fieldwork that was completed during each month of the project, important issues that arose during the month, and the issues' resolution. The detailed Weekly Construction Progress Reports prepared by URS are included in Appendix A, and the detailed Inspector's Daily Reports prepared by the URS Resident Inspector Nick Reylek, are included in Appendix B. Highlights from these reports are presented below and arranged chronological by month.

Highlights of Construction:

March 2004 (Weekly Reports 1 - 5)

- El-Co began installation of the 24-inch diameter ductile iron pipe (DIP) feeder pipelines from the pump suction and discharge headers to the previously installed 24-inch DIP transmission pipeline in Encanto Park.

April 2004 (Weekly Reports 6 - 9)

- El-Co completed installation, and successfully pressure-tested the 24-inch diameter DIP feeder pipelines from the pump suction and discharge headers to the previously installed 24-inch DIP transmission pipeline in the EPBPS.
- El-Co completed the rough grading activities at the carbon vessel concrete support pad areas at the 19th Street Plant.
- El-Co completed the installation of the 30-inch DIP influent pipeline at the 19th Street Plant (approximately 602 linear feet [LF] of 30-inch DIP).
- Schuler, a subcontractor to El-Co, completed construction of the eastside concrete pads for the GAC vessels and pipeline.
- Schuler began construction of the westside concrete pads for the GAC vessels and pipeline. Exterior wood forms were completed and rebar was placed in 50 percent of the concrete pads. Concrete was placed in 50 percent of the westside pads.
- Schuler completed construction of the footings and block walls at the EPBPS.
- El-Co completed the installation of the 24-inch DIP lateral on the influent pipeline at the 19th Street Plant.
- Survey and staking was completed for the 12-inch diameter DIP bypass pipeline, and the 12-inch and 24-inch diameter DIP backwash supply pipelines at the 19th Street Plant.

- El-Co began installation of the 12-inch DIP bypass pipeline (approximately 128 LF) and the 12-inch DIP backwash supply pipeline (approximately 149 LF).

May 2004 (Weekly Reports 10 - 13)

- El-Co began surveying and staking the property boundaries in the northwest corner of the 19th Street Plant, for the sound-wall construction.
- El-Co completed Phase I construction of the sound wall (the western and northwestern portions of the new plant area).
- Schuler completed construction of the westside concrete pads for the GAC vessels and pipelines.
- El-Co began installation of the 24-inch diameter DIP backwash supply pipeline (approximately 154 LF).
- El-Co began installation of the 30-inch diameter DIP bypass pipeline between the influent and effluent pipelines (approximately 28 LF).
- El-Co began installation of the 16-inch diameter DIP effluent pipeline laterals for connection to the SBMWD 1,249-foot pressure zone pipeline (approximately 55 LF).
- El-Co completed installation of the 10-inch diameter backflow preventor assembly on the backwash supply pipeline.
- Schuler completed construction of the concrete pier pipe supports on the east and west sides of the GAC vessel concrete pads.
- El-Co installed a 24-inch by 24-inch tee to connect the 24-inch diameter backwash supply pipeline to the SBMWD's existing pressure zone pipeline.
- El-Co completed installation of the aboveground GAC vessel header piping at the south end of the GAC vessel pads.
- El-Co flushed and pressure-tested the installed portions of the influent and backwash supply pipelines at the 19th Street Plant. Both pipeline successfully passed the pressure tests.
- Successful bacteriological testing was completed on the installed portions pipelines at the 19th Street Plant.
- El-Co began the installation of the 16-inch diameter effluent pipeline flow control valve assemblies at the 19th Street Plant.
- El-Co completed the tie-in of the new 30-inch diameter DIP influent pipeline to the existing 30-inch DIP transmission pipeline at 19th Street.

June 2004 (Weekly Reports 14 - 18)

- El-Co completed installation of the 12-inch diameter bypass pipeline at the 19th Street Plant.
- El-Co completed tie-in of the 12-inch diameter bypass pipeline to the existing 12-inch steel raw water line at the 19th Street Plant.

- El-Co completed hydrostatic pressure testing and chlorination of the 12-inch diameter bypass pipeline.
- El-Co completed installation of the 16-inch diameter effluent pipeline flow control valve assemblies at the 19th Street Plant.
- El-Co completed placement of Class II road base at the entry to the 19th Street Plant, off of 19th Street.
- El-Co completed tie-in of the 24-inch DIP influent pipeline lateral into the existing treatment plant system at the 19th Street Plant.
- El-Co completed pressure testing, chlorination and flushing of the south half of the effluent pipeline at the 19th Street Plant.
- El-Co replaced base coarse asphalt pavement at the entrance to the 19th Street Plant at the 19th Street entrance. The gate is ready for SBMWD to replace arms to restore to automatic operation.
- El-Co began installation of the flow meter and pressure-sustaining valve on the existing 16-inch steel effluent line (on the west of the existing pump house) at the 19th Street Plant.
- El-Co installed Booster Pump No. 5 in the existing pump house at the 19th Street Plant.
- El-Co installed the belowground surge tank pipeline connecting to the influent pipeline at the EPBPS.
- El-Co constructed the belowground portion of the revised manhole No. 4 on the spent backwash collection system.
- El-Co replaced the concrete curb on the west side of the existing driveway at the 19th Street Plant.
- El-Co initiated excavation for underground electrical components at the EPBPS.
- El-Co completed installation of the canal valve at manhole No. 4 on the spent backwash system at the 19th Street Plant.

July 2004 (Weekly Reports 19– 22)

- El-Co completed installation of the flow meter and pressure-sustaining valve on the existing 16-inch steel effluent line (on the west of the existing pump house) at the 19th Street Plant.
- El-Co installed the concrete bases for the effluent pressure sustaining valve vault and the chlorine injection vault at the 19th Street Plant.
- El-Co completed the underground piping and tap for the irrigation system at the EPBPS.
- El-Co base-paved the driveway along the east side of the reservoir at the 19th Street Plant.
- El-Co completed pressure testing, chlorination and flushing of the north half of the effluent pipeline at the 19th Street Plant.
- El-Co installed the chlorine injection point and 30-inch flow meter in the chlorination vault at the 19th Street Plant

- El-Co installed piping for the pressure-sustaining valves and the east and west valves in the new pressure-sustaining vault at the 19th Street Plant.
- El-Co completed installation of the flow meter and pressure-sustaining valve on the existing 16-inch steel effluent line (on the west of the existing pump house) at the 19th Street Plant.
- Southern California Edison (Edison) completed inspection of the underground electrical vault at the EPBPS.
- El-Co completed electrical underground conduit installation at the EPBPS.
- El-Co began the second phase of the installation of the new sound wall, beginning on the northeast side of the 19th Street Plant.
- El-Co completed grouting the GAC vessel header piping concrete supports, and began grouting the GAC vessel support legs.
- El-Co began the construction of concrete pipe supports for the aboveground flow meter and pressure-sustaining valves on the effluent laterals.
- El-Co completed construction of the anti-siphon loop on the effluent pipeline at the 19th Street Plant.
- El-Co completed grading at the EPBPS, in preparation for construction of the concrete slabs.

August 2004 (Weekly Reports 23 - 26)

- El-Co completed the new 24-inch DIP effluent pipeline lateral tie-in to the existing plant's steel effluent pipeline.
- El-Co began installation of underground electrical conduits at the 19th Street Plant.
- El-Co continued setting the posts and panels for the new sound-wall installation on the northeast side and the west side of the 19th Street Plant.
- El-Co completed construction of the concrete pads at the EPBPS.
- El-Co installed the surge relief vessel at the EPBPS.
- El-Co completed construction of the concrete pipe supports for the aboveground flow meter and pressure-sustaining valves on the effluent laterals, at the 19th Street Plant.
- El-Co completed construction of the anti-siphon loop concrete pad at the 19th Street Plant.
- El-Co completed the pipeline tie-ins for the effluent, influent and backwash supply pipelines at the GAC vessel concrete pad locations, at the 19th Street Plant.
- El-Co completed installation of the catch basins for the spent backwash collection system at the 19th Street Plant.
- El-Co completed grouting of the GAC vessel support legs at the 19th Street Plant.
- El-Co began installation of the pipe support straps for the GAC vessel header piping at the 19th Street Plant.

September 2004 (Weekly Reports 27 - 31)

- El-Co continued setting the posts and panels for the new sound-wall installation on the northeast, east and west sides of the 19th Street Plant.
- El-Co completed installation of the underground electrical conduits at the 19th Street Plant.
- El-Co completed installation of the wrought iron fence and gates at the EPBPS.
- El-Co completed installation of the tie-down straps for the GAC vessel header pipelines at the 19th Street Plant.
- El-Co completed construction of the 30-inch diameter bypass vault, the chlorine injection vault and the pressure-sustaining vault at the 19th Street Plant.
- El-Co installed the three booster pumps at the EPBPS.
- El-Co completed installation of the aboveground discharge header piping at the EPBPS.

October 2004 (Weekly Reports 32 - 35)

- El-Co completed setting the posts and panels for the new sound-wall installation on the east side of the 19th Street Plant, and completed the demolition of the residential block wall and chainlink fencing along the south site of the 19th Street Plant.
- El-Co began aboveground electrical installation at the EPBPS.
- Edison began underground electrical installation at the EPBPS.
- Schuler completed the acoustical panel installation inside the existing pump station at the 19th Street Plant.
- El-Co completed installation of the sound-wall fence posts and panels along the south side of the 19th Street Plant.
- El-Co completed installation of the sample vault at the EPBPS.
- El-Co completed installation of the chlorine injection system at the 19th Street Plant.

November 2004 (Weekly Reports 36 - 39)

- El-Co continued the aboveground electrical installations at the 19th Street Plant and the EPBPS.
- El-Co completed the tie-in of booster pump No. 5 at the 19th Street Plant.
- El-Co began work on the GAC vessel modifications at the 19th Street Plant.
- El-Co completed the new roof construction between the block wall and handball court at the EPBPS.
- El-Co completed construction of the backwash collection system discharge piping concrete pipe supports at the 19th Street Plant.
- El-Co completed installation of the surge tank compressor and piping at the EPBPS.

- El-Co completed demolition of the existing picnic enclosure and began construction of the new picnic area at the EPBPS.
- El-Co completed punch-list work and cleanup for the sound-wall installation at the 19th Street Plant.
- El-Co completed grading and paving at the EPBPS.
- El-Co completed repairs to the existing residential block walls at the 19th Street Plant.
- El-Co completed placing slag inside the EPBPS.

December 2004 (Weekly Reports 40 - 44)

- El-Co continued aboveground electrical installations at the 19th Street Plant and the EPBPS.
- El-Co repaired and relocated the irrigation system around the picnic area at the EPBPS, and installed picnic tables at the picnic area.
- El-Co completed the survey and staking work for fine-grading at the 19th Street Plant.
- El-Co began cleanup and painting work at the 19th Street Plant and the EPBPS.
- El-Co completed GAC vessel modification work at the 19th Street Plant, with the exception of the sample sinks and air-vacuum valves on the influent header.
- El-Co installed underground electrical conduit for the irrigation system at the 19th Street Plant.
- El-Co began installation of the air vacuum valves on the influent header at the 19th Street Plant. The valve locations were prepared on the influent header pipeline and construction was completed, except for installation of the air-vacuum valve units.
- El-Co completed fine-grading at the 19th Street Plant.
- El-Co completed installation of the chlorine injector unit inside the chlorine injection vault located on the effluent pipeline at the 19th Street Plant.
- El-Co completed placing the new asphalt roadway in the vicinity of the new GAC vessels at the 19th Street Plant, except for the asphalt paving work in the Caltrans right-of-way along Highland Avenue.
- El-Co began landscaping at the 19th Street Plant.
- El-Co installed spent backwash drain piping at the 19th Street Plant.
- El-Co began installing the spent backwash pipe supports at the 19th Street Plant.

January 2005 (Weekly Reports 45 – 48)

- El-Co continued landscaping at the 19th Street Plant.
- El-Co continued aboveground electrical installations at the 19th Street Plant and the EPBPS.
- El-Co continued cleanup and painting at the 19th Street Plant.
- El-Co completed installation of the spent backwash pipe supports at the 19th Street Plant.

- El-Co completed installation of the US Filter Westates-supplied sample sinks on the GAC vessels at the 19th Street Plant.
- El-Co completed the GAC vessel and header piping pressure-testing at the 19th Street Plant.
- El-Co completed wrought iron gate installation at the 19th Street Plant.
- El-Co completed placement of the crushed miscellaneous base (CMB) material on the non-paved areas at the 19th Street Plant.

February 2005 (Weekly Reports 49 – 52)

- El-Co completed landscaping at the 19th Street Plant.
- El-Co continued the aboveground electrical installations at the 19th Street Plant.
- El-Co continued cleanup and painting at the 19th Street Plant.
- Edison completed installation of electrical power supply at the EPBPS.
- El-Co completed installation of the security cage at the EPBPS.
- El-Co completed installation of the concrete curb on the east side of the 19th Street Plant.
- Carbon Activated began delivering the carbon for the 19th Street Plant GAC vessels. A total of 11 vessels were filled.

March 2005 (Weekly Reports 53 – 57)

- El-Co continued cleanup and punch-list items at the 19th Street Plant and the EPBPS.
- El-Co completed work on the Highland Avenue driveway entrance to the 19th Street Plant.
- Carbon Activated completed delivering carbon for the 19th Street Plant GAC vessels. A total of 13 vessels were filled this month, for a grand total of 24 vessels.
- Advanced Telemetry Systems International, Inc. (ATSI), a subcontractor to El-Co, completed physical installation of the supervising control and data acquisition (SCADA) system at the 19th Street Plant and the EPBPS.
- El-Co cold-planed the existing asphalt pavement and placed the new asphalt cap on the existing SBMWD treatment plant area of the 19th Street Plant.
- URS and SBMWD began the system shakedown procedure.
- El-Co completed aboveground electrical installations at the 19th Street Plant and the EPBPS.
- El-Co completed the requested electrical wiring modifications to the chlorine injection system in the chlorine control room at the 19th Street Plant.

April 2005 (Weekly Reports 58 – 61)

- El-Co continued cleanup and punch-list items at the 19th Street Plant and the EPBPS.

- URS and SBMWD continued the system shakedown procedure, specifically dealing with electrical and SCADA systems.
- El-Co completed installation of the differential pressure transmitters on the GAC vessels at the 19th Street Plant.

May 2005 (Weekly Reports 62 - 66)

- El-Co continued cleanup and punch-list items at the 19th Street Plant and the EPBPS.
- URS and SBMWD completed the system shakedown procedure.
- El-Co had ATSI perform SCADA modifications on the chlorine injection system at the 19th Street Plant.
- El-Co and Davis Electric, a subcontractor to El-Co, installed the SBVMWD slave radio equipment and power supply at the EPBPS. The system sends SCADA information to SBVMWD.
- El-Co installed the larger chlorine injection feed-line tubing in the chlorine injection vault at the 19th Street Plant.
- El-Co changed out the 8-inch diameter impeller for a 9-inch diameter impeller on the chlorine booster pump, in the chlorine control room at the 19th Street Plant.

June 2005 (Weekly Reports 67 - 70)

- El-Co continued cleanup and punch-list items at the 19th Street Plant and the EPBPS.
- El-Co disconnected, packaged, and shipped the differential pressure transmitters from the GAC vessels at the 19th Street Plant. They were sent to the manufacturer's representative in Connecticut for reprogramming and recalibration, to change the readout from percentage to pressure in pounds per square inch (psi), per the SBMWD request.
- El-Co completed mechanical installation of the metering equipment in the vault at the EPBPS.
- El-Co began electrical installation of the metering equipment in the vault at the EPBPS.

July 2005 (Weekly Reports 71 - 74)

- El-Co continued cleanup and punch-list items at the 19th Street Plant and the EPBPS.
- El-Co installed hour meters for the booster pump motors at the 19th Street Plant and the EPBPS.
- El-Co began reinstallation of the GAC vessel differential pressure transmitters at the 19th Street Plant.

August 2005 (Weekly Reports 75 - 79)

- El-Co continued cleanup and punch-list items at the 19th Street Plant and the EPBPS.
- El-Co continued reinstallation of the GAC vessel differential pressure transmitters at the 19th Street Plant.

September 2005 (Weekly Reports 80 - 83)

- El-Co continued cleanup and punch-list items at the 19th Street Plant and the EPBPS.
- URS conducted the monthly performance inspection on the 19th Street Plant, as required by the one-year plant operation program.
- El-Co completed reinstallation of the GAC vessel differential pressure transmitters at the 19th Street Plant.
- El-Co completed work on the canal valve manhole floor at the 19th Street Plant.
- El-Co and Davis completed installation of the hand-off-auto switches on the booster pump control panels at the EPBPS and the 19th Street Plant.
- El-Co and Davis continued electrical installation of the metering equipment in the vault at the EPBPS. The communication cable arrived and cable installation began.
- El-Co completed flushing the 24-inch DIP transmission pipelines at the EPBPS. The mechanical components were prepared for start-up.

October 2005 (Weekly Reports 84 - 87)

- El-Co continued cleanup and punch-list items at the 19th Street Plant and the EPBPS.
- URS conducted the monthly performance inspection on the 19th Street Plant, as required by the one-year plant operation program.
- EPBPS start-up, shakedown of the mechanical operation, pressure surge testing, and final inspection were completed.
- SBMWD completed the EPBPS pump-efficiency testing, in coordination with Edison.
- El-Co worked on Six-CENSE probe setup.

November 2005 (Weekly Reports 88 – 91)

- El-Co continued punch-list items at the 19th Street Plant and the EPBPS.
- El-Co continued with the Six-CENSE probe setup, incorporation into SCADA, testing, and training for SBMWD.
- E2 Consulting (E2), SBMWD, and URS conducted a monthly performance inspection.

December 2005 (Weekly Reports 92 – 95)

- El-Co continued punch-list items at the 19th Street Plant and the EPBPS.
- Davis installed a new network communications cable between the remote telemetry unit (RTU) panels at the 19th Street Treatment Plant.
- ATSI installed new processors at each RTU panel and re-established communication between the RTU panels at the 19th Street Plant.

- Continued progress on Six-CENSE probe setup, incorporation into SCADA, and testing.

2.2 QUALITY ASSURANCE TESTING SUMMARY

Concrete Strength Testing

Signet Testing Labs, a certified independent testing lab, performed the concrete, masonry, grout, and mortar laboratory testing. URS Resident Inspector Nick Reylek directed concrete testing locations and frequency. Concrete field-test cylinder samples were taken during the concrete pours for footings, foundation slabs and pipeline support structures. Concrete slump tests were performed in accordance with American Society for Testing and Materials (ASTM) C 143. All concrete, masonry, grout and mortar field-test samples were then laboratory-tested in accordance with ASTM C31/C39 for compressive strength. Appendix C contains the concrete compression test reports.

Soils and Compaction Testing

Signet Testing Labs, a certified independent testing lab, performed the soil laboratory testing. URS Resident Inspector Nick Reylek directed soils compaction testing frequency. Tests were taken of the trench backfill, subgrade and base materials and under-pad foundations. All compaction tests were performed with a nuclear density gauge, using the Nuclear Density Gauge method per ASTM Standards D2922 and D3017. Trench backfill under the roadway was mechanically compacted to 90 percent of the maximum relative density, except for the top 6 inches of subgrade, which was compacted to 95 percent of the maximum relative density. Appendix D contains the soil compaction testing results and map showing the compaction test locations.

Hydrostatic Testing, Chlorination and Flushing

The hydrostatic test was performed on the newly installed influent, effluent, backwash supply header pipelines at the time they were completed. URS Resident Inspector Nick Reylek witnessed the testing of each pipeline section. The pipeline section was filled with water and pressure-tested at 150 psi continuously, for two hours. Water leakage was measured by determining the quantity of water required to maintain test pressure in the pipeline section. No additional water was needed on any section of any pipeline during these tests, and all sections passed the hydrostatic tests. Hydrostatic testing results are documented in the Inspector's Daily Reports, included in Appendix B.

Upon successful completion hydrostatic testing, each pipeline section was disinfected. Chlorine was introduced via a chlorine injector pump into the water-filled pipeline section. The chlorine concentration was specified to be between 50 and 80 parts per million (ppm), and this mixture was retained inside the pipeline section for a 24-hour period. After 24 hours, the residual chlorine level was required to be at least 25 ppm. El-Co chlorination data are included in Appendix E. SBMWD Water Quality Control Supervisor Con Arrieta confirmed the chlorine concentration before and after the 24-hour period. Following chlorination, all water in each pipeline section was flushed out until the replacement water showed no residual chlorine.

Bacteria Testing

SBMWD personnel collected water samples from flushed pipeline sections and had the samples analyzed for the presence of coliform bacteria. All test results were negative for bacteria. The test results are included in Appendix F.

2.3 SAFETY AND HEALTH

Installing pipelines on busy city streets and installing equipment at the 19th Street Plant and the EPBPS presented numerous challenges to the field crews completing the work. In response to these conditions, the project was performed with a high degree of concern for the safety and health of the work force and the general public. El-Co conducted weekly tailgate safety meetings to enforce safe work practices and to discuss any potential safety concerns of the crews.

2.4 COMMUNITY RELATIONS

Due to the sensitive nature of relations with the local residential community, URS worked with Jackie Lane/EPA and Russell Smith/SBMWD to develop a proactive approach to the community relations issue during construction of the 19th Street and the EPBPS. During the installation of the 19th Street Plant, there were several minor issues raised by the local residents. Following the planned approach, these issues were brought to the immediate attention of Russell Smith. All of the issues were handled rapidly by Russell Smith, URS and El-Co to the satisfaction of the local residents. These issues are described in the Weekly Construction Progress Reports, included in Appendix A.

2.5 CHANGE ORDER SUMMARY

Subcontract modifications during the construction of the 19th Street Plant and EPBPS are listed below:

CO #	Description
1.	Revision of Project Site Coordinates on Sheet C-1
2.	Effluent Lateral Elevation Modification - C5
3.	Revision of West GAC Pad Elevation - S2
4.	EPBPS Pipeline Realignment
5.	Add Pipe Backwash Effluent Support Pads
6.	Move North Sound Wall to be Consistent with Property Boundary
7.	Not Used
8.	EPBPS Change Connection of Surge Tank to Influent Side of Pump
9.	24-inch Vertical Offset on Backwash Supply
10.	Canal Valve Vault
11.	Residential Wall Extension
12.	Effluent Lateral Alignment Modification
13.	Influent Pipeline Alignment Modification
14.	Vault Covers

CO #	Description
15.	Catch Basin Modifications
16.	EPBPS Landscaping and Irrigation Modification
17.	EPBPS Southern California Edison Electrical Modifications
18.	Backwash Supply Water to Hose Bibs, Washdown, Carbon Truck Fill
19.	ATSI Add Input / Output Modules - REJECTED
20.	Restraints for Flexible Couplings
21.	Sample Port at System Effluent
22.	Influent Pipeline Air Release Valves
23.	Differential Pressure Transmitters for Carbon Vessels
24.	Piping for Single and Triple Sample Port Sinks
25.	Electrical Power to Irrigation Controller
26.	Chlorine Injection System Modifications (Piping and Motor Starter)
27.	ACV #3 Modification Due to Changes in Sequence of Operations
28.	Security Cage at EPBPS
29.	Asphalt Upgrade at 19th Street Plant
30.	EPBPS Instrumentation
31.	Reconfigure Differential Pressure Transmitters to Display PSI
32.	Integrate New Chlorine Injection System with Existing System
33.	Punch List Items Requested by SBMWD
34.	Reconfigure Sight Glass at EPBPS Surge Tank
35.	Repair RTU Communication at 19th Street Plant
36.	EPBPS Instrumentation Junction Box

2.6 CONSTRUCTION PHOTOS

Included in Appendix G are the photos taken by URS Resident Inspector Nick Reylek during the construction of the 19th Street Plant and the EPBPS. Forty photos have been selected from the total of 408, showing project progress from start to completion. These photos are printed in this document. Also in Appendix G is the complete photo log, listing all 408 photos, and a CD containing these 408 photos.

2.7 FINAL INSPECTION

A Pre-final Inspection Checklist, punch list and a shakedown checklist for the entire 19th Street Plant and EPBPS Project were used to track construction completion and any punch-list items. The items on these checklists were verified as completed by Bob Kemmerle of E2, on the behalf of EPA, and by various SBMWD personnel, including Mike Lowe and Terry Tonn. Final inspection of the 19th Street Plant construction project, with exceptions, was conducted on July 28, 2005. Kim Hoang/EPA, Stacey Aldstadt/SBMWD, Bill Bryden/SBMWD, Bob Kemmerle/E2, Dwayne Deutscher/URS, Matt Dwyer/URS, Adam Harvey/URS, Nick Reylek/URS were in attendance to review the work, list any outstanding issues, and to give formal acceptance of the project with the list of exceptions. Final Acceptance of the EPBPS was conducted on October 11, 2005 by Kim Hoang/EPA, Stacey Aldstadt/SBMWD, Bill Bryden/SBMWD, Bob Kemmerle/E2, Dwayne Deutscher/URS, Matt Dwyer/URS, Adam Harvey/URS, Nick Reylek/URS. Final electrical shakedown and inspection of the

Attachment A exception items noted during the October 11, 2005 inspection was conducted on April 26, 2006. A copy of the signed Final Inspection and Acceptance Forms with noted exceptions is included in Appendix H.

The 19th Street Plant and the EPBPS began the one-year performance evaluation period on July 25, 2005.

2.8 CONCLUSION

The 19th Street Plant and EPBPS project was completed safely and in accordance with the plans and specifications. Record drawings of the completed 19th Street Plant and EPBPS have been prepared, and are included as Appendix I of this report.