SDMS DOCID# 1141631

FINAL SOIL REMEDIAL DESIGN

PACIFIC COAST PIPELINE (PCPL) SUPERFUND SITE
FILLMORE, CALIFORNIA

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April 29, 2013

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This final soil remedial design presents the methods and mass grading design developed to address impacted soil at the Chevron Environmental Management Company (Chevron) Pacific Coast Pipeline Superfund Site (Site), located in Fillmore, California. The purpose of this report is to (1) provide sufficient background information to understand the current conditions, and (2) provide specific methods, drawings, and specifications that will be used during soil remediation activity at the Site.

No express or implied representation or warranty is included or intended in this report except that the work was performed within the limits prescribed by Chevron with the customary thoroughness and competence of professionals working in the same area on similar projects.

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TABLE OF CONTENTS

Section **Page**

EXECUTIVE SUMMARY ES-1

1.0 INTRODUCTION 1
1.1 Purpose 1
1.2 Report Organization 2
1.3 Site Background 2
1.3.1 Site Description 2
1.3.2 Site Operational History 2
1.3.3 Regulatory History and Previous Investigations 3

2.0 PROJECT TEAM ORGANIZATION 10
2.1 Project Team 10

3.0 PHYSICAL CHARACTERISTICS OF THE SITE 11
3.1 Geography 11
3.2 Meteorology 11
3.3 Surface Hydrology 11
3.3.1 Existing Site Drainage Patterns 11
3.3.2 Proposed Site Drainage Patterns 11
3.3.3 Detention Pond Function 12
3.3.4 Roadway Drainage 12
3.3.5 East Slope Drainage 12
3.3.6 Lot Drainage 12
3.4 Geology 12
3.4.1 Regional Geology 12
3.4.2 Local Geology 13
3.4.3 Regional Hydrogeology 13
3.4.4 Local Hydrogeology 13
3.5 Demography 14

4.0 NATURE AND EXTENT OF CONTAMINATION 15
4.1 Sources of Contaminants 15
4.2 Contaminant Distribution – Shallow Soils 15
4.3 Summary of Previous Site Investigations 16
4.3.1 Phase 1 – Former Tank Areas 17
4.3.2 Phase 2 – Historical Operations 17
4.3.3 Phase 3 – Data Gap Sampling 17
4.3.4 2010-2011 Soil Delineation 17
4.3.5 2012 Consolidation Area Trenching 17
4.4 Soil Analytical Results 18
4.5 Previous Soil Remedial Action 18

5.0 REMEDIAL ACTION OBJECTIVES 19

6.0 APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS 20
6.1 Applicable or Relevant and Appropriate Requirements 20
6.2 Institutional Controls 20
6.2.1 Type of Control 20
6.2.2 Relationship of Control to Remedy 20

6.2.3 Objectives Attained by ICs 21
6.2.4 Performance Standards 21
6.2.5 Monitoring 21
6.2.6 Responsible Entities 21

7.0 SOIL REMEDIAL DESIGN 22
7.1 Design Criteria Summary 23
7.2 Technical Design Standards 23
7.3 Basis of Design 24
7.4 Remedial Design and Construction Summary 25
7.5 Operation, Maintenance, and Monitoring 25

8.0 PROJECT SCHEDULE 26
8.1 Construction Schedule 26
8.2 Deliverables Schedule 26

9.0 REFERENCES 27

Tables

Table 1 Summary of Excavation Volumes
Table 2 Summary of 2012 Consolidation Area Trench Sampling Results
Table 3 Summary of Project ARARs
Table 4 Institutional Controls Roadmap

Figures

Figure 1 Site Location Map
Figure 2 Areas of Concern
Figure 3 Project Team Organizational Chart
Figure 4 Excavation Areas within the Proposed Consolidation Area
Figure 5 Project Schedule

Appendices

Appendix A Remedial Grading Plans and Specifications – Final EPA Design
Appendix B Soil Operation, Maintenance and Monitoring Plan Outline

LIST OF ACRONYMS AND ABBREVIATIONS

Agency	U.S. Environmental Protection Agency or EPA
AL	Action Level
ARAR	Applicable or Relevant and Appropriate Requirement
AST	aboveground storage tank
BMPs	Best Management Practices
BTEX	benzene, toluene, ethylbenzene, and total xylene
CAM	California Assessment Manual
CAMU	Corrective Action Management Unit
CD	consent decree
Chevron	Chevron Environmental Management Company
CH&SC	California Health and Safety Code
CHHSLs	California Human Health Screening Levels
COC	chemical of concern
CQAP	Construction Quality Assurance Plan
CTR	California Toxics Rule
CY	Cubic Yards
DHS	Department of Health Services
DTSC	Department of Toxic Substances Control
E&A	England and Associates
EPA	(U.S.) Environmental Protection Agency
GCL	Geosynthetic Clay Liner
GWTS	groundwater treatment system
ICs	Institutional Controls
µg/L	micrograms per liter
mg/L	milligrams per liter
MNA	monitored natural attenuation
msl	mean sea level
MWP	(former) Main Waste Pit
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
NELAP	National Environmental Laboratory Accreditation Program
OM&M	Operation, Maintenance, and Monitoring
ORC®	oxygen release compound
PAH	Polycyclic Aromatic Hydrocarbon
PCPL	Pacific Coast Pipeline
PE	Professional Engineer
PG	Professional Geologist
P&T	pump-and-treat
RAO	Remedial Action Objective
RD	Remedial Design
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
RWQCB	Regional Water Quality Control Board
Site	Pacific Coast Pipeline Superfund Site
SVE	soil vapor extraction
TPH	total petroleum hydrocarbons
UAO	Unilateral Administrative Order
URS	URS Corporation
VCAPCD	Ventura County Air Pollution Control District
VOC	Volatile Organic Compounds

EXECUTIVE SUMMARY

This Soil Remedial Design (Soil RD) report was prepared for the Pacific Coast Pipeline Superfund Site (Site), located in Fillmore, California (**Figure 1**). The purpose of this Soil RD is to provide the design for the selected remedial approach described in the Record of Decision (ROD) amendment for the Site, issued on September 29, 2011, by the United States Environmental Protection Agency (EPA) (EPA, 2011).

The Site was an oil refinery from circa 1915 until 1950. Texaco acquired the existing refinery in 1928. The refinery was shut down in 1950; dismantled by 1951, except for approximately eight aboveground storage tanks (ASTs); and converted to a crude oil pumping station by 1952. Pumping station operations were discontinued, and nearly all of the remaining facilities were dismantled and removed by 2002. The last remaining AST was removed in August 2004.

Contaminants found in numerous historical investigations conducted since 1983 are typical of petroleum industry operations that were ongoing at the Site since circa 1915, and include polycyclic aromatic hydrocarbons (PAHs) and lead. The majority of soil impacts were addressed as part of 1986 waste removal actions. Residual soil impacts are present across the Site, predominantly in shallow soils, and are likely associated with historical operations, incidental releases, and former waste management practices (**Figure 2**).

The soil remedial action objectives (RAOs) identified in the ROD include:

- Prevent human exposure through direct dermal contact, ingestion, and inhalation of shallow soil contaminated above threshold levels for commercial land use, construction activities, and recreational activities.
- Prevent contaminants in waste pit (lead, PAHs) from migrating into underlying groundwater.
- Reduce contamination in soil below toxicity threshold levels so it is not toxic to the plants and animals of the existing scrub habitat.

The primary applicable or relevant and appropriate requirements (ARARs) for the soil remedy are the California land use covenant requirements and Ventura County Air Pollution Control District regulations for fugitive dust.

In addition to implementation of the soil remedy described in this Soil RD to address the RAOs and ARARs, the project will implement institutional controls (ICs). These will include a deed restriction, and monitoring to prevent exposure to contaminated soil and to maintain the integrity of the remedial cap.

The major components of the soil remedy include excavation of approximately 18,500 cubic yards of contaminated soil that exceeds risk-based cleanup criteria developed to be protective of human health and the environment; and disposal of that soil in an onsite Consolidation Area. The Consolidation Area will then be covered by an engineered cap that incorporates a geosynthetic clay liner (GCL) that will prohibit infiltration, and further minimize the low potential for leaching of contaminants in soil to the groundwater. The final Site grading presented in the Remedial Grading Plans (Appendix A) was designed to leave the Site ready for reuse. As part of the remedial action, ICs will be put in place to restrict future property use to commercial

and/or recreational purposes, and limit actions that could interfere with the remedy (i.e., the cap).

The Consolidation Area will be located over the former Main Waste Pit (MWP) area of the former refinery, beneath a planned roadway and along the adjacent front yard lot setback areas. The selection of the former MWP area and adjacent setbacks for the Consolidation Area was the result of a detailed process, wherein several alternative locations and configurations were identified and evaluated. This approach to locating and configuring the Consolidation Area will a) take advantage of the former MWP excavation, significantly reducing the volume of material to be moved to create the Consolidation Area; b) leverage a planned paved roadway to provide additional protection of the Consolidation Area cap; and c) increase the use of the adjacent lot front yards, which typically consist of paved parking areas.

To ensure long-term protection of the Consolidation Area, a minimum 5-foot-thick engineered cap is planned, consisting of a minimum 3-foot-thick protective erosion fill layer underlain with a 2-foot-thick low-permeability layer consisting of a GCL sandwiched in protective sandy/granular onsite borrow soils. This engineered cap configuration will allow placement of the roadway and adjacent lot grading well above the low-permeability layer, accommodating incidental utility crossings, appropriate surface vegetation (e.g., shallow rooted plants) and associated irrigation, and surface pavement, but still allowing access to the low-permeability GCL material for verification of condition and/or maintenance. No future utilities will be located longitudinally above the Consolidation Area, but will be in a permanent easement in the adjacent lot front yards.

Following completion of the remedial action, monitoring and maintenance activities described in the pending Soil Operation, Maintenance, and Monitoring Plan will include annual visual inspections of the cap and drainage system for the first 2 years, and every other year thereafter. The results of the inspections will be submitted as a Soil Remedial Performance Evaluation Report to the EPA. After 5 years, the EPA may reduce the inspection frequency. It is anticipated the EPA will require ongoing reviews performed every 5 years.

1.0 INTRODUCTION

On behalf of Chevron Environmental Management Company (Chevron), working under an environmental services agreement on behalf of Texaco Inc., URS Corporation (URS) has prepared this Final Soil Remedial Design (Soil RD) detailing the remedial design for excavation and consolidation of contaminated shallow subsurface soils currently present at the Texaco Pacific Coast Pipeline (PCPL) Superfund Site (the Site). The 55-acre Site is located at 67 East Telegraph Road in Fillmore, California (**Figure 1**).

This Soil RD presents the detailed design for the selected remedial approach described in the Record of Decision (ROD) amendment for the Site, issued on September 29, 2011, by the United States Environmental Protection Agency (EPA) (EPA, 2011). The information presented in this Soil RD also incorporates the findings from the *Remedial Investigation/Focused Feasibility Study* (RI/FS), dated January 14, 2011 (URS, 2011a); the *Engineering Geology and Geotechnical Investigation,* dated September 9, 2011 (URS, 2011c); and the *Soil Delineation Sampling and Infrastructure Removal Report,* dated December 16, 2011 (URS, 2011d).

The major components of the soil remedy as outlined in the ROD amendment include excavation of contaminated soil that exceeds risk-based cleanup criteria developed to be protective of human health and the environment, and disposal of that soil in an onsite Consolidation Area in the Main Waste Pit (MWP) for the former refinery. The Consolidation Area will then be covered by an engineered cap that incorporates a geosynthetic clay liner (GCL) that will prohibit infiltration, and further minimize the low potential for leaching of contaminants in soil to the groundwater. As part of the remedial action, institutional controls (ICs) will be put in place to restrict future property use to commercial and/or recreational purposes, and limit actions that could interfere with the remedy (i.e., the cap). Additionally, regular operations and maintenance consisting of cap inspections will be conducted to assess cap performance and integrity.

URS conducted several field investigations and demolition activities to better define the scope presented in this Soil RD. The investigations and demolition activities were conducted in several phases, starting in 2006. A more detailed discussion of the investigation and demolition activities is presented in Section 4.0.

1.1 PURPOSE

As described in the ROD Amendment (EPA, 2011, Section 6.0), the City of Fillmore expects future development of the property to be for commercial/industrial and recreational (open space) uses. The property will not be zoned for residential uses.

The purpose of the proposed remedial design and implementation is to satisfy the Remedial Action Objectives (RAOs) for soil as outlined in the ROD Amendment (EPA, 2011). The soil RAOs include the following: 1) prevent human exposure through direct dermal contact, ingestion, and inhalation of shallow soil contaminated above threshold levels for commercial land use, construction activities, and recreational activities; 2) prevent contaminants in waste pit (lead, polycyclic aromatic hydrocarbons [PAHs]) from migrating into underlying groundwater; and 3) reduce contamination in soil below toxicity threshold levels so it is not toxic to the plants and animals of the existing scrub habitat.

The proposed remedial action for soil includes: 1) excavation and segregated stockpiling of clean and contaminated soils from the footprint of the planned onsite Consolidation Area to

accommodate construction of the Consolidation Area; 2) excavation of contaminated soil exceeding risk-based cleanup levels from across the Site; 3) confirmation testing; 4) placement of excavated soil in the Consolidation Area in the former MWP; 5) construction of an engineered cap; and 6) mass grading across the Site. The MWP is shown on **Figure 2** (Area of Concern 9), and planned soil excavation volumes are provided in **Table 1**. This approach will meet the RAOs by removing soil above risk-based cleanup levels to mitigate human and ecological exposure pathways. Covering of the Consolidation Area with an engineered cap will mitigate the potential for the material placed in the Consolidation Area to leach to the underlying groundwater.

1.2 REPORT ORGANIZATION

This report is organized into the following sections:

- Section 1 contains the Site regulatory background, and a summary of Site investigations.
- Section 2 introduces the project team.
- Section 3 presents a physical description of the Site.
- Section 4 discusses the nature and extent of contamination at the Site.
- Section 5 presents the RAOs for the work.
- Section 6 presents the Applicable or Relevant and Appropriate Requirements (ARARs) for the remedial design.
- Section 7 describes the soil remedial design.
- Section 8 provides the project schedule.
- Section 9 provides a list of the references cited in this Soil RD.

1.3 SITE BACKGROUND

The Site background provides a Site description, a general history of operations, a chronology of the Site regulatory history, and a summary of previous investigations.

The EPA (Region 9) is the regulatory authority administering an existing consent decree (CD) (EPA, 1993). The Department of Toxic Substances Control (DTSC) is the state agency administering the CD for the State of California. However, the EPA became the lead agency for the project when the Site was listed on the National Priorities List (NPL).

Texaco Inc. is the responsible party for the Site and the property is owned by Texaco Downstream Properties Inc.

1.3.1 Site Description

The Site is referred to as the PCPL Superfund Site. The EPA identification number for the Site is CAD980636781. The Site is located at 67 East Telegraph Road along the eastern border of the City of Fillmore in Ventura County, California (**Figure 1**).

1.3.2 Site Operational History

The Site was an oil refinery from circa 1915 until 1950. The earliest known reference indicates that refining operations were conducted as the “Ventura Refinery” in 1917 (ENSR, 1990). Texaco acquired the existing refinery in 1928. The refinery was shut down in 1950; dismantled by 1951, except for approximately eight aboveground storage tanks (ASTs); and converted to a

crude oil pumping station by 1952. Pumping station operations were discontinued, and nearly all of the remaining facilities were dismantled and removed by 2002. The last remaining AST was removed in August 2004.

Former facility features were evaluated based on a compilation of previous operations, drawn primarily from two facility drawings dated 1919 and 1933. The second drawing (1933) was last revised in 1947. The drawings contain details of past operations; however, the text on most of the drawings was of poor quality, due to replication of the drawings over the years. The Site operations have been detailed in numerous reports; however, in many cases, the exact history was difficult to evaluate, due to the lack of available information in the project records. The available historical facility drawings were provided in Appendix C of a report titled *Phase 3 – Shallow Soil Investigation – Data Gap Sampling and Human Health Risk Assessment* (URS, 2009).

Most of the known infrastructure had been removed as of December 2012. The remaining infrastructure (mainly consisting of subsurface conveyance piping) will be removed ahead of the soil remedial excavations planned for 2013. The remaining infrastructure currently includes a deep water supply well, numerous groundwater monitoring wells, and a remedial contractor field office trailer.

1.3.3 Regulatory History and Previous Investigations

An annotated chronology of the Site regulatory history and previous investigations is provided below:

- **1980** – An investigation was requested by the Regional Water Quality Control Board (RWQCB).
- **1983 to 1989** – Voluntary groundwater and soil assessment was conducted under the Department of Health Services (DHS) and RWQCB.
- **1986** – 38,000 tons of waste and contaminated soil was removed from the former main waste pit and other small waste disposal areas.
- **1989 –** The Site was added to the NPL by the EPA.
- **1990** to **1992 –** An RI/FS was completed (ENSR, 1991, 1992). The RI/FS concluded that there were significant levels of total petroleum hydrocarbons (TPH) and benzene, toluene, ethylbenzene, and total xylene (BTEX) in groundwater; and significant concentrations of TPH, but very little evidence of BTEX in the vadose zone. The RI/FS concluded that groundwater pump-and-treat (P&T), coupled with limited soil vapor extraction (SVE) in the vadose zone, were the appropriate remediation technologies for the Site.
- **1992 –** The ROD was issued in March 1992 (EPA, 1992). The selected remedy included groundwater P&T and SVE for those areas that threaten to contaminate groundwater at levels above Site cleanup standards. The ROD listed groundwater cleanup levels for BTEX, methylene chloride, and 1,2-dichloroethane. Benzene and toluene are the only compounds that currently exceed the groundwater cleanup standards. Because there was little evidence of BTEX in the vadose zone, the waste pits were already remediated, and a

baseline risk assessment (CH2M Hill, 1991) found that surface soil did not pose a concern for land use at that time, no shallow soil cleanup standards were mandated.

- **1992** – A *Preliminary Design Work Plan* (ESI, 1992) was submitted and approved by EPA in December 1992.

- **1993 –** The *Consent Decree* was entered in August 1993. The *Phase 1 Design Report* (ESI, 1993) was completed in September 1993. The Phase 1 remedial program included pilot testing for SVE treatment and groundwater extraction; and treatment with granular activated carbon and discharge to Pole Creek under a National Pollutant Discharge Elimination System (NPDES) permit. Phase 1 groundwater extraction and treatment began in December 1993.

- **1994 –** Phase 1 vapor extraction began, and the *Final Phase 2 Design Report* (E&A, 1994) was submitted and approved.

- **1995 –** The *Final Phase 2 Remedial Action Work Plan* (E&A, 1995a) was submitted and approved. Phase 2 vapor extraction began, using thermal oxidation for soil vapor treatment; and the groundwater treatment system (GWTS) operations were upgraded in capacity. The *Operation and Maintenance Plan* and the *Monitoring and Confirmation Sampling Plan* (E&A, 1995b and 1995c) were also submitted and approved.

- **1996** – An *Interim Remedial Action Plan Report* (E&A, 1996a) was submitted to fulfill the requirements for Construction Complete and Closeout Reporting required by the CD. System optimization measures were discussed with the EPA, and documented in a letter (E&A, 1996b).

- **1997** – Permitting with local agencies was completed and system optimization measures were implemented, including the installation of a new well in an area of higher concentration. The groundwater sampling program was modified as described in an approved technical memorandum (E&A, 1997).

- **1998** – Monitoring well network upgrades—including abandonment of damaged wells and wells that were no longer useful, and installation of new wells—were completed (E&A, 1998a and 1998b).

- **2000 through 2002** – Texaco applied for renewal of the NPDES permit in March 2000. The RWQCB indicated that processing for new permits was on hold pending finalization of the California Toxics Rule (CTR), and that the existing permit requirements would remain in effect in the interim. The CTR was finalized in May 2000 in Code of Federal Regulations 40, Part 131. The CTR promulgates numeric criteria for priority pollutants, and requires the state to issue compliance for new or revised NPDES permit limits. In response, the State Water Resources Control Board adopted the State Implementation Plan. As a result of the CTR and the State Implementation Plan, more stringent limits were required for a new permit. Many of the CTR limits were below naturally occurring background levels. Following negotiations with the RWQCB, Chevron was given permission to continue operating under the old NPDES permit limits, but was required to

discontinue discharge under the permit prior to May 2003 (England Geosystem, 2002b).

- **2001** – EPA completed the *First Five-Year Review Report for Pacific Coast Pipeline Superfund Site* (EPA, 2001). The report indicated that the treatment systems were operating as designed, and the remedial action continues to be protective of human health and the environment.

- **2001 and 2002** – An early request for authorization to shut off the SVE system was submitted, because shutoff criteria were nearly met (England Geosystem, 2001). In January 2002, the shutoff criteria were met and a technical memorandum detailing the SVE shutoff and monitoring plans was submitted (England Geosystem, 2002a and 2002c). The shutoff was approved on April 11, 2002, and the SVE system operations were discontinued on April 14, 2002. Soil gas concentrations were monitored monthly for 8 months following SVE system shutoff. Soil vapor monitoring was discontinued in November 2002.

- **2002 – 2004 –** A technical memorandum for GWTS operational modifications and pilot study for enhanced bioremediation at the PCPL Superfund Site in Fillmore, California, was submitted to the EPA on October 16, 2002 (England Geosystem, 2002d). Onsite conventional groundwater P&T technology had reached its effective limit at the PCPL Site. Chevron proposed modifying the operation of that system, and investigating the implementation of enhanced monitored natural attenuation (MNA) as a replacement or supplement to allow for additional focused remediation while ensuring protection of public health and safety. In January 2003, EPA approved the modification to the operations of the GWTS at Fillmore and the pilot testing as proposed. The oxygen release compound (ORC®) pilot-test performed in 2003-2004 at the Site demonstrated that ORC® injection was not effective in reducing dissolved-phase benzene concentrations at the Site. The results from the ORC® pilot study are described in *Evaluation of the Enhanced Bioattenuation Pilot Study* (England Geosystem, 2005b). Although the pilot study for enhanced bioattenuation was not effective, calculations showed that natural attenuation accounts for a significant amount of destruction of dissolved hydrocarbons in groundwater. Therefore, Chevron continued to evaluate MNA enhancement as a groundwater remedial alternative at the Site.

- **2004 –** Regulatory and corporate meetings were held to discuss forward plans, including the potential for MNA and land revitalization.

- **2005 –** A work plan for Phase 1 Soil Sampling in the former tank areas was submitted (England Geosystem, 2005a) to the EPA, and comments were received from both the EPA and DTSC. Another work plan was also submitted to the EPA and DTSC for review: *Sampling and Analysis Plan for Natural Attenuation Characteristics and Soil Vapor Characteristics Above Dissolved Phase Benzene Plumes* (URS, 2006a).

- **2006** – A response to agency comments regarding Phase 1 Soil Sampling was sent by Chevron (Chevron, 2006b), and the work plan was approved by EPA and DTSC in 2006. Phase 1 Soil Sampling was conducted by URS, and a report was

submitted to the EPA and DTSC (URS, 2006b). The work plan, *Sampling and Analysis Plan for Natural Attenuation Characteristics and Soil Vapor Characteristics Above Dissolved Phase Benzene Plumes*, was revised based on comments received from the agencies and subsequently approved by EPA and DTSC (URS, 2006a). Field work for this investigation began in September 2006 with the collection of soil and preliminary vapor samples.

- During the third quarter of the year, the second Five-Year Review report was completed (EPA, 2006). The review of documents, ARARs, risk assumptions, and the results of the Site inspection indicate that the remedy is functioning as intended by the ROD to control further migration of the contaminated groundwater.

- **2007** – A vapor monitoring well installation report, *Continuous Multichannel Tubing Well Installation Report* (URS, 2007a), was submitted to the EPA and DTSC. A work plan for Phase 2 Soil Sampling was submitted to the EPA and DTSC for review. The work plan, *Soil Sampling Phase 2 – Historical Operations*, was revised based on comments received from the agencies and subsequently approved by EPA and DTSC (URS, 2007b). Field work for this investigation was conducted in September and October 2007.

- **2008** – The *Soil Sampling Report for Phase 2 – Historical Operations* (URS, 2008a) and *Work Plan Phase 3 – Data Gaps for Risk Assessment* (URS, 2008b) were submitted to the EPA and DTSC. The five Continuous Multichannel Tubing wells west of Pole Creek were destroyed (URS, 2008c). Agency comments on the Phase 3 Work Plan were received and addressed. Agency approval to proceed with the Phase 3 Work Plan was received on September 18, 2008. Phase 3 soil sampling occurred in October. Rainfall delayed collection of Phase 3 soil vapor samples until January 2009.

- **2009** – Phase 3 soil vapor samples were collected in mid-January. Chevron submitted to the EPA a memorandum titled *Evidence for Monitored Natural Attenuation with Institutional Controls for Final Groundwater Remedy* (Chevron, 2009). The *Phase 3 – Shallow Soil Investigation Data Gap Sampling and Human Health Risk Assessment* (URS, 2009) was submitted on May 11, 2009. The EPA transmitted to Chevron a draft scope of work for a friendly Unilateral Administrative Order (UAO), which outlines the schedule for completion of the RI/FS. Chevron responded with comments on the scope of work that were generally acceptable to the agency. EPA transmitted comments on the *Phase 3 – Shallow Soil Investigation Data Gap Sampling and Human Health Risk Assessment* (URS, 2009) on September 15, 2009. Chevron submitted to the EPA the *Remedial Action Objectives* (*RAO) Technical Memorandum* and the *Reuse Assessment* on September 15, 2009. The EPA issued the UAO, effective September 28, 2009. On November 24, 2009, Chevron submitted a *Draft Remedial Investigation/Focused Feasibility Study* to the EPA. On December 16, 2009, the EPA transmitted comments on the RAO memorandum.

- **2010** – The EPA issued an amendment to the UAO on February 11, 2010. Chevron submitted a revised Human Health Risk Assessment along with additional soil characterization in *Soil Lead Speciation and Bioavailability at the*

Pacific Coast Pipelines Site, Fillmore, California (Geomega, Inc., 2010). The documents demonstrated that lead samples did not contain alkylated lead, and concluded that organic lead was not a chemical of concern (COC) for the Site. At a meeting in the EPA's San Francisco office on April 22, 2010, the EPA concurred and agreed that development of remediation alternatives for lead in shallow soil would focus on inorganic lead impacts. In a letter dated April 27, 2010, the EPA conveyed comments on the Draft RI/FS. On June 11, Chevron submitted the *Final Remedial Investigation/Focused Feasibility Study* to the EPA. Chevron submitted a response to comments letter to the EPA and DTSC (dated August 27, 2010), indicating how and where agency comments were addressed in the Final RI/FS. On December 16, 2010, Chevron submitted the *Work Plan to Remove Remaining Infrastructure*.

- **2011** – Chevron incorporated additional agency comments and submitted a Final RI/FS dated January 14, 2011. Chevron incorporated EPA comments into the *Work Plan to Remove Remaining Infrastructure* (URS, 2011b), which was approved by the EPA in a letter dated March 24, 2011. Infrastructure removal began on June 1, 2011. On June 2, 2011, the EPA released its Proposed Plan for remediation of the Site. The EPA held a public meeting in Fillmore on June 16, 2011, to explain the Proposed Plan to members of the community, and to gather comments. In September 2011, the EPA completed the ROD Amendment, which describes the remediation selection process and presents the alternative selected to clean up remaining impacts in the shallow soil and groundwater. In September, the pipeline and infrastructure removal activities were completed for the year. The *Soil Delineation Sampling and Infrastructure Removal Report* (URS, 2011d) was submitted to the EPA. The report incorporated additional delineation sampling results (post-RI/FS) and documentation of 2011 infrastructure removal activities. Also in December, *Work Plan to Remove Remaining Infrastructure (Phase 2)* (URS, 2011b) was submitted to the EPA for approval.

- **2012** – Chevron submitted the *Preliminary Soil Remedial Design and Remedial Action Work Plan* (URS, 2012a) to the EPA. On March 13, 2012, the EPA transmitted comments on the Work Plan to Remove Remaining Infrastructure (Phase 2). The comments were incorporated, and the revised work plan was submitted on March 30, 2012. The draft *Sampling and Analysis Plan (Field Sampling Plan and Quality Assurance Project Plan)* (URS, 2012b) was submitted to the EPA for review and comment. On June 15, two reports were submitted to the EPA: *Performance Groundwater Monitoring Plan* (URS, 2012c) and *Groundwater Project Work Plan* (URS, 2012d). The *Final Quality Assurance Project Plan (Field Sampling Plan and Sampling and Analysis Plan)* (URS, 2012e) (retitled April 4th submittal), was submitted to the EPA. EPA comments dated May 23, 2012, were incorporated in the final report.

Pre-1992 ROD Remedial Activities

From 1983 to 1989, Texaco, under the direction of the California DHS and the RWQCB, conducted a groundwater and soil assessment. Three groundwater monitoring wells were installed, and benzene was detected in groundwater up to a maximum concentration of 5,800 micrograms per liter (µg/L).

In 1986, under the direction of the DHS, Texaco removed 38,000 cubic yards of waste material and contaminated soils from the main waste pit and other disposal areas. This soil removal completed the soil excavation activities that were required at that time. Texaco installed 34 additional groundwater monitoring wells as part of the Site investigation. In 1989, the Site was placed on the NPL. Pursuant to an EPA Administrative Order on Consent for Remedial Investigation and Feasibility Study issued in November 1989, Texaco performed some early remedial design activities. These included: 1) preparation of a Preliminary Remedial Design Work Plan; 2) design, implementation, monitoring, and reporting on a pilot study to evaluate the effectiveness of SVE; 3) design of the SVE system; and 4) design of the groundwater extraction and treatment system.

On March 31, 1992, the EPA signed the ROD for the Site. The RAOs were to control further migration of the contaminated groundwater, prevent further migration of contamination in soil to groundwater, and recover and treat contaminated groundwater until the aquifer was restored and groundwater contamination was below cleanup levels. The cleanup levels established in the ROD are the federal and state drinking water standards. EPA selected a remedy that included the following:

- Construction and operation of a groundwater extraction and treatment system;
- Discharge of treated groundwater to the aquifer or reuse in a beneficial manner;
- SVE for those soil areas that threaten to contaminate groundwater;
- Groundwater monitoring to demonstrate that the extraction system is effectively capturing the contaminant plume; and
- Maintenance of perimeter fencing until cleanup standards are met.

At the time the ROD was signed, the EPA anticipated that the groundwater would be restored to the cleanup standards in 30 years.

Post-1992 ROD Cleanup (1993 – 2005)

The EPA issued the August 1993 CD after the ROD was signed directing Texaco to install an SVE/P&T system, as specified in the ROD. The remedial work was conducted in two phases: a pilot study, and the implementation of the pilot study results. The objective of Phase 1 was to provide data necessary for the design of the Phase 2 system, while achieving some remediation in the interim.

The Phase 1 GWTS began operating in December 1993. The extracted groundwater was treated with granular activated carbon, and discharged to Pole Creek under a NPDES permit. The Phase 1 SVE system operations began in 1994. Several types of soil vapor treatment systems were operated at the Site to evaluate the optimum equipment for Phase 2 operations. Equipment tested at the Site included a regenerative thermal oxidation unit, internal combustion engines (VR Systems), and thermal oxidation units (King Buck/Hasstech and Baker Furnace).

The Phase 2 SVE commenced in May 1995. SVE wells were used in the three target areas evaluated in Phase 1, and the Baker Furnace thermal oxidation unit was selected for the soil vapor treatment. In November 1995, the Phase 2 GWTS began operating. The Phase 2 groundwater system was similar to the Phase 1 system, but it had an increased capacity and several operational modifications to improve performance. The Site achieved construction completion status when the Preliminary Close Out Report was signed on September 27, 1996.

The SVE system reached the shut-off criteria of benzene of less than 100 milligrams per cubic meter (31 parts per million by volume) in January 2002. Soil gas concentrations were monitored monthly for 8 months following SVE system shutoff. Soil vapor monitoring was discontinued in November 2002. The GWTS operated as designed through October 2002, at which time the EPA determined that the ROD cleanup goals could not be achieved by the GWTS. Continued monitoring indicated that the footprint of the groundwater plume remained stable, and that concentrations of benzene, the primary contaminant, did not increase. The current benzene concentration in the southern groundwater plume is 350 µg/L (Fourth Quarter of 2012), which is a reduction of greater than 90 percent compared to dissolved benzene concentrations prior to implementing SVE and GWTS.

In 2003/2004, an ORC® injection pilot test was performed to clean up the remaining benzene in groundwater beneath the Site. ORC® injection performed below expectations. Evaluation of the data from the pilot test indicated that the oxygen demand for the upper saturated zone was considerably higher than anticipated. Therefore, ORC® enhancement was eliminated as a potential remedial alternative at the Site. For more information about the ORC® pilot test, see *Evaluation of the Enhanced Bioattentuation Pilot Study, Pacific Coast Pipeline Superfund Site* (England Geosystem, 2005b).

In 2005, the EPA directed Chevron to evaluate the potential for vapor intrusion into residences near two groundwater plumes beneath the Site. Following work plan approval, Chevron conducted the investigation from 2006 to 2007. The evaluation indicated that, although vapor (primarily xylene and toluene) from groundwater is migrating up into the deeper soils (40 to 60 feet below ground surface) directly above the groundwater plumes, it attenuates rapidly as it rises in the vadose zone and does not pose a risk to nearby residents. The investigation also confirmed that dissolved benzene in groundwater is naturally attenuating.

Because the 1992 ROD did not address shallow surface soil, the EPA directed Chevron to characterize the Site surface soils to evaluate whether additional cleanup is required to revitalize the property. In 2005, Chevron began a multi-phased shallow soil investigation for beneficial reuse of the Site, to assess the potential risk to human health and the environment. Phase 1 focused on the soil under the former storage tanks; Phase 2 included an in-depth review of Site historical operations and shallow soil sampling across the Site; and Phase 3 addressed data gaps from the previous investigation phases. The results were compiled and subsequently analyzed in the RI/FS (URS, 2011a).

2.0 PROJECT TEAM ORGANIZATION

The project team comprises specialty subcontractors, environmental consultants, the EPA, and Chevron. The lead regulatory agency is the EPA. A project team organizational chart is provided on **Figure 3**.

2.1 PROJECT TEAM

The EPA Remedial Project Manager is Ms. Holly Hadlock. She is the lead agency representative responsible for overseeing work performed by the sole Potentially Responsible Party (Texaco Inc.). The EPA representative will also seek input from other local agency representatives, including the City of Fillmore, County of Ventura, and DTSC.

Ms. Leslie Klinchuch is the key contact managing environmental investigation and construction activities for Chevron. She will be the main point-of-contact regarding any regulatory communications with EPA/DTSC. URS is currently providing consulting services to Chevron.

Mr. David Brod of URS is responsible for managing work conducted at the Site. URS has a minimum of two registered professionals responsible for overseeing the work. The remedial grading and engineering-related tasks will be overseen by Mr. Thomas Sweet. The field work will be conducted in accordance with Site-specific health and safety plans generated by Ms. Susan Gulbrandsen. The quality assurance program will be implemented by Mr. Brian Partington.

A project team organizational chart is presented on **Figure 3**. Key contacts for this project are summarized are listed below.

List of Key Project Team Contacts

Title	Organization	Name	Education	Registration/ License	Experience (years)	Phone Number
Project Manager	EPA	Holly Hadlock	---	---	---	(415) 972-3171
Project Manager	Chevron	Leslie Klinchuch	Geology, BS	PG, CHG, CGWP	22	(661) 632-1408
Project Manager	URS	David Brod	Anthropology, BA	---	22	(562) 308-2312
Technical Lead (Engineer)	URS	Ahmad Ghazinoor	Geotech. Eng., BS	PE, GE	42	(714) 648-2847
Technical Lead (Engineer)	URS	Thomas Sweet	Civil Engineer, BS	PE	28	(415) 243-3713
Health and Safety	URS	Susan Gulbrandsen	Health Science, BS, MS	CIH	26	(805) 964-6010
Quality Assurance	URS	Brian Partington	Geology, BS	PG, CHG	17	(714) 648-2803
Technical Lead (Geology)	URS	Jon Sanks	Geology, BS	PG	8	(714) 648-2849
Remedial Grading Project Manager	Recon Services	Keith Watts	---	---	21	(805) 816-9205
Analytical Testing	Laboratory	Test America	---	NELAP	---	(949) 261-1022

3.0 PHYSICAL CHARACTERISTICS OF THE SITE

A brief summary of Site physical characteristics is provided in this section, drawn from several historical reports. Physical characteristics discussed include the geography, meteorology, surface hydrology, geology, hydrogeology, and demography of the Site.

3.1 GEOGRAPHY

The Site comprises 55 acres. The land surface elevation changes from north to south across the Site. The elevation in the northern portion of the property is approximately 575 feet above mean sea level (msl). The southern portion of the property is approximately 475 feet above msl. The elevation of the hill along the eastern property boundary is approximately 665 feet above msl. The majority of the property is currently graded to bare soil, and is largely devoid of vegetation (EPA, 2011).

3.2 METEOROLOGY

The climate at the Site is semi-arid and Mediterranean. The average annual rainfall is approximately 18 inches. The majority of regional precipitation occurs during an approximately 4-month period in the winter, when the daily high temperature is approximately in the mid-60s. The daily high temperature in the summer is approximately in the mid-80s. The prevailing wind direction is westerly from the Pacific Ocean toward the east.

3.3 SURFACE HYDROLOGY

The Santa Clara River is located approximately 0.5 mile south of the Site. The river flows in a westerly direction towards its terminus at the Pacific Ocean. As expected, peak flows coincide with winter rain events, and typically begin to subside around April.

Two perennial streams in the general vicinity of the Site provide water to the Santa Clara River. The first tributary is Sespe Creek. This creek drains the majority of the local mountains to the north and is west-southwest from the Site at a distance of approximately 1.5 miles.

The second tributary is Pole Creek. This creek runs adjacent to the western border of the Site, and drains an area of approximately 7.5 square miles. The lower portion of this creek was channelized with concrete circa 1973. A debris flow retention basin was constructed in 2008, just south of Highway 126.

3.3.1 Existing Site Drainage Patterns

The western portion of the Site and the northern offsite contributing area drain toward Pole Creek, with the eastern portion of the Site and the southern offsite portion draining to the existing pipe under the railroad tracks and Highway 126.

3.3.2 Proposed Site Drainage Patterns

The flow directions are generally the same as at the existing Site, with discharge split between Pole Creek and the existing pipe under the railroad tracks, toward Highway 126.

3.3.3 Detention Pond Function

In general, the planned detention ponds will allow infiltration for treatment of initial run-off volumes, then split initial overflow toward Pole Creek and secondary overflow to the existing pipe under the railroad tracks, toward Highway 126.

- **Northern Pond** – The interior control structure directs initial overflow to Pole Creek until capacity is reached; then additional inflows are allowed to discharge to Southern Pond. After inflow is complete, detained water discharges via the low water control orifice to Southern Pond, and/or infiltrates to restore available detention capacity.

- **Southern Pond** – The control structures direct initial overflow through the westerly overflow structure to Pole Creek until capacity is reached; then additional inflows are allowed to discharge through the easterly overflow structure to the existing pipe under the railroad tracks, toward Highway 126. After inflow is complete, the detained water discharges via the low water control orifice in the easterly overflow structure, and/or infiltrates to restore available detention capacity.

3.3.4 Roadway Drainage

Shallow roadside swales (6 inches deep, lined with processed concrete over geotextile non-woven filter fabric) will be cut for interim surface drainage to planned drop inlets. Future roadway pavement and curb and gutter will be placed to use planned drop inlets.

3.3.5 East Slope Drainage

Concrete-lined v-ditches will be placed at the top of the slope, mid-slope, and toe of slope to collect and convey runoff from offsite contributing areas and onsite areas. The graded slope face will be covered with an erosion control/dust control agent or palliative.

3.3.6 Lot Drainage

Lots generally drain west and south to lined drainage swales and detention areas for initial treatment, and then overflow to the northerly and southerly detention ponds. Where slopes occur at the perimeter of each lot, a slight berm will be graded at the top of adjacent down-slopes to minimize runoff entering slopes. Slope across the lots will be fairly flat; they will have wattles placed at regular intervals perpendicular to the direction of flow, to reduce erosion potential.

3.4 GEOLOGY

3.4.1 Regional Geology

The Site lies along the northern boundary of the Santa Clara Trough, which contains sedimentary deposits over 40,000 feet thick ranging from Cretaceous to Recent in age. In the Fillmore area, the Santa Clara Trough is bordered by the San Cayetano Fault on the north and the Oakridge Fault on the south. The San Cayetano Fault passes beneath the Site approximately parallel to the eastern Site boundary. Fractured bedrock along the fault has resulted in extensive landsliding. This fractured rock has also provided a conduit for naturally

occurring hydrocarbons to reach the Earth's surface. Crude oil seeps and tar sands are common features in the Site vicinity.

The Site lies within a petroleum-producing province along the eastern portion of Ventura Basin. Oilfields in the Site vicinity include the Fillmore, Shiells Canyon, and Bardsdale fields. In addition to the oilfields, several surface oil and tar sand accumulations or seeps have been mapped near the Site (URS, 2011a). These reportedly occur in the fractured sands and shale of the Monterey Formation north of the Site along Pole Creek, and in recent landslide debris directly adjacent to the Site. It is likely that the observed oil seeps resulted from the migration of hydrocarbons along fractures in the Monterey Formation associated with the San Cayetano Fault. Some of the seep material was previously analyzed and found to contain naturally occurring benzene. Forensic analysis of material collected from the seeps was conducted by Environmental Solutions, Inc., in 1993. The results of the analyses indicated benzene concentrations ranging from 220 milligrams per liter (mg/L) to 900 mg/L (E&A, 1994).

3.4.2 Local Geology

The subsurface interpretations are based on past investigations conducted at the Site. The near-surface geology can be characterized as consisting of laterally discontinuous interlayers of unconsolidated, fine- to coarse-grained detritus deposited in stream channel, alluvial fans, and mass wasting depositional environments associated with nearby landslides. The extreme heterogeneity of the subsurface strata has created a complex hydrogeologic environment.

3.4.3 Regional Hydrogeology

The Site is located within the eastern portion of the Fillmore Groundwater Basin. In the Site area, the alluvial deposits and the underlying San Pedro Formation are the major water-bearing units, with groundwater flow directions towards the west, following the Santa Clara River. Regionally, long-term groundwater monitoring has been measured in a nearby well owned by Ventura County Watershed Protection District. The maximum recorded groundwater fluctuation in the general vicinity was 50 feet.

3.4.4 Local Hydrogeology

The local hydrogeology is categorically divided into three water-bearing zones, including a Perched Zone, Aquifer I, and Aquifer II. Below is a brief description of each zone (listed according to depth):

Perched Zone

- Perched water within shallow, discontinuous, fine-grained sediments.

Aquifer I

- This unconfined to semi-confined zone is the primary focus of groundwater cleanup at the Site.

Aquifer II

- Deeper groundwater that is not considered to be impacted with shallower petroleum hydrocarbons.

3.5 DEMOGRAPHY

The nearby land use designations are primarily agricultural, industrial, and residential. Nearby land use and demographics are presented in more detail in the *PCPL Fillmore Reuse Assessment* (Chevron, 2010). The neighboring property designations are summarized as follows:

- North of the Site, there is primarily open space contained within a relatively steep slope, terminating into Pole Creek.
- East of the Site are rolling hills, occupied by an avocado orchard and a communications satellite installation (Intelsat).
- Southeast of the Site is a small parcel zoned for commercial use, located along Highway 126.
- South of the Site is Highway 126. A small picnic area is located at the entrance to the Site.
- West of the Site is primarily a residential community with a nearby elementary school.

A rail line currently owned by Ventura County Transportation Commission is located in the southern portion of the Site. A historic train tourist attraction (Fillmore & Western) currently uses the rail line and maintains a rail yard adjacent to the southwest corner of the Site. The rail line is also used as a filming location for the entertainment industry.

Fillmore is a relatively small agricultural community, with a human population of approximately 15,000. The city is committed to slow, well-planned growth, with a maximum population of 20,000 (City of Fillmore, 2006).

3.6 SITE ECOLOGY

The majority of the Site is graded and devoid of vegetation and habitat. The only areas where ecological habitat may exist are the eastern hillside and the northernmost portion of the Site.

The hillside is approximately 12 acres and is generally very steep, sloping upward to the east. The vegetation is mostly intact, with a few dirt service roads and disturbed by the presence of non-native weeds in a few areas. The vegetation consists primarily of Venturan Coastal Sage Scrub, which is characterized as low, mostly soft-woody shrubs less than six feet in height. Species of this community include California sagebrush, California buckwheat, purple sage, coyote brush, and desert candle. The Amended ROD establishes ecological cleanup levels for the hillside habitat to protect potential burrowing mammals.

The northernmost portion covers approximately 7 acres and is relatively flat with several graded depressions. This potential habitat area is much more disturbed than the hillside habitat. Large portions are devoid of vegetation. The remainder of the area contains some native scrub and sparse wooded areas. Of the vegetated portions, roughly 30% is Venturan Coastal Sage Scrub, 40% is ruderal habitat (weedy plants that grow in highly disturbed areas), and about 30% is wooded. The wooded areas are patchy and populated primarily by non-native Peruvian pepper and eucalyptus trees. Thus, the northernmost portion of the Site, when compared with both the adjacent hillside and habitat outside the Site boundary, is of insignificant value as habitat in light of its degraded and disturbed condition.

4.0 NATURE AND EXTENT OF CONTAMINATION

This section includes a brief review of contaminants present in soils beneath the Site.

4.1 SOURCES OF CONTAMINANTS

Contaminants found in the historical investigations are typical of petroleum industry operations that were ongoing at the Site since circa 1915. Although few Volatile Organic Compounds (VOCs) were detected in the recent shallow soil investigation, residual contaminants remain in the saturated zone and continue to be a potential source to groundwater. The key sources of groundwater impacts were the main waste pit and assorted smaller pits, especially around the southern part of the Site. In addition to the groundwater impacts associated with historical operations, groundwater is also impacted by the presence of naturally occurring hydrocarbons in soils and the underlying strata (see *Final Phase 2 Design Report* [E&A, 1994]).

The 1992 ROD identified primary sources of groundwater contamination as a series of nine unlined waste pits that were used to store liquid waste generated during refining operations and was subsequently removed during soil remediation (excavation) conducted in 1986. Because the pits more or less continuously contained liquid waste while they were in service during refinery operations, they provided a mechanism by which hydrocarbons could migrate into the subsurface. Once refinery operations ceased, waste was no longer added to the pits (ENSR, 1990), thereby reducing the hydraulic head contributing to the vertical migration of hydrocarbon liquids. After the waste within the former pits was removed, potential for vertical migration and lateral spreading was severely curtailed or eliminated.

The majority of soil impacts were addressed as part of the 1986 waste removal actions. Residual soil impacts are present across the Site, predominantly in shallow soils, and are likely associated with historical operations, incidental releases, and former waste management practices (**Figure 2**).

4.2 CONTAMINANT DISTRIBUTION – SHALLOW SOILS

A three-phased soil sampling program was conducted at the Site from 2006 through 2009. The first phase of the investigation documented subsurface conditions generally located at the former tank areas (URS, 2006b). The second phase of the investigation was to characterize subsurface conditions beneath areas of known historical operations at the Site (URS, 2008a). The third phase (URS, 2009) was intended to be the final data-gathering effort; it focused on filling gaps in information from the previous two investigation phases, and collecting soil vapor data necessary to complete a human health risk assessment for shallow soils at the Site. In addition, a qualitative ecological scoping assessment was conducted to determine the need for a quantitative screening evaluation. Through each phase of this shallow soil investigation, a seven-step data quality objective process was followed to ensure that appropriate data quality objectives were defined and met.

The objective of the shallow soil investigation was to assess whether detectable concentrations in soils beneath the former process areas (to depths of 10 feet below ground surface) might pose a health risk to future industrial or construction/excavation workers. Future land use options for the Site do not include residential use, and a deed restriction is intended to enforce this decision.

The Site was divided into 14 areas of concern, based on similar historical uses and/or impacts from chemical constituents. Quantitative human health and ecological risk assessments were completed as part of an RI/FS. The COCs in shallow soil that will be mitigated are inorganic lead and PAHs. Shallow soil gas results do not pose unacceptable risk for vapor intrusion to indoor air, with the exception of one area of concern for benzene and ethylbenzene. These concerns will also be mitigated.

4.3 SUMMARY OF PREVIOUS SITE INVESTIGATIONS

A three-phased shallow soil investigation was performed to assess the nature and extent of subsurface impacts at the Site to support preparation of the RI. Subsequent to the RI, two additional investigations were conducted. During the five investigations, a total of 2,157 soil samples was collected for chemical analyses, as listed below.

Summary of Previous Site Investigations

Investigation	Sample Matrix	Borings	Number of Samples	Analyses
Phase 1	Soil	22	72	VOCs, PAHs, CAM Metals, Organic Lead
Phase 2	Soil	296	949	VOCs, PAHs, Inorganic Lead, Organic Lead, Hexavalent Chromium, PCBs, pH
Phase 3	Soil	27	62	VOCs, PAHs, Inorganic Lead, Organic Lead
	Soil Vapor	27	60	TO-15 VOCS
2010-2011 Soil Delineation	Soil	623	944	Lead, PAHs, VOCs
2012 Consolidation Area Trenching	Soil	23	70	Lead, PAHs, VOCs
		Total	**2,157**	

Notes:

CAM = California Assessment Manual
PAH = Polycyclic Aromatic Hydrocarbons
PCB = Polychlorinated Biphenyls
VOCs = Volatile Organic Compounds

Samples were analyzed by an environmental testing laboratory for the following analytes:

- VOCs by EPA Method 5035/8260;
- PAHs by EPA Method 8270-SIM/EPA Method 8310;
- Hexavalent Chromium (EPA Method 7199);
- Inorganic Lead and Other Metals (EPA Method 6010B);
- Organic Lead (Hazardous Material List 939-M);
- Polychlorinated Biphenyls [PCBs] (EPA Method 8082);
- pH (EPA Method 9045C); and
- Soil Vapor VOCs (EPA Method TO-15).

The investigative methods are provided in the RI/FS (URS, 2011a). The results of the investigations are discussed briefly below.

4.3.1 Phase 1 – Former Tank Areas

In 2006, twenty-two soil borings were advanced beneath former aboveground petroleum storage tanks during Phase 1. The results were documented in a report entitled *Soil Sampling Phase 1 – Former Tank Areas Pacific Coast Pipeline (PCPL) Superfund Site Fillmore, California,* dated September 8, 2006 (URS, 2006b). During this investigation, a total of 72 soil samples (including six replicate soil samples) was analyzed for VOCs, PAHs, California Assessment Manual (CAM) metals, and organic lead.

4.3.2 Phase 2 – Historical Operations

In 2007, two hundred ninety-six (296) soil borings were advanced beneath areas of known historical operations. The results were documented in a report entitled *Soil Sampling Phase 2 – Historical Operations PCPL Superfund Site Fillmore, California,* dated April 15, 2008 (URS, 2008a). During this investigation, a total of 949 samples was collected and analyzed for VOCs, PAHs, inorganic lead, and organic lead. Select samples were analyzed for hexavalent chromium, PCBs, and pH.

4.3.3 Phase 3 – Data Gap Sampling

In 2008/2009, twenty-seven soil/vapor borings were advanced throughout the Site to address data gaps identified during a preliminary risk assessment. The results were documented in a report entitled *Phase 3 – Shallow Soil Investigation: Data Gap Sampling and Human Health Risk Assessment,* dated May 8, 2009 (URS, 2009). During this investigation, a total of 62 soil samples (including 9 replicate soil samples) was collected and selectively analyzed for VOCs, PAHs, inorganic lead, hexavalent chromium, and organic lead. A total of 60 soil vapor samples was collected and analyzed for VOCs.

4.3.4 2010-2011 Soil Delineation

In 2010 and 2011, six hundred twenty-three (623) soil borings were advanced to better delineate the limits of the soil remediation areas identified in the three-phased shallow soil investigation. The results were documented along with berm data and pipeline removal data in a report entitled *Soil Delineation Sampling and Infrastructure Removal Report,* dated December 16, 2011 (URS, 2011d). During these investigations, 944 additional soil samples were collected and analyzed by EPA Method 6010 for lead, and/or EPA Method 8270-SIM for PAHs. Select soil samples were analyzed by EPA Method 8260B for VOCs.

4.3.5 2012 Consolidation Area Trenching

In 2012, seven trenches were excavated in the planned Consolidation Area, and 70 soil samples (including three replicate soil samples) were collected and analyzed by EPA Method 6010 for lead, and/or EPA Method 8270-SIM for PAHs, and EPA Method 8260B for VOCs. The results will be documented in a pending report entitled *Soil Delineation Sampling and Infrastructure Removal (Phase 2) Report,* planned to be dated March 2013, which will contain 2012 lateral delineation information, and data collected during 2012 Consolidation Area trenching (URS, 2013 [pending]). Initial results are indicated in **Table 2**, and extent of planned remedial excavations illustrated on **Figure 4**.

Results from the investigations used to establish the limits proposed for remedial excavations are illustrated in Appendix A, Sheets C-10 through C-26.

4.4 SOIL ANALYTICAL RESULTS

The analytical results from the soil sampling were used to establish risk-based cleanup criteria in order to delineate the extent of required remediation for potential redevelopment as a commercial/industrial property. The soil impacts were generally limited to medium- to heavy-molecular-weight petroleum hydrocarbons, PAHs, and inorganic lead. Although VOCs were detected in soils, these were generally at low concentrations, with only naphthalene detected in three samples above the industrial regional screening levels.

Fourteen areas of concern were identified to assist in preparing the health risk evaluation, given the size and geography of the Site, complexity of past operations, and multiple chemical release areas. The areas of concern are shown on **Figure 2**.

Soil analytical results are provided in the final *Remedial Investigation/Focused Feasibility Study (RI/FS) Pacific Coast Pipeline (PCPL) Superfund Site Fillmore, California*, dated January 14, 2011 (URS, 2011a); the *Engineering Geology and Geotechnical Investigation, Pacific Coast Pipeline (PCPL) Superfund Site, Fillmore, California*, dated September 9, 2011 (URS, 2011c); the *Soil Delineation Sampling and Infrastructure Removal Report***,** dated December 16, 2011, which contains 2010 lateral delineation information and data collected during 2011 pipeline removal work (URS, 2011d); and the pending report entitled *Soil Delineation Sampling and Infrastructure Removal (Phase 2) Report,* planned to be dated March 2013, which will contain 2012 lateral delineation information and data collected during 2012 Consolidation Area trenching (URS, 2013 [pending]).

4.5 PREVIOUS SOIL REMEDIAL ACTION

In 1986, 38,000 tons of waste material and contaminated soils were excavated from the MWP and other pit areas, and disposed at an offsite facility.

5.0 REMEDIAL ACTION OBJECTIVES

URS prepared this Soil RD primarily to address remedial soil excavation and Consolidation Area soil placement procedures. As discussed above, previous soil investigations have identified areas that require remediation. Approximately 18,500 cubic yards (CY) of soil will be excavated from approximately 80 discrete areas and placed into a Consolidation Area (expanded former MWP) with an engineered cap along the western side of the Site. Therefore, the primary objective of the Soil RD is to ensure that soil excavated and consolidated during construction activities is managed and handled in accordance with the procedures prescribed herein. RAOs from the ROD applicable to the planned soil remedial excavation and Consolidation Area soil placement are discussed below.

The following RAOs—as well as how the selected remedial alternative addresses each RAO—are identified in the ROD Amendment issued by the EPA on September 29, 2011. ICs will be used to restrict the future use of the property to commercial and recreational uses only, and to maintain the remedy integrity.

- Prevent human exposure through direct dermal contact, ingestion, and inhalation of shallow soil and soil vapor contaminated above threshold levels for commercial land use, construction activities, and recreational activities. [Removing contaminated soil that exceeds the cleanup level will reduce the risk to an acceptable exposure level for a commercial or recreational user].

  This objective was established to allow for the reasonably anticipated future use of the property for commercial and recreational purposes, and to protect property users from potential exposure to contaminants in the shallow soil that exceed established risk-based threshold levels.

- Prevent contaminants in waste pit (lead, PAHs) from migrating into underlying groundwater. [Installation of an engineered cap will eliminate the risk for groundwater to become contaminated with lead and PAHs].

  This objective is to protect groundwater from potential future contamination.

- Reduce contamination in soil below toxicity threshold levels so it is not toxic to the plants and animals of the existing scrub habitat. [Removing contaminated soil that exceeds the cleanup level will reduce the risk posed by lead to ecological receptors in the Site habitat].

  This objective is to protect the onsite scrub habitat and the ecological receptors.

6.0 APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

ARARs from the ROD applicable to the planned soil remedial excavation and Consolidation Area soil placement are discussed below, and baseline assumptions for the ICs that will be used at the Site are provided.

6.1 APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

The applicable project ARARs (and how the project addresses each ARAR) are identified in **Table 3**. The primary ARARs for the soil remedy are the California land use covenant requirements and Ventura County Air Pollution Control District (VCAPCD) regulations for fugitive dust. The selected remedy will be protective of human health and the environment by reducing the potential for exposure to the COCs in soil. The Hazardous Waste Determination ARARs are not applicable to the selected remedy that will manage the soil onsite, but are relevant and appropriate if any generated waste will be disposed offsite. The Area of Contamination Policy is applicable to the Site; therefore, Corrective Action Management Unit (CAMU) regulations are also not applicable, but may be relevant and appropriate for the construction of the onsite Consolidation Area. The CAMU regulations allow alternative requirements to be specified where design and location characteristics will effectively prevent migration of wastes.

Chemical-Specific ARARs – There are no chemical-specific ARARs for Site soil [not applicable].

Location-Specific ARARs – Locate the proposed action outside the floodplain [proposed Consolidation Area is located outside the 100-year floodplain].

Action-Specific ARARs – Use the best available control technologies to minimize dust emissions associated with the soil remedy; conduct monitoring during earth-moving activities to control generation of dust emissions so as to not remain visible in the atmosphere beyond the property line; and comply with VCAPCD regulations.

6.2 INSTITUTIONAL CONTROLS

In addition to the RAOs and ARARs summarized above, the project will implement ICs as discussed in the ROD Amendment to prevent exposure to contaminated soil and maintain the integrity of the remedy, with the following components (see **Table 4** – Institutional Controls Roadmap for a more complete list of ICs).

6.2.1 Type of Control

Deed Restrictions, a land covenant between the State and property owner, and City zoning requirements.

6.2.2 Relationship of Control to Remedy

To protect Site users from long-term exposure to contaminated soil; to protect the remedy (engineered cap) from construction activities.

6.2.3 Objectives Attained by ICs

Prevent long-term exposure to contaminants in soil; prevent migration of contaminants in soil.

6.2.4 Performance Standards

Prohibit residential and other sensitive uses of the former refinery property.

6.2.5 Monitoring

To ensure the ICs are implemented and enforced.

6.2.6 Responsible Entities

Deed restrictions included by Texaco on its property; a restrictive covenant to be signed by Texaco, California DTSC, and the EPA, and filed at the Ventura County Recorder's office; zoning by the City of Fillmore.

7.0 SOIL REMEDIAL DESIGN

A goal of the soil remediation and Site grading task is to establish wherever feasible the approximate rough finished grades to make the Site ready for reuse. Chevron intends to complete these activities on behalf of Texaco Inc., and then subsequently develop a commercial and light industrial development on the Site, if economically viable. The project would also include annexation of the Site into the City of Fillmore.

As described in the ROD Amendment, the Remedial Grading Plan (Appendix A) integrates excavation of affected soils (Appendix A, Sheet C-01, Sheets C-10 through C-26); placement in an onsite Consolidation Area (Appendix A, Sheet C-01, Sheets C-30 through C-32, and C-61); backfill and compaction of excavated areas with onsite soils meeting the Site risk-based cleanup criteria (Appendix A, Sheet C-60); construction of an engineered cap (Appendix A, C-33); and grading to proposed rough grades to ready the Site for reuse (Appendix A, C-40 through C-44). This approach is aligned with the EPA's Greener Cleanups Policy (EPA, 2009) in that the remedy will act to retain excavated soils onsite, and minimize greenhouse gas emissions from construction traffic coming into and leaving the Site. In addition, the Remedial Grading Plan has been coordinated with reuse planning for the Site to minimize earth-moving activities and recycle demolition material (e.g., concrete). Chevron will also implement Lean Sigma principles with the remedial construction contractor, which support greener cleanups by maximizing efficiency during the field work.

The Consolidation Area will be located over the former MWP area, beneath a planned roadway and along the adjacent front yard lot setback areas. The selection of the former MWP area and adjacent setbacks for the Consolidation Area was the result of a detailed process, wherein several alternative locations and configurations were identified and evaluated. This approach to locating and configuring the Consolidation Area will a) take advantage of the former MWP excavation, significantly reducing the volume of material to be moved to create the Consolidation Area; b) leverage the planned paved roadway to provide additional protection of the Consolidation Area cap; and c) increase use of the adjacent lot front yards, which typically consist of paved parking areas.

To ensure long-term protection of the Consolidation Area, a minimum 5-foot-thick engineered cap is planned, consisting of a minimum 3-foot-thick protective erosion fill layer underlain with a 2-foot-thick low-permeability layer consisting of a GCL sandwiched in protective sandy/granular onsite borrow soils. This engineered cap configuration will allow placement of the roadway and adjacent lot grading well above the low-permeability layer, accommodating incidental utility crossings, appropriate surface vegetation (e.g., shallow rooted plants) and associated irrigation, and surface pavement, but still allowing access to the low-permeability GCL material for verification of condition and/or maintenance. No future utilities will be located longitudinally above the Consolidation Area, but will be in a permanent easement in the adjacent lot front yards.

Although the Consolidation Area will be over 40 feet to the east of Pole Creek and outside the current 100-year floodplain (future channel improvements are expected to further reduce the floodplain to within the Pole Creek culvert adjacent to the Consolidation Area), an erosion control cellular confinement geotextile mat is planned to be constructed along the entire length of the Consolidation Area between the Pole Creek property line and planned roadway. Further, the existing grade along the shared property line with Pole Creek will be maintained, and the onsite grades raised somewhat, resulting in a minor slope (less than 2 feet high and at a slope

less than 3:1[horizontal to vertical]) to ensure the existing Pole Creek flow characteristics are not altered by construction of the Consolidation Area.

7.1 DESIGN CRITERIA SUMMARY

The Soil RD and attachments, including the Remedial Grading Plan (Appendix A) and Specifications, reflect information summarized in the ROD Amendment, which addresses the RAOs and ARARs identified for the Site, including:

- Use of a Consolidation Area to place excavated soils into a single contiguous feature;
- Use of an engineered cap;
- Constructability considerations;
- Single construction season (16 weeks+/-);
- Dust suppression and air monitoring; and
- Operation and maintenance guidance for the engineered cap.

As summarized in the 2011 RI/FS and ROD Amendment, the planned excavation of Site soils and placement into the Consolidation Area with engineered cap will address:

- The top 10 feet of soil;
- Cleanup of soil to a cancer risk of 1×10^{-6} and blood-lead risk of 1 microgram per deciliter;
- Approximately 18,500 CY of soil;
- Dust monitoring and dust suppression; and
- Reduction in contamination to allow for future commercial and recreational uses.

7.2 TECHNICAL DESIGN STANDARDS

Physical Configuration of Consolidation Area – The configuration of the Consolidation Area—including side slopes, depth of the excavation, and use of benching to avoid shoring—is based on the geologic and geotechnical information contained in the *Engineering Geology and Geotechnical Investigation*, *Pacific Coast Pipeline (PCPL) Superfund Site, Fillmore, California,* dated September 9, 2011 (URS, 2011c).

Engineered Cap – The engineered cap design, intended to prevent migration of soil contaminants to groundwater, is based on EPA guidance (EPA Technical Guidance Document: Final Covers on Hazardous Waste Landfills and Surface Impoundments; EPA/530-SW-89-047, July 1989, to provide long-term minimization of migration of liquids through the consolidated soils, require minimum maintenance, and promote drainage and minimize erosion of the cap.

Grading of the Consolidation Area – The proposed longitudinal grading of the Consolidation Area is based on a grading study performed by the project land use civil engineer, Cannon Corporation (San Luis Obispo, California), which is intended to provide positive drainage off of the cap soils; balance Site earthwork cut-and-fill volumes; and avoid offsite transport of soil. URS, lead civil engineer for the remedial grading, is working collaboratively on the grading and drainage system design with Cannon, the civil engineer for future reuse of the Site. See **Figure 3** for a project organizational chart.

7.3 BASIS OF DESIGN

Below are summarized: a) the basis of design for the Consolidation Area configuration, extent, siting, and cap; b) mitigation requirements to protect the community; and c) easement/access requirements.

Configuration – The configuration of the Consolidation Area is based on maximizing the volumetric yield of the area outside of the 100-year floodplain beneath the planned north-south roadway and adjacent front-yard lot areas. Based on field investigations, soil characterization, and laboratory data, the volume of soil to be excavated has been estimated to be 18,500 CY. To provide a buffer to manage potential increases in soil volume during construction, the Consolidation Area has been configured to accommodate on the order of 23,500 CY. In the event additional soils requiring consolidation are discovered during construction, a supplemental area (Appendix A, Sheet C-01) adjacent to the Consolidation Area has been identified to provide additional volume of approximately 18,500 to 30,000 CY if excavated soil volume increases beyond the planned 23,500 CY.

Extent – To minimize impact to siting of utilities, the Consolidation Area is planned to lie under the entire north-south extent of the north-south roadway, and extend west to the 100-year floodplain limits, and east 15 feet into the front yards of the adjacent lots (Appendix A, Sheets C-32 and C-33). This extent will maximize volumetric yield while balancing impacts to the developable area of the adjacent lots by using the zoning-mandated front-yard setback for Consolidation Area soils, and a utility corridor.

Siting – As part of the project planning process, several locations were evaluated across the project Site. The proposed Consolidation Area location was selected because it provides a single contiguous location sufficiently sized to accommodate the expected excavated soil volume; minimizes loss of developable area; leverages planned roadway pavement to bolster protection of the engineered cap; and avoids excavation near the tall slope and geologic fault zone to the east.

Cap – The cap section proposed places the low-permeability layer more than 3 feet below finished grade to provide sufficient protection from planned shallow-crossing utilities, erosion, incidental excavation, plant roots, or burrowing animals by a range of onsite granular soil sub-layers. Because the onsite soils to be placed within the Consolidation Area are also granular, the robust thickness of the GCL and 6-inch layers of screened fine-grained onsite soils used above and below the GCL layer will be sufficient to cushion and protect it from damage.

Mitigation Requirements to Protect the Community – To protect the community, including the residences and school west of Pole Creek, dust suppression best practices will be employed. To monitor effectiveness of dust suppression, perimeter air monitoring will also be performed in accordance with the Dust Suppression and Air Monitoring Plan. This plan details the type of dust suppression best practices to be employed across the Site and associated air monitoring to be performed, and the location of the air monitoring stations. The plan identifies action levels at which additional dust suppression measures are required to prevent the generation of fugitive dust emissions, and when a stop work action is required. Also, the majority of the construction will occur primarily while the school is out of session.

Easement/Access Requirements – In accordance with the Amended Consent Decree Statement of Work, visual inspections of the Consolidation Area ground surface will be conducted to assess the effectiveness of the engineered cap, and verify that it is functioning as

designed. Because the Consolidation Area will be primarily located under the planned north-south roadway and within a front-yard setback/easement of 15 feet in proposed lots to its east, access to the cap can be easily accommodated for visual inspection and/or repairs as needed. Chevron will retain ownership to the property and easements for long-term access. Should any repairs to the cap be needed, the proposed lots to its east have alternative roadway access.

7.4 REMEDIAL DESIGN AND CONSTRUCTION SUMMARY

A phased approach to construction has been integrated into the design documents. Specifically, it is anticipated that grading of the Consolidation Area will be initiated first, followed in parallel with excavation of the affected soil areas, to allow excavated soils to be placed and compacted from the bottom up over a sufficient area of the planned footprint. As the excavation and backfill progress and the volume of material is tracked, it is planned that the Consolidation Area side slopes will be benched to allow for 4-foot-high (maximum) vertical fill zones below grade to provide for additional volume, as needed (Appendix A, Detail 2 on Sheet C-61). If the volume of the Consolidation Area will not be sufficient to contain the volume of excavated soils, a supplemental Consolidation Area will be constructed to accept additional soils. The supplemental Consolidation Area is a separate area approximately 30 feet to the east of the northern end of the Consolidation Area (Appendix A, Sheet C-01). If constructed, the supplemental Consolidation Area would use the same design standards as the main Consolidation Area (Appendix A, Sheet C-32, Section E-E and Sheet C-61). Once excavation of soil is completed in each affected area, and the area is cleared by laboratory confirmation testing, mass grading will proceed to shape the Site, resulting in the planned lots, roadway, and drainage areas being rough-graded for future redevelopment of the property.

7.5 OPERATION, MAINTENANCE, AND MONITORING

In general, with the exception of water and sanitary sewer service connections at Sespe Avenue, no future trunk utilities will be allowed above the engineered cap, and lot front yard landscaping will be limited to shallow root zone plants. Therefore, post-remedial-action excavation above the cap should be limited to the service utilities, initial landscaping, irrigation, and roadway construction. Subsequent to construction of the crossing utilities, roadway, and lot improvements, only controlled excavation will be allowed, and will be limited to pre-approved roadway, landscaping, and irrigation repair activities. Operationally, avoidance and repair of any erosion over the cap, including burrowing by animals, will need to be monitored. Assuming erosion and/or burrowing is controlled, considering the significant thickness of the erosion control layer planned above the low-permeability layer more than 3 feet below grade, no maintenance or monitoring of the low-permeability layer is anticipated to be needed.

Based on the Amended Consent Decree Statement of Work, the Soil Operation, Maintenance, and Monitoring (OM&M) Plan will include, at a minimum: 1) a schedule of activities for the first 5 years; 2) information regarding assignment of duties (who will perform the visual inspections); and 3) an outline of potential maintenance issues and repairs (for example, what would be done if settling or cracks are noted at ground surface). Visual inspections will be conducted annually for the first 2 years, and every other year thereafter. The results of the inspections will be submitted as a Soil Remedial Performance Evaluation Report to the EPA. After 5 years, the EPA may reduce the inspection frequency. It is anticipated the EPA will require the Site to perform a review process every 5 years.

A proposed outline for the Soil OM&M Plan is included in Appendix B. A draft OM&M plan will be submitted to EPA by the end of second quarter 2013.

8.0 PROJECT SCHEDULE

A project schedule was prepared to track progress for construction activity and deliverables anticipated for the Site.

8.1 CONSTRUCTION SCHEDULE

It is currently anticipated that the field work will commence in the second calendar quarter of 2013, pending final agency approvals. The bulk of the excavation activities will be performed during the summer months to minimize potential disruptions at San Cayetano Elementary School, located west of the Site. The field work is expected to take approximately 16 weeks. A schedule of field activities is included as **Figure 5**. The schedule may be revised if unexpected conditions are encountered. Upon completion, a Soil Remedial Action Report will be submitted to the EPA.

8.2 DELIVERABLES SCHEDULE

The Final Remedial Action Work Plan and Draft Construction Quality Assurance Plan (CQAP) will be submitted with the Final Soil RD. The Health and Safety Plan will be submitted to the EPA in February 2013; and the Final CQAP will be submitted within 30 days of EPA approval of the Final Soil RD. The objective is for all deliverables to be approved by the spring of 2013, for construction to proceed in 2013.

The Soil OM&M Plan will be submitted 30 days after the final soil construction inspection.

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Tables

Table 1
Summary of Excavation Volumes
Texaco PCPL Superfund Site
Fillmore, California

Sheet	Boring ID	Area (ft^2)	Removal Depth (ft)	Contaminated Stockpile Volume (cy)	(E) Grade	(P) Grade	Bottom El. ±	Constituents
AOCs #1 - #14								
C-11	MPC-URS28	534	7	138	570.5	565.0	563.5	Benzo(a)anthracence, Benzo(a)pyrene, Benzo(b)fluoranthene, Chrysene
C-11	MPC-URS26	568	3	63	561.8	565.0	558.8	Benzo(a)anthracence, Benzo(a)pyrene, Benzo(b)fluoranthene, Chrysene, Naphthalene
C-12	TK3321-URS01	189	12	84	543.7	545.0	531.7	Lead
C-12	MPC-URS24	1,382	3	154	552.2	545.0	549.2	Lead (though not unacceptable health threat AOC-wide, this is a hot spot with 2400mg/kg)
C-13	TK68-URS01	30	7	8	541.7	535.0	534.7	Lead
C-13	TK66-URS01	713	3	79	531.8	535.0	528.8	Lead
C-13	TK75-URS01	41	3	5	532.0	535.0	529.0	Lead
C-13	TK62-URS01	877	3	97	535.8	535.0	532.8	Lead
C-13	TK71-URS01	104	3	12	534.8	535.0	531.8	Lead
C-13	TK79-URS01	351	3	39	531.9	535.0	528.9	Lead
C-13	P2-URS03	1,148	7	298	528.0	525.2	521.0	Lead
C-14	RW-URS01	349	7	90	560.8	540.0	553.8	Lead
C-14	ASU-URS02	438	3	49	561.3	549.0	558.3	Lead
C-14	SSP-URS01	344	3	38	560.3	536.3	557.3	Lead
C-14	HTA-URS05-R	782	12	568	544.6	535.0	525.0	Benzo(a)pyrene
C-15	TK101-WD	88	3	10	524.1	523.0	521.1	Benzo(a)anthracence, Benzo(a)pyrene, Benzo(b)fluoranthene, Naphthalene
C-15	MWP-URS01	1,205	12	536	505.9	521.1	493.9	Naphthalene
C-15	N-1	1,138	7	295	504.6	519.6	497.6	Lead
C-15	MWP-URS02	29	3	3	504.1	523.0	501.1	Lead
C-15	SB-3	12	3	1	523.3	523.0	520.3	Naphthalene
C-15	TK351-URS01	282	3	31	519.9	520.0	516.9	Benzo(a)pyrene
C-15	SB-1	46	3	5	516.0	516.0	513.0	Naphthalene
C-15	UT15-URS01	263	7	68	539.5	525.0	532.5	Benzo(a)pyrene
C-15	T01-W-01/ T01-E-01	206	3	23	504.5	520.9	501.5	Benzo(a)pyrene, Lead
C-15	T02-M-10	193	10	72	505.1	518.0	495.1	Benzo(a)pyrene
C-16	UT11-URS01	201	7	52	571.9	558.1	564.9	Benzo(a)pyrene, Lead
C-16	UT12-URS01	233	3	26	571.0	556.7	568.0	Lead
C-16	P8-URS01	604	3	67	586.3	586.3	583.3	Lead
C-16	P8-URS02		3		585.7	585.7	582.7	Lead
C-16	BH-URS02	128	3	14	539.5	535.0	536.5	Benzo(a)anthracence, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Chrysene, Dibenz(a,h)anthracene, Indeno(1,2,3-cd)pyrene
C-16	UT17-URS01	702	7	182	660.3	660.3	653.3	Lead
C-16	UT17-URS02		3		661.1	661.1	658.1	Lead
C-17	MWP-URS04	592	7	153	505.1	520.0	498.1	Benzo(a)pyrene, Lead
C-17	TK1-F1	1,055	3	117	504.2	510.0	501.2	Lead
C-17	TK2-F1	10,185	7	4,527	504.9	515.0	497.9	Benzo(a)pyrene
C-17	TK2-F2		12		505.7	515.0	493.7	Benzo(a)anthracence, Benzo(a)pyrene, Benzo(b)fluoranthene
C-17	TK2-0/TK2-02		3		506.0	515.0	503.0	Benzo(a)anthracence, Benzo(b)fluoranthene
C-17	T04-E-10	193	10	72	507.5	512.4	497.5	Naphthalene
C-18	TK5028-URS01	591	3	66	605.4	605.4	602.4	Lead
C-18	UT38-URS01	890	3	99	558.8	558.8	555.8	Lead
C-18	TK3-URS01	112	7	29	662.7	662.7	655.7	Lead

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C-19	TK174-URS01	257	7	67	504.0	505.1	497.0	Benzo(a)pyrene, Lead
C-19	TK172-URS01	270	3	30	502.4	502.0	499.4	Lead
C-19	NP-URS01/ NP-URS01-SV	887	3	99	502.3	502.0	499.3	Lead
C-19	NP-URS02	211	12	94	502.4	502.0	490.4	Naphthalene in Soil (1 ft bgs) Soil vapor detected benzene, ethylbenzene (10 ft bgs)
C-19	NP-URS03-SV	174	12	77	503.0	502.0	491.0	Soil vapor detected ethylbenzene (10 ft bgs)
C-19	NP-URS04	49	7	13	502.0	502.0	495.0	Benzo(a)pyrene
C-19	NP-URS05/ NP-URS05-SV	775	12	344	502.4	502.0	490.4	Lead in Soil (1 ft bgs) Soil vapor detected benzene, ethylbenzene (10 ft bgs)
C-19	NP-URS06		3		502.6	502.0	490.6	Benzo(a)pyrene
C-19	MPH-URS01	3,115	3	346	499.7	502.0	496.7	Lead
C-19	GSP-URS01	100	7	26	498.4	499.8	491.4	Naphthalene
C-19	GSP-URS03/ GSP-URS03-SV	1,068	12	475	498.8	502.0	486.8	Lead, Naphthalene in Soil (10 ft bgs) Soil vapor detected benzene, ethylbenzene, naphthalene (10 ft bgs)
C-20	TK156-URS01	3,092	3	344	503.0	500.0	500.0	Benzo(a)anthracence
C-20	P10-URS01	1,266	3	141	529.0	521.5	526.0	Benzo(a)anthracence, Benzo(a)pyrene, Benzo(b)fluoranthene, Lead
C-20	P11-URS01	384	12	207	527.3	520.2	510.2	Benzo(a)anthracence, Benzo(a)pyrene, Benzo(b)fluoranthene, Chrysene
C-20	P11-URS02		7		527.4	520.2	520.4	Benzo(a)anthracence, Benzo(b)fluoranthene, Lead
C-20	UT18-URS01	199	12	88	544.6	544.6	532.6	Benzo(a)anthracence, Benzo(a)pyrene, Benzo(b)fluoranthene, Chrysene, Dibenz(a,h)anthracene, Indeno(1,2,3-cd)pyrene, Naphthalene
C-20	P7-BH2	695	7	397	528.7	520.0	521.7	Lead
C-20	P7-URS01		12		528.8	520.0	510.0	Benzo(a)pyrene, Lead
C-20	P7-URS02	278	12	124	530.4	530.4	518.4	Lead
C-20	UPA3-URS01	283	12	150	531.3	527.0	517.0	Lead
C-20	UPA3-URS02	51	12	23	531.0	531.0	519.0	Lead
C-20	FH-URS01	1,139	3	127	529.6	529.6	526.6	Lead
C-21	P3-BH-2-SV	1,719	12	764	492.6	490.0	480.6	Soil vapor detected benzene, ethylbenzene, naphthalene (10 ft bgs)
C-21	TK7404-F1	42	12	21	493.2	490.0	480.0	Lead
C-21	P3-BH-3	42	7	11	496.0	490.0	489.0	Lead
C-21	P3-URS02	740	12	329	490.7	490.0	478.7	Naphthalene
C-21	P3-BH-1		12		490.1	490.0	478.1	Lead
C-21	TK35001-URS02	96	12	47	493.0	490.0	480.0	Benzo(a)pyrene
C-22	FH-URS02	299	12	133	529.3	529.3	517.3	Lead
C-22	UT29-URS01	66	3	7	566.0	566.0	563.0	Lead
C-23	CLR-URS01/ CLR-URS01-R	187	7	48	481.5	481.0	474.5	Indeno(1,2,3-cd)pyrene, Benzo(a)pyrene
C-25	MPC-URS02	46	7	12	476.6	475.0	469.6	Dibenz(a,h)anthracene
SUBTOTAL	–	–	–	**12,711**	–	–	–	–

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Sheet	Boring ID	Area (ft^2)	Removal Depth (ft)	Contaminated Stockpile Volume (cy)	(E) Grade	(P) Grade	Bottom El. ±	Constituents
PIPELINE EXCAVATION SAMPLES								
C-20	PL-01	685	7	178	499.3	500.0	492.3	Lead
C-22	PL-02	2,590	3	288	492.0	494.6	489.0	Lead, 1,2,4-Trimethylbenzene, Naphthalene, Ethylbenzene
C-22	PL-03		3		492.0	494.6	489.0	
C-22	PL-04		3		492.0	494.6	489.0	
C-22	PL-05		3		492.0	494.6	489.0	
C-22	PL-61		3		492.0	494.6	489.0	
C-11	PL-06	40	7	10	570.9	565.0	563.9	1,2-Dibromo-3-chloropropane, Benzo(a)anthracence, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Chrysene
C-11	PL-07		7		570.9	565.0	563.9	1,2-Dibromo-3-chloropropane, Benzo(a)anthracence, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Chrysene
C-11	PL-10	92	7	24	570.9	565.0	563.9	1,2-Dibromo-3-chloropropane, Benzo(a)anthracence, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Chrysene, Dibenz(a,h)anthracene, Naphthalene
C-11	PL-15		7		570.9	565.0	563.9	
C-11	PL-16		7		570.9	565.0	563.9	
C-17	PL-17	28	7	7	509.0	510.0	502.0	Benzo(a)pyrene
C-19	PL-21	250	3	28	504.5	510.0	501.5	Naphthalene
C-19	PL-23		3		504.5	510.0	501.5	
C-11	PL-24	1,843	3	205	549.2	565.0	546.2	Benzo(a)anthracence, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Chrysene, Naphthalene
C-19	PL-26	400	3	44	500.0	502.0	497.0	Benzo(a)anthracence, Benzo(a)pyrene, Benzo(b)fluoranthene, Naphthalene
C-19	PL-27		3		500.0	502.0	497.0	
C-15	PL-33	1,550	7	402	518.9	525.0	511.9	Benzo(a)anthracence, Naphthalene
C-15	PL-34		7		518.9	525.0	511.9	
C-15	PL-35		7		518.9	525.0	511.9	
C-15	PL-36		7		518.9	525.0	511.9	
C-15	PL-37		7		518.9	525.0	511.9	
C-15	PL-38		7		518.9	525.0	511.9	
C-19	PL-48	49	7	13	498.3	502.0	491.3	Lead, Benzo(a)pyrene
C-19	PL-49		7		498.3	502.0	491.3	
C-19	PL-50		7		498.3	502.0	491.3	
C-20	PL-55	400	3	44	504.7	500.0	501.7	Benzo(a)pyrene
C-20	PL-59	–	3	–	502.7	500.0	499.7	Benzo(a)pyrene, Naphthalene. Excavation included with TK156-URS1
C-20	PL-60	–	3	–	502.7	500.0	499.7	
C-21	PL-66	375	3	42	488.0	490.0	485.0	Benzo(b)fluoranthene
C-19	PL-73	98	3	11	497.8	499.8	494.8	Benzo(a)pyrene
C-19	PL-75	157	3	17	497.7	500.6	494.7	Benzo(a)pyrene
C-14	PL-77	1,074	3	119	551.0	561.2	548.0	Naphthalene
C-13	PL-69	963	3	107	530.0	535.0	527.0	Lead, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Dibenz(a,h)anthracene, Indeno(1,2,3-cd)pyrene, Naphthalene
	PL-70							
	PL-71							
	PL-72							
	PL-78							
	PL-79							
	PL-80							
	PL-81							

Table 1
Summary of Excavation Volumes
Texaco PCPL Superfund Site
Fillmore, California

Sheet	Boring ID	Area (ft^2)	Removal Depth (ft)	Contaminated Stockpile Volume (cy)	(E) Grade	(P) Grade	Bottom El. ±	Constituents
C-13	PL-82	769	3	85	531.3	535.0	528.3	Lead, Benzo(a)pyrene, Dibenz(a,h)anthracene
C-13	PL-83	309	3	34	530.5	535.0	527.5	Lead, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Dibenz(a,h)anthracene, Indeno(1,2,3-cd)pyrene
C-19	PL-85	130	3	14	500.7	502.0	497.7	Lead
C-19	PL-86	196	3	22	500.5	502.0	497.5	Lead, Naphthalene
C-19	PL-87	1,185	3	132	510.0	503.7	507.0	Lead
	PL-88							
	PL-89							
	PL-90							
	PL-91							
SUBTOTAL	–	–	–	**1,827**	–	–	–	–
TANK BERMS								
C-27	Tank 1	2,400	–	2,025	–	–	–	Lead
C-27	Tank 2	2,100	–	804	–	–	–	Lead
C-27	Tank 8	1,750	–	282	–	–	–	Lead
C-27	Tank 101 / 103	500	–	1,244	–	–	–	Lead
C-27	Tank 7403 / 7404	7,000	–	700	–	–	–	Lead
SUBTOTAL	–	–	–	**5,055**	–	–	–	–
TOTAL	–	–	–	**19,600**	–	–	–	–

Notes:
AOC = Area of Contamination
bgs = below ground surface
cy = cubic yards
(E) = existing
ft = feet
mg/kg = milligram per kilogram
(P) = proposed

Table 2

Summary of 2012 Consolidation Area Trench Sampling Results

Texaco PCPL Superfund Site

Fillmore, California

			EPA Method 6010	EPA Method 8260B for VOCs (mg/kg)															EPA Method 8270-SIM for PAHs (mg/kg)							
Sample Location	Sample Depth (ft bgs)	Sample Date	Lead (mg/kg)	1,1,2-Trichloroethane	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	Benzene	Ethylbenzene	Isopropylbenzene	m,p-Xylene	Naphthalene	n-Butylbenzene	N-Propylbenzene	o-Xylene	p-Isopropyltoluene	sec-Butylbenzene	tert-Butylbenzene	Toluene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Indeno(1,2,3-cd)pyrene	Naphthalene
Trench #1																										
T01-E-01	1	09/19/12	120	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.002	<0.002	<0.002	<0.005	<0.005	<0.002	0.17	0.14	0.23	0.21	0.44	<0.12	<0.12	<0.12
T01-E-05	5	09/19/12	2.7	<0.0019	<0.0019	<0.0019	<0.0019	<0.0019	<0.0019	<0.0019	<0.0048	<0.0048	<0.0019	<0.0019	<0.0019	<0.0048	<0.0048	<0.0019	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006
T01-E-10	10	09/19/12	2.3	<0.0022	<0.0022	<0.0022	<0.0022	<0.0022	<0.0022	<0.0022	<0.0056	<0.0056	<0.0022	<0.0022	<0.0022	<0.0056	<0.0056	<0.0022	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006
T01-M-01	1	09/19/12	8.5	<0.0022	<0.0022	<0.0022	<0.0022	<0.0022	<0.0022	<0.0022	<0.0054	<0.0054	<0.0022	<0.0022	<0.0022	<0.0054	<0.0054	<0.0022	<0.006	<0.006	<0.006	<0.006	0.0081	<0.006	<0.006	<0.006
T01-M-05	5	09/19/12	3.2	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021	<0.0052	<0.0052	<0.0021	<0.0021	<0.0021	<0.0052	<0.0052	<0.0021	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006
T01-M-10	10	09/19/12	7.4	<0.0023	<0.0023	<0.0023	<0.0023	<0.0023	<0.0023	<0.0023	<0.0057	<0.0057	<0.0023	<0.0023	<0.0023	<0.0057	<0.0057	<0.0023	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006
T01-W-01	1	09/19/12	606	<0.0023	<0.0023	<0.0023	<0.0023	<0.0023	<0.0023	<0.0023	<0.0058	<0.0058	<0.0023	<0.0023	<0.0023	<0.0058	<0.0058	<0.0023	<0.12	0.43	<0.12	<0.12	0.41	<0.12	<0.12	<0.12
T01-W-05	5	09/19/12	180	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021	0.0036	<0.0021	<0.0051	<0.0051	0.0086	<0.0021	0.0052	<0.0051	<0.0051	<0.0021	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12
T01-W-10	10	09/19/12	2.2	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0062	<0.0062	<0.0025	<0.0025	<0.0025	<0.0062	<0.0062	<0.0025	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006
Trench #2																										
T02-E-01	1	09/19/12	200	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021	<0.0054	<0.0054	<0.0021	<0.0021	<0.0021	<0.0054	<0.0054	<0.0021	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
T02-E-05	5	09/19/12	<2.0	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021	<0.0053	<0.0053	<0.0021	<0.0021	<0.0021	<0.0053	<0.0053	<0.0021	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015
T02-E-10	10	09/19/12	4.5	<0.11	3.8	1.2	0.41	3.4	0.52	9.0	1.4	0.45	0.91	5.3	0.49	<0.27	<0.27	2.2	0.80	<0.12	0.26	<0.12	2.4	<0.12	<0.12	<0.12
T02-M-01	1	09/19/12	5.4	<0.0029	<0.0029	<0.0029	<0.0029	<0.0029	<0.0029	<0.0029	<0.0072	<0.0072	<0.0029	<0.0029	<0.0029	<0.0072	<0.0072	<0.0029	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12
T02-M-05	5	09/19/12	53.8	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0063	<0.0063	<0.0025	<0.0025	<0.0025	<0.0063	<0.0063	<0.0025	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
T02-M-10	10	09/19/12	2.7	<0.13	3.0	0.82	0.16	1.4	0.22	3.8	2.9	0.59	0.41	2.0	0.51	<0.32	<0.32	1.2	0.75	0.17	0.26	<0.12	2.1	<0.12	<0.12	1.5
T02-W-01	1	09/19/12	27	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.002	<0.002	<0.002	<0.005	<0.005	<0.002	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
T02-W-05	5	09/19/12	3.9	<0.0018	<0.0018	<0.0018	<0.0018	<0.0018	<0.0018	<0.0018	<0.0046	<0.0046	<0.0018	<0.0018	<0.0018	<0.0046	<0.0046	<0.0018	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006
T02-W-10	10	09/19/12	3.7	<0.11	0.15	<0.11	<0.11	<0.11	<0.11	0.54	<0.27	<0.27	<0.11	0.25	<0.11	<0.27	<0.27	0.25	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12
Trench #3																										
T03-E-01	1	09/19/12	32	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.002	<0.002	<0.002	<0.005	<0.005	<0.002	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
T03-E-05	5	09/19/12	4.3	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.0051	<0.0051	<0.002	<0.002	<0.002	<0.0051	<0.0051	<0.002	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012
T03-E-10	10	09/19/12	3.3	<0.096	0.30	<0.096	<0.096	<0.096	<0.096	0.35	<0.24	<0.24	<0.096	0.099	<0.096	<0.24	<0.24	<0.096	0.25	<0.12	<0.12	<0.12	0.56	<0.12	<0.12	<0.12
T03-M-01	1	09/19/12	4.7	<0.0023	<0.0023	<0.0023	<0.0023	<0.0023	<0.0023	<0.0023	<0.0057	<0.0057	<0.0023	<0.0023	<0.0023	<0.0057	<0.0057	<0.0023	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006
T03-M-05	5	09/19/12	3.2	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021	<0.0052	<0.0052	<0.0021	<0.0021	<0.0021	<0.0052	<0.0052	<0.0021	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006
T03-M-10	10	09/19/12	2.2	<0.0019	0.0035	0.0019	0.0021	<0.0019	<0.0019	0.011	<0.0047	<0.0047	0.0029	0.0040	<0.0019	<0.0047	<0.0047	0.0054	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12
T03-W-01	1	09/19/12	<2.0	<0.0019	<0.0019	<0.0019	<0.0019	<0.0019	<0.0019	<0.0019	<0.0048	<0.0048	<0.0019	<0.0019	<0.0019	<0.0048	<0.0048	<0.0019	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
T03-W-05	5	09/19/12	66	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021	<0.0054	<0.0054	<0.0021	<0.0021	<0.0021	<0.0054	<0.0054	<0.0021	0.0558	0.0415	0.0443	0.0414	0.0457	0.0389	0.0360	0.0377
T03-W-10	10	09/19/12	2.9	<0.096	<0.096	<0.096	<0.096	<0.096	<0.096	0.17	<0.24	<0.24	<0.096	<0.096	<0.096	<0.24	<0.24	<0.096	0.15	<0.12	<0.12	<0.12	0.18	<0.12	<0.12	<0.12
Trench #4																										
T04-E-01	1	09/19/12	38	<0.0018	<0.0018	<0.0018	<0.0018	<0.0018	<0.0018	<0.0018	<0.0044	<0.0044	<0.0018	<0.0018	<0.0018	<0.0044	<0.0044	<0.0018	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12
T04-E-05	5	09/19/12	240	<0.38	14	3.1	<0.38	3.3	1.4	3.4	6.8	3.0	2.8	3.6	2.7	<0.96	<0.96	<0.38	<0.12	<0.12	<0.12	<0.12	0.22	<0.12	<0.12	2.4
T04-E-10	10	09/19/12	17	<0.094	21	6.6	0.50	8.3	2.2	24	13	3.1	4.3	13	3.1	1.0	0.42	1.7	0.30	<0.12	<0.12	<0.12	0.93	<0.12	<0.12	6.9
T04-M-01	1	09/19/12	100	<0.0019	<0.0019	<0.0019	<0.0019	<0.0019	<0.0019	<0.0019	<0.0048	<0.0048	<0.0019	<0.0019	<0.0019	<0.0048	<0.0048	<0.0019	0.088	<0.024	<0.024	<0.024	<0.024	<0.024	<0.024	<0.024
T04-M-05	5	09/19/12	7.9	<0.002	0.010	0.0024	<0.002	<0.002	<0.002	<0.002	0.020	<0.005	<0.002	<0.002	0.0021	<0.005	<0.005	<0.002	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	0.11
T04-M-10	10	09/19/12	<4.0	<0.1	19	5.5	0.24	5.5	1.7	15	14	3.3	3.6	10	3.1	0.93	0.35	0.87	0.21	<0.12	<0.12	<0.12	0.68	<0.12	<0.12	6.6
T04-W-01	1	09/19/12	8.2	<0.0019	<0.0019	<0.0019	<0.0019	<0.0019	<0.0019	<0.0019	<0.0047	<0.0047	<0.0019	<0.0019	<0.0019	<0.0047	<0.0047	<0.0019	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012
T04-W-05	5	09/19/12	270	<0.18	11	2.4	<0.18	0.86	0.83	2.2	8.1	2.4	1.8	1.0	2.4	0.66	<0.46	<0.18	0.12	<0.06	<0.06	<0.06	0.28	<0.06	<0.06	4.5
T04-W-10	10	09/19/12	<2.0	<0.086	0.094	<0.086	<0.086	<0.086	0.24	0.17	<0.22	0.26	0.61	<0.086	<0.086	<0.22	<0.22	<0.086	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12

Table 2

Summary of 2012 Consolidation Area Trench Sampling Results

Texaco PCPL Superfund Site

Fillmore, California

			EPA Method 6010	EPA Method 8260B for VOCs (mg/kg)															EPA Method 8270-SIM for PAHs (mg/kg)							
Sample Location	Sample Depth (ft bgs)	Sample Date	Lead (mg/kg)	1,1,2-Trichloroethane	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	Benzene	Ethylbenzene	Isopropylbenzene	m,p-Xylene	Naphthalene	n-Butylbenzene	N-Propylbenzene	o-Xylene	p-Isopropyltoluene	sec-Butylbenzene	tert-Butylbenzene	Toluene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Indeno(1,2,3-cd)pyrene	Naphthalene
Trench #5																										
T05-E-01	**1**	09/20/12	**3.3**	<0.0019	<0.0019	<0.0019	<0.0019	<0.0019	<0.0019	<0.0019	<0.0048	<0.0048	<0.0019	<0.0019	<0.0019	<0.0048	<0.0048	<0.0019	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006
T05-E-05	**5**	09/20/12	**5.9**	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.0049	<0.0049	<0.002	<0.002	<0.002	<0.0049	<0.0049	<0.002	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006
T05-E-10	**10**	09/20/12	**5.2**	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.0049	<0.0049	<0.002	<0.002	<0.002	<0.0049	<0.0049	<0.002	**0.0086**	**0.0074**	**0.0065**	<0.006	**0.010**	<0.006	<0.006	**0.0064**
T05-M-01	**1**	09/20/12	**51**	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.0051	<0.0051	<0.002	<0.002	<0.002	<0.0051	<0.0051	<0.002	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015
T05-M-05	**5**	09/20/12	**4.2**	<0.0019	<0.0019	<0.0019	<0.0019	<0.0019	<0.0019	<0.0019	<0.0047	<0.0047	<0.0019	<0.0019	<0.0019	<0.0047	<0.0047	<0.0019	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006
T05-M-10	**10**	09/20/12	**3.8**	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.0051	<0.0051	<0.002	<0.002	<0.002	<0.0051	<0.0051	<0.002	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006
T05-M-15	**15**	10/16/12	**22**	<0.0027	<0.0027	<0.0027	<0.0027	<0.0027	<0.0027	<0.0027	<0.0067	<0.0067	<0.0027	<0.0027	<0.0027	<0.0067	<0.0067	<0.0027	**0.019**	**0.017**	**0.016**	<0.006	**0.027**	<0.006	**0.0074**	<0.006
T05-M-15D	**15 (dup)**	10/16/12	**4.8**	<0.0036	<0.0036	<0.0036	<0.0036	<0.0036	<0.0036	<0.0036	<0.0089	<0.0089	<0.0036	<0.0036	<0.0036	<0.0089	<0.0089	<0.0036	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006
T05-M-20	**20**	10/16/12	**16**	<0.0023	<0.0023	<0.0023	<0.0023	<0.0023	<0.0023	<0.0023	<0.0058	<0.0058	<0.0023	<0.0023	**0.0025**	<0.0058	<0.0058	<0.0023	**0.12**	**0.09**	**0.079**	**0.029**	**0.15**	**0.012**	**0.031**	**0.0091**
T05-M-20D	**20 (dup)**	10/16/12	**3.4**	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021	<0.0054	<0.0054	<0.0021	<0.0021	<0.0021	<0.0054	<0.0054	<0.0021	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006
T05-W-01	**1**	09/20/12	**242**	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021	<0.0053	<0.0053	<0.0021	<0.0021	<0.0021	<0.0053	<0.0053	<0.0021	**0.0505**	**0.0456**	**0.0403**	**0.0392**	**0.0429**	**0.0319**	**0.0412**	**0.042**
T05-W-05	**5**	09/20/12	**4.6**	<0.0019	<0.0019	<0.0019	<0.0019	<0.0019	<0.0019	<0.0019	<0.0049	<0.0049	<0.0019	<0.0019	<0.0019	<0.0049	<0.0049	<0.0019	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015
T05-W-10	**10**	09/20/12	**8.1**	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021	<0.0052	<0.0052	<0.0021	<0.0021	<0.0021	<0.0052	<0.0052	<0.0021	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015
Trench #6																										
T06-E-01	**1**	09/20/12	**37**	<0.0022	<0.0022	<0.0022	<0.0022	<0.0022	<0.0022	<0.0022	<0.0055	<0.0055	<0.0022	<0.0022	<0.0022	<0.0055	<0.0055	<0.0022	<0.024	<0.024	<0.024	<0.024	<0.024	<0.024	<0.024	<0.024
T06-E-05	**5**	09/20/12	**4.1**	<0.0018	<0.0018	<0.0018	<0.0018	<0.0018	<0.0018	<0.0018	<0.0045	<0.0045	<0.0018	<0.0018	<0.0018	<0.0045	<0.0045	<0.0018	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006
T06-E-10	**10**	09/20/12	**3.2**	<0.0022	<0.0022	<0.0022	<0.0022	<0.0022	<0.0022	<0.0022	<0.0056	<0.0056	<0.0022	<0.0022	<0.0022	<0.0056	<0.0056	<0.0022	<0.024	<0.024	<0.024	<0.024	<0.024	<0.024	<0.024	<0.024
T06-M-01	**1**	09/20/12	**8.6**	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.002	<0.002	<0.002	<0.005	<0.005	<0.002	<0.024	<0.024	<0.024	<0.024	<0.024	<0.024	<0.024	<0.024
T06-M-05	**5**	09/20/12	**13**	<0.0019	<0.0019	<0.0019	<0.0019	<0.0019	<0.0019	<0.0019	<0.0048	<0.0048	<0.0019	<0.0019	<0.0019	<0.0048	<0.0048	<0.0019	<0.024	<0.024	<0.024	<0.024	<0.024	<0.024	<0.024	<0.024
T06-M-10	**10**	09/20/12	**47**	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.0049	<0.0049	<0.002	<0.002	<0.002	<0.0049	<0.0049	<0.002	<0.024	<0.024	<0.024	<0.024	**0.025**	<0.024	<0.024	<0.024
T06-M-15	**15**	10/16/12	**7.3**	<0.0035	<0.0035	<0.0035	<0.0035	<0.0035	<0.0035	<0.0035	<0.0088	<0.0088	<0.0035	<0.0035	<0.0035	<0.0088	<0.0088	<0.0035	**0.0494**	**0.0445**	**0.0393**	**0.0398**	**0.0458**	**0.0396**	**0.043**	**0.0437**
T06-M-20	**20**	10/16/12	**1000**	<0.0034	<0.0034	<0.0034	<0.0034	<0.0034	<0.0034	<0.0034	<0.0086	<0.0086	<0.0034	<0.0034	<0.0034	<0.0086	<0.0086	<0.0034	**0.18**	**0.14**	**0.12**	<0.06	**0.21**	<0.06	<0.06	<0.06
T06-M-20D	**20 (dup)**	10/16/12	**2.3**	<0.0035	<0.0035	<0.0035	<0.0035	<0.0035	<0.0035	<0.0035	<0.0088	<0.0088	<0.0035	<0.0035	<0.0035	<0.0088	<0.0088	<0.0035	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006
T06-W-01	**1**	09/20/12	**110**	<0.0019	<0.0019	<0.0019	<0.0019	<0.0019	<0.0019	<0.0019	<0.0047	<0.0047	<0.0019	<0.0019	<0.0019	<0.0047	<0.0047	<0.0019	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015
T06-W-05	**5**	09/20/12	**420**	<0.0019	<0.0019	<0.0019	<0.0019	<0.0019	<0.0019	<0.0019	<0.0047	<0.0047	<0.0019	<0.0019	<0.0019	<0.0047	<0.0047	<0.0019	**0.16**	**0.11**	**0.098**	**0.045**	**0.18**	<0.024	<0.024	<0.024
T06-W-10	**10**	09/20/12	**3.5**	<0.0019	<0.0019	<0.0019	<0.0019	<0.0019	<0.0019	<0.0019	<0.0049	<0.0049	<0.0019	<0.0019	<0.0019	<0.0049	<0.0049	<0.0019	<0.024	<0.024	<0.024	<0.024	<0.024	<0.024	<0.024	<0.024

Table 2

Summary of 2012 Consolidation Area Trench Sampling Results

Texaco PCPL Superfund Site

Fillmore, California

Sample Location	Sample Depth (ft bgs)	Sample Date	EPA Method 6010	EPA Method 8260B for VOCs (mg/kg)															EPA Method 8270-SIM for PAHs (mg/kg)							
			Lead (mg/kg)	1,1,2-Trichloroethane	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	Benzene	Ethylbenzene	Isopropylbenzene	m,p-Xylene	Naphthalene	n-Butylbenzene	N-Propylbenzene	o-Xylene	p-Isopropyltoluene	sec-Butylbenzene	tert-Butylbenzene	Toluene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Indeno(1,2,3-cd)pyrene	Naphthalene
Trench #7																										
T07-E-01	**1**	09/20/12	**28**	<0.0018	<0.0018	<0.0018	<0.0018	<0.0018	<0.0018	<0.0018	<0.0046	<0.0046	<0.0018	<0.0018	<0.0018	<0.0046	<0.0046	<0.0018	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012
T07-E-05	**5**	09/20/12	**3.3**	<0.0019	<0.0019	<0.0019	<0.0019	<0.0019	<0.0019	<0.0019	<0.0047	<0.0047	<0.0019	<0.0019	<0.0019	<0.0047	<0.0047	<0.0019	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
T07-E-12	**12**	09/20/12	**3.6**	<0.089	<0.089	<0.089	<0.089	<0.089	<0.089	<0.089	**0.28**	<0.22	**0.089**	<0.089	<0.089	<0.22	<0.22	<0.089	**0.0449**	**0.0434**	**0.0387**	**0.0423**	**0.0436**	**0.0367**	**0.0407**	**0.32**
T07-M-15	**15**	10/16/12	**9**	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.0074	<0.0074	<0.003	<0.003	<0.003	<0.0074	<0.0074	<0.003	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006
T07-ME-01	**1**	09/20/12	**8.1**	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.0049	<0.0049	<0.002	<0.002	<0.002	<0.0049	<0.0049	<0.002	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012
T07-ME-05	**5**	09/20/12	**3.3**	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021	<0.0052	<0.0052	<0.0021	<0.0021	<0.0021	<0.0052	<0.0052	<0.0021	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012
T07-ME-12	**12**	09/20/12	**5.7**	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0041	<0.0041	<0.0016	<0.0016	<0.0016	<0.0041	<0.0041	<0.0016	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012
T07-MW-01	**1**	09/20/12	**22**	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021	<0.0052	<0.0052	<0.0021	<0.0021	<0.0021	<0.0052	<0.0052	<0.0021	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
T07-MW-05	**5**	09/20/12	**5.3**	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021	<0.0053	<0.0053	<0.0021	<0.0021	<0.0021	<0.0053	<0.0053	<0.0021	<0.024	<0.024	<0.024	<0.024	<0.024	<0.024	<0.024	<0.024
T07-MW-12	**12**	09/20/12	**2.8**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.26	**0.32**	**0.17**	<0.1	<0.1	<0.26	<0.26	<0.1	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	**0.024**
T07-W-01	**1**	09/20/12	**230**	<0.0018	<0.0018	<0.0018	<0.0018	<0.0018	<0.0018	<0.0018	<0.0046	<0.0046	<0.0018	<0.0018	<0.0018	<0.0046	<0.0046	<0.0018	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015
T07-W-05	**5**	09/20/12	**52.3**	**0.28**	<0.088	<0.088	<0.088	**0.35**	**0.90**	<0.088	**0.50**	**0.77**	**1.8**	<0.088	<0.088	**0.90**	<0.22	<0.088	**0.067**	<0.024	<0.024	<0.024	**0.19**	<0.024	<0.024	**0.25**
T07-W-12	**12**	09/20/12	**2.8**	<0.12	<0.12	<0.12	<0.12	<0.12	**0.35**	<0.12	<0.31	**0.44**	**0.70**	<0.12	<0.12	**0.37**	<0.31	<0.12	<0.012	<0.012	<0.012	<0.012	**0.018**	<0.012	<0.012	**0.12**
Minimum Detection			**2.2**	**0.28**	**0.0035**	**0.0019**	**0.0021**	**0.35**	**0.0036**	**0.011**	**0.020**	**0.26**	**0.0029**	**0.0040**	**0.0021**	**0.37**	**0.35**	**0.0054**	**0.0086**	**0.0074**	**0.0065**	**0.029**	**0.0081**	**0.012**	**0.0074**	**0.0064**
Maximum Detection			**1000**	**0.28**	**21**	**6.6**	**0.50**	**8.3**	**2.2**	**24**	**14**	**3.3**	**4.3**	**13**	**3.1**	**1.0**	**0.42**	**2.2**	**0.80**	**0.43**	**0.26**	**0.21**	**2.4**	**0.0396**	**0.043**	**6.9**
Cleanup Level			**320**	---	---	---	---	---	---	---	**13**	---	---	---	---	---	---	---	**1.2**	**0.12**	**1.2**	**1.2**	**12**	**0.35**	**1.2**	**13**

Notes:
Dup = replicate sample
PAH = polycyclic aromatic hydrocarbon
VOC = volatile organic compound
mg/kg = milligrams per kilogram
< = not detected at or above the laboratory reporting limit
--- = cleanup level not established
VOC samples collected by EPA Method 5035 using Encore sampling system
Detectable concentrations are summarized on this table - see individual analytical reports for non-detections
Shaded cells indicate concentration exceed Record of Decision (ROD) cleanup levels
Bold cells indicate the compound was detected above the laboratory reporting limit

Table 3
Summary of Project ARARs
Texaco PCPL Superfund Site
Fillmore, California

Requirement	Jurisdiction	Medium	Citation	Applicable or Relevant and Appropriate	Description/Discussion
Chemical-Specific ARARs					
Primary Drinking Water Standards	State	Groundwater	22 CCR 64431 and 64444	Relevant and Appropriate	California has promulgated drinking water standards for public drinking water sources under the California Safety Drinking Water Act (CH&SC Section 4010 et. seq.). California primary MCLs are established to protect public health from contaminants that may be found in drinking water sources. The referenced standards apply within the distribution network of regulated public water systems, hence they are not applicable, but are relevant and appropriate because groundwater is a potential source of drinking water. The selected remedy uses State MCLs as the cleanup levels for the COCs in groundwater because they are more stringent (See Table 8-1).
Basin Plan for Los Angeles Region	State	Groundwater	California Law Division 7 Chapter 4 Section 13240 *et seq.*	Relevant and Appropriate	The Water Quality Control Plan for the Los Angeles Region (Basin Plan, adopted November 19, 1992) contains numerical and narrative water quality objectives (WQOs) for waters of the state that ensure protection of beneficial uses and prevention of nuisances affecting beneficial use. These objectives are not merely restricted to surface water but also apply to groundwater (SWRCB, 1992). The Basin Plan is relevant and appropriate.
Action-Specific ARARs					
SWRCB - Investigation/Cleanup/Abatement of Discharges	State	Groundwater	Resolution No. 92-49	Relevant and Appropriate	To protect groundwater, this resolution requires cleanup to either background water quality or the best water quality that is reasonable if background water quality cannot be restored. Cleanup levels that differ from background water quality conditions must be consistent with the maximum benefit to the public, with current and anticipated future beneficial uses, and must conform to water quality control plans and policies. Groundwater at the site will be cleaned up to MCLs.
SWRCB - High Quality Waters	State	Groundwater	Resolution No. 68-16	Relevant and Appropriate	The Statement of Policy With Respect to Maintaining High Quality of Waters in California is the state's anti-degradation policy that provides a narrative standard which requires that high quality surface water and groundwater be maintained to the maximum extent possible. This resolution is relevant and appropriate to the goal of restoration of groundwater to its highest.
Land Use Covenants	State	Soil	22 CCR 67391.1(a), (d) – (f), (i)	Relevant and Appropriate	These state requirements specify that a land use covenant imposing appropriate limitations on land use shall be executed and recorded when hazardous substances will remain at the property at levels which are not suitable for unrestricted use of the land. The selected alternative requires cleanup to a restricted (i.e., commercial/industrial) standard. These requirements are relevant and appropriate.

Table 3
Summary of Project ARARs
Texaco PCPL Superfund Site
Fillmore, California

Action-Specific ARARs (continued)					
RCRA Hazardous Waste Determination by Generator	Federal	Soil and Groundwater	40 CFR 261.11 through 261.24; 261.31 through 33; 262.11	Relevant and Appropriate	A hazardous waste is considered a RCRA hazardous waste if it exhibits any of the federal characteristics of ignitability, corrosivity, reactivity, or toxicity, or if it is listed as a hazardous waste by EPA. Wastes which are generated during construction, monitoring, or remediation, and that will be disposed of off-site, must be characterized and managed in accordance with certain requirements if they are determined to be RCRA hazardous. These requirements are relevant and appropriate.
California Hazardous Waste Determination for Generators	State	Soil and Groundwater	22 CCR 66261.20 through 66261.24; 22 CCR 66262.11; 22 CCR 66260.200	Relevant and Appropriate	Wastes can be classified as non-RCRA hazardous wastes if they exceed the soluble threshold limit concentration or total threshold limit concentration values. Wastes which are generated during construction, monitoring, or remediation, and that will be disposed of off-site, must be characterized and managed in accordance with state hazardous waste management requirements if they are determined to be non-RCRA hazardous. These requirements are relevant and appropriate.
CAMU Regulations	Federal	Soil	40 CFR 264.552	Relevant and Appropriate	The CAMU regulations are relevant and appropriate because the selected soil remedy involves the excavation and on-site consolidation of contaminated soil.
Staging Piles	Federal	Soil	40 CFR 265.554	Relevant and Appropriate	Staging piles are temporary storage locations for remediation waste. In the event that staging piles will be used during remedy implementation, the piles will be located within the boundaries of the AOC. Design and/or operating standards for staging piles will be required, as appropriate, depending on location, the nature of the remediation wastes contained in them, the length of anticipated use and other relevant factors.
Underground Injection Control (UIC) Regulations	Federal and State	Groundwater	40 CFR 144.12; CH&SC 25159.10 and 25159.25; 22 CCR 66260.10	Applicable	The selected groundwater remedy includes air sparging, which injects air into the subsurface. These regulations prohibit the contamination of underground drinking water sources through underground injection wells.
Ventura County Air Pollution Control District (VCAPCD)	State[1]	Air	VCAPCD Rules and Regulations	Applicable	The VCAPCD regulations are established to achieve and maintain state and federal ambient air quality standards through the federal-approved state implementation plan (SIP). Site activities that result in air emissions may be subject to VCAPCD requirements (see below).
VCAPCD Regulation for Fugitive Dust	State[1]	Air	Rule 55	Applicable	Emissions of fugitive dust shall not remain visible in the atmosphere beyond the property line of the emission source. Activities conducted in the South Coast Air Basin shall use best available control measures to minimize fugitive dust emissions and take necessary steps to prevent the track-out of bulk material onto public paved roadways as a result of their operations. Fugitive dust during earthmoving activities is a concern and requires controls; therefore, this requirement is applicable to the site.

Table 3
Summary of Project ARARs
Texaco PCPL Superfund Site
Fillmore, California

Location-Specific ARARs					
Executive Order on Floodplain protection	Federal	Soil and Groundwater	Executive order 11988, Floodplain Management (5)2411977	Applicable	EO 11988, in relevant part, requires federal agencies to determine whether a proposed action as defined therein will occur within a floodplain; if so, to consider alternatives to the proposed action in the floodplain; and if the proposed action is the "only practicable alternative," to minimize potential harm to the floodplain. EO 11988 is applicable because Site remedial activities will take place within the 500-year floodplain.
Guidance and Advisories To Be Considered					
California Water Well Standards	State	Groundwater	DWR Bulletin 74-90	---	Standard well construction/destruction for water wells within California. The previous guidance was established in Bulletin 74-81.
Regional Screening Levels (RSLs)	Federal	Soil and Groundwater	EPA Website	---	A risk-based screening tool established for multiple media (soil, water, and air). http://www.epa.gov/region9/superfund/prg/index.html
California Human Health Screening Levels (CHHSLs)	State	Soil and Soil Gas	CalEPA, OEHHA Websites	---	A State risk-based screening tool for evaluation of soil and soil gas on contaminated properties. http://www.calepa.ca.gov/Brownfields/documents/2005/CHHSLsGuide.pdf http://www.oehha.org/risk/pdf/LeadCHHSL091709.pdf
Area of Contamination (AOC) Policy	Federal	Soil	55 FR 8758-8760 (March 8, 1990)	---	Based on operational history and site data, the contaminated soil to be consolidated is not a listed or characteristic waste and would be managed onsite to reduce, control, or mitigate exposure. Should a characteristic waste be found during remedial design or remedial action, it will be managed consistent with this AOC policy.

Notes:
- ALs = Action Levels
- AOC = Area of Contamination
- ARARs = Applicable or Relevant and Appropriate Requirements
- BMPs = Best Management Practices
- CalEPA = California Environmental Protection Agency
- CAMU = Corrective Action Management Unit
- CCR = California Code of Regulations
- CFR = Code of Federal Regulations
- CH&SC = California Health and Safety Code
- CHHSLs = California Human Health Screening Levels
- DTSC = Department of Toxic Substances Control
- DWR = Department of Water Resources
- EPA = U.S. Environmental Protection Agency
- FR = Federal Register
- LARWQCB = Los Angeles Regional Water Quality Control Board
- MCLs = Maximum Contaminant Levels
- MCLGs = Maximum Contaminant Level Goals
- OEHHA = California Office of Environmental Health Hazard Assessment
- RCRA = Resourse Conservation and Recovery Act
- RSLs = Regional Screening Levels
- SIP = State Implementation Plan
- SWRCB = State Water Resource Control Board
- TSDF = Treatment, Storage, and Disposal Facility
- UIC = Underground Injection Control
- VCAPCD = Ventura County Air Pollution Control District
- WQOs = Water Quality Objectives

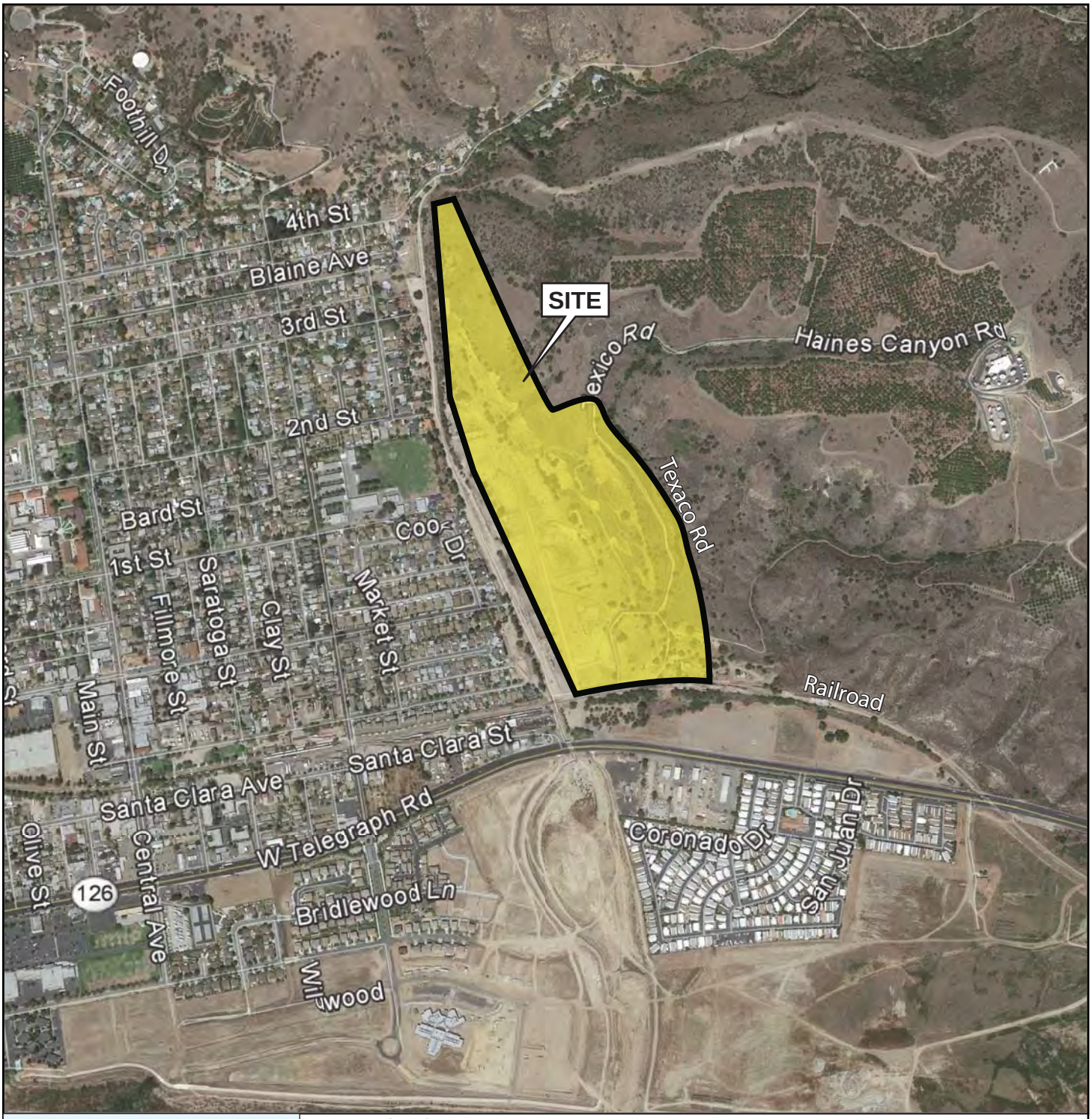
[1] = VCAPCD rules are included in the State Implementation Plan (SIP) that is submitted to the U.S. EPA and so become de facto state regulations.

Table 4
Institutional Controls Roadmap
Texaco PCPL Superfund Site
Fillmore, California

Type of Institutional Control	Relationship of the Institutional Control to the remedy	Objective of the Institutional Control	Performance standard required by the Institutional Control	Monitoring plan including entity responsible for implementing, maintaining, and enforcing the Institutional Control
The entire site shall be subject to a comprehensive deed restriction prohibiting the use of the property for (i) any residential purposes of any kind, including any mobile home or factory built housing, (ii) any hospital related purposes, (iii) any public or private school, and (iv) any day care usage.	The risk assessment upon which the remedial decisions are based assumes exposure scenarios consistent with deed restrictions where the use of the property is limited to industrial and commercial activities.	The object of this comprehensive deed restriction is to ensure that the long-term use of the property is consistent with the exposure scenarios used in the risk assessment and which the remedial decisions were based.	The restrictive covenant would prohibit the use of the property for: (i) any residential purposes of any kind, including any mobile home or factory built housing, (ii) any hospital related purposes, (iii) any public or private school, and (iv) any day care usage.	For any portion of the site that is transferred to a third party, Texaco would reserve the right to enter the property for purposes of determining compliance with the deed reservation and restrictive covenant. In addition, for any portion of the site that is transferred to a third party, Texaco would conduct annual inspections of the property to confirm compliance.
For any portion of the site that is transferred to a third party Texaco would retain all ownership and rights to groundwater. In addition, a restrictive covenant would be recorded in the deed records prohibiting the extraction of groundwater for purposes of human consumption.	The restrictive covenant eliminates risks associated with contamination in groundwater.	The deed reservation and restrictive covenant would cut off the exposure pathways associated with the ingestion of groundwater.	The restrictive covenant would contain provisions prohibiting the installation and/or operation of any water wells on the property for human consumption purposes. Human consumption would be defined to be consistent with EPA's use of the term for public water systems regulated under the Safe Drinking Water Act	For any portion of the site that is transferred to a third party, Texaco would reserve the right to enter the property for purposes of determining compliance with the deed reservation and restrictive covenant. In addition, for any portion of the site that is transferred to a third party, Texaco would conduct annual inspections of the property to confirm compliance.
A restrictive covenant would be recorded in the deed records to address the risks associated with vapor intrusion.	The restrictive covenant eliminates risks associated with the inhalation of vapors in structures built on the property.	The restrictive covenant would cut off the exposure pathways associated with the inhalation of vapors	The restrictive covenant would contain provisions requiring that all foundations for all structures on the property contain a vapor barrier approved by EPA, DTSC or the City of Fillmore.	For any portion of the site that is transferred to a third party, Texaco would require for all construction on the property proof that the required vapor barrier had been approved by EPA, DTSC or the City of Fillmore.
A restrictive covenant would be recorded in the deed records to address the risks associated with dermal exposure to and inhalation of contaminated soils on the property.	The restrictive covenant eliminates risks associated with dermal exposure to and inhalation of contaminated soils.	The restrictive covenant would cut off the exposure pathways associated with contaminated soils.	The restrictive covenant would prohibit excavations on the property deeper than10 feet below post-remediation final grade. The restrictive covenant would also require the use of construction worker protective clothing to prevent dermal exposure for any excavation of soils on the property. Finally, the restrictive would prohibit vegetable gardens, orchards and the growth of plants for human consumption.	For any portion of the site that is transferred to a third party, Texaco would reserve the right to enter the property for purposes of determining compliance with the restrictive covenant. In addition, for any portion of the site that is transferred to a third party, Texaco would conduct annual inspections of the property to confirm compliance.

Notes:
- EPA = United States Environmental Protection Agency
- DTSC = Department of Toxic Substances Control

Figures



Source: Google Earth Pro., 2013.

N

0 500 1000

Scale in Feet

URS

SITE LOCATION MAP

Proj. No.: 30990336	Date: February 2013
Project: TEXACO PCPL SUPERFUND SITE FILLMORE, CALIFORNIA	Figure: 1

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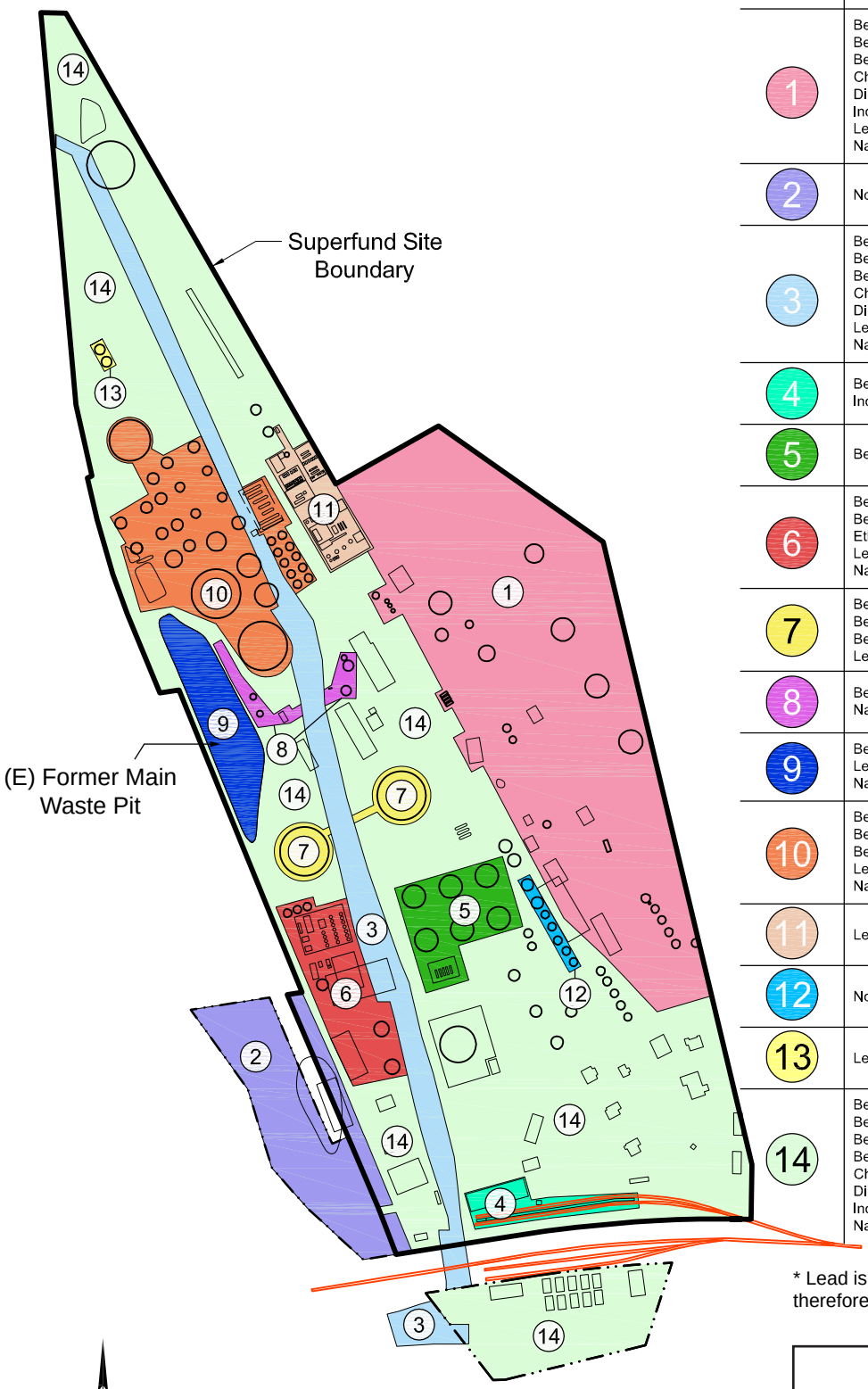

AREA OF CONCERN	CHEMICALS OF CONCERN EXCEEDING RISK BASED CRITERIA 10^{-6} Cancer Risk Threshold (Not Applied to Lead*)
1	Benzo(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene Chrysene Dibenz(a,h)anthracene Indeno(1,2,3-cd)pyrene Lead Naphthalene
2	None
3	Benzo(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene Chrysene Dibenz(a,h)anthracene Lead Naphthalene
4	Benzo(a)pyrene Indeno(1,2,3-cd)pyrene
5	Benzo(a)anthracene
6	Benzene Benzo(a)pyrene Ethylbenzene Lead Naphthalene
7	Benzo(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene Lead
8	Benzo(a)pyrene Naphthalene
9	Benzo(a)pyrene Lead Naphthalene
10	Benzo(a)anthracene Benzo(a)pyrene Benzo(k)fluoranthene Lead Naphthalene
11	Lead
12	None
13	Lead
14	Benzo(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene Benzo(k)fluoranthene Chrysene Dibenz(a,h)anthracene Indeno(1,2,3-cd)pyrene Naphthalene

* Lead is a noncancer health hazard, and is therefore unaffected by cancer risk threshold.

URS

AREAS OF CONCERN

Proj. No.: 30990336	Date: February 2013
Project: TEXACO PCPL SUPERFUND SITE FILLMORE, CALIFORNIA	Figure: 2

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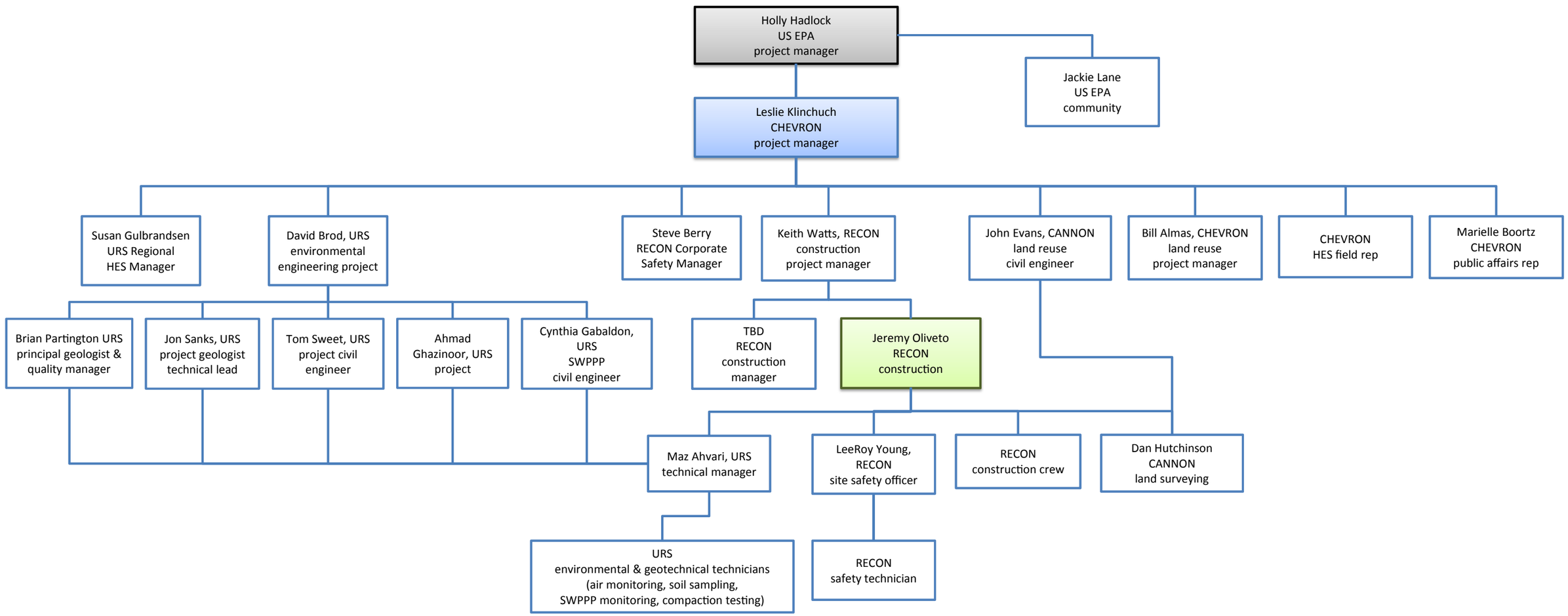

URS

PROJECT TEAM
ORGANIZATIONAL CHART

Proj. No.: 30990336	Date: April 2013
Project: TEXACO PCPL SUPERFUND SITE FILLMORE, CALIFORNIA	Figure: 3

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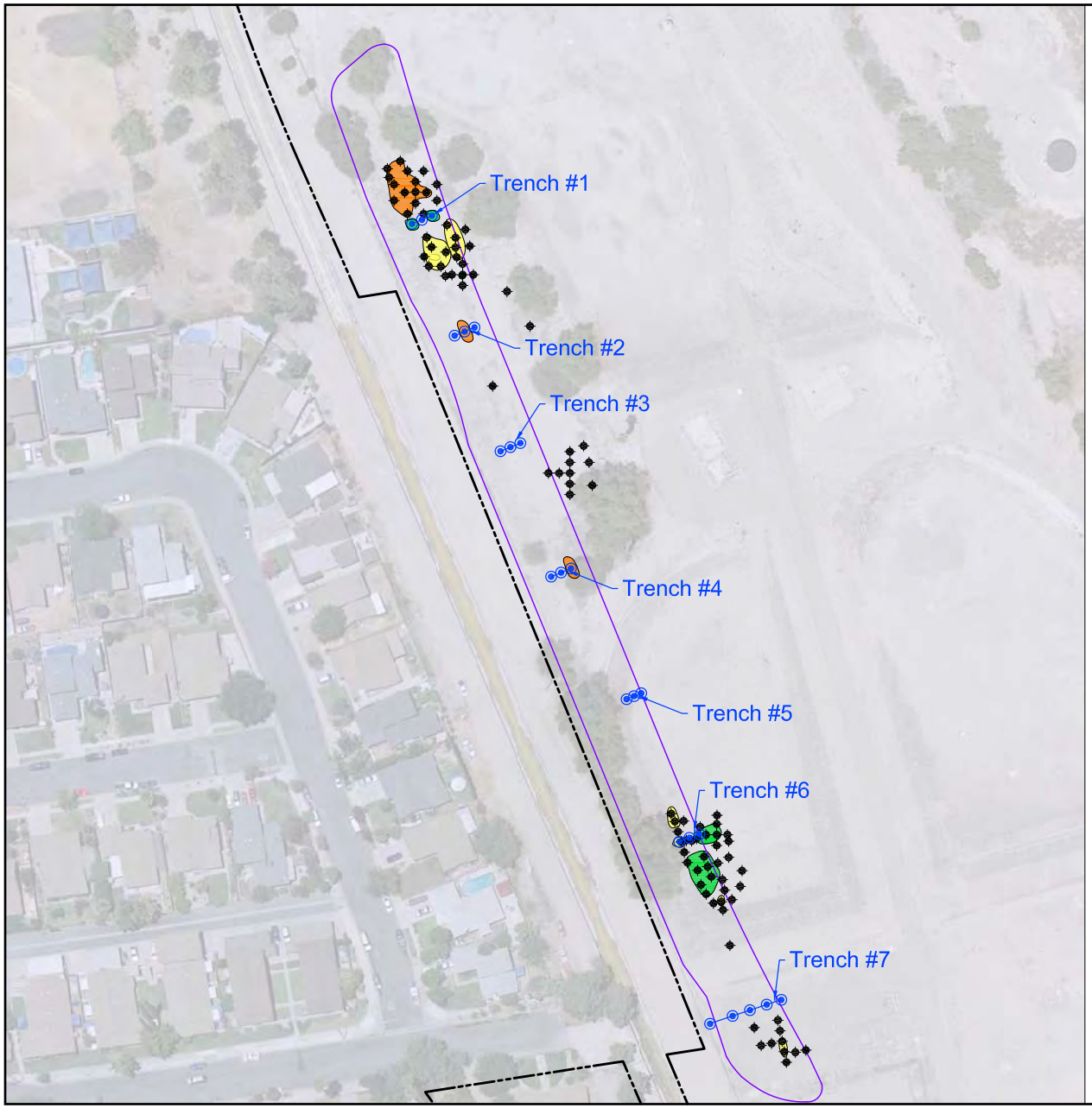

EXPLANATION

- Soil Excavation Depth to 3 Feet Below Ground Surface (ft bgs)
- Soil Excavation Depth to 7 ft bgs
- Soil Excavation Depth to 10 ft bgs
- Soil Boring (2006-2011)
- Trench Sampling Location (2012)
- Property Boundary
- Consolidation Area Boundary

Notes:
1. Soil excavation areas are preliminary (data validation pending).
2. Excavated soil will be stockpiled and placed back in the Consolidation Area after it has been fully excavated to accommodate contaminated Site soil.

N

0 50 100
Scale in Feet

URS

EXCAVATION AREAS WITHIN
THE PROPOSED CONSOLIDATION AREA

Proj. No.: 30990336	Date: February 2013
Project: TEXACO PCPL SUPERFUND SITE FILLMORE, CALIFORNIA	Figure: 4

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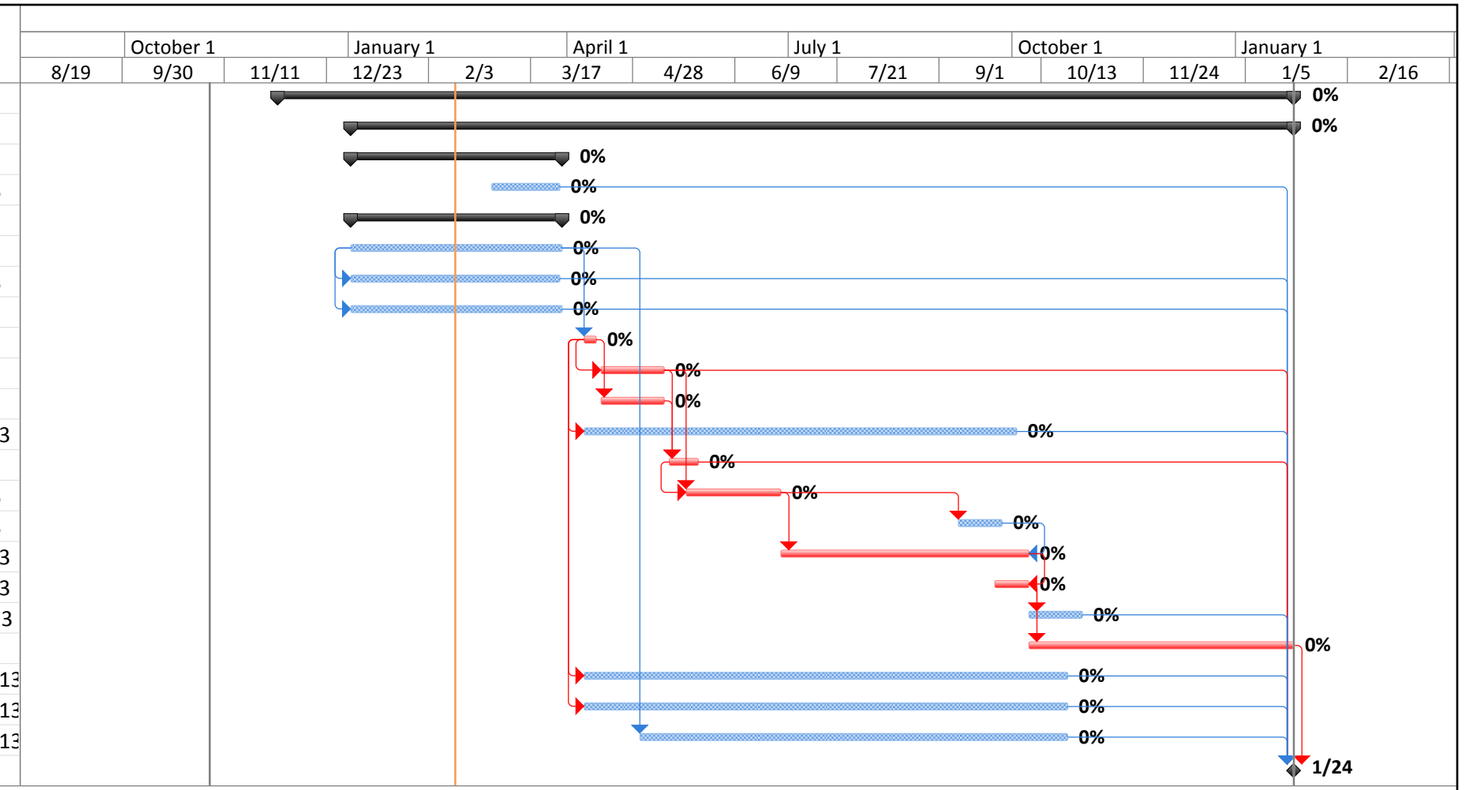
ID	CEMC WBS	Task Name	Duration	Start	Finish
1	--	**PCPL Fillmore**	**291 days**	**Mon 12/3/12**	**Fri 1/24/14**
7	--	**Soil Remediation Grading**	**271 days**	**Wed 1/2/13**	**Fri 1/24/14**
8	--	**Pre Field Activities**	**63 days**	**Wed 1/2/13**	**Fri 3/29/13**
9	05.01	Pre Job Deliverables (HASP)	20 days	Fri 3/1/13	Thu 3/28/13
10	--	**Permitting**	**63 days**	**Wed 1/2/13**	**Fri 3/29/13**
11	02.03	Modify Grading Permit	63 days	Wed 1/2/13	Fri 3/29/13
12	02.03	SWPPP	62 days	Wed 1/2/13	Thu 3/28/13
13	02.03	General Permitting	63 days	Wed 1/2/13	Fri 3/29/13
14	05.01	Mob Site Prep	5 days	Mon 4/8/13	Fri 4/12/13
15	15.03	Remaining Infrastructure	20 days	Mon 4/15/13	Fri 5/10/13
16	05.01	Clear and Grub	20 days	Mon 4/15/13	Fri 5/10/13
17	05.01	Erosion Control (SWPPP)	125 days	Mon 4/8/13	Wed 10/2/13
18	19.01	Build Consolidation Area	10 days	Mon 5/13/13	Fri 5/24/13
19	19.01	Remedial Excavation and Backfill	28 days	Mon 5/20/13	Thu 6/27/13
20	19.08	Engineered Cap	14 days	Mon 9/9/13	Thu 9/26/13
21	19.03	Mass Grading	70 days	Fri 6/28/13	Mon 10/7/13
22	05.02	Fencing and DeMob	10 days	Tue 9/24/13	Mon 10/7/13
23	07.11	Install Vapor Probe	16 days	Tue 10/8/13	Tue 10/29/13
24	04.19	Construction Report Prep	75 days	Tue 10/8/13	Fri 1/24/14
25	02.08	Construction Management	140 days	Mon 4/8/13	Wed 10/23/13
26	07.11	Technical Mgmt	140 days	Mon 4/8/13	Wed 10/23/13
27	07.01	Surveying	123 days	Wed 5/1/13	Wed 10/23/13
28	M	Soil Remediation Grading Complete	0 days	Fri 1/24/14	Fri 1/24/14



Critical		Split		Finish-only		Baseline Milestone		Manual Summary		Inactive Task	
Critical Split		Task Progress		Duration-only		Milestone		Project Summary		Inactive Milestone	
Critical Progress		Manual Task		Baseline		Summary Progress		External Tasks		Inactive Summary	
Task		Start-only		Baseline Split		Summary		External Milestone		Deadline	

Note: Confirmation sampling will be performed during all excavation activities

URS

PROJECT SCHEDULE

Proj. No.: 30990336	Date: February 2013
Project: TEXACO PCPL SUPERFUND SITE FILLMORE, CALIFORNIA	Figure: 5

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Appendices

Appendix A
Remedial Grading Plans and Specifications – Final EPA Design

PACIFIC COAST PIPELINE (PCPL) SUPERFUND SITE

CITY OF FILLMORE, CALIFORNIA

REMEDIAL GRADING PLAN

APRIL 26, 2013

VICINITY MAP

SCALE: NO SCALE

Chevron

Environmental Management Company

REVISIONS			
NO.	BY.	DATE	DESCRIPTION
0	KA	4/26/13	ISSUED FOR CONSTRUCTION

REVISIONS			
NO.	BY.	DATE	DESCRIPTION

URS

Post Montgomery Center
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DESIGNED BY: K. ARROW

CHECKED BY: T. SWEET

APPROVED BY:

PACIFIC COAST PIPELINE (PCPL) SUPERFUND SITE
CITY OF FILLMORE, CALIFORNIA

COVER SHEET

JOB NO.

DATE 4/26/13

SCALE NO SCALE

SHEET 1 OF 43 SHEETS

SHEET NO. G-01

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SHEET INDEX

G-01	COVER SHEET
G-02	SHEET INDEX, ABBREVIATIONS, AND LEGEND
G-03	GENERAL NOTES
C-00	REMEDIAL EXCAVATION LOCATIONS, OVERALL SHEET KEYMAP, AND ACCESS ROUTE MAP
C-01	GRADING AND DRAINAGE COORDINATION PLAN
C-02	REMEDIATION AREA COORDINATE CONTROL PLAN
C-03	PROJECT COORDINATE CONTROL PLAN
C-10	DETAILED GRADING PLAN 1
C-11	DETAILED GRADING PLAN 2
C-12	DETAILED GRADING PLAN 3
C-13	DETAILED GRADING PLAN 4
C-14	DETAILED GRADING PLAN 5
C-15	DETAILED GRADING PLAN 6
C-16	DETAILED GRADING PLAN 7
C-17	DETAILED GRADING PLAN 8
C-18	DETAILED GRADING PLAN 9
C-19	DETAILED GRADING PLAN 10
C-20	DETAILED GRADING PLAN 11
C-21	DETAILED GRADING PLAN 12
C-22	DETAILED GRADING PLAN 13
C-23	DETAILED GRADING PLAN 14
C-24	DETAILED GRADING PLAN 15
C-25	DETAILED GRADING PLAN 16
C-26	DETAILED GRADING PLAN 17
C-27	BERM REMOVAL PLAN
C-30	CONSOLIDATION AREA – PLAN AND PROFILE – SHEET 1
C-31	CONSOLIDATION AREA – PLAN AND PROFILE – SHEET 2
C-32	CONSOLIDATION AREA – SECTION
C-33	CONSOLIDATION AREA – DETAIL ENLARGEMENT AND DETAILS
C-40	MASS GRADING PLAN
C-41	MASS GRADING SECTIONS (A-A THROUGH D-D)
C-42	MASS GRADING SECTIONS (E-E AND F-F)
C-43	MASS GRADING SECTIONS (G-G)
C-44	MASS GRADING DETAILS
C-50	DRAINAGE PLAN AND EROSION CONTROL PLAN
C-51	ENLARGED DRAINAGE PLAN AND EROSION CONTROL PLAN 1
C-52	ENLARGED DRAINAGE PLAN AND EROSION CONTROL PLAN 2
C-53	ENLARGED INTERIM DRAINAGE PLAN AND EROSION CONTROL PLAN 3
C-54	ENLARGED FUTURE DRAINAGE PLAN AND EROSION CONTROL PLAN 3
C-55	DRAINAGE DETAILS
C-56	EROSION CONTROL DETAILS
C-60	EXCAVATION AND SAMPLING DETAILS 1
C-61	EXCAVATION AND SAMPLING DETAILS 2

ABBREVIATIONS

SYMBOL	DESCRIPTION
AOC	AREA OF CONCERN
BGS	BELOW GROUND SURFACE
BMP	BEST MANAGEMENT PRACTICE
BOT	BOTTOM
CEMC	CHEVRON ENVIRONMENTAL MANAGEMENT COMPANY
CFR	CODE OF FEDERAL REGULATIONS
COC	CHEMICAL OF CONCERN
CQAP	CONSTRUCTION QUALITY ASSURANCE PLAN
CY	CUBIC YARD
DHW	DESIGN HIGH WATER
DI	DROP INLET
DLW	DESIGN LOW WATER
DSAAMP	DUST SUPPRESSION AND AIR MONITORING PLAN
DWG	DRAWING
E	EAST
(E)	EXISTING
ELEV	ELEVATION
EPA	ENVIRONMENTAL PROTECTION AGENCY
FEMA	FEDERAL EMERGENCY MANAGEMENT AGENCY
FIRM	FLOOD INSURANCE RATE MAP
FT	FOOT
GBM	GRANULAR BUFFER MATERIAL
GCL	GEOSYNTHETIC CLAY LINER
H	HORIZONTAL
HSP	HEALTH AND SAFETY PLAN
INV	INVERT
KG	KILOGRAM
L	LENGTH
LB	POUND
LF	LINEAR FOOT
MAX	MAXIMUM
MG	MILLIGRAM
MIN	MINIMUM
N	NORTH
(N)	NEW
NOI	NOTICE OF INTENT
NTS	NOT TO SCALE
OSHA	OCCUPATIONAL HEALTH AND SAFETY ADMINISTRATION
(P)	PROPOSED
PACE	PACIFIC ADVANCED CIVIL ENGINEERING, INC.
PAH	POLYCYCLIC AROMATIC HYDROCARBON
PC	POLE CREEK
PID	PHOTOIONIZATION DETECTOR
PL	PROPERTY LINE
QAPP	QUALITY ASSURANCE PROJECT PLAN
RD	REMEDIAL DESIGN
RAWP	REMEDIAL ACTION WORK PLAN
RCP	REINFORCED CONCRETE PIPE
RD	REMEDIAL DESIGN
RD/RAWP	REMEDIAL DESIGN AND REMEDIAL ACTION WORK PLAN
S	SOUTH
SD	STORM DRAIN
SF	SQUARE FOOT
SIM	SELECTED ION MONITORING
SLDS	STANDARD LAND DEVELOPMENT SPECIFICATIONS
STA	STATION
SWPPP	STORMWATER POLLUTION PREVENTION PLAN
TOB	TOP OF BANK
TYP	TYPICAL
URS	URS CORPORATION
USGS	UNITED STATES GEOLOGICAL SURVEY
V	VERTICAL
VCAPCD	VENTURA COUNTY AIR POLLUTION CONTROL DISTRICT
W	WEST
W/	WITH
W/O	WITHOUT
XRF	X-RAY FLUORESCENCE

LEGEND

- 520.38 — SPOT ELEVATION
- EFFECTIVE 500 YEAR FLOOD PLAIN
- EFFECTIVE 100 YEAR FLOOD PLAIN
- FP — PROPOSED 100 YEAR FLOOD PLAN
- APPROXIMATE SAN CAYETANO FAULT ALIGNMENT
- 50' FAULT SETBACK
- PROPERTY LINE
- PROPOSED PROPERTY LINE (SEE CIVIL PLANS)
- (E) FORMER MAIN WASTE PIT EXTENTS
- 500 — (E) CONTOUR
- 500 — (P) CONTOUR
- PRELIMINARY AREA REQUIRING REMEDIATION TO 3 FT BGS
- PRELIMINARY AREA REQUIRING REMEDIATION TO 7 FT BGS
- PRELIMINARY AREA REQUIRING REMEDIATION TO 12 FT BGS
- FORMER ABOVEGROUND STORAGE TANK
- FORMER WASTE PIT
- FORMER PROCESS AREA
- CONCENTRATION CONTOUR OF PAHs
- CONCENTRATION CONTOUR OF LEAD
- (E) AQUIFER I MONITORING WELL (TO REMAIN)
- (E) AQUIFER I EXTRACTION/MONITORING WELL (TO REMAIN)
- (E) AQUIFER II MONITORING WELL (TO REMAIN)
- BERM SOIL SAMPLE (URS, 2008 TO 2009)
- VAPOR PROBE (URS, 2008)
- DELINEATION SOIL BORING (URS, 2010)
- MPC-URS02 — REMEDIAL EXCAVATION BORING ID
- BA09-URS01 — SOIL BORING ID

LEGEND

- PRIMARY SOIL BORROW AREAS
- CONSOLIDATION AREA (SEE SHEET C-30)
- POTENTIAL SUPPLEMENTAL CONSOLIDATION AREA
- FG 525 — PLANNED ROUGH FINISH GRADE
- CELLULAR CONFINEMENT ZONE (SEE DETAIL 2 ON SHEET C-33)
- CUT SLOPE BENCH DRAINAGE V-DITCH
- TOE OF SLOPE V-DITCH
- LOT DRAINAGE SWALE(S)

REVISIONS			
NO.	BY.	DATE	DESCRIPTION
1	KA	4/26/13	ISSUED FOR CONSTRUCTION

REVISIONS			
NO.	BY.	DATE	DESCRIPTION

URS
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DESIGNED BY: K. ARROW
CHECKED BY: T. SWEET
APPROVED BY:

PACIFIC COAST PIPELINE (PCPL) SUPERFUND SITE
CITY OF FILLMORE, CALIFORNIA

SHEET INDEX, ABBREVIATIONS, AND LEGEND

JOB NO.
DATE 4/26/13
SCALE NO SCALE
SHEET 2 OF 43 SHEETS
SHEET NO. G-02

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GENERAL NOTES

1. GRADING SHALL BE IN ACCORDANCE WITH THE VENTURA COUNTY BUILDING CODE APPENDIX J AND THE VENTURA COUNTY STANDARD LAND DEVELOPMENT SPECIFICATIONS AND THE LAND DEVELOPMENT MANUAL.
2. A PRECONSTRUCTION CONFERENCE OF ALL INTERESTED PARTIES SHALL BE HELD PRIOR TO ANY CONSTRUCTION OR GRADING.
3. ALL RECOMMENDATIONS MADE BY THE SOILS ENGINEER (AND ENGINEERING GEOLOGIST, WHERE EMPLOYED) CONTAINED IN THE REPORTS REFERENCED HEREON AS APPROVED OR CONDITIONED BY THE COUNTY SHALL BE A PART OF THIS GRADING PLAN.
4. ALL GRADED SURFACES SUBJECT TO EROSION SHALL BE PROTECTED IN ACCORDANCE WITH THE STORMWATER POLLUTION PREVENTION PLAN (SWPPP). PROTECTION SHALL BE PROVIDED AND FULLY FUNCTIONAL AT ALL TIMES.
5. ALL DELETERIOUS MATERIAL, I.E. LUMBER, LOGS, BRUSH, OR ANY OTHER ORGANIC MATERIALS OR RUBBISH, SHALL BE REMOVED FROM ALL AREAS TO RECEIVE COMPACTED FILL.
6. UNSUITABLE MATERIAL SHALL BE REMOVED AS REQUIRED BY THE SOILS ENGINEER AND ENGINEERING GEOLOGIST FROM ALL AREAS TO RECEIVE COMPACTED FILL OR DRAINAGE STRUCTURES.
7. ALL AREAS TO RECEIVE COMPACTED FILL SHALL BE INSPECTED AND APPROVED BY THE SOILS ENGINEER (AND ENGINEERING GEOLOGIST WHERE EMPLOYED) AFTER REMOVAL OF UNSUITABLE MATERIAL AND EXCAVATION OF KEYWAYS AND BENCHES, AND PRIOR TO PLACEMENT OF SUBSURFACE DRAINAGE SYSTEMS OF ANY FILL.
8. ALL SOIL OR ROCK MATERIALS DEEMED UNSUITABLE FOR PLACEMENT IN COMPACTED FILL SHALL BE REMOVED FROM THE SITE. ANY MATERIAL SUCH AS CONCRETE CONSTRUCTION INERT DEBRIS, OR IMPORTED MATERIALS SHALL BE APPROVED BY THE SOILS ENGINEER AND COUNTY PRIOR TO USE IN COMPACTED FILL. WHERE EXCAVATED MATERIAL IS BLOCKY IT WILL BE BROKEN INTO SUITABLE PARTICLE SIZES, NONE LARGER THAN SIX INCHES IN LARGEST DIMENSION, BEFORE BEING USED AS FILL.
9. THE SOILS ENGINEER SHALL DIRECT THE REMOVAL OF ANY EXISTING UNDERGROUND STRUCTURES SUCH AS SEPTIC TANKS, IRRIGATION LINES, ETC.
10. ANY WATER WELLS LOCATED WITHIN THE SITE SHALL BE REPORTED TO THE WATER RESOURCES DIVISION, WATERSHED PROTECTION DISTRICT PRIOR TO ITS MODIFICATION, ABANDONMENT, OR DESTRUCTION.
11. ALL EXCAVATED BACK SLOPES AND KEYS FOR BUTTRESS FILLS MUST BE EXAMINED BY THE ENGINEERING GEOLOGIST AND SOILS ENGINEER TO ENSURE THAT ALL POTENTIAL PLANES OF FAILURE HAVE BEEN EXPOSED IN THE EXCAVATION AND WILL BE ADEQUATELY SUPPORTED BY THE PROPOSED BUTTRESS. FIELD CERTIFICATION TO BE SUBMITTED BY SOILS ENGINEER (AND ENGINEERING GEOLOGIST, WHERE EMPLOYED).
12. THE SOILS ENGINEER AND ENGINEERING GEOLOGIST (WHERE EMPLOYED) SHALL SUBMIT RECOMMENDATIONS FOR CORRECTIVE WORK TO ENSURE SLOPE STABILITY WHERE UNSTABLE MATERIAL IS EXPOSED AT THE TOP OF CUTS.
13. UNLESS OTHERWISE SPECIFIED, CORRUGATED STEEL PIPE SHALL BE BITUMINOUS COATED IN ACCORDANCE WITH STANDARD LAND DEVELOPMENT SPECIFICATIONS (SLDS).
14. INTERIM SOILS AND GEOLOGIC REPORTS SHALL BE SUBMITTED TO THE COUNTY AS REQUIRED BY THE BUILDING OFFICIAL.
15. FINAL ROUGH GRADE SOILS ENGINEERING AND (IF APPLICABLE) ENGINEERING GEOLOGY REPORTS SUMMARIZING ALL EARTHWORK PERFORMED OUTLINING ANY VARIATIONS OR VARIANCES FROM THE DESIGN, AND CONCLUDING THAT THE WORK HAS BEEN COMPLETED ACCORDING TO THE APPROVED REPORTS SHALL BE SUBMITTED TO THE COUNTY FOR APPROVAL OF THE ROUGH GRADING BY THE BUILDING OFFICIAL.
16. FINAL SOILS ENGINEERING AND (IF APPLICABLE) ENGINEERING GEOLOGY REPORTS SUMMARIZING ALL EARTHWORK PERFORMED SINCE ROUGH GRADING AND CONCLUDING THAT THE WORK HAS BEEN COMPLETED ACCORDING TO THE APPROVED REPORTS SHALL BE SUBMITTED TO THE COUNTY PRIOR TO FINAL INSPECTION BY THE BUILDING OFFICIAL.
17. THE TOTAL ESTIMATED DISTURBED AREA OF GRADING AND CONSTRUCTION IS ON THE ORDER OF 40 ACRES. PROJECTS THAT ARE 1.0 ACRE OR GREATER IN DISTURBED AREA WILL REQUIRE A SWPPP AND NOTICE OF INTENT (NOI) AS APPROVED BY THE STATE REGIONAL WATER QUALITY CONTROL BOARD.
18. ALL SITE EARTHWORK TO CONFORM TO SOIL REMEDIAL DESIGN (RA) AND SOIL REMEDIAL ACTION WORK PLAN (RAWP) AND THE DOCUMENTS APPENDED TO THE SOIL RD AND SOIL RAWP. CONTRACTOR TO CONFIRM SITE CONDITIONS, INCLUDING LOCATION AND EXTENT OF EXISTING FEATURES (INCLUDING BUT NOT LIMITED TO FORMER MAIN WASTE PIT, SECONDARY CONTAINMENT BERMS, DRAINAGE FEATURES/CULVERTS, TOPOGRAPHY, UTILITIES, EXTENT OF VEGETATION, ETC.). CONTRACTOR TO REPORT ANY DIFFERENCES BETWEEN ACTUAL FIELD CONDITIONS AND INFORMATION CONTAINED IN THE CONTRACT DOCUMENTS IN WRITING TO ENGINEER 15 DAYS PRIOR TO COMMENCING ANY CONSTRUCTION.
19. CONTRACTOR TO PERFORM DUST SUPPRESSION IN CONFORMANCE WITH THE DSAAMP AND VCAPCD REQUIREMENTS. IF PARTICULATE LEVELS EXCEED 0.50 MG/M^3 FOR A 15-MINUTE AVERAGE FOR NET GROUND LEVEL CONCENTRATION, CONTRACTOR TO CEASE OPERATIONS AND MITIGATE EMISSIONS BY IMPLEMENTING DUST CONTROLS.
20. SOURCE OF EFFECTIVE 100- AND 500- YEAR FLOOD PLAIN LIMITS:
FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA), FLOOD INSURANCE RATE MAP (FIRM), VENTURA COUNTY, CALIFORNIA AND INCORPORATED AREAS, PANEL 644 OF 1275, MAP NUMBER 06111C0644E, EFFECTIVE DATE JANUARY 20, 2010.
21. SOURCE OF PROPOSED 100- YEAR FLOOD PLAIN LIMITS:
PACIFIC ADVANCED CIVIL ENGINEERING, INC. (PACE), HERITAGE VALLEY PARK, BASIS OF DESIGN REPORT FOR SEDIMENT STORAGE & FLOOD CONTROL IMPROVEMENTS ON POLE CREEK, OCTOBER 17, 2006.
22. AT THE LOCATIONS IDENTIFIED FOR REMEDIATION, THE CONTRACTOR, ASSISTED BY THE ENGINEER, WILL IDENTIFY PRELIMINARY SURFACE DIMENSIONS OF EACH EXCAVATION AREA BY USING PREVIOUSLY IDENTIFIED LIMITS IN CONJUNCTION WITH VISUAL MEANS (I.E., STAINED SOIL), ODOR, PHOTOIONIZATION DETECTOR (PID), CROSS TRENCHING TO EXPOSE SUBSURFACE SOILS AND APPROXIMATE DIMENSION LISTED FOR EACH EXCAVATION AREA ON THE REMEDIAL GRADING PLANS. THE CONTRACTOR WILL FACILITATE COLLECTION OF FIELD TESTING SAMPLES FOR THE ENGINEER TO PREPARE AND TEST USING AN X-RAY FLUORESCENCE (XRF) METER. ACTION LEVEL FOR INORGANIC LEAD IS 320 MG/KG OVER THE MAJORITY OF THE SITE AND 26 MG/KG (TOP 6 INCHES) AND 56 MG/KB TO 6 FT BGS FOR THE HILLSIDE. IT IS ANTICIPATED THAT FOR EVERY 10 XRF METER FIELD READINGS A LABORATORY CONFIRMATION TEST WILL BE PERFORMED.
23. ONCE THE PRELIMINARY EXCAVATION DIMENSIONS ARE EVALUATED AND AGREED UPON IN THE FIELD BETWEEN CONTRACTOR AND ENGINEER, CONTRACTOR WILL EXCAVATE TO THE DEPTHS LISTED ON THE REMEDIAL GRADING PLANS (E.G., 3, 7 OR 12 FT BGS). ENGINEER WILL COLLECT SOIL SAMPLES FROM BOTH THE FLOOR AND THE WALLS OF THE EXCAVATION (FROM THE EXCAVATOR BUCKET) AND CHARACTERIZE USING THE UNITED SOILS CLASSIFICATION SYSTEM (USCS), SCREEN FOR COCS USING FIXED LABORATORY TESTING, PERIMETER VAPOR MONITORING, HEADSPACE SCREENING, AND THE XRF. CONFIRMATION SOIL TESTING WILL BE PERFORMED FOR EVERY 20 LINEAR FEET (LF) OF EXCAVATION WALL AND EVERY 400 SQUARE FEET (SF) OF BOTTOM AREA. THE CONFIRMATION SOIL SAMPLES WILL BE ANALYZED AS FOLLOWS:
   - EPA METHOD 8270 SIM FOR POLYCYCLIC AROMATIC HYDROCARBONS (PAHS); AND,
   - EPA METHOD 6010 FOR LEAD (10% OF TOTAL NUMBER OF SOIL SAMPLES BY XRF).
24. EXPANSION OF THE LATERAL EXCAVATION LIMITS WILL BE CONTROLLED BY FIELD TESTING RESULTS AND LABORATORY CONFIRMATION. WHEN EXPANSION IS WARRANTED, THE EXCAVATION WILL GENERALLY BE EXPANDED IN 3-FT MAXIMUM INCREMENTS LATERALLY TO CONTROL EXCAVATION VOLUMES. EXCAVATION VERTICAL LIMITS WILL BE SET AT A MAXIMUM OF 10-FT BGS (EXISTING AND/OR FUTURE GRADE, WHICHEVER IS LOWER), OR FOR IMPACTS LOCATED AT 10-FT BGS, THE MAXIMUM LIMIT WILL BE 12-FT BGS. TO MINIMIZE EXCAVATION, IT IS ANTICIPATED EXCAVATION WALLS WILL BE ALLOWED TO STAND VERTICAL TO THE EXTENT PRACTICABLE UNTIL TESTING IS COMPLETE, THEN WHEN DEEMED COMPLIANT WITH COC ACTION LEVELS, THE EXCAVATIONS WILL TYPICALLY BE BOWLED OUT TO ALLOW FOR BACKFILLING AND COMPACTION.
25. TO CONTROL VOLUME OF EXCAVATED SOIL PLACED IN THE CONSOLIDATION AREA, SOILS EXCAVATED OUTSIDE OF THE AFFECTED SOIL LIMITS TO PRODUCE SUITABLE SLOPES WILL BE STOCKPILED (AND COVERED) SEPARATELY FOR BACKFILLING AS CLEAN FILL. SHEET C-01 INDICATES GENERAL AREAS OF onsite BORROW AS A SOURCE OF SUITABLE BACKFILL TO COMPLETE FILLING OF EXCAVATIONS TO AVOID THE NEED TO BRING IN BACKFILL MATERIAL FROM OFF-SITE. BACKFILLING OF REMEDIAL EXCAVATION AREAS WILL BE PERFORMED IN 12-INCH MAXIMUM LIFTS AND COMPACTED TO 95% RELATIVE COMPACTION.
26. FOR EXCAVATIONS REQUIRING ENTRY, IF THE EXCAVATION AREA IS DEEPER THAN 4-FT, APPROPRIATE SHORING/SLOPING WILL BE REQUIRED IN ACCORDANCE WITH U.S. OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) 29 CODE OF FEDERAL REGULATIONS (CFR) 1926.
27. THE CONSOLIDATION AREA FOOTPRINT WILL BE EXCAVATED TO DESIGN BOTTOM ELEVATIONS (25+ FT BGS) AND THE SLOPES GRADED TO THE DEPTHS SHOWN ON SHEETS C-30 TO C-32. AS SOIL IS EXCAVATED, PLACED AND COMPACTED (TO 95% RELATIVE COMPACTION AS MEASURED BY MODIFIED PROCTOR) IN THE CONSOLIDATION AREA, VOLUMES GENERATED ARE TO BE MONITORED BY ENGINEER FOR COMPLIANCE WITH THE PLANNED EXCAVATION VOLUMES INCLUDED IN THE SOIL RD AND RAWP AND SHEET C-61. IF THE VOLUME IS TRENDING ABOVE THE PLAN, CONTRACTOR AND ENGINEER WILL COORDINATE BENCHING OF THE CONSOLIDATION AREA STARTING AT 9-FT BGS ALLOW VERTICAL SIDE SLOPES DOWN TO 13-FT BGS AND RESULT IN AN INCREASE OF VOLUMETRIC YIELD OF THE CONSOLIDATION AREA. SIMILARLY, WHEN FILL REACHES 9-FT BGS, BENCHING WILL BE PERFORMED AT 5-FT BGS AS-NEEDED TO UTILIZE VERTICAL SIDE SLOPES UP TO 5-FT BGS (BOTTOM OF THE ENGINEERED CAP). FILLING OF THE CONSOLIDATION AREA SHALL BE IN MAXIMUM 8-INCH THICK LOOSE LIFTS, MOISTURE CONDITIONED AND EACH LIFT COMPACTED TO 95% RELATIVE COMPACTION.
28. IF ADDITIONAL VOLUME IS NEEDED BEYOND WHAT CAN BE ACCOMMODATED USING BENCHING AND VERTICAL SLOPES DOWN TO 13-FT BGS, PART OF THE CONSOLIDATION AREA WILL BE EXPANDED TO THE EAST UNDER THE NORTHERN LOT ALONG THE NORTH-SOUTH ROADWAY.
29. A MINIMUM 5-FOOT THICK ENGINEERED CAP, CONSISTING OF A MINIMUM 3-FOOT THICK PROTECTIVE GENERAL FREE-DRAINING EROSION FILL LAYER UNDERLAIN WITH A 2-FOOT THICK LOW PERMEABILITY LAYER CONSISTING OF A GEOSYNTHETIC CLAY LINER (GCL) SANDWICHED WITHIN PROTECTIVE SANDY/GRANULAR ONSITE BORROW SOILS MEETING SITE CLEANUP CRITERIA WILL BE CONSTRUCTED OVER THE ENTIRE CONSOLIDATION AREA (AND TOED IN ALONG THE PERIMETER).
30. AN EROSION CONTROL CELLULAR CONFINEMENT GEOTEXTILE MAT IS TO BE CONSTRUCTED ALONG THE ENTIRE LENGTH OF THE CONSOLIDATION AREA BETWEEN THE POLE CREEK PROPERTY LINE AND PLANNED ROADWAY AND THE EXISTING GRADE ALONG THE SHARED PROPERTY LINE WITH POLE CREEK WILL BE MAINTAINED AND THE onsite GRADES RAISED SOMEWHAT RESULTING IN A MINOR SLOPE (LESS THAN 2 FEET HIGH AND AT A SLOPE LESS THAN 3H:1V) TO ENSURE THE EXISTING POLE CREEK FLOW CHARACTERISTICS ARE NOT ALTERED BY CONSTRUCTION OF THE CONSOLIDATION AREA.
31. AS PART OF THE REMEDIAL GRADING, THE SITE WILL BE ROUGH GRADED TO A CONDITION SUITABLE FOR FUTURE REUSE. THE REMEDIAL EXCAVATION AND PLACEMENT AND COMPACTION OF SOILS IN THE CONSOLIDATION AREA WILL BE PERFORMED FIRST, FOLLOWED BY GENERAL SITE-WIDE EARTHWORK. TO ENSURE THE REMEDIAL EXCAVATION IS COMPLETE, LABORATORY CONFIRMATORY SAMPLES FROM EACH EXCAVATION AREA WILL BE PERFORMED PRIOR TO BACKFILLING WITH CLEAN onsite SOILS. ONCE THE REMEDIAL EXCAVATION AND BACKFILLING HAS BEEN COMPLETED IN A PORTION OF THE SITE, GENERAL EARTHWORK WILL BE ALLOWED TO PROGRESS TO MINIMIZE OVERALL DURATION OF THE PROJECT AND FIT WITHIN THE SUMMER SEASON CONSTRUCTION WINDOW (12-16 WEEKS).
32. FOR AREAS OF CUT IN THE VICINITY OF THE EXISTING SLOPE ALONG THE EASTERN AND WESTERN PORTIONS OF THE SITE, GENERAL BENCHING, BUTTRESS, KEYWAY AND DRAINAGE FEATURES ARE CALLED OUT ON SHEETS C-40 TO C-44. ENGINEER WILL BE RESPONSIBLE FOR MONITORING CUT AND FILL IN THESE CRITICAL TOE-OF-SLOPE AREAS AND WILL WORK COLLABORATIVELY WITH CONTRACTOR TO ADJUST CONSTRUCTION ADAPT TO ACTUAL FIELD CONDITIONS. THIS MAY RESULT IN STEPPING CUT, KEYWAYS AND BENCHING AND OTHER MODIFICATIONS TO MATCH OBSERVED EXISTING SLOPE AND SUBSURFACE SOIL CONDITIONS. GENERAL CONCEPTUAL DETAILS FOR CONSTRUCTION OF THE EASTERN SLOPE, INCLUDING BENCHING, DRAINAGE, GRADING AND SEQUENCING OF WORK ARE INCLUDED IN THE REMEDIAL GRADING PLANS.
33. GRADING OF RETENTION/DETENTION FEATURES TO COLLECT AND ROUTE STORM WATER RUNOFF DURING THE RAINY SEASON TO CONTROL RUNOFF AND AVOID EROSION IS ILLUSTRATED ON SHEETS C-50-C-54. CONSTRUCTION OF THESE FEATURES SHALL BE IN CONFORMANCE WITH PROJECT SWPPP AND ASSOCIATED POST-CONSTRUCTION STORM WATER BEST MANAGEMENT PRACTICE (BMP) FEATURES.
34. ALL EARTHWORK WILL BE CONTROLLED, WITH CUT AND FILL OCCURRING IN PLANNED LOCATIONS WITH PROPER MOISTURE CONDITIONING AND COMPACTION TO ENSURE AVOIDANCE OF DUST EMISSIONS AND READY FOR REUSE BUILDING PAD AREAS ARE PROPERLY COMPACTED (90% MIN. RELATIVE COMPACTION).
35. SEE SOIL RD AND RAWP FOR REQUIRED CONTRACTOR AND ENGINEER INSPECTIONS, TESTING AND DOCUMENTATION ROLES AND RESPONSIBILITIES.
36. REFERENCE TO CIVIL PLANS INDICATES FUTURE PLANS BY CANNON AND ASSOCIATES, CIVIL ENGINEER OF RECORD FOR FUTURE SITE DEVELOPMENT IMPROVEMENTS FOR UTILITIES, ROADWAYS, ETC.

BENCH MARK AND DATUM DATA

HORIZONTAL AND VERTICAL CONTROL DATUM:
BEARINGS ARE BASED ON THE CALIFORNIA STATE PLANE COORDINATE SYSTEM, ZONE 5, NAD27, AND CONSTRAINED TO STATION 102 15, PID EW4726.
N: 328722.67 (sFT)
E: 1727755.42 (sFT)
ALL DISTANCES ARE GROUND UNLESS OTHERWISE NOTED. TO OBTAIN GRID DISTANCES, MULTIPLY BY 0.999923294.

ELEVATIONS SHOWN ARE BASED ON NGVD29. THE PROJECT BENCHMARK IS STATION 102 15, PID EW4726, HAVING ELEVATION 477.52 FEET.

STATION RECOVERY (1994):
RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1994 (SSD) 0.1 KM (0.05 MI) SOUTHERLY ALONG CENTRAL AVENUE FROM THE POST OFFICE IN FILLMORE, THENCE 0.9 KM (0.55 MI) EASTERLY ALONG THE SOUTHERN PACIFIC RAILROAD, 14.6 M (47.9 FT) SOUTH OF THE NEAR RAIL, 9.0 M (29.5 FT) EAST OF THE CENTER OF A PAVED ROAD, 1.4 M (4.6 FT) BELOW THE LEVEL OF THE ROAD, 1.2 M (3.9 FT) EAST OF THE NORTHWEST CORNER OF A CHAIN-LINK FENCE, 0.4 M (1.3 FT) NORTH OF A WITNESS POST AND FENCE, AND THE MONUMENT IS FLUSH WITH THE GROUND SURFACE.

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REVISIONS

NO.	BY.	DATE	DESCRIPTION
0	KA	4/26/13	ISSUED FOR CONSTRUCTION

REVISIONS

NO.	BY.	DATE	DESCRIPTION

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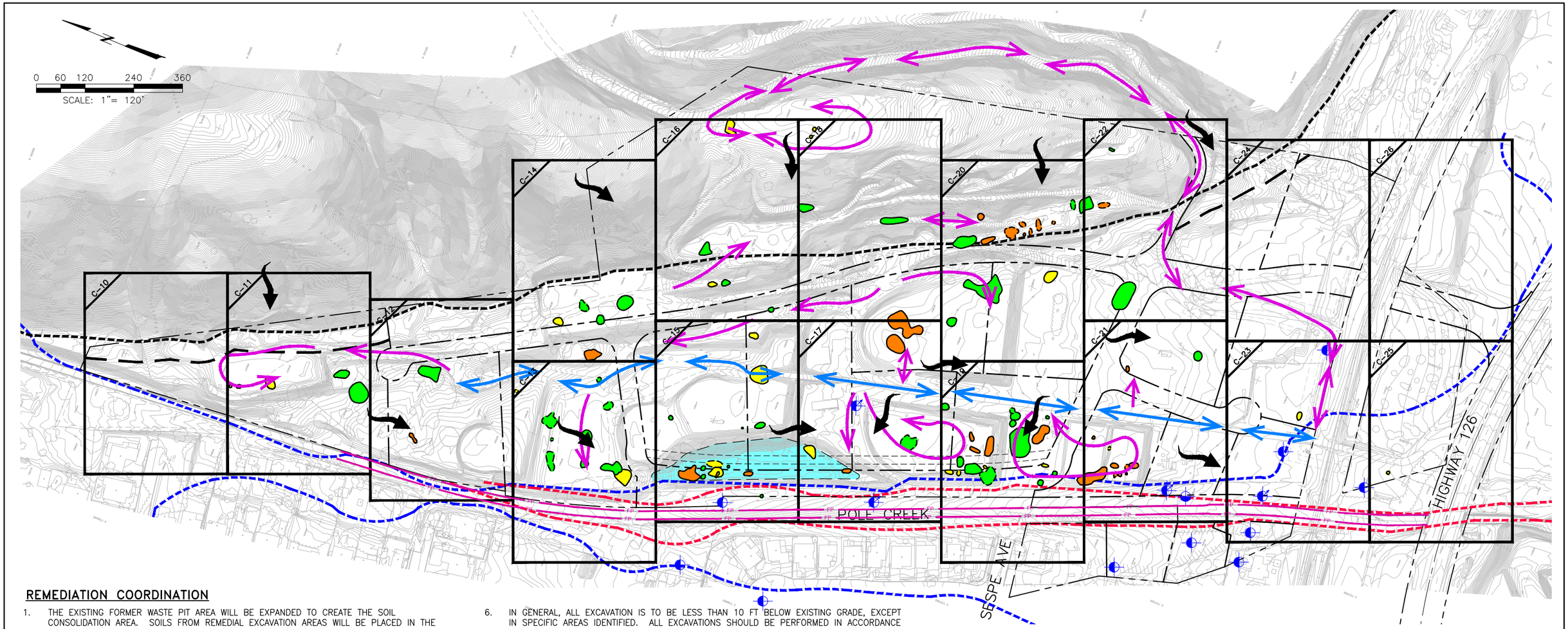
CITY OF FILLMORE, CALIFORNIA

GENERAL NOTES

JOB NO.
DATE 4/26/13
SCALE NO SCALE
SHEET 3 OF 43 SHEETS
SHEET NO. G-03



REMEDIATION COORDINATION

1. THE EXISTING FORMER WASTE PIT AREA WILL BE EXPANDED TO CREATE THE SOIL CONSOLIDATION AREA. SOILS FROM REMEDIAL EXCAVATION AREAS WILL BE PLACED IN THE CONSOLIDATION AREA AND COMPACTED TO 95% RELATIVE DENSITY. A PORTION OF THE EXISTING FORMER WASTE PIT AREA WILL BE FILLED TO RESULT IN A CONSOLIDATION AREA THAT IS UNIFORM IN SECTION.
2. REMEDIAL EXCAVATION WILL OCCUR IN AREAS OF AFFECTED SOILS (INDIVIDUAL REMEDIATION AREAS WITHIN THE IDENTIFIED AREAS OF CONCERN (AOC)) WHICH INCLUDE FORMER TANK AREAS, AREAS WITHIN SECONDARY CONTAINMENT ZONES, SECONDARY CONTAINMENT BERMS, AND HILLSIDE LOCATIONS. THESE EXCAVATION AREAS WILL BE BACKFILLED WITH ONSITE BORROW MATERIAL FROM BORROW AREAS (PARTIALLY IDENTIFIED HEREIN) AND COMPACTED. BORROW AREAS INCLUDE PORTIONS OF THE SOIL CONSOLIDATION AREA, TANK SECONDARY CONTAINMENT AREAS, AND PLANNED STORMWATER TREATMENT AND DETENTION AREAS.
3. THE EXTENT AND CONFIGURATION OF THE PLANNED SOIL CONSOLIDATION AREA SHOWN IS CONSIDERED TO BE THE MAXIMUM SIZE ANTICIPATED TO BE NEEDED TO PROVIDE SUFFICIENT VOLUME FOR THE EXCAVATED SOILS. HOWEVER, THE CONSTRUCTION OF THE CONSOLIDATION AREA IS INTENDED TO BE RESPONSIVE TO ACTUAL EXCAVATED AFFECTED SOIL VOLUMES. THEREFORE CONTRACTOR SHALL CONSTRUCT CONSOLIDATION AREA FROM THE BOTTOM UP AND EXPAND AS NEEDED TO ACCOMMODATE EXCAVATED SOIL. SEE SOIL REMEDIAL DESIGN AND REMEDIAL ACTION WORK PLAN (SOIL RD AND RAWP) FOR ADDITIONAL DETAIL.
4. APPROXIMATE EXCAVATION DIMENSIONS FOR THE INDIVIDUAL REMEDIATION AREAS HAVE BEEN ESTIMATED BASED ON RESULTS OF PREVIOUS SITE SOIL SAMPLING AND ANALYSIS. THIS INFORMATION IS PROVIDED TO THE CONTRACTOR AS A GUIDE IN PLANNING THE APPROACH TO EXCAVATION. THE ACTUAL DIMENSIONS OF EXCAVATION WILL BE SET BY FIELD OBSERVATIONS, CONFIRMATORY FIELD TESTING AND LABORATORY TESTING. EXPANSION OF THE SHOWN EXCAVATION LIMITS MUST BE APPROVED BY THE ENGINEER PRIOR TO INITIATING ADDITIONAL EXCAVATION ACTIVITIES (SEE SHEETS C-10 TO C-26 AND SOIL RD AND RAWP FOR ADDITIONAL DETAIL). IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO CONTROL DEPTH AND EXTENT OF EXCAVATION IN CONFORMANCE WITH CONSTRUCTION DOCUMENTS. ANY EXCAVATION PERFORMED BEYOND THE EXTENTS SHOWN HEREIN AND/OR AGREED IN WRITING BY THE ENGINEER FOR EACH REMEDIATION AREA WILL NOT BE COMPENSATED.
5. BASED ON THE RESULTS OF PREVIOUS SOIL SAMPLING, ALL EXCAVATED SOILS ARE PLANNED TO BE PLACED IN THE CONSOLIDATION AREA.
6. IN GENERAL, ALL EXCAVATION IS TO BE LESS THAN 10 FT BELOW EXISTING GRADE, EXCEPT IN SPECIFIC AREAS IDENTIFIED. ALL EXCAVATIONS SHOULD BE PERFORMED IN ACCORDANCE WITH U.S. OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) 29 CODE OF FEDERAL REGULATIONS (CFR) 1926, AND ALL APPLICABLE REQUIREMENTS OF CALIFORNIA CONSTRUCTION AND GENERAL INDUSTRY SAFETY ACT ORDERS, THE OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970. APPROPRIATE SLOPING OF BACKCUT EXCAVATION OR SHORING WILL BE REQUIRED. WHERE SLOPES ARE USED IN LIEU OF SHORING/SHEETING METHODS, EXCAVATED SOIL FROM OUTSIDE OF THE LIMITS OF THE REMEDIATION AREA SHALL BE STOCKPILED SEPARATELY ADJACENT TO THE SOURCE REMEDIATION AREA FOR REUSE AS COMPACTED BACKFILL. PRIOR TO REUSE AS BACKFILL, STOCKPILED BORROW MATERIAL SHALL BE SCREENED FOR COCs AND AS SUMMARIZED IN THE SOIL RD AND RAWP. EXCAVATED AFFECTED SOIL SHALL BE PLACED DIRECTLY IN THE CONSOLIDATION AREA OR STOCKPILED TEMPORARILY IN APPROVED LOCATIONS.
7. CONTRACTOR TO CONFIRM INTERIM REMEDIATION ON-SITE VEHICLE ROUTES SHOWN. IT IS INTENDED THAT REPETITIVE ON-SITE TRUCK HAUL ROUTES BE OPTIMIZED TO MAXIMIZE SAFETY BY AVOIDING ROUTES CLOSE TO SLOPES OR ACTIVE CONSTRUCTION ZONES AND MINIMIZE BACKING MOVEMENTS. CONTRACTOR TO OBTAIN WRITTEN PERMISSION TO MODIFY VEHICLE HAUL ROUTES AND ACCESS ROADWAYS. FOR HILLSIDE EXCAVATION AND BACKFILLING OPERATIONS, CONTRACTOR TO SUBMIT A PROPOSED EQUIPMENT STAGING PLAN ILLUSTRATING EXCAVATION EQUIPMENT LOCATIONS AND TRUCK HAUL ROUTES.
8. AIR MONITORING, CONFIRMATORY FIELD TESTING, AND LABORATORY TESTING SHALL BE CONDUCTED IN CONFORMANCE WITH THE SOIL RD AND RAWP.
9. CONTRACTOR TO PROVIDE EROSION AND DUST CONTROL MEASURES PER VCAPCD AT SOIL STOCKPILES, RUN-ON CONTROL AT EXCAVATION AREAS, INTERIM DRAINAGE FEATURES TO CONVEY RUNOFF AROUND WORK ZONES AND SITE CONSTRUCTION VEHICLE ENTRANCE FEATURES TO PREVENT EROSION AND/OR SEDIMENTATION IN CONFORMANCE WITH THE PROJECT SWPPP.
10. FORMER TANK SECONDARY CONTAINMENT BERMS GENERALLY PRECLUDE STORMWATER RUNOFF COLLECTED IN EACH FORMER TANK AREA FROM BEING DISCHARGED TO DOWNGRADIENT SITE AND/OR OFF-SITE AREAS.

LEGEND:

- EFFECTIVE 500 YEAR FLOOD PLAIN
- EFFECTIVE 100 YEAR FLOOD PLAIN
- PROPOSED 100 YEAR FLOOD PLAIN (FP)
- APPROXIMATE SAN CAYETANO FAULT ALIGNMENT
- 50' FAULT SETBACK
- PROPERTY LINE
- PROPOSED PROPERTY LINE (SEE CIVIL PLANS)
- MAIN ACCESS ROUTE
- EXCAVATION ACCESS
- (E) FORMER MAIN WASTE PIT EXTENTS
- (E) AQUIFER EXTRACTION/MONITORING WELLS
- APPROXIMATE REMEDIAL EXCAVATION LOCATIONS
- (E) SURFACE DRAINAGE FLOW DIRECTION (SEE NOTE 10)

REVISIONS				REVISIONS			
NO.	BY.	DATE	DESCRIPTION	NO.	BY.	DATE	DESCRIPTION
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PACIFIC COAST PIPELINE (PCPL) SUPERFUND SITE
CITY OF FILLMORE, CALIFORNIA

REMEDIAL EXCAVATION LOCATIONS, OVERALL SHEET KEYMAP, AND ACCESS ROUTE MAP

JOB NO.
DATE 4/26/13
SCALE 1"= 120'
SHEET 4 OF 43 SHEETS
SHEET NO. C-00

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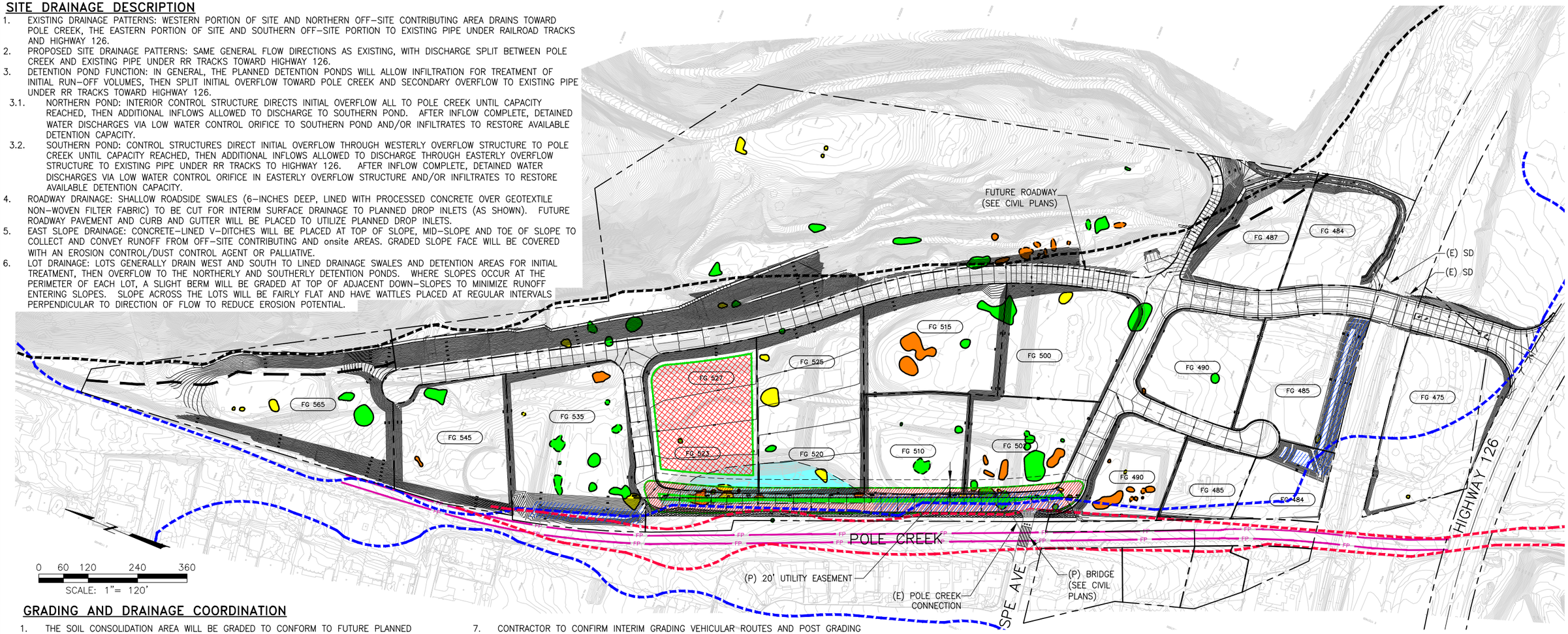
dahlia_mendoza

SITE DRAINAGE DESCRIPTION

1. EXISTING DRAINAGE PATTERNS: WESTERN PORTION OF SITE AND NORTHERN OFF-SITE CONTRIBUTING AREA DRAINS TOWARD POLE CREEK, THE EASTERN PORTION OF SITE AND SOUTHERN OFF-SITE PORTION TO EXISTING PIPE UNDER RAILROAD TRACKS AND HIGHWAY 126.
2. PROPOSED SITE DRAINAGE PATTERNS: SAME GENERAL FLOW DIRECTIONS AS EXISTING, WITH DISCHARGE SPLIT BETWEEN POLE CREEK AND EXISTING PIPE UNDER RR TRACKS TOWARD HIGHWAY 126.
3. DETENTION POND FUNCTION: IN GENERAL, THE PLANNED DETENTION PONDS WILL ALLOW INFILTRATION FOR TREATMENT OF INITIAL RUN-OFF VOLUMES, THEN SPLIT INITIAL OVERFLOW TOWARD POLE CREEK AND SECONDARY OVERFLOW TO EXISTING PIPE UNDER RR TRACKS TOWARD HIGHWAY 126.
   - 3.1. NORTHERN POND: INTERIOR CONTROL STRUCTURE DIRECTS INITIAL OVERFLOW ALL TO POLE CREEK UNTIL CAPACITY REACHED, THEN ADDITIONAL INFLOWS ALLOWED TO DISCHARGE TO SOUTHERN POND. AFTER INFLOW COMPLETE, DETAINED WATER DISCHARGES VIA LOW WATER CONTROL ORIFICE TO SOUTHERN POND AND/OR INFILTRATES TO RESTORE AVAILABLE DETENTION CAPACITY.
   - 3.2. SOUTHERN POND: CONTROL STRUCTURES DIRECT INITIAL OVERFLOW THROUGH WESTERLY OVERFLOW STRUCTURE TO POLE CREEK UNTIL CAPACITY REACHED, THEN ADDITIONAL INFLOWS ALLOWED TO DISCHARGE THROUGH EASTERLY OVERFLOW STRUCTURE TO EXISTING PIPE UNDER RR TRACKS TO HIGHWAY 126. AFTER INFLOW COMPLETE, DETAINED WATER DISCHARGES VIA LOW WATER CONTROL ORIFICE IN EASTERLY OVERFLOW STRUCTURE AND/OR INFILTRATES TO RESTORE AVAILABLE DETENTION CAPACITY.
4. ROADWAY DRAINAGE: SHALLOW ROADSIDE SWALES (6-INCHES DEEP, LINED WITH PROCESSED CONCRETE OVER GEOTEXTILE NON-WOVEN FILTER FABRIC) TO BE CUT FOR INTERIM SURFACE DRAINAGE TO PLANNED DROP INLETS (AS SHOWN). FUTURE ROADWAY PAVEMENT AND CURB AND GUTTER WILL BE PLACED TO UTILIZE PLANNED DROP INLETS.
5. EAST SLOPE DRAINAGE: CONCRETE-LINED V-DITCHES WILL BE PLACED AT TOP OF SLOPE, MID-SLOPE AND TOE OF SLOPE TO COLLECT AND CONVEY RUNOFF FROM OFF-SITE CONTRIBUTING AND onsite AREAS. GRADED SLOPE FACE WILL BE COVERED WITH AN EROSION CONTROL/DUST CONTROL AGENT OR PALLIATIVE.
6. LOT DRAINAGE: LOTS GENERALLY DRAIN WEST AND SOUTH TO LINED DRAINAGE SWALES AND DETENTION AREAS FOR INITIAL TREATMENT, THEN OVERFLOW TO THE NORTHERLY AND SOUTHERLY DETENTION PONDS. WHERE SLOPES OCCUR AT THE PERIMETER OF EACH LOT, A SLIGHT BERM WILL BE GRADED AT TOP OF ADJACENT DOWN-SLOPES TO MINIMIZE RUNOFF ENTERING SLOPES. SLOPE ACROSS THE LOTS WILL BE FAIRLY FLAT AND HAVE WATTLES PLACED AT REGULAR INTERVALS PERPENDICULAR TO DIRECTION OF FLOW TO REDUCE EROSION POTENTIAL.



GRADING AND DRAINAGE COORDINATION

1. THE SOIL CONSOLIDATION AREA WILL BE GRADED TO CONFORM TO FUTURE PLANNED GRADES. THIS INCLUDES A 5 FT THICK COVER CONTAINING GCL CAP MATERIAL (SEE SHEET C-33 FOR DETAIL). AREAS ADJACENT TO THE CONSOLIDATION AREA WILL BE GRADED TO TRANSITION FROM THE CONSOLIDATION AREA COVER ELEVATIONS TO SURROUNDING PLANNED GRADE.
2. THE SOIL CONSOLIDATION AREA COVER WILL BE CONSTRUCTED WITH ONSITE BORROW SOILS. IDENTIFIED SOIL BORROW AREAS HAVE BEEN SELECTED BASED ON LOCATION AND PERCEIVED SOIL CHARACTERISTICS. CONTRACTOR TO CONFIRM SITE BORROW SOILS MEET MATERIAL SPECIFICATION REQUIREMENTS AND STRUCTURAL CHARACTERISTICS.
3. FORMER TANK SECONDARY CONTAINMENT BERMS GENERALLY PRECLUDE STORMWATER RUNOFF COLLECTED IN EACH FORMER TANK AREA FROM BEING DISCHARGED TO DOWNGRADIENT SITE AND/OR OFF-SITE AREAS.
4. A STORM DRAIN SYSTEM WILL BE INSTALLED ADJACENT TO THE CONSOLIDATION AREA TO COLLECT AND CONVEY RUNOFF FROM AREAS NORTH AND EAST OF THE CONSOLIDATION AREA. DRAIN INLETS WILL BE PLACED AT LOW AREAS TO ENSURE POSITIVE DRAINAGE FROM SITE AREAS IS CONVEYED TO EXISTING AND PROPOSED OFFSITE DISCHARGE LOCATION(S). SIMILARLY, IMPROVEMENTS TO EXISTING STORM DRAIN PIPING WILL BE MADE AT THE SOUTHEAST CORNER OF THE SITE TO PROVIDE POSITIVE DRAINAGE.
5. TREATMENT/DETENTION FEATURES WILL BE CONSTRUCTED TO PROVIDE COLLECTION AND TREATMENT OF RUNOFF PRIOR TO DISCHARGE TO OFF-SITE AREAS. PERMANENT BMPS WILL BE EMPLOYED WHERE NEEDED TO PREVENT EROSION AND SEDIMENTATION IN CONFORMANCE WITH THE SWPPP.
6. REMEDIAL EXCAVATION AREAS GENERALLY WILL BE BACKFILLED TO EXISTING GRADE WITH WITH ONSITE BORROW MATERIAL THAT MEETS SITE CLEANUP CRITERIA. IN SOME AREAS, FINISHED GRADE WILL BE ABOVE EXISTING GRADE TO FACILITATE SITE ACCESS AND/OR CONSTRUCTION OF THE CONSOLIDATION AREA. EXTENT AND GRADE OF THE CONSOLIDATION AREA WILL DEPEND ON THE VOLUME OF SOIL EXCAVATED AND MAY CHANGE TO CONFORM TO ACTUAL REMEDIAL SOIL EXCAVATION VOLUME(S).
7. CONTRACTOR TO CONFIRM INTERIM GRADING VEHICULAR ROUTES AND POST GRADING VEHICULAR ACCESS ROADWAYS SHOWN (SHEET C-00). IT IS INTENDED THAT REPETITIVE TRUCK HAUL ROUTES BE OPTIMIZED TO MAXIMIZE SAFETY BY AVOIDING ROUTES CLOSE TO SLOPES OR ACTIVE CONSTRUCTION ZONES AND MINIMIZE BACKING MOVEMENTS. CONTRACTOR TO OBTAIN WRITTEN PERMISSION TO MODIFY VEHICLE HAUL ROUTES AND ACCESS ROADWAYS. FOR HILLSIDE GRADING, CONTRACTOR TO SUBMIT A PROPOSED EQUIPMENT STAGING PLAN ILLUSTRATING EXCAVATION EQUIPMENT LOCATIONS AND TRUCK HAUL ROUTES.
8. FOR EACH DRAINAGE SUBBASIN, CONTRACTOR TO COMPLETE DRAINAGE IMPROVEMENTS TO ENSURE DISCHARGE TO OTHER SITE AREAS AND/OR OFF-SITE AREAS IS CONTROLLED PER THE SWPPP. PRIOR TO REMOVAL AND PROPER OFF-SITE DISPOSAL OF INTERIM EROSION CONTROL BMPS, CONTRACTOR TO COMPLETE INSTALLATION OF IDENTIFIED POST-CONSTRUCTION BMPS.
9. PLACEMENT OF POST-CONSTRUCTION BMPS TO BE COORDINATED WITH THE ENGINEER IN THE FIELD TO ENSURE OPTIMUM FUNCTIONALITY. CONTRACTOR TO ADJUST LOCATION AND CONFIGURATION OF POST-CONSTRUCTION BMPS AS-NEEDED. CONTRACTOR TO PROTECT CONSOLIDATION AREA COVER FROM EROSION AND CONTROL/PREVENT VEHICLES FROM ACCESSING UNTIL EROSION CONTROL SURFACE PROTECTION MEASURES ARE INSTALLED TO PROTECT CAP (SOIL SEMENT® OR EQUAL, WATLES, SILT FENCE, ETC.).
10. CONTRACTOR TO STABILIZE HILLSIDE REMEDIAL EXCAVATION AREAS. REMEDIAL EXCAVATION AREAS WITHIN TANK SECONDARY CONTAINMENT AREAS AND SECONDARY CONTAINMENT BERMS WILL GENERALLY NOT REQUIRE STABILIZATION. PERMANENT POST-CONSTRUCTION BMPS IDENTIFIED IN THE SWPPP MAY ALSO REQUIRE STABILIZATION.
11. AIR MONITORING, CONFIRMATORY FIELD TESTING, AND LABORATORY TESTING SHALL BE CONDUCTED IN CONFORMANCE WITH THE SOIL RD/RAWP.
12. CONTRACTOR TO PROVIDE EROSION AND DUST SUPPRESSION MEASURES INCLUDING INTERIM DRAINAGE FEATURES TO CONVEY RUNOFF AROUND WORK ZONES AND SITE CONSTRUCTION VEHICLE ENTRANCE FEATURES TO PREVENT EROSION AND/OR SEDIMENTATION IN CONFORMANCE WITH THE PROJECT SWPPP.

LEGEND:

- EFFECTIVE 500 YEAR FLOOD PLAIN
- EFFECTIVE 100 YEAR FLOOD PLAIN
- FP — PROPOSED 100 YEAR FLOOD PLAIN
- PROPERTY LINE
- PROPOSED PROPERTY LINE (SEE CIVIL PLANS)
- (E) FORMER MAIN WASTE PIT EXTENTS
- (E) CONTOURS
- FUTURE (P) CONTOURS (SEE CIVIL PLANS)
- PRIMARY SOIL BORROW AREAS
- CONSOLIDATION AREA (SEE SHEET C-30)
- POTENTIAL SUPPLEMENTAL CONSOLIDATION AREA
- FG 525 — PLANNED ROUGH FINISH GRADE
- APPROXIMATE REMEDIAL EXCAVATION LOCATIONS

REVISIONS			
NO.	BY.	DATE	DESCRIPTION
1	KA	4/26/13	ISSUED FOR CONSTRUCTION

REVISIONS			
NO.	BY.	DATE	DESCRIPTION

URS
Post Montgomery Center
One Montgomery Street, Suite 900
San Francisco, Ca 94104
Tel: 415-896-5858
Fax: 415-882-9261

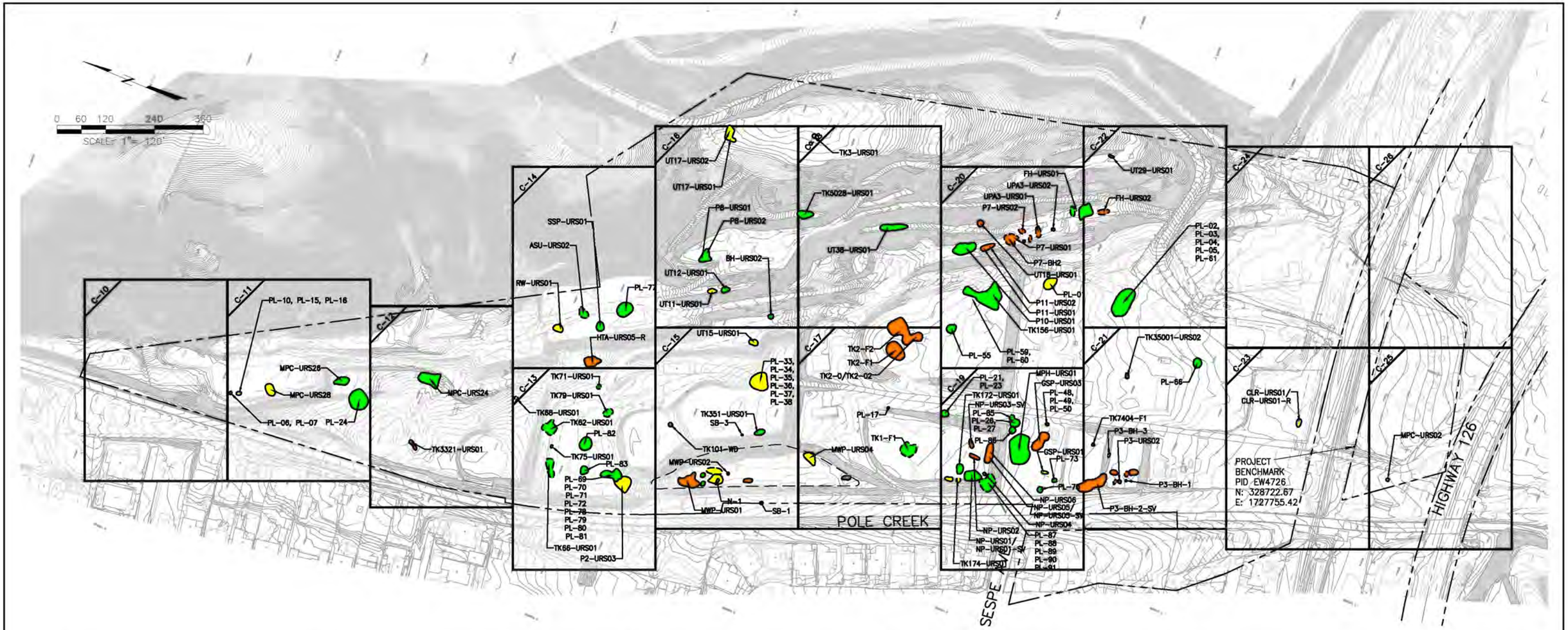
DRAWN BY: D. MENDOZA
DESIGNED BY: K. ARROW
CHECKED BY: T. SWEET
APPROVED BY:

PACIFIC COAST PIPELINE (PCPL) SUPERFUND SITE
CITY OF FILLMORE, CALIFORNIA

GRADING AND DRAINAGE COORDINATION PLAN

JOB NO.
DATE 4/26/13
SCALE 1'= 120'
SHEET 5 OF 43 SHEETS
SHEET NO. C-01

Apr 30, 2013 - 1:09pm T:\chevron fillmore\Sheet\C-01.dwg
dahlia_mendoza



REMEDIATION AREA COORDINATE CONTROL POINTS			
Point #	BORING ID	Northing	Easting
1	MPC-URS28	331243.3164	1726869.2459
2	MPC-URS26	331089.2876	1726955.5439
3	PL-06, PL-07	331332.2549	1726823.9716
4	PL-10, PL-15, PL-16	331311.8088	1726831.0106
5	PL-24	331031.9125	1726929.3240
6	TK3321-URS01	330875.0261	1726882.0103
7	MPC-URS24	330891.2306	1727042.6005
8	TK68-URS01	330676.4000	1727060.1000
9	TK66-URS01	330540.7657	1726961.0614
10	TK75-URS01	330550.3871	1727003.8192
11	TK62-URS01	330568.6319	1727041.4048
12	TK71-URS01	330499.2108	1727183.4000
13	TK79-URS01	330454.7394	1727130.9351
14	P2-URS03	330353.8439	1726960.6198
15	RW-URS01	330640.2147	1727277.9966
16	ASU-URS02	330602.4916	1727334.8435
17	SSP-URS01	330552.0280	1727321.2223
18	HTA-URS05-R	330534.5083	1727229.9801
19	TK101-WD	330299.4440	1727164.6100
20	MWP-URS01	330209.9201	1727053.0364

REMEDIATION AREA COORDINATE CONTROL POINTS			
Point #	BORING ID	Northing	Easting
21	N-1	330144.0313	1727083.0424
22	MWP-URS02	330123.3358	1727107.4296
23	SB-3	330127.8336	1727208.2715
24	TK351-URS01	330094.7424	1727227.2167
25	SB-1	330020.4526	1727071.7307
26	UT15-URS01	330186.4000	1727429.9104
27	PL-33, PL-34, PL-35, PL-36, PL-37, PL-38	330136.2781	1727345.7125
28	UT11-URS01	330330.1155	1727507.5494
29	UT12-URS01	330300.6864	1727524.4756
30	P8-URS01	330383.9011	1727572.1163
31	P8-URS02	330377.7485	1727588.1480
32	BH-URS02	330172.5453	1727504.3672
33	UT17-URS01	330431.5064	1727871.3237
34	UT17-URS02	330440.3486	1727888.3939
35	MWP-URS04	329952.8606	1727218.9944
36	TK1-F1	329735.1215	1727329.5499
37	TK2-F1	329857.4134	1727543.2133
38	TK2-F2	329866.6472	1727590.6064
39	TK2-0/TK2-02	329823.0215	1727593.6995
40	PL-17	329820.0307	1727405.9311

REMEDIATION AREA COORDINATE CONTROL POINTS			
Point #	BORING ID	Northing	Easting
41	TK3-URS01	330242.5554	1727955.1507
42	UT38-URS01	329989.8653	1727817.7381
43	TK5028-URS01	330191.0070	1727766.8663
44	TK174-URS01	329595.3000	1727309.5302
45	TK172-URS01	329604.2926	1727341.5828
46	NP-URS01/NP-URS01-SV	329566.8366	1727333.0621
47	NP-URS02	329579.1245	1727375.9980
48	NP-URS03-SV	329596.5436	1727401.2992
49	NP-URS04	329540.6825	1727348.8000
50	NP-URS05/NP-URS05-SV	329543.1704	1727388.3815
51	NP-URS06	329546.1333	1727401.8861
52	MPH-URS01	329483.1230	1727432.9563
53	GSP-URS01	329407.0942	1727405.9420
54	GSP-URS03	329443.4604	1727471.7775
55	PL-21, PL-23	329686.0625	1727448.9418
56	PL-26, PL-27	329518.6107	1727491.3513
57	PL-48, PL-49, PL-50	329442.8875	1727516.2648
58	TK156-URS01	329686.8217	1727760.7836
59	P10-URS01	329792.5369	1727843.0727
60	P11-URS01	329752.2174	1727858.2817

REMEDIATION AREA COORDINATE CONTROL POINTS			
Point #	BORING ID	Northing	Easting
61	P11-URS02	329740.9483	1727869.3256
62	UT18-URS01	329782.2000	1727912.5524
63	P7-BH2	329704.1062	1727903.7702
64	P7-URS01	329692.1153	1727911.4473
65	P7-URS02	329680.0663	1727934.0752
66	UPA3-URS01	329643.2448	1727947.2000
67	UPA3-URS02	329612.0000	1727967.1000
68	FH-URS01	329574.4319	1728029.7023
69	PL-01	329568.6290	1727841.8327
70	PL-55	329750.4650	1727646.0010
71	PL-59, PL-60	329730.6907	1727733.2142
72	P3-BH-2-SV	329272.3876	1727429.5926
73	TK7404-F1	329319.6800	1727515.5000
74	P3-BH-3	329273.6500	1727505.8600
75	P3-URS02	329224.6313	1727455.9952
76	P3-BH-1	329210.6166	1727464.4031
77	TK35001-URS02	329305.6624	1727702.0870
78	PL-66	329157.8778	1727798.8290
79	FH-URS02	329513.2937	1728054.3112
80	UT29-URS01	329543.1320	1728186.3358

REMEDIATION AREA COORDINATE CONTROL POINTS			
Point #	BORING ID	Northing	Easting
81	PL-02, PL-03, PL-04, PL-05, PL-61	329383.8329	1727865.5025
82	CLR-URS01/CLR-URS01-R	326871.8929	1727760.1402
83	MPC-URS02	328616.0000	1727711.8000
84	PL-69, PL-70, PL-71, PL-72, PL-78, PL-79, PL-80, PL-81	330364.3000	1726995.6500
85	PL-73	329373.2800	1727396.2400
86	PL-75	329398.8600	1727362.2200
87	PL-77	330510.0000	1727383.5900
88	PL-82	330478.0900	1727040.0900
89	PL-83	330452.6200	1726977.9300
90	PL-85	329528.2300	1727499.6300
91	PL-86	329516.8300	1727471.1400
92	PL-87, PL-68, PL-89, PL-90, PL-91	329522.4656	1727329.6740

NOTES:

1. REMEDIATION AREA LOCATIONS SHOWN FOR SPATIAL CONTROL ONLY. FOR AREA OF REMEDIAL EXCAVATION, DEPTH OF REMOVAL AND CONSTITUENT OF CONCERN FOR EACH INDIVIDUAL REMEDIATION LOCATION, SEE SHEETS C-10 TO C-26.

REVISIONS			
NO.	BY.	DATE	DESCRIPTION
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NO.	BY.	DATE	DESCRIPTION

URS
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DRAWN BY: D. MENDOZA
DESIGNED BY: K. ARROW
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APPROVED BY:

PACIFIC COAST PIPELINE (PCPL) SUPERFUND SITE
CITY OF FILLMORE, CALIFORNIA

REMEDIATION AREA COODINATE CONTROL PLAN

JOB NO.
DATE 4/26/13
SCALE 1'= 120'
SHEET 6 OF 43 SHEETS
SHEET NO. C-02

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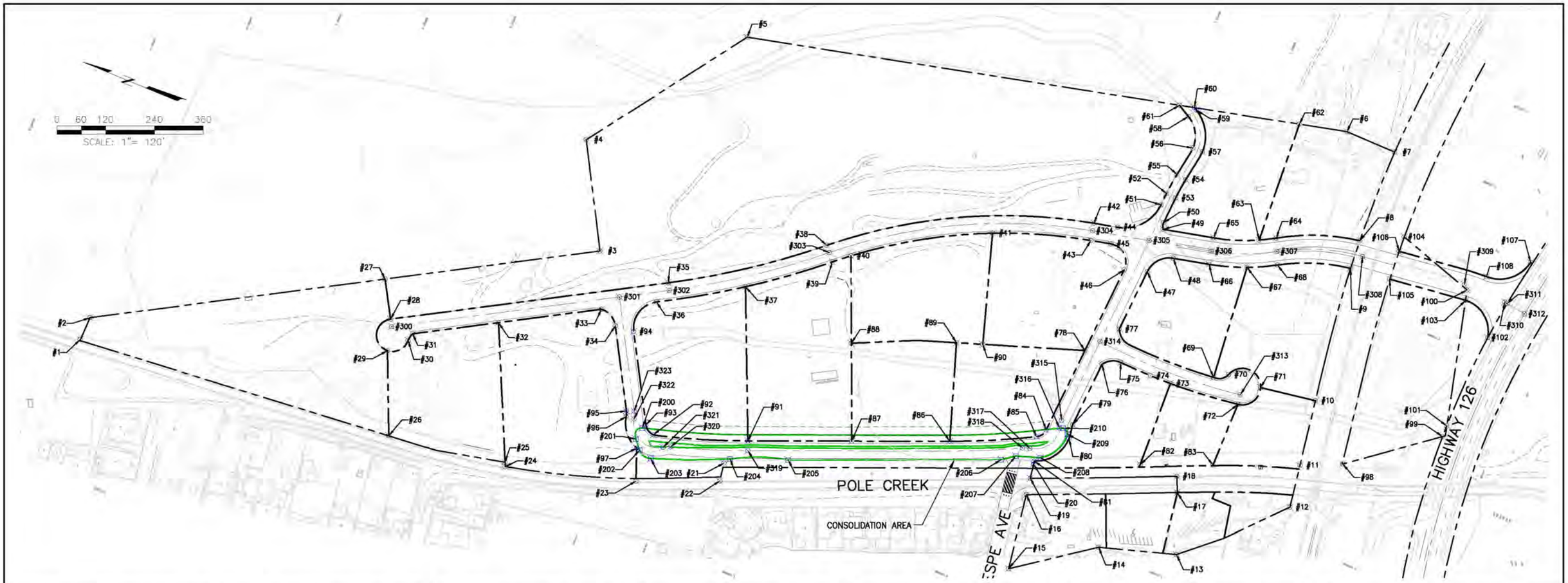

PARCEL LINE COORDINATE CONTROL PLAN		
Point #	Northing	Easting
1	331690.4136	1726722.8774
2	331688.7447	1726781.7794
3	330589.8512	1727411.6878
4	330725.3438	1727651.8081
5	330454.5417	1728035.9515
6	329000.9304	1728383.4051
7	328872.8777	1728381.3034
8	328869.2745	1728147.3800
9	328864.4299	1728075.7491
10	328820.6017	1727741.7570
11	328795.2287	1727580.2736
12	328778.8333	1727475.8533
13	328993.1212	1727262.3410
14	329177.3317	1727205.9109
15	329362.2227	1727072.7362
16	329390.9305	1727257.2362
17	329049.1848	1727403.3279
18	329065.1985	1727439.9624
19	329397.2701	1727297.9721
20	329402.7128	1727332.9512
21	330108.8410	1727045.4722
22	330101.8420	1727000.9980
23	330292.5254	1726921.9784

PARCEL LINE COORDINATE CONTROL PLAN		
Point #	Northing	Easting
24	330803.9694	1728831.8168
25	330808.3743	1728842.1054
26	330897.6527	1726793.3389
27	331052.9945	1727146.2045
28	331002.8659	1727060.3364
29	330980.5623	1726985.7058
30	330943.0586	1727028.2280
31	330938.6914	1727047.5575
32	330754.1401	1727153.3396
33	330531.6833	1727280.8486
34	330484.8347	1727255.8335
35	330404.5873	1727403.2610
36	330413.5134	1727348.5819
37	330225.0429	1727466.6659
38	330078.7782	1727636.9991
39	330050.2905	1727604.7896
40	330013.8528	1727635.9909
41	329712.7841	1727820.0546
42	329491.1906	1727937.7014
43	329461.7288	1727895.7554
44	329433.3802	1727950.7419
45	329433.4129	1727906.6541
46	329378.6003	1727859.9218

PARCEL LINE COORDINATE CONTROL PLAN		
Point #	Northing	Easting
47	329324.3658	1727877.8064
48	329277.6876	1727932.5554
49	329327.6821	1727988.9363
50	329332.9469	1728003.7626
51	329355.5833	1728041.9903
52	329353.6018	1728073.3775
53	329328.8515	1728071.8024
54	329322.7351	1728122.7290
55	329347.3821	1728126.9157
56	329335.8150	1728201.5450
57	329310.8150	1728201.5450
58	329375.8099	1728269.3654
59	329383.7114	1728291.2430
60	329370.6132	1728295.0597
61	329406.8821	1728286.4380
62	329115.9913	1728355.9023
63	329099.1735	1728054.3390
64	329062.1979	1728074.9434
65	329205.0119	1728016.6075
66	329190.4889	1727952.2252
67	329100.9712	1727980.9157
68	329034.1042	1728014.7833
69	329074.3792	1727899.2802

PARCEL LINE COORDINATE CONTROL PLAN		
Point #	Northing	Easting
70	329042.7556	1727720.0401
71	328957.6767	1727720.2366
72	328993.5199	1727680.9563
73	329168.9742	1727645.0566
74	329219.1517	1727644.1631
75	329299.3711	1727646.2759
76	329340.3615	1727624.4330
77	329334.2640	1727721.0179
78	329392.5001	1727639.7487
79	329350.7451	1727459.9549
80	329346.1247	1727424.8790
81	329403.9389	1727340.8310
82	329159.6720	1727431.8993
83	328993.7111	1727499.4663
84	329406.1843	1727422.9868
85	329421.7983	1727396.5219
86	329815.1383	1727306.8153
87	329838.4084	1727215.1646
88	329930.9802	1727437.4155
89	329692.2330	1727537.1963
90	329630.7026	1727558.2503
91	330075.0633	1727118.2335
92	330298.3051	1727043.7143

PARCEL LINE COORDINATE CONTROL PLAN		
Point #	Northing	Easting
93	330322.3326	1727058.7957
94	330437.5827	1727259.8852
95	330379.7221	1727072.4503
96	330375.0520	1727059.6107
97	330321.5322	1726997.7960
98	328698.9829	1727623.6038
99	328497.5501	1727779.5112
100	328579.0941	1728135.7017
101	328498.0949	1727807.3240
102	328487.3009	1728046.8028
103	328572.5496	1728111.0740
104	328771.6364	1728197.3333
105	328785.2576	1728087.9735
106	328769.9353	1728159.9331
107	328459.9763	1728258.1981
108	328547.3727	1728184.3380

ROADWAY CENTERLINE COORDINATE CONTROL PLAN		
Point #	Northing	Easting
300	330993.4175	1727043.8523
301	330502.6834	1727325.1454
302	330395.1389	1727386.7769
303	330066.1905	1727622.7670
304	329487.0097	1727919.1671
305	329348.8448	1727950.3334
306	329197.7504	1727984.4163
307	329047.9147	1728044.9917
308	328848.1703	1728114.1954
309	328589.9123	1728145.4719
310	328481.7103	1728143.8309
311	328475.0182	1728142.8137
312	328425.5861	1728135.2998
313	328997.0731	1727664.6938
314	329368.2607	1727674.4841
315	329379.8712	1727458.8722
316	329378.0576	1727439.9854
317	329425.9213	1727365.7529
318	329443.3833	1727359.8681
319	330065.9867	1727096.0243
320	330245.7314	1727032.2245
321	330262.3439	1727024.2509
322	330355.0741	1727081.6232
323	330361.7681	1727079.3692

CONSOLIDATION AREA COORDINATE CONTROL PLAN		
Point #	Northing	Easting
200	330328.0183	1727048.5568
201	330331.9080	1727017.2543
202	330313.1820	1726995.4766
203	330280.2161	1726987.1770
204	330098.9958	1727060.2419
205	329965.6851	1727112.8402
206	329480.8493	1727313.2191
207	329450.9163	1727335.1985
208	329393.4720	1727354.5482
209	329354.0091	1727433.4436
210	329369.9079	1727442.2212

REVISIONS

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URS
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DRAWN BY: D. MENDOZA
DESIGNED BY: K. ARROW
CHECKED BY: T. SWEET
APPROVED BY:

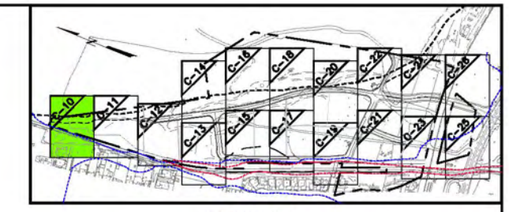
PACIFIC COAST PIPELINE (PCPL) SUPERFUND SITE
CITY OF FILLMORE, CALIFORNIA

PROJECT COORDINATE CONTROL PLAN

JOB NO.
DATE 4/26/13
SCALE 1"= 120'
SHEET 7 OF 43 SHEETS
SHEET NO. C-03

dolito_mendoza Apr 30, 2013 - 1:10pm T:\cheron fillmore\Sheet\C-03.dwg

MATCHLINE A – SEE SHEET C-11



KEYPLAN
N.T.S.

NOTES:

1. ALL BORING LOCATIONS ARE SHOWN FOR REFERENCE ONLY.
2. SEE SHEETS C-50 TO C-55 FOR DETAIL ON DETENTION POND/SD PIPING.
3. SEE SHEET G-02 FOR LEGEND.

LEGEND

- FORMER WASTE PIT
- FORMER ABOVEGROUND STORAGE TANK
- BERM SOIL SAMPLE (URS, 2008 TO 2009)
- SOIL BORING (URS, 2006 TO 2008)
- —570— (P) CONTOURS
- —570— (E) CONTOURS

N

0 10 20 40 60
SCALE: 1"= 20'

REVISIONS			
NO.	BY.	DATE	DESCRIPTION
1	KA	4/26/13	ISSUED FOR CONSTRUCTION

REVISIONS			
NO.	BY.	DATE	DESCRIPTION

URS
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DESIGNED BY: K. ARROW
CHECKED BY: T. SWEET
APPROVED BY:

PACIFIC COAST PIPELINE (PCPL) SUPERFUND SITE
CITY OF FILLMORE, CALIFORNIA

DETAILED GRADING PLAN 1

JOB NO.
DATE 4/26/13
SCALE 1'= 20'
SHEET 8 OF 43 SHEETS
SHEET NO. C-10

Apr 30, 2013 – 1:10pm T:\chevron fillmore\Sheet\C-10.dwg
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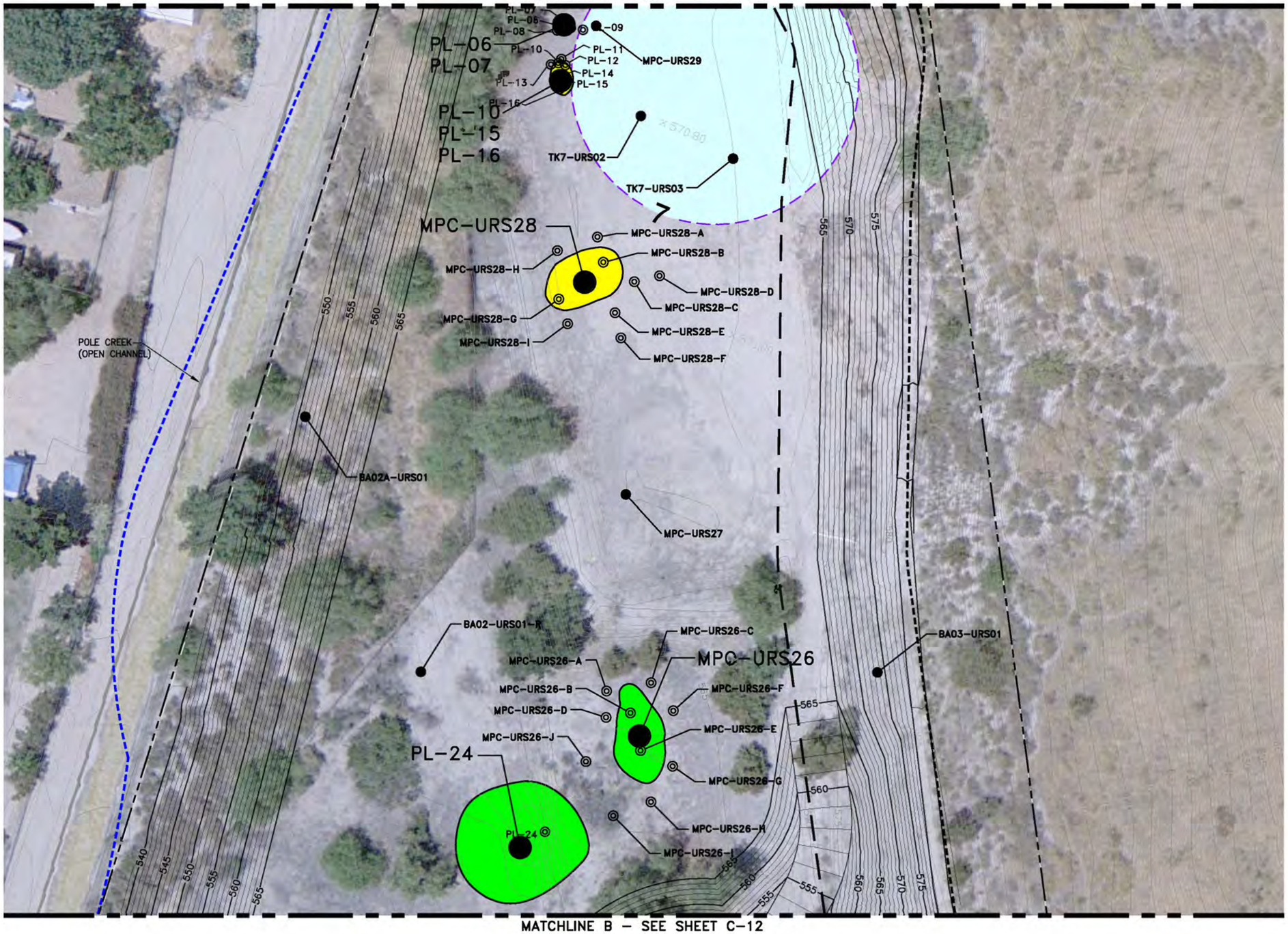
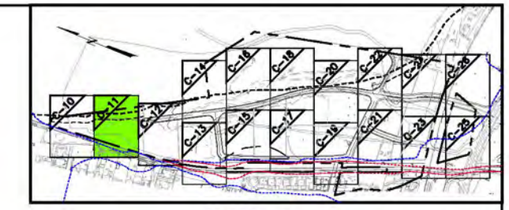
MATCHLINE A – SEE SHEET C-10



MATCHLINE B – SEE SHEET C-12



KEYPLAN
N.T.S.

NOTES:

1. ALL EXCAVATION AREAS ARE SHOWN SCHEMATICALLY AND ARE TO BE VERIFIED IN THE FIELD. ALL BORING LOCATIONS ARE SHOWN FOR REFERENCE ONLY.
2. REMEDIATION AREAS TABLE SHOWN FOR REFERENCE ONLY. ACTUAL DIMENSIONS AND DEPTHS OF EXCAVATION MUST BE DETERMINED IN THE FIELD USING METHODS OUTLINED IN THIS PLAN SET AND SOIL RD AND RAWP.
3. SEE SHEETS C-50 TO C-55 FOR DETAIL ON DETENTION POND/SD PIPING.
4. SEE SHEET G-02 FOR LEGEND.

LEGEND

- PRELIMINARY AREA REQUIRING REMEDIATION TO 3 FT BGS
- PRELIMINARY AREA REQUIRING REMEDIATION TO 7 FT BGS
- FORMER ABOVEGROUND STORAGE TANK
- CONCENTRATION CONTOUR OF PAHs
- DELINEATION SOIL BORING (URS, 2010)
- SOIL BORING (URS, 2006 TO 2008)
- REMEDIATION AREA SOIL BORING (URS, 2006 TO 2008)
- —570— (P) CONTOURS
- —570— (E) CONTOURS

REMEDIATION AREAS:

Boring ID	Approximate Area (sf)	Removal Depth (ft)	Contaminated Stockpile Volume (cy)	(E) Grade	(P) Grade	Bottom El. ±	Constituents
MPC-URS28	534	7	138	570.5	565.0	563.5	Benzo(a)anthracence, Benzo(a)pyrene, Benzo(b)fluoranthene, Chrysene
MPC-URS26	568	3	63	561.8	565.0	558.8	Benzo(a)anthracence, Benzo(a)pyrene, Benzo(b)fluoranthene, Chrysene, Naphthalene
PL-06 PL-07	40	7	10	570.9	565.0	563.9	1,2-Dibromo-3-chloroprop ane, Benzo(a)anthracence, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Chrysene
PL-10 PL-15 PL-16	92	7	24	570.9	565.0	563.9	1,2-Dibromo-3-chloroprop ane, Benzo(a)anthracence, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Chrysene, Dibenz(a,h)anthracene, Naphthalene
PL-24	1,843	3	205	549.2	565.0	546.2	Benzo(a)anthracence, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Chrysene, Naphthalene

0 10 20 40 60
SCALE: 1"= 20'

N

REVISIONS			
NO.	BY.	DATE	DESCRIPTION
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Tel: 415-896-5858
Fax: 415-882-9261

DRAWN BY: D. MENDOZA
DESIGNED BY: K. ARROW
CHECKED BY: T. SWEET
APPROVED BY:

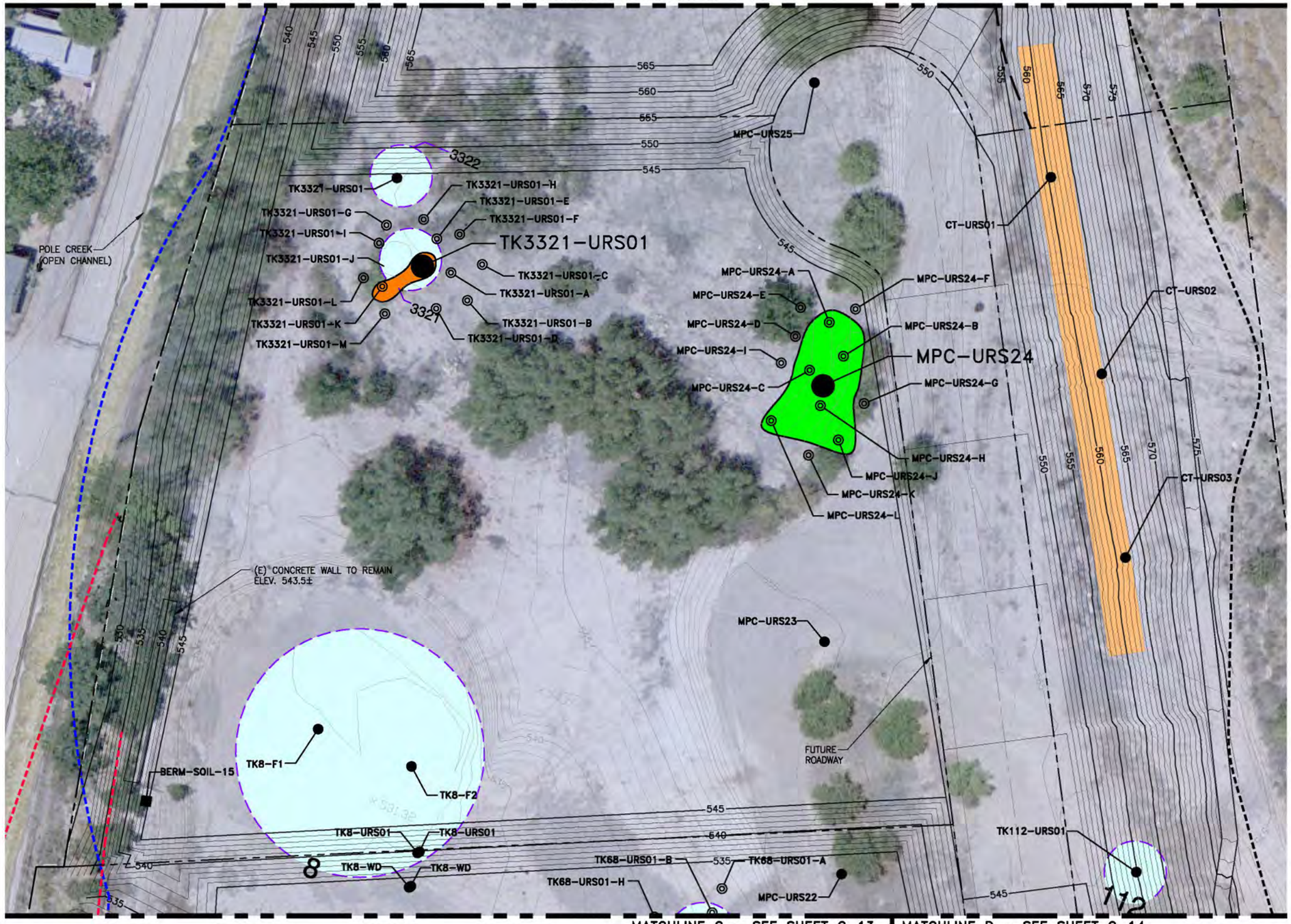
PACIFIC COAST PIPELINE (PCPL) SUPERFUND SITE
CITY OF FILLMORE, CALIFORNIA

DETAILED GRADING PLAN 2

JOB NO.
DATE 4/26/13
SCALE 1"= 20'
SHEET 9 OF 43 SHEETS
SHEET NO. C-11

dallis_mendoza Apr 30, 2013 - 1:10pm T:\cheveron fillmore\Sheet\C-11.dwg

MATCHLINE B – SEE SHEET C-11



MATCHLINE C – SEE SHEET C-13 | MATCHLINE D – SEE SHEET C-14

KEYPLAN
N.T.S.

NOTES:

1. ALL EXCAVATION AREAS ARE SHOWN SCHEMATICALLY AND ARE TO BE VERIFIED IN THE FIELD. ALL BORING LOCATIONS ARE SHOWN FOR REFERENCE ONLY.
2. REMEDIATION AREAS TABLE SHOWN FOR REFERENCE ONLY. ACTUAL DIMENSIONS AND DEPTHS OF EXCAVATION MUST BE DETERMINED IN THE FIELD USING METHODS OUTLINED IN THIS PLAN SET AND SOIL RD/RAWP.
2. SEE SHEETS C-50 TO C-55 FOR DETAIL ON DETENTION POND AND SD PIPING.
3. SEE SHEET G-02 FOR LEGEND.

LEGEND

- PRELIMINARY AREA REQUIRING REMEDIATION TO 3 FT BGS
- PRELIMINARY AREA REQUIRING REMEDIATION TO 12 FT BGS
- FORMER ABOVEGROUND STORAGE TANK
- FORMER PROCESS AREA
- CONCENTRATION CONTOUR OF LEAD
- BERM SOIL SAMPLE (URS, 2008 TO 2009)
- DELINEATION SOIL BORING (URS, 2010)
- SOIL BORING (URS, 2006 TO 2008)
- REMEDIATION AREA SOIL BORING (URS, 2006 TO 2008)
- —570— (P) CONTOURS
- —570— (E) CONTOURS

REMEDIATION AREAS:

Boring ID	Approximate Area (sf)	Removal Depth (ft)	Contaminated Stockpile Volume (cy)	(E) Grade	(P) Grade	Bottom El. ±	Constituents
TK3321-URS01	189	12	84	543.7	545.0	531.7	Lead
MPC-URS24	1,382	3	154	552.2	545.0	549.2	Lead (though not unacceptable health threat AOC-wide, this is a hot spot with 2400mg/kg)

0 10 20 40 60
SCALE: 1" = 20'

REVISIONS			
NO.	BY.	DATE	DESCRIPTION
0	KA	4/26/13	ISSUED FOR CONSTRUCTION

REVISIONS			
NO.	BY.	DATE	DESCRIPTION

URS
Post Montgomery Center
One Montgomery Street, Suite 900
San Francisco, Ca 94104
Tel: 415-896-5858
Fax: 415-882-9261

DRAWN BY: D. MENDOZA
DESIGNED BY: K. ARROW
CHECKED BY: T. SWEET
APPROVED BY:

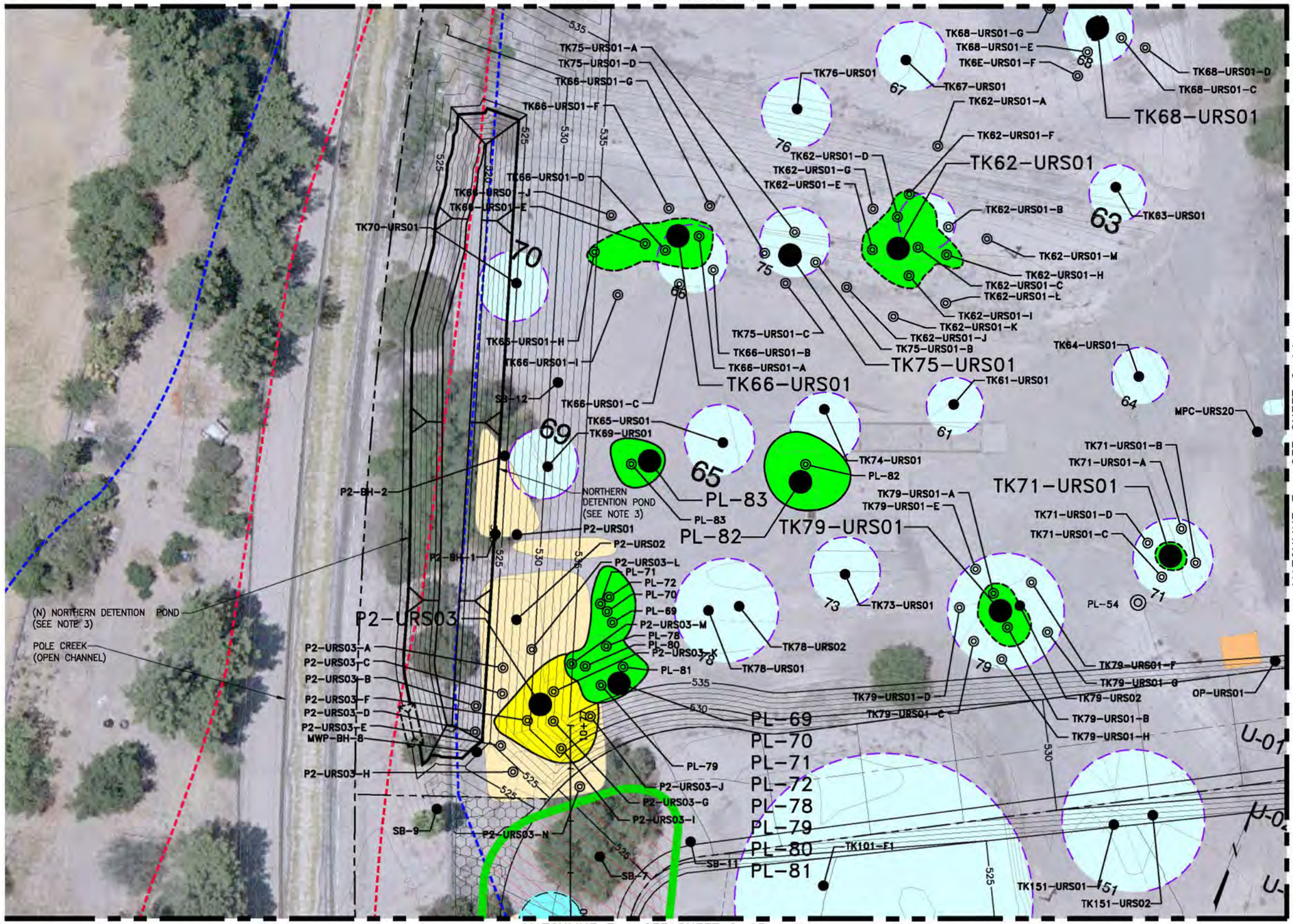
PACIFIC COAST PIPELINE (PCPL) SUPERFUND SITE
CITY OF FILLMORE, CALIFORNIA

DETAILED GRADING PLAN 3

JOB NO.
DATE 4/26/13
SCALE 1"= 20'
SHEET 10 OF 43 SHEETS
SHEET NO. C-12

Apr 30, 2013 – 1:11pm T:\chevron fillmore\Sheet\C-12.dwg
dotlio_mendoza

MATCHLINE C – SEE SHEET C-12



KEYPLAN
N.T.S.

NOTES:

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2. REMEDIATION AREAS TABLE SHOWN FOR REFERENCE ONLY. ACTUAL DIMENSIONS AND DEPTHS OF EXCAVATION MUST BE DETERMINED IN THE FIELD USING METHODS OUTLINED IN THIS PLAN SET AND SOIL RD/RAWP.
3. SEE SHEETS C-50 TO C-55 FOR DETAIL ON DETENTION POND AND SD PIPING.
4. SEE SHEET G-02 FOR LEGEND.

LEGEND

- PRELIMINARY AREA REQUIRING REMEDIATION TO 3 FT BGS
- PRELIMINARY AREA REQUIRING REMEDIATION TO 7 FT BGS
- FORMER ABOVEGROUND STORAGE TANK
- FORMER WASTE PIT
- FORMER PROCESS AREA
- CONCENTRATION CONTOUR OF PAHs
- CONCENTRATION CONTOUR OF LEAD
- DELINEATION SOIL BORING (URS, 2010/2012)
- SOIL BORING (URS, 2006 TO 2008)
- REMEDIATION AREA SOIL BORING (URS, 2006 TO 2008)
- CONSOLIDATION AREA
- —570— (P) CONTOURS
- —570— (E) CONTOURS

REMEDIATION AREAS:

Boring ID	Approximate Area (sf)	Removal Depth (ft)	Contaminated Stockpile Volume (cy)	(E) Grade	(P) Grade	Bottom El. ±	Constituents
TK68-URS01	30	7	8	541.7	535.0	534.7	Lead
TK66-URS01	713	3	79	531.8	535.0	528.8	Lead
TK75-URS01	41	3	5	532.0	535.0	529.0	Lead
TK62-URS01	877	3	97	535.8	535.0	532.8	Lead
TK71-URS01	104	3	12	534.8	535.0	531.8	Lead
TK79-URS01	351	3	39	531.9	535.0	528.9	Lead
P2-URS03	1,148	7	298	528.0	525.2	521.0	Lead
PL-69, PL-70, PL-71, PL-72, PL-78, PL-79, PL-80, PL-81	963	3	107	530.0	535.0	527.0	Lead, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Dibenz(a,h)anthracene, Indeno(1,2,3-cd)pyrene, Naphthalene
PL-82	769	3	85	531.3	535.0	528.3	Lead, Benzo(a)pyrene, Dibenz(a,h)anthracene
PL-83	309	3	34	530.5	535.0	527.5	Lead, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Dibenz(a,h)anthracene, Indeno(1,2,3-cd)pyrene

REVISIONS			
NO.	BY.	DATE	DESCRIPTION
1	KA	4/26/13	ISSUED FOR CONSTRUCTION

REVISIONS (NO. | BY. | DATE | DESCRIPTION)

URS
Post Montgomery Center
One Montgomery Street, Suite 900
San Francisco, Co 94104
Tel: 415-896-5858
Fax: 415-882-9261

DRAWN BY: D. MENDOZA
DESIGNED BY: K. ARROW
CHECKED BY: T. SWEET
APPROVED BY:

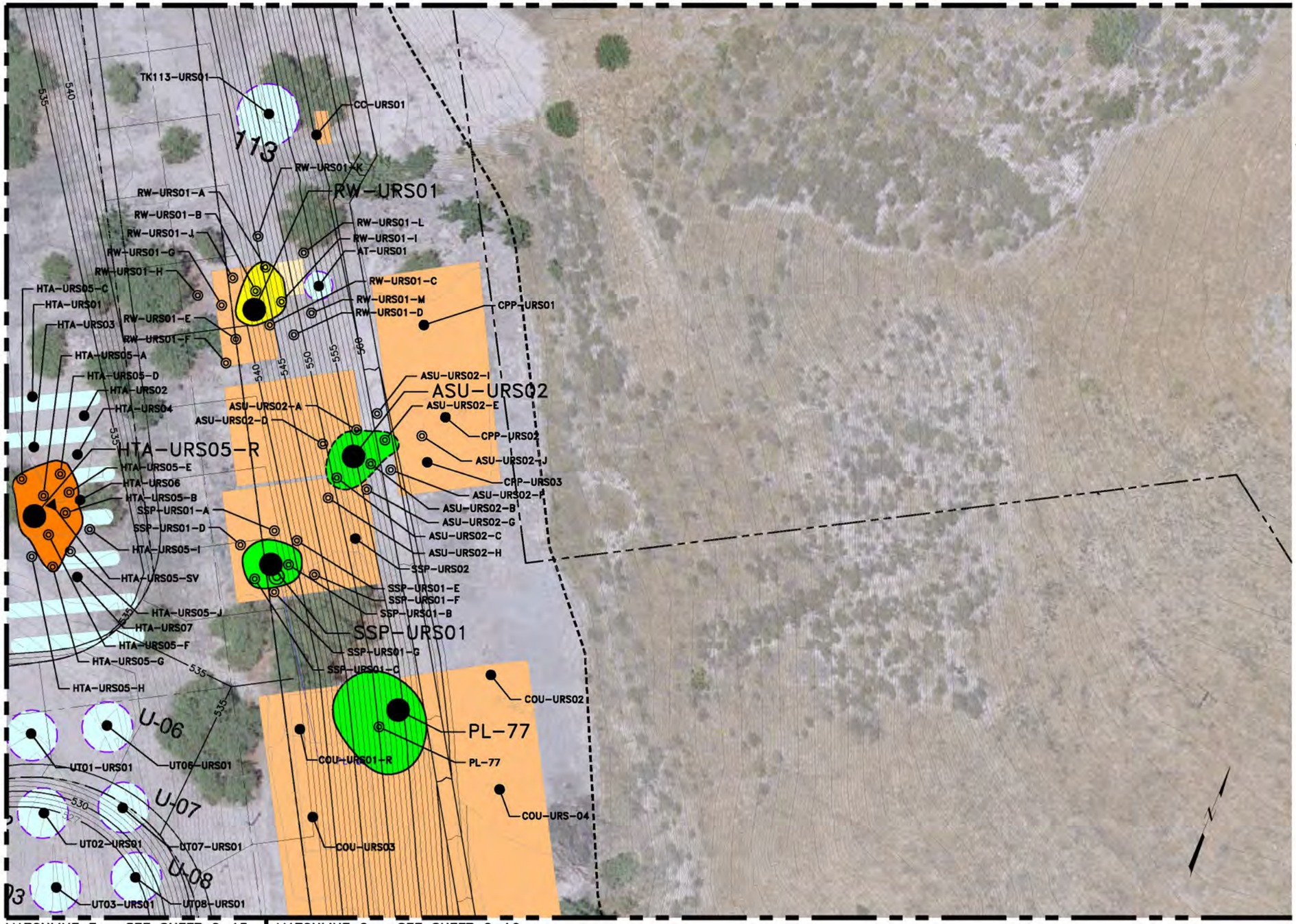
PACIFIC COAST PIPELINE (PCPL) SUPERFUND SITE
CITY OF FILLMORE, CALIFORNIA

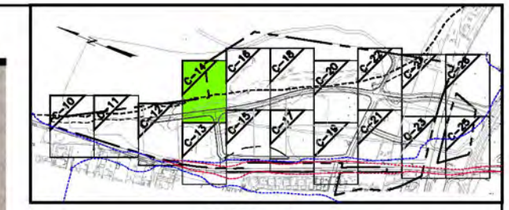
DETAILED GRADING PLAN 4

JOB NO.
DATE 4/26/13
SCALE 1"= 20'
SHEET 11 OF 43 SHEETS
SHEET NO. C-13

Apr 30, 2013 – 1:12pm T:\chevron fillmore\Sheet\C-13.dwg
dotlia_mendoza

MATCHLINE D – SEE SHEET C-12





KEYPLAN
N.T.S.

NOTES:

1. ALL EXCAVATION AREAS ARE SHOWN SCHEMATICALLY AND ARE TO BE VERIFIED IN THE FIELD. ALL BORING LOCATIONS ARE SHOWN FOR REFERENCE ONLY.
2. REMEDIATION AREAS TABLE SHOWN FOR REFERENCE ONLY. ACTUAL DIMENSIONS AND DEPTHS OF EXCAVATION MUST BE DETERMINED IN THE FIELD USING METHODS OUTLINED IN THIS PLAN SET AND SOIL RD AND RAWP.
3. SEE SHEETS C-50 TO C-55 FOR DETAIL ON DETENTION POND/SD PIPING.
4. SEE SHEEET G-02 FOR LEGEND.

LEGEND

- PRELIMINARY AREA REQUIRING REMEDIATION TO 3 FT BGS
- PRELIMINARY AREA REQUIRING REMEDIATION TO 7 FT BGS
- PRELIMINARY AREA REQUIRING REMEDIATION TO 12 FT BGS
- FORMER ABOVEGROUND STORAGE TANK
- FORMER WASTE PIT
- FORMER PROCESS AREA
- CONCENTRATION CONTOUR OF PAHs
- CONCENTRATION CONTOUR OF LEAD
- VAPOR PROBE (URS, 2008)
- DELINEATION SOIL BORING (URS, 2010/2012)
- SOIL BORING (URS, 2006 TO 2008)
- REMEDIATION AREA SOIL BORING (URS, 2006 TO 2008)
- 570 (P) CONTOURS
- 570 (E) CONTOURS

REMEDIATION AREAS:

Boring ID	Approximate Area (sf)	Removal Depth (ft)	Contaminated Stockpile Volume (cy)	(E) Grade	(P) Grade	Bottom El. ±	Constituents
RW-URS01	349	7	90	560.8	540.0	553.8	Lead
ASU-URS02	438	3	49	561.3	549.0	558.3	Lead
SSP-URS01	344	3	38	560.3	536.3	557.3	Lead
HTA-URS05-R *	782	12	568	544.6	535.0	525.0	Benzo(a)pyrene
PL-77	1,074	3	119	551.0	561.2	548.0	Naphthalene

* INDICATES REMEDIATION AREA WHERE ADDITIONAL EXCAVATION HAS BEEN INCLUDED TO ACHIEVE 10-FT SEPARATION BETWEEN (P) GRADE AND BOTTOM ELEVATION.

0 10 20 40 60
SCALE: 1"= 20'

REVISIONS			
NO.	BY.	DATE	DESCRIPTION
1	KA	4/26/13	ISSUED FOR CONSTRUCTION

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Post Montgomery Center
One Montgomery Street, Suite 900
San Francisco, Ca 94104
Tel: 415-896-5858
Fax: 415-882-9261

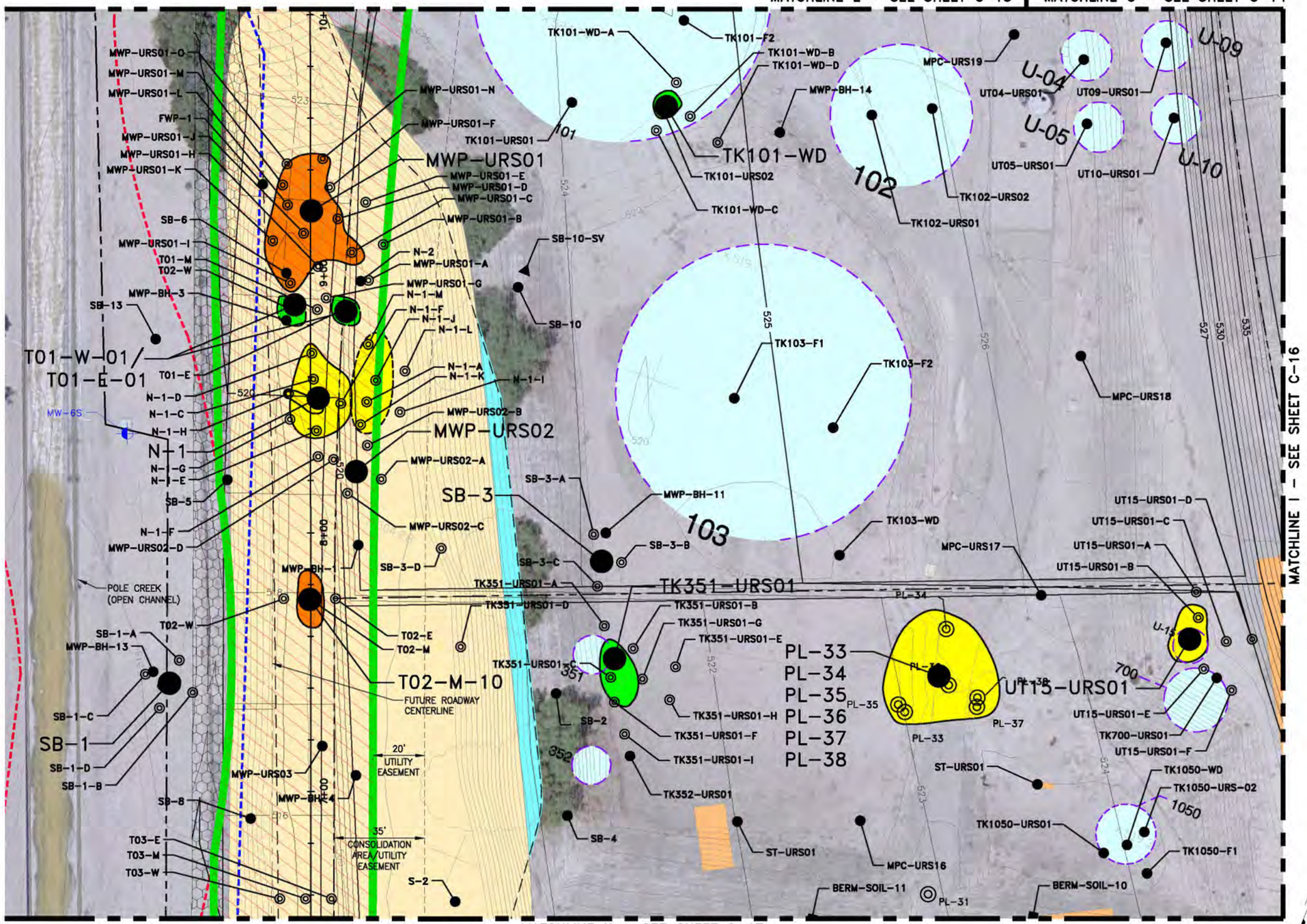
DRAWN BY: D. MENDOZA
DESIGNED BY: K. ARROW
CHECKED BY: T. SWEET
APPROVED BY:

PACIFIC COAST PIPELINE (PCPL) SUPERFUND SITE
CITY OF FILLMORE, CALIFORNIA

DETAILED GRADING PLAN 5

JOB NO.
DATE 4/26/13
SCALE 1"= 20'
SHEET 12 OF 43 SHEETS
SHEET NO. C-14

dablia_mendoza Apr 30, 2013 – 1:12pm T:\cherson fillmore\Sheet\C-14.dwg



KEYPLAN
N.T.S.

NOTES:

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3. SEE SHEETS C-50 TO C-55 FOR DETAIL ON DETENTION POND/SD PIPING.
4. SEE SHEET G-02 FOR LEGEND.

LEGEND

- PRELIMINARY AREA REQUIRING REMEDIATION TO 3 FT BGS
- PRELIMINARY AREA REQUIRING REMEDIATION TO 7 FT BGS
- PRELIMINARY AREA REQUIRING REMEDIATION TO 12 FT BGS
- FORMER ABOVEGROUND STORAGE TANK
- FORMER WASTE PIT
- FORMER PROCESS AREA
- CONCENTRATION CONTOUR OF PAHs
- CONCENTRATION CONTOUR OF LEAD
- DELINEATION SOIL BORING (URS, 2010/2012)
- SOIL BORING (URS, 2006 TO 2008)
- REMEDIATION AREA SOIL BORING (URS, 2006 TO 2008)
- (E) AQUIFER I MONITORING WELL (TO REMAIN)
- CONSOLIDATION AREA
- —570— (P) CONTOURS
- —570— (E) CONTOURS

REMEDIATION AREAS:

Boring ID	Approximate Area (sf)	Removal Depth (ft)	Contaminated Stockpile Volume (cy)	(E) Grade	(P) Grade	Bottom El. ±	Constituents
TK101-WD	88	3	10	524.1	523	521.1	Benzo(a)anthracence, Benzo(a)pyrene, Benzo(b)fluoranthene, Naphthalene
MWP-URS01	1,205	12	536	505.9	521.1	493.9	Naphthalene
N-1	1,138	7	295	504.6	519.6	497.6	Lead
MWP-URS02	29	3	3	504.1	523.0	501.1	Lead
SB-3	12	3	1	523.3	523.0	520.3	Naphthalene
TK351-URS01	282	3	31	519.9	520.0	516.9	Benzo(a)pyrene
SB-1	46	3	5	516.0	516.0	513.0	Naphthalene
UT15-URS01	263	7	68	539.5	525.0	532.5	Benzo(a)pyrene
PL-33, PL-34, PL-35, PL-36, PL-37,PL-38	1,550	7	402	518.9	525.0	511.9	Benzo(a)anthracence, Naphthalene
T01-W-01/T01-E-01	206	3	23	504.5	520.9	501.5	Lead, benzo(a)pyrene
T02-M-10	193	10	72	505.1	518	495.1	Benzo(a) pyrene

REVISIONS			
NO.	BY.	DATE	DESCRIPTION
0	KA	4/26/13	ISSUED FOR CONSTRUCTION

REVISIONS			
NO.	BY.	DATE	DESCRIPTION

URS
Post Montgomery Center
One Montgomery Street, Suite 900
San Francisco, Co 94104
Tel: 415-896-5858
Fax: 415-882-9261

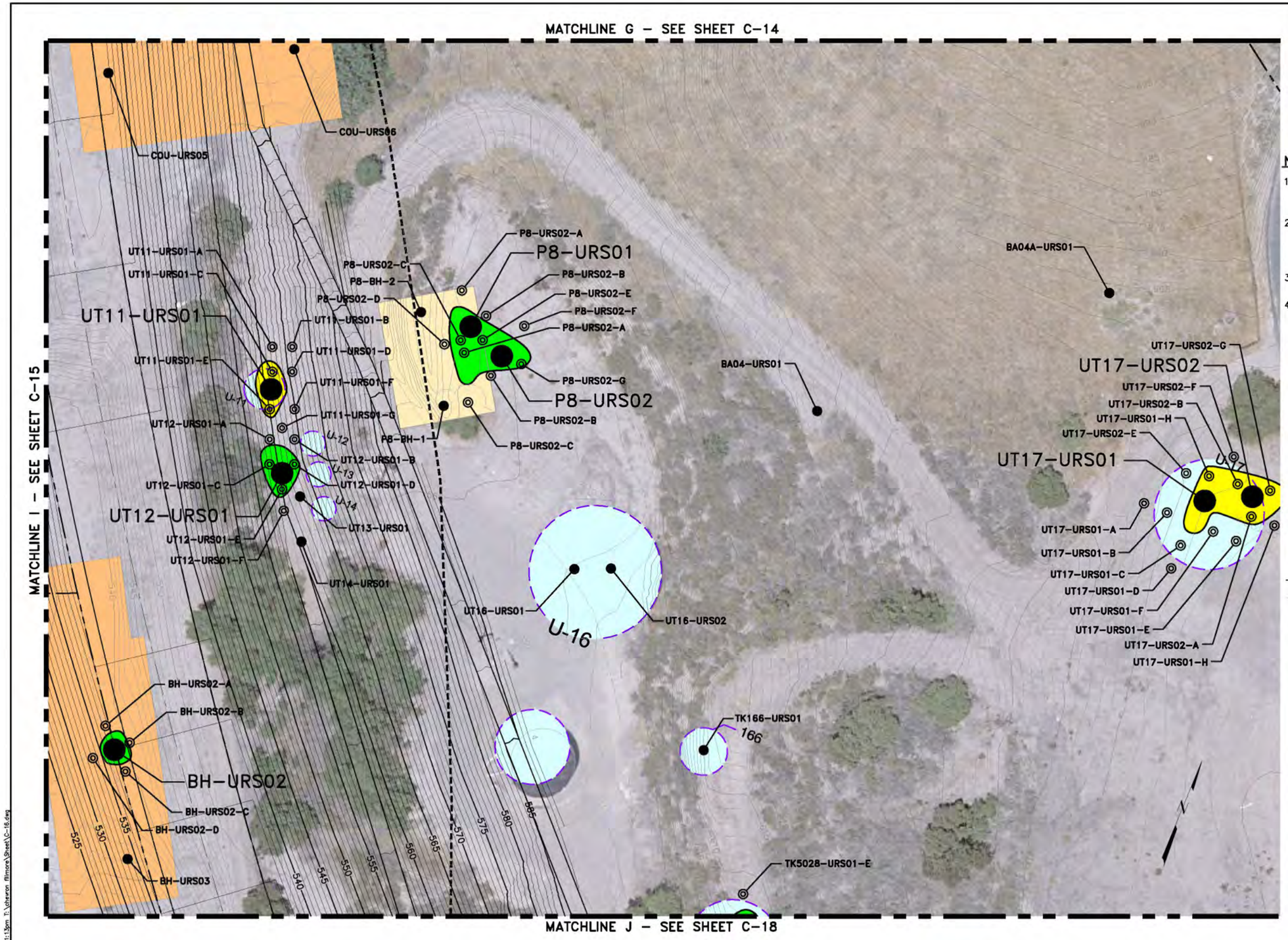
DRAWN BY: D. MENDOZA
DESIGNED BY: K. ARROW
CHECKED BY: T. SWEET
APPROVED BY:

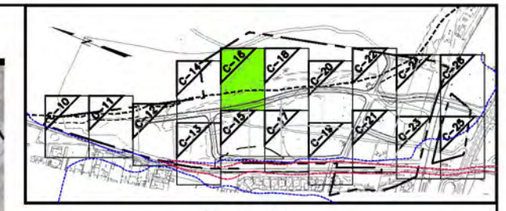
PACIFIC COAST PIPELINE (PCPL) SUPERFUND SITE
CITY OF FILLMORE, CALIFORNIA

DETAILED GRADING PLAN 6

JOB NO.
DATE 4/26/13
SCALE 1'= 20'
SHEET 13 OF 43 SHEETS
SHEET NO. C-15

Apr 30, 2013 – 11:13am T:\chevron (fillmore)\Sheet\C-15.dwg
dallia_mendoza





KEYPLAN
N.T.S.

NOTES:

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2. REMEDIATION AREAS TABLE SHOWN FOR REFERENCE ONLY. ACTUAL DIMENSIONS AND DEPTHS OF EXCAVATION MUST BE DETERMINED IN THE FIELD USING METHODS OUTLINED IN THIS PLAN SET AND SOIL RD AND RAWP.
3. SEE SHEETS C-50 TO C-55 FOR DETAIL ON DETENTION POND/SD PIPING.
4. SEE SHEET G-02 FOR LEGEND.

LEGEND

- PRELIMINARY AREA REQUIRING REMEDIATION TO 3 FT BGS
- PRELIMINARY AREA REQUIRING REMEDIATION TO 7 FT BGS
- FORMER ABOVEGROUND STORAGE TANK
- FORMER WASTE PIT
- FORMER PROCESS AREA
- CONCENTRATION CONTOUR OF PAHs
- CONCENTRATION CONTOUR OF LEAD
- DELINEATION SOIL BORING (URS, 2010)
- SOIL BORING (URS, 2006 TO 2008)
- REMEDIATION AREA SOIL BORING (URS, 2006 TO 2008)
- —570— (P) CONTOURS
- —570— (E) CONTOURS

REMEDIATION AREAS:

Boring ID	Approximate Area (sf)	Removal Depth (ft)	Contaminated Stockpile Volume (cy)	(E) Grade	(P) Grade	Bottom El. ±	Constituents
UT11-URS01	201	7	52	571.9	558.1	564.9	Benzo(a)pyrene, Lead
UT12-URS01	233	3	26	571.0	556.7	568.0	Lead
P8-URS01	604	3	67	586.3	586.3	583.3	Lead
P8-URS02		3		585.7	585.7	582.7	Lead
BH-URS02	128	3	14	539.5	535.0	536.5	Benzo(a)anthracence, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Chrysene, Dibenz(a,h)anthracene, Indeno(1,2,3-cd)pyrene
UT17-URS01	702	7	182	660.3	660.3	653.3	Lead
UT17-URS02		3		661.1	661.1	658.1	Lead

0 10 20 40 60
SCALE: 1"= 20'

REVISIONS			
NO.	BY.	DATE	DESCRIPTION
1	KA	4/26/13	ISSUED FOR CONSTRUCTION

REVISIONS			
NO.	BY.	DATE	DESCRIPTION

URS
Post Montgomery Center
One Montgomery Street, Suite 900
San Francisco, Ca 94104
Tel: 415-896-5858
Fax: 415-882-9261

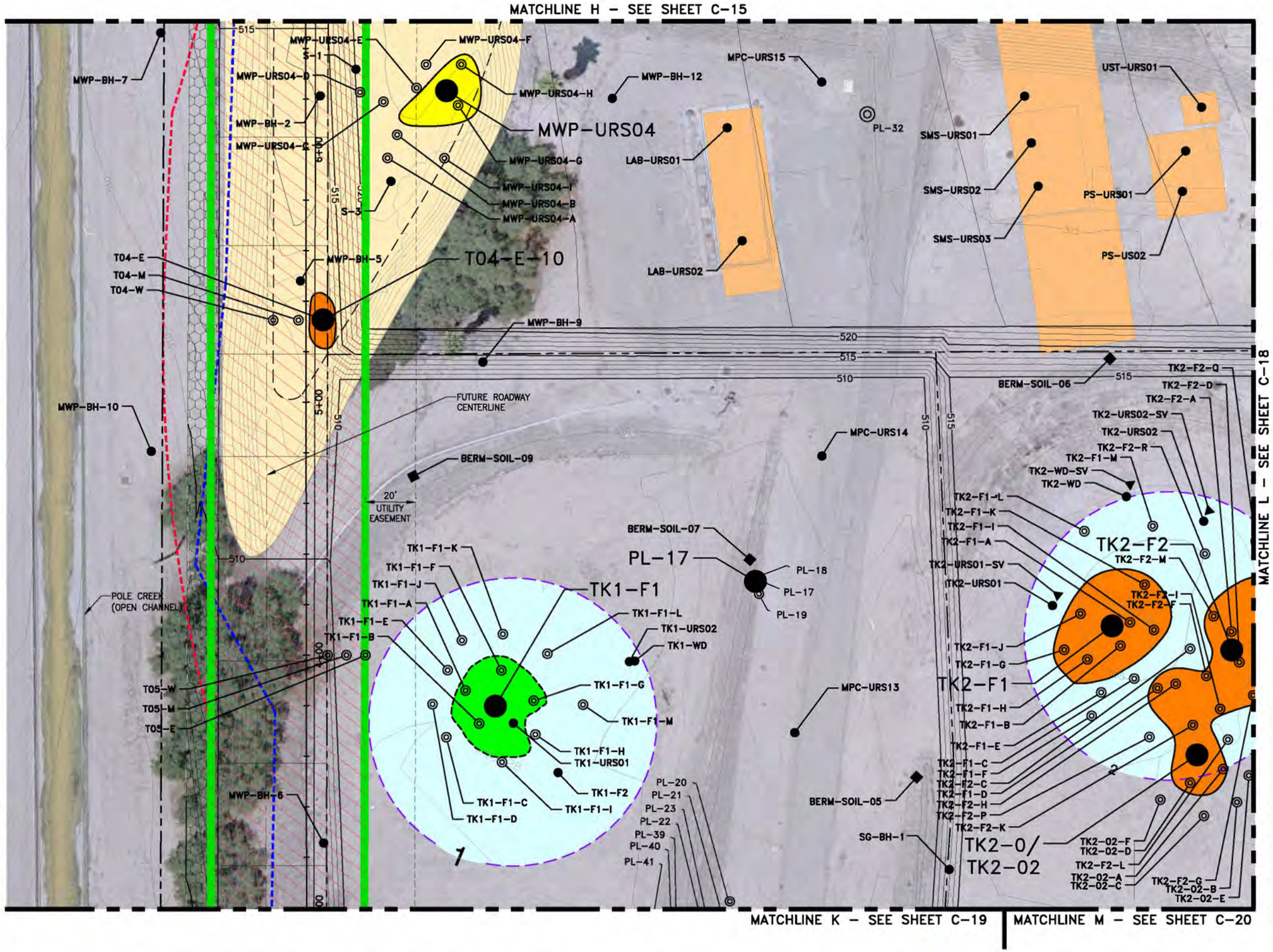
DRAWN BY: D. MENDOZA
DESIGNED BY: K. ARROW
CHECKED BY: T. SWEET
APPROVED BY:

PACIFIC COAST PIPELINE (PCPL) SUPERFUND SITE
CITY OF FILLMORE, CALIFORNIA

DETAILED GRADING PLAN 7

JOB NO.
DATE 4/26/13
SCALE 1'= 20'
SHEET 14 OF 43 SHEETS
SHEET NO. C-16

dalila_mendoza Apr 30, 2013 – 1:13pm T:\chevron fillmore\Sheet\C-16.dwg



KEYPLAN
N.T.S.

NOTES:

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3. SEE SHEETS C-50 TO C-55 FOR DETAIL ON DETENTION POND/SD PIPING.
4. SEE SHEET G-02 FOR LEGEND.

LEGEND

- PRELIMINARY AREA REQUIRING REMEDIATION TO 3 FT BGS
- PRELIMINARY AREA REQUIRING REMEDIATION TO 7 FT BGS
- PRELIMINARY AREA REQUIRING REMEDIATION TO 12 FT BGS
- FORMER ABOVEGROUND STORAGE TANK
- FORMER WASTE PIT
- FORMER PROCESS AREA
- CONCENTRATION CONTOUR OF PAHs
- CONCENTRATION CONTOUR OF LEAD
- BERM SOIL SAMPLE (URS, 2008 TO 2009)
- VAPOR PROBE (URS, 2008)
- DELINEATION SOIL BORING (URS, 2010/2012)
- SOIL BORING (URS, 2006 TO 2008)
- REMEDIATION AREA SOIL BORING (URS, 2006 TO 2008)
- (E) AQUIFER I EXTRACTION/MONITORING WELL (TO REMAIN)
- CONSOLIDATION AREA
- —570— (P) CONTOURS
- —570— (E) CONTOURS

REMEDIATION AREAS:

Boring ID	Approximate Area (sf)	Removal Depth (ft)	Contaminated Stockpile Volume (cy)	(E) Grade	(P) Grade	Bottom El. ±	Constituents
MWP-URS04	592	7	153	505.1	520.0	498.1	Benzo(a)pyrene, Lead
TK1-F1	1,055	3	117	504.2	510.0	501.2	Lead
TK2-F1	10,185	7	4,527	504.9	515.0	497.9	Benzo(a)pyrene
TK2-F2		12		505.7	515.0	493.7	Benzo(a)anthracence, Benzo(a)pyrene, Benzo(b)fluoranthene
TK2-0/ TK2-02		3		506.0	515.0	503.0	Benzo(a)anthracence, Benzo(b)fluoranthene
PL-17	28	7	7	509.0	510.0	502.0	Benzo(a)pyrene
T04-E-10	193	10	72	507.5	512.4	497.5	Napthalene

0 10 20 40 60
SCALE: 1"= 20'

REVISIONS			
NO.	BY.	DATE	DESCRIPTION
1	KA	4/26/13	ISSUED FOR CONSTRUCTION

REVISIONS			
NO.	BY.	DATE	DESCRIPTION

URS
Post Montgomery Center
One Montgomery Street, Suite 900
San Francisco, Ca 94104
Tel: 415-896-5858
Fax: 415-882-9261

DRAWN BY: D. MENDOZA
DESIGNED BY: K. ARROW
CHECKED BY: T. SWEET
APPROVED BY:

PACIFIC COAST PIPELINE (PCPL) SUPERFUND SITE
CITY OF FILLMORE, CALIFORNIA

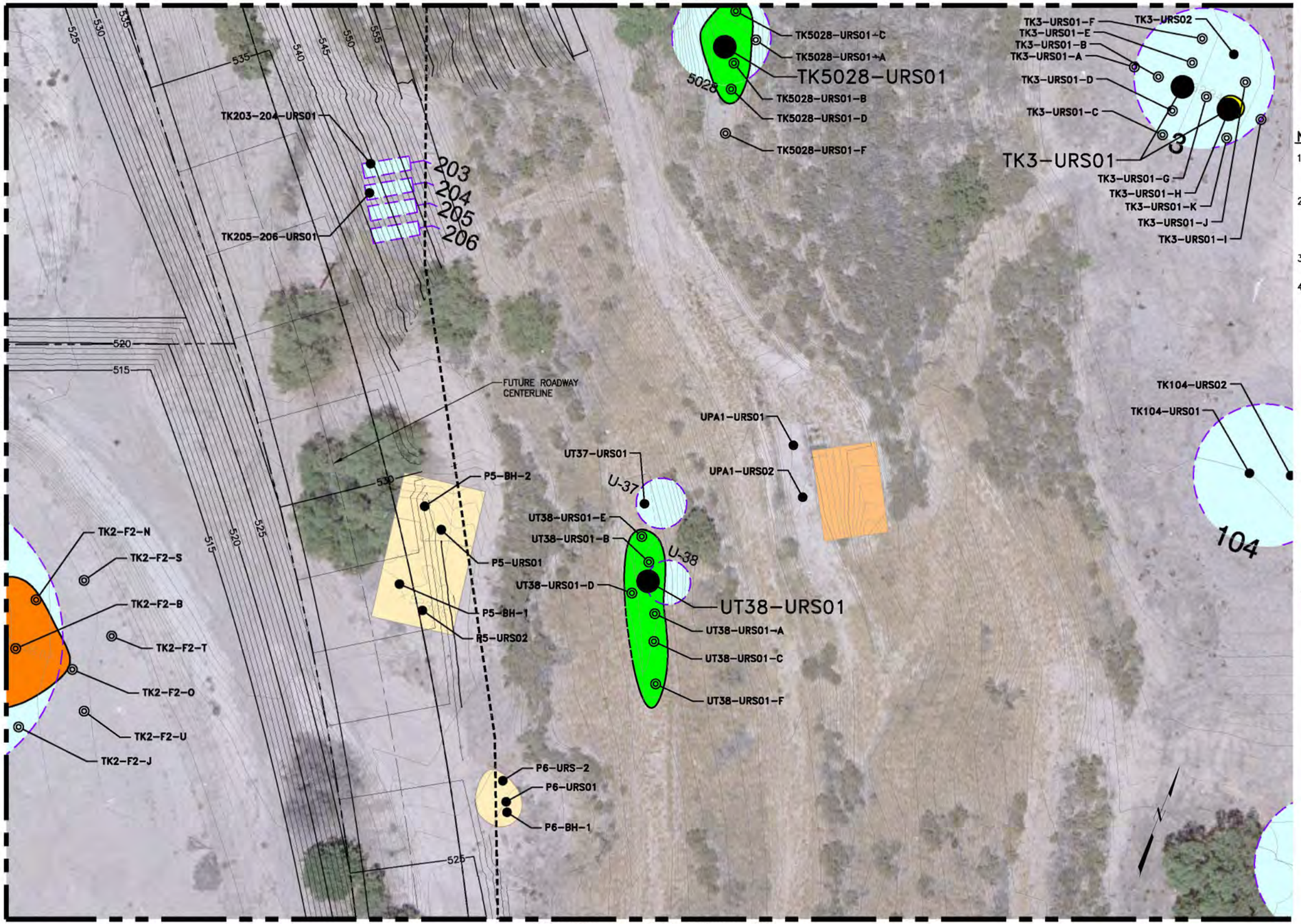
DETAILED GRADING PLAN 8

JOB NO.
DATE 4/26/13
SCALE 1"= 20'
SHEET 15 OF 43 SHEETS
SHEET NO. C-17

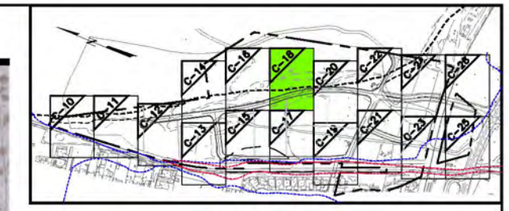
Apr 30, 2013 – 1:14pm T:\chevron fillmore\Sheet\C-17.dwg
danlis_mendoza

MATCHLINE J – SEE SHEET C-16

MATCHLINE L – SEE SHEET C-17



MATCHLINE M – SEE SHEET C-20



KEYPLAN
N.T.S.

NOTES:

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3. SEE SHEETS C-50 TO C-55 FOR DETAIL ON DETENTION POND/SD PIPING.
4. SEE SHEET G-02 FOR LEGEND.

LEGEND

- PRELIMINARY AREA REQUIRING REMEDIATION TO 3 FT BGS
- PRELIMINARY AREA REQUIRING REMEDIATION TO 7 FT BGS
- FORMER ABOVEGROUND STORAGE TANK
- FORMER WASTE PIT
- FORMER PROCESS AREA
- CONCENTRATION CONTOUR OF PAHs
- CONCENTRATION CONTOUR OF LEAD
- DELINEATION SOIL BORING (URS, 2010)
- SOIL BORING (URS, 2006 TO 2008)
- REMEDIATION AREA SOIL BORING (URS, 2006 TO 2008)
- —570— (P) CONTOURS
- —570— (E) CONTOURS

REMEDIATION AREAS:

Boring ID	Approximate Area (sf)	Removal Depth (ft)	Contaminated Stockpile Volume (cy)	(E) Grade	(P) Grade	Bottom El. ±	Constituents
TK5028-URS01	591	3	66	605.4	605.4	602.4	Lead
UT38-URS01	890	3	99	558.8	558.8	555.8	Lead
TK3-URS01	112	7	29	662.7	662.7	655.7	Lead

0 10 20 40 60
SCALE: 1"= 20'

REVISIONS			
NO.	BY.	DATE	DESCRIPTION
1	KA	4/26/13	ISSUED FOR CONSTRUCTION

REVISIONS			
NO.	BY.	DATE	DESCRIPTION

URS
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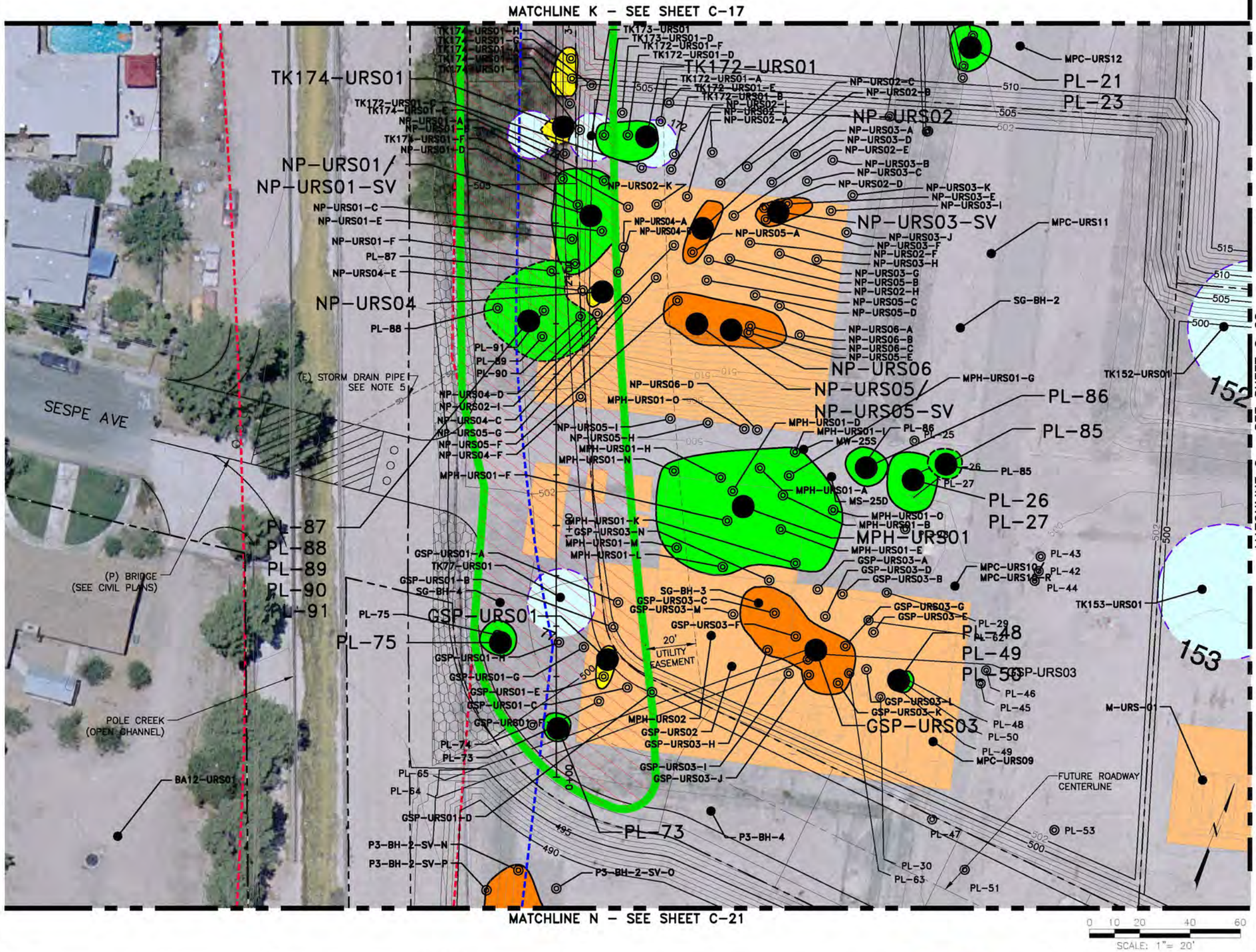
DRAWN BY: D. MENDOZA
DESIGNED BY: K. ARROW
CHECKED BY: T. SWEET
APPROVED BY:

PACIFIC COAST PIPELINE (PCPL) SUPERFUND SITE
CITY OF FILLMORE, CALIFORNIA

DETAILED GRADING PLAN 9

JOB NO.
DATE 4/26/13
SCALE 1'= 20'
SHEET 16 OF 43 SHEETS
SHEET NO. C-18

Apr 30, 2013 – 1:14pm T:\chevron fillmore\Sheet\C-18.dwg
danilo_mendoza



KEYPLAN
N.T.S.

NOTES:

1. ALL EXCAVATION AREAS ARE SHOWN SCHEMATICALLY AND ARE TO BE VERIFIED IN THE FIELD. ALL BORING LOCATIONS ARE SHOWN FOR REFERENCE ONLY.
2. REMEDIATION AREAS TABLE SHOWN FOR REFERENCE ONLY. ACTUAL DIMENSIONS AND DEPTHS OF EXCAVATION MUST BE DETERMINED IN THE FIELD USING METHODS OUTLINED IN THIS PLAN SET AND SOIL RD AND RAWP.
3. SEE SHEETS C-50 TO C-55 FOR DETAIL ON DETENTION POND/SD PIPING.
4. SEE SHEET G-02 FOR LEGEND.
5. (E) STORM DRAIN TO BE REMOVED WITHIN 5' OF PROPERTY LINE AND REMAINING PORTION TO BE FILLED WITH CONCRETE.

LEGEND

- PRELIMINARY AREA REQUIRING REMEDIATION TO 3 FT BGS
- PRELIMINARY AREA REQUIRING REMEDIATION TO 7 FT BGS
- PRELIMINARY AREA REQUIRING REMEDIATION TO 12 FT BGS
- FORMER ABOVEGROUND STORAGE TANK
- FORMER PROCESS AREA
- CONCENTRATION CONTOUR OF PAHs
- CONCENTRATION CONTOUR OF LEAD
- DELINEATION SOIL BORING (URS, 2010/2012)
- SOIL BORING (URS, 2006 TO 2008)
- REMEDIATION AREA SOIL BORING (URS, 2006 TO 2008)
- CONSOLIDATION AREA
- —570— (P) CONTOURS
- —570— (E) CONTOURS
- —SD— (E) STORM DRAIN PIPE

REMEDIATION AREAS:

Boring ID	Approximate Area (sf)	Removal Depth (ft)	Contaminated Stockpile Volume (cy)	(E) Grade	(P) Grade	Bottom El. ±	Constituents
TK174-URS01	257	7	67	504.0	505.1	497.0	Benzo(a)pyrene, Lead
TK172-URS01	336	3	37	502.4	502.0	499.4	Lead
NP-URS01/ NP-URS01-SV	887	3	99	502.3	502.0	499.3	Lead
NP-URS02	211	12	94	502.4	502.0	490.4	Naphthalene in Soil (1 ft bgs) Soil vapor detected benzene, ethylbenzene (10 ft bgs)
NP-URS03-SV	174	12	77	503.0	502.0	491.0	Soil vapor detected ethylbenzene (10 ft bgs)
NP-URS04	49	7	13	502.0	502.0	495.0	Benzo(a)pyrene
NP-URS05/ NP-URS05-SV	775	12	344	502.4	502.0	490.4	Lead in Soil (1 ft bgs) Soil vapor detected benzene, ethylbenzene (10 ft bgs)
NP-URS06		3		502.6	502.0	490.6	Benzo(a)pyrene
MPH-URS01	3,115	3	346	499.7	502.0	496.7	Lead
GSP-URS01	100	7	26	498.4	499.8	491.4	Naphthalene
GSP-URS03/ GSP-URS03-SV	1,068	12	475	498.8	502.0	486.8	Lead, Naphthalene in Soil (10 ft bgs) Soil vapor detected benzene, ethylbenzene, naphthalene (10 ft bgs)
PL-21 PL-23	250	3	28	504.5	510.0	501.5	Naphthalene
PL-26 PL-27	400	3	44	500.0	502.0	497.0	Benzo(a)anthracence, Benzo(a)pyrene, Benzo(b)fluoranthene, Naphthalene
PL-48 PL-49 PL-50	49	7	13	498.3	502.0	491.3	Lead, Benzo(a)pyrene
PL-73	98	3	11	497.8	499.8	494.8	Benzo(a)pyrene
PL-75	157	3	17	497.7	500.6	494.7	Benzo(a)pyrene
PL-85	130	3	14	500.7	502.0	497.7	Lead
PL-86	196	3	22	500.5	502.0	497.5	Lead, Naphthalene
PL-87, PL-88, PL-89, PL-90, PL-91	1,185	3	132	510.0	503.7	507	Lead

REVISIONS			
NO.	BY.	DATE	DESCRIPTION
A	KA	4/26/13	ISSUED FOR CONSTRUCTION

REVISIONS			
NO.	BY.	DATE	DESCRIPTION

URS
Post Montgomery Center
One Montgomery Street, Suite 900
San Francisco, Ca 94104
Tel: 415-896-5858
Fax: 415-882-9261

DRAWN BY: D. MENDOZA
DESIGNED BY: K. ARROW
CHECKED BY: T. SWEET
APPROVED BY:

PACIFIC COAST PIPELINE (PCPL) SUPERFUND SITE
CITY OF FILLMORE, CALIFORNIA

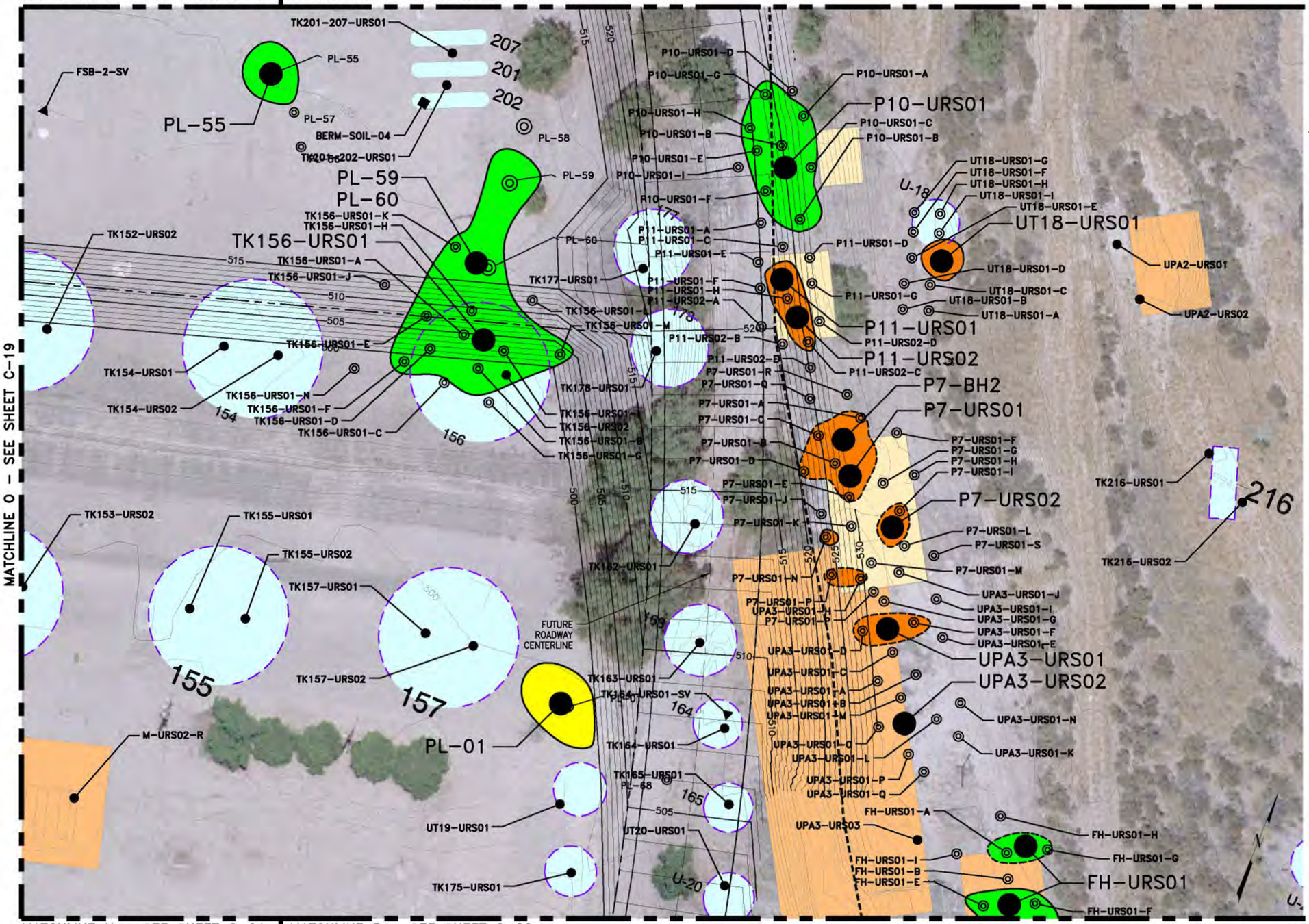
DETAILED GRADING PLAN 10

JOB NO.
DATE 4/26/13
SCALE 1"= 20'
SHEET 17 OF 43 SHEETS
SHEET NO. C-19

Apr 30, 2013 – 1:15pm T:\chevron fillmore\Sheet\C-19.dwg
dahlia_mendoza

MATCHLINE K – SEE SHEET C-17 | MATCHLINE M – SEE SHEET C-18

MATCHLINE O – SEE SHEET C-19



MATCHLINE N – SEE SHEET C-21 | MATCHLINE P – SEE SHEET C-22

0 10 20 40 60

SCALE: 1"= 20'

KEYPLAN

N.T.S.

NOTES:

1. ALL EXCAVATION AREAS ARE SHOWN SCHEMATICALLY AND ARE TO BE VERIFIED IN THE FIELD. ALL BORING LOCATIONS ARE SHOWN FOR REFERENCE ONLY.
2. REMEDIATION AREAS TABLE SHOWN FOR REFERENCE ONLY. ACTUAL DIMENSIONS AND DEPTHS OF EXCAVATION MUST BE DETERMINED IN THE FIELD USING METHODS OUTLINED IN THIS PLAN SET AND SOIL RD AND RAWP.
3. SEE SHEETS C-50 TO C-55 FOR DETAIL ON DETENTION POND/SD PIPING.
4. SEE SHEETS G-02 FOR LEGEND.

LEGEND

- PRELIMINARY AREA REQUIRING REMEDIATION TO 3 FT BGS
- PRELIMINARY AREA REQUIRING REMEDIATION TO 7 FT BGS
- PRELIMINARY AREA REQUIRING REMEDIATION TO 12 FT BGS
- FORMER ABOVEGROUND STORAGE TANK
- FORMER WASTE PIT
- FORMER PROCESS AREA
- CONCENTRATION CONTOUR OF PAHs
- CONCENTRATION CONTOUR OF LEAD
- BERM SOIL SAMPLE (URS, 2008 TO 2009)
- VAPOR PROBE (URS, 2008)
- DELINEATION SOIL BORING (URS, 2010)
- SOIL BORING (URS, 2006 TO 2008)
- REMEDIATION AREA SOIL BORING (URS, 2006 TO 2008)
- CONSOLIDATION AREA
- —570— (P) CONTOURS
- —570— (E) CONTOURS

REMEDIATION AREAS:

Boring ID	Approximate Area (sf)	Removal Depth (ft)	Contaminated Stockpile Volume (cy)	(E) Grade	(P) Grade	Bottom El. ±	Constituents
TK156-URS01	3,092	3	344	503.0	500.0	500.0	Benzo(a)anthracence
P10-URS01	1,266	3	141	529.0	521.5	526.0	Benzo(a)anthracence, Benzo(a)pyrene, Benzo(b)fluoranthene, Lead
P11-URS01 *	384	12	207	527.3	520.2	510.2	Benzo(a)anthracence, Benzo(a)pyrene, Benzo(b)fluoranthene, Chrysene
P11-URS02		7		527.4	520.2	520.4	Benzo(a)anthracence, Benzo(b)fluoranthene, Lead
UT18-URS01	199	12	88	544.6	544.6	532.6	Benzo(a)anthracence, Benzo(a)pyrene, Benzo(b)fluoranthene, Chrysene, Dibenz(a,h)anthracene, Indeno(1,2,3-cd)pyrene, Naphthalene
P7-BH2	695	7	397	528.7	520.0	521.7	Lead
P7-URS01 *		12		528.8	520.0	510.0	Benzo(a)pyrene, Lead
P7-URS02	278	12	124	530.4	530.4	518.4	Lead
UPA3-URS01 *	283	12	150	531.3	527.0	517.0	Lead
UPA3-URS02	51	12	23	531.0	531.0	519.0	Lead
FH-URS01	1,139	3	127	529.6	529.6	526.6	Lead
PL-01	685	7	178	499.3	500.0	492.3	Lead
PL-55	400	3	44	504.7	500.0	501.7	Benzo(a)pyrene
PL-59	–	3	–	502.7	500.0	499.7	Benzo(a)pyrene, Naphthalene.
PL-60	–	3	–	502.7	500.0	499.7	Excavation included with TK156-URS1

* INDICATES REMEDIATION AREA WHERE ADDITIONAL EXCAVATION HAS BEEN INCLUDED TO ACHIEVE 10-FT SEPARATION BETWEEN (P) GRADE AND BOTTOM ELEVATION.

REVISIONS			
NO.	BY.	DATE	DESCRIPTION
1	KA	4/26/13	ISSUED FOR CONSTRUCTION

REVISIONS			
NO.	BY.	DATE	DESCRIPTION

URS
Post Montgomery Center
One Montgomery Street, Suite 900
San Francisco, Ca 94104
Tel: 415-896-5858
Fax: 415-882-9261

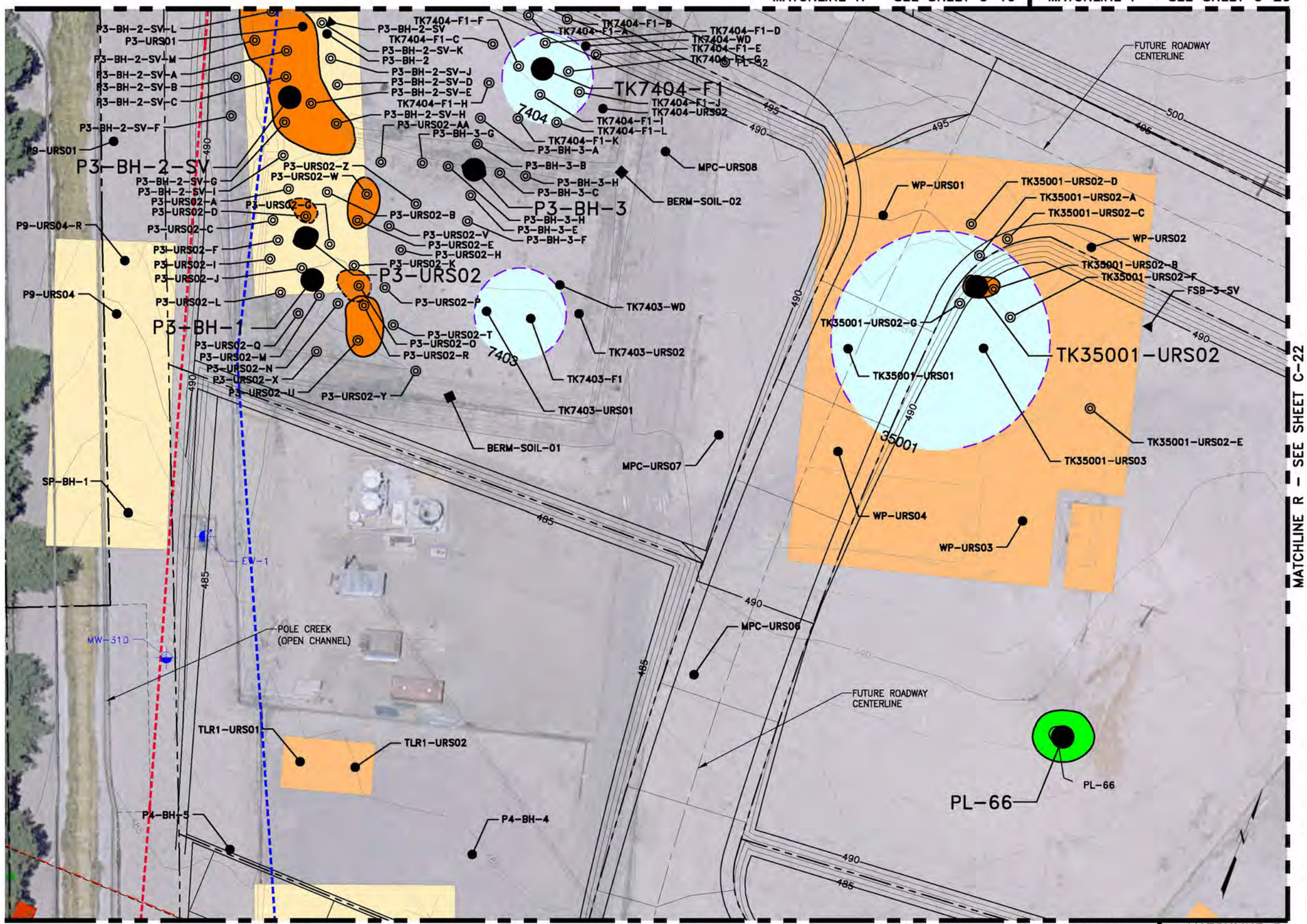
DRAWN BY: D. MENDOZA
DESIGNED BY: K. ARROW
CHECKED BY: T. SWEET
APPROVED BY:

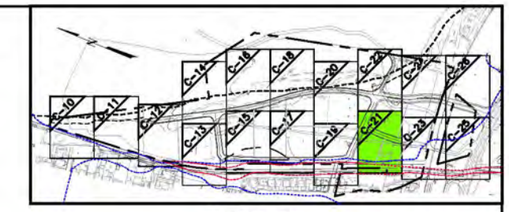
PACIFIC COAST PIPELINE (PCPL) SUPERFUND SITE
CITY OF FILLMORE, CALIFORNIA

DETAILED GRADING PLAN 11

JOB NO.
DATE 4/26/13
SCALE 1"= 20'
SHEET 18 OF 43 SHEETS
SHEET NO. C-20

Apr 30, 2013 – 1:16pm T:\Ashervon Fillmore\Sheet\C-20.dwg
adalia_mendoza





KEYPLAN
N.T.S.

NOTES:

1. ALL EXCAVATION AREAS ARE SHOWN SCHEMATICALLY AND ARE TO BE VERIFIED IN THE FIELD. ALL BORING LOCATIONS ARE SHOWN FOR REFERENCE ONLY.
2. REMEDIATION AREAS TABLE SHOWN FOR REFERENCE ONLY. ACTUAL DIMENSIONS AND DEPTHS OF EXCAVATION MUST BE DETERMINED IN THE FIELD USING METHODS OUTLINED IN THIS PLAN SET AND SOIL RD AND RAWP.
3. SEE SHEETS C-50 TO C-55 FOR DETAIL ON DETENTION POND/SD PIPING.
4. SEE SHEET G-02 FOR LEGEND.

LEGEND

- PRELIMINARY AREA REQUIRING REMEDIATION TO 7 FT BGS
- PRELIMINARY AREA REQUIRING REMEDIATION TO 12 FT BGS
- FORMER ABOVEGROUND STORAGE TANK
- FORMER WASTE PIT
- FORMER PROCESS AREA
- CONCENTRATION CONTOUR OF PAHs
- CONCENTRATION CONTOUR OF LEAD
- VAPOR PROBE (URS, 2008)
- DELINEATION SOIL BORING (URS, 2010)
- BERM SOIL SAMPLE (URS, 2008 TO 2009)
- SOIL BORING (URS, 2006 TO 2008)
- REMEDIATION AREA SOIL BORING (URS, 2006 TO 2008)
- (E) AQUIFER I MONITORING WELL (TO REMAIN)
- (E) AQUIFER II MONITORING WELL (TO REMAIN)
- —570— (P) CONTOURS
- —570— (E) CONTOURS

REMEDIATION AREAS:

Boring ID	Approximate Area (sf)	Removal Depth (ft)	Contaminated Stockpile Volume (cy)	(E) Grade	(P) Grade	Bottom El. ±	Constituents
P3-BH-2-SV	1,719	12	764	492.6	490.0	480.6	Soil vapor detected benzene, ethylbenzene, naphthalene (10 ft bgs)
TK7404-F1 *	42	12	21	493.2	490.0	480.0	Lead
P3-BH-3	42	7	11	496.0	490.0	489.0	Lead
P3-URS02	740	12	329	490.7	490.0	478.7	Naphthalene
P3-BH-1				490.1	490.0	478.1	Lead
TK35001-URS02 *	96	12	47	493.0	490.0	480.0	Benzo(a)pyrene
PL-66	375	3	42	488.0	490.0	485.0	Benzo(b)fluoranthene

* INDICATES REMEDIATION AREA WHERE ADDITIONAL EXCAVATION HAS BEEN INCLUDED TO ACHIEVE 10-FT SEPARATION BETWEEN (P) GRADE AND BOTTOM ELEVATION.

0 10 20 40 60
SCALE: 1"= 20'

REVISIONS			
NO.	BY.	DATE	DESCRIPTION
1	KA	4/26/13	ISSUED FOR CONSTRUCTION

REVISIONS			
NO.	BY.	DATE	DESCRIPTION

URS
Post Montgomery Center
One Montgomery Street, Suite 900
San Francisco, Ca 94104
Tel: 415-896-5858
Fax: 415-882-9261

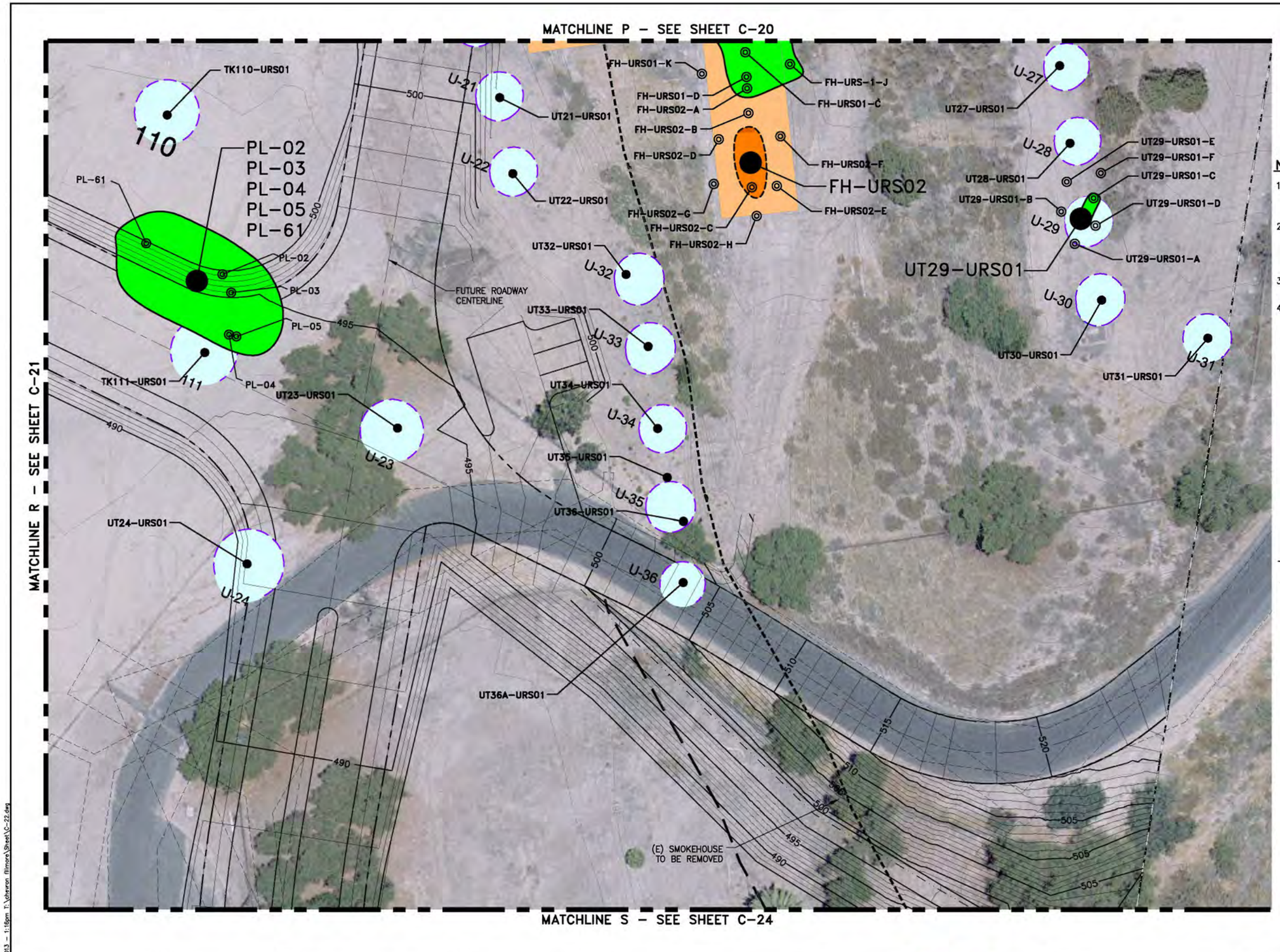
DRAWN BY: D. MENDOZA
DESIGNED BY: K. ARROW
CHECKED BY: T. SWEET
APPROVED BY:

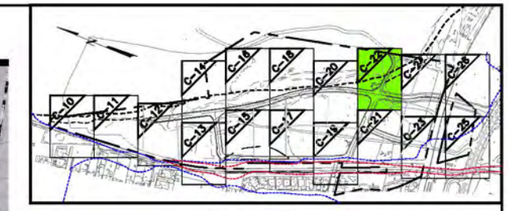
PACIFIC COAST PIPELINE (PCPL) SUPERFUND SITE
CITY OF FILLMORE, CALIFORNIA

DETAILED GRADING PLAN 12

JOB NO.
DATE 4/26/13
SCALE 1'= 20'
SHEET 19 OF 43 SHEETS
SHEET NO. C-21

dahlia_mendoza Apr 30, 2013 – 1:15pm T:\chevron fillmore\Sheet\C-21.dwg





KEYPLAN
N.T.S.

NOTES:

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3. SEE SHEETS C-50 TO C-55 FOR DETAIL ON DETENTION POND/SD PIPING.
4. SEE SHEET G-02 FOR LEGEND.

LEGEND

- PRELIMINARY AREA REQUIRING REMEDIATION TO 3 FT BGS
- PRELIMINARY AREA REQUIRING REMEDIATION TO 12 FT BGS
- FORMER ABOVEGROUND STORAGE TANK
- FORMER PROCESS AREA
- CONCENTRATION CONTOUR OF PAHs
- CONCENTRATION CONTOUR OF LEAD
- DELINEATION SOIL BORING (URS, 2010)
- SOIL BORING (URS, 2006 TO 2008)
- REMEDIATION AREA SOIL BORING (URS, 2006 TO 2008)
- —570— (P) CONTOURS
- —570— (E) CONTOURS

REMEDIATION AREAS:

Boring ID	Approximate Area (sf)	Removal Depth (ft)	Contaminated Stockpile Volume (cy)	(E) Grade	(P) Grade	Bottom El. ±	Constituents
FH-URS02	299	12	133	529.3	529.3	517.3	Lead
UT29-URS01	66	3	7	566.0	566.0	563.0	Lead
PL-02	2,590	3	288	492.0	494.6	489.0	Lead, 1,2,4-Trimethylbenzene, Naphthalene, Ethylbenzene
PL-03		3		492.0	494.6	489.0	
PL-04		3		492.0	494.6	489.0	
PL-05		3		492.0	494.6	489.0	
PL-61		3		492.0	494.6	489.0	

N

0 10 20 40 60
SCALE: 1"= 20'

REVISIONS			
NO.	BY.	DATE	DESCRIPTION
1	KA	4/26/13	ISSUED FOR CONSTRUCTION

REVISIONS			
NO.	BY.	DATE	DESCRIPTION

URS
Post Montgomery Center
One Montgomery Street, Suite 900
San Francisco, Co 94104
Tel: 415-896-5858
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DRAWN BY: D. MENDOZA
DESIGNED BY: K. ARROW
CHECKED BY: T. SWEET
APPROVED BY:

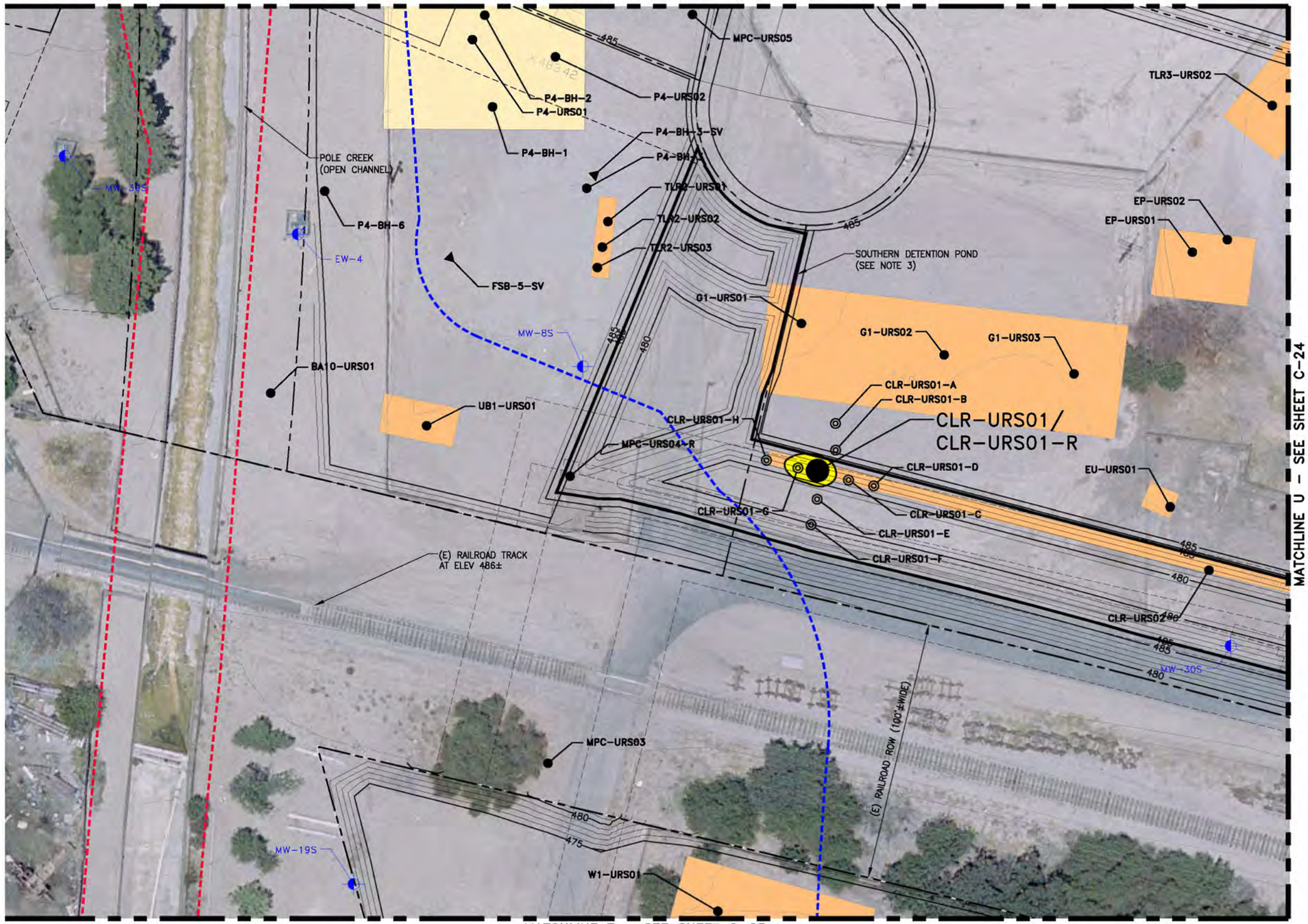
PACIFIC COAST PIPELINE (PCPL) SUPERFUND SITE
CITY OF FILLMORE, CALIFORNIA

DETAILED GRADING PLAN 13

JOB NO.
DATE 4/26/13
SCALE 1'= 20'
SHEET 20 OF 43 SHEETS
SHEET NO. C-22

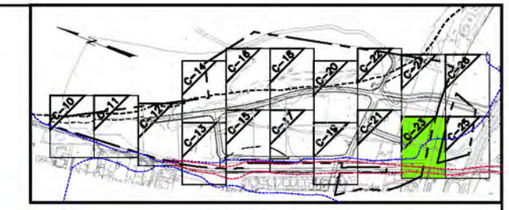
dalila_mendoza Apr 30, 2013 – 1:16pm T:\chevron fillmore\Sheet\C-22.dwg

MATCHLINE Q – SEE SHEET C-21



MATCHLINE T – SEE SHEET C-25

MATCHLINE U – SEE SHEET C-24



KEYPLAN
N.T.S.

NOTES:

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3. SEE SHEETS C-50 TO C-55 FOR DETAIL ON DETENTION POND/SD PIPING.
4. SEE SHEET G-02 FOR LEGEND.

LEGEND

- PRELIMINARY AREA REQUIRING REMEDIATION TO 7 FT BGS
- FORMER WASTE PIT
- FORMER PROCESS AREA
- CONCENTRATION CONTOUR OF PAHs
- VAPOR PROBE (URS, 2008)
- DELINEATION SOIL BORING (URS, 2010)
- SOIL BORING (URS, 2006 TO 2008)
- REMEDIATION AREA SOIL BORING (URS, 2006 TO 2008)
- (E) AQUIFER I MONITORING WELL (TO REMAIN)
- (E) AQUIFER I EXTRACTION/MONITORING WELL (TO REMAIN)
- —570— (P) CONTOURS
- —570— (E) CONTOURS

REMEDIATION AREAS:

Boring ID	Approximate Area (sf)	Removal Depth (ft)	Contaminated Stockpile Volume (cy)	(E) Grade	(P) Grade	Bottom El. ±	Constituents
CLR-URS01/ CLR-URS01-R	187	7	48	481.5	481.0	474.5	Indeno(1,2,3-cd)pyrene, Benzo(a)pyrene

N

0 10 20 40 60
SCALE: 1"= 20'

REVISIONS			
NO.	BY.	DATE	DESCRIPTION
1	KA	4/26/13	ISSUED FOR CONSTRUCTION

REVISIONS

NO.	BY.	DATE	DESCRIPTION

URS
Post Montgomery Center
One Montgomery Street, Suite 900
San Francisco, Ca 94104
Tel: 415-896-5858
Fax: 415-882-9261

DRAWN BY: D. MENDOZA
DESIGNED BY: K. ARROW
CHECKED BY: T. SWEET
APPROVED BY:

PACIFIC COAST PIPELINE (PCPL) SUPERFUND SITE
CITY OF FILLMORE, CALIFORNIA

DETAILED GRADING PLAN 14

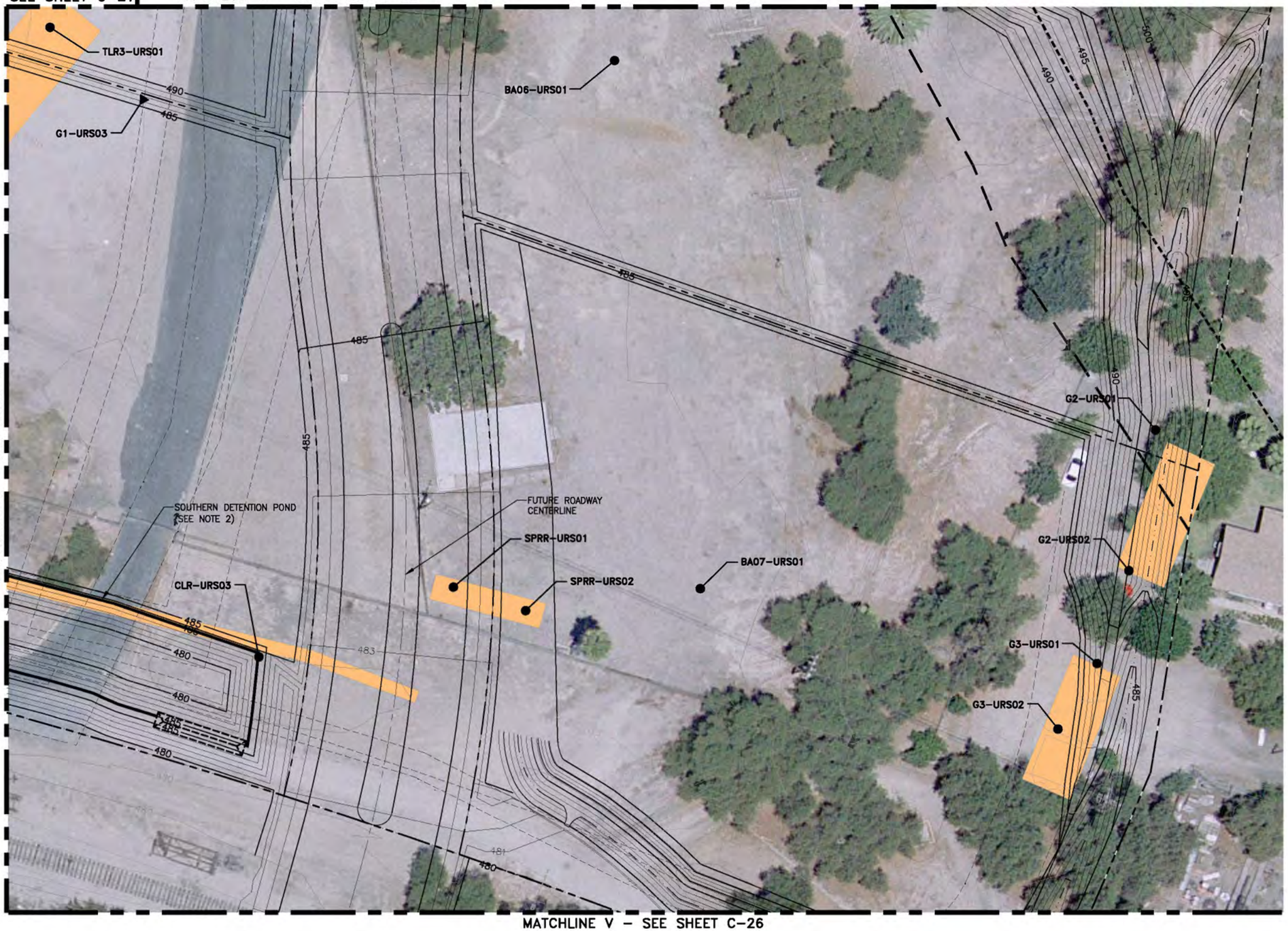
JOB NO.
DATE 4/26/13
SCALE 1"= 20'
SHEET 21 OF 43 SHEETS
SHEET NO. C-23

dahlia_mendoza Apr 30, 2013 – 1:17pm T:\cheron fillmore\Sheet\C-23.dwg

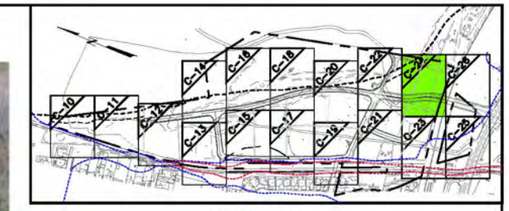
MATCHLINE Q
SEE SHEET C-21

MATCHLINE S – SEE SHEET C-22

MATCHLINE U – SEE SHEET C-23



MATCHLINE V – SEE SHEET C-26



KEYPLAN
N.T.S.

NOTE:

1. ALL BORING LOCATIONS ARE SHOWN FOR REFERENCE ONLY.
2. SEE SHEETS C-50 TO C-55 FOR DETAIL ON DETENTION POND/SD PIPING.
3. SEE SHEET G-02 FOR LEGEND.

LEGEND

- FORMER PROCESS AREA
- ▲ VAPOR PROBE (URS, 2008)
- ● SOIL BORING (URS, 2006 TO 2008)
- —570— (P) CONTOURS
- —570— (E) CONTOURS

N

0 10 20 40 60
SCALE: 1"= 20'

REVISIONS			
NO.	BY.	DATE	DESCRIPTION
1	KA	4/26/13	ISSUED FOR CONSTRUCTION

REVISIONS			
NO.	BY.	DATE	DESCRIPTION

URS
Post Montgomery Center
One Montgomery Street, Suite 900
San Francisco, Ca 94104
Tel: 415-895-5858
Fax: 415-882-9261

DRAWN BY: D. MENDOZA
DESIGNED BY: K. ARROW
CHECKED BY: T. SWEET
APPROVED BY:

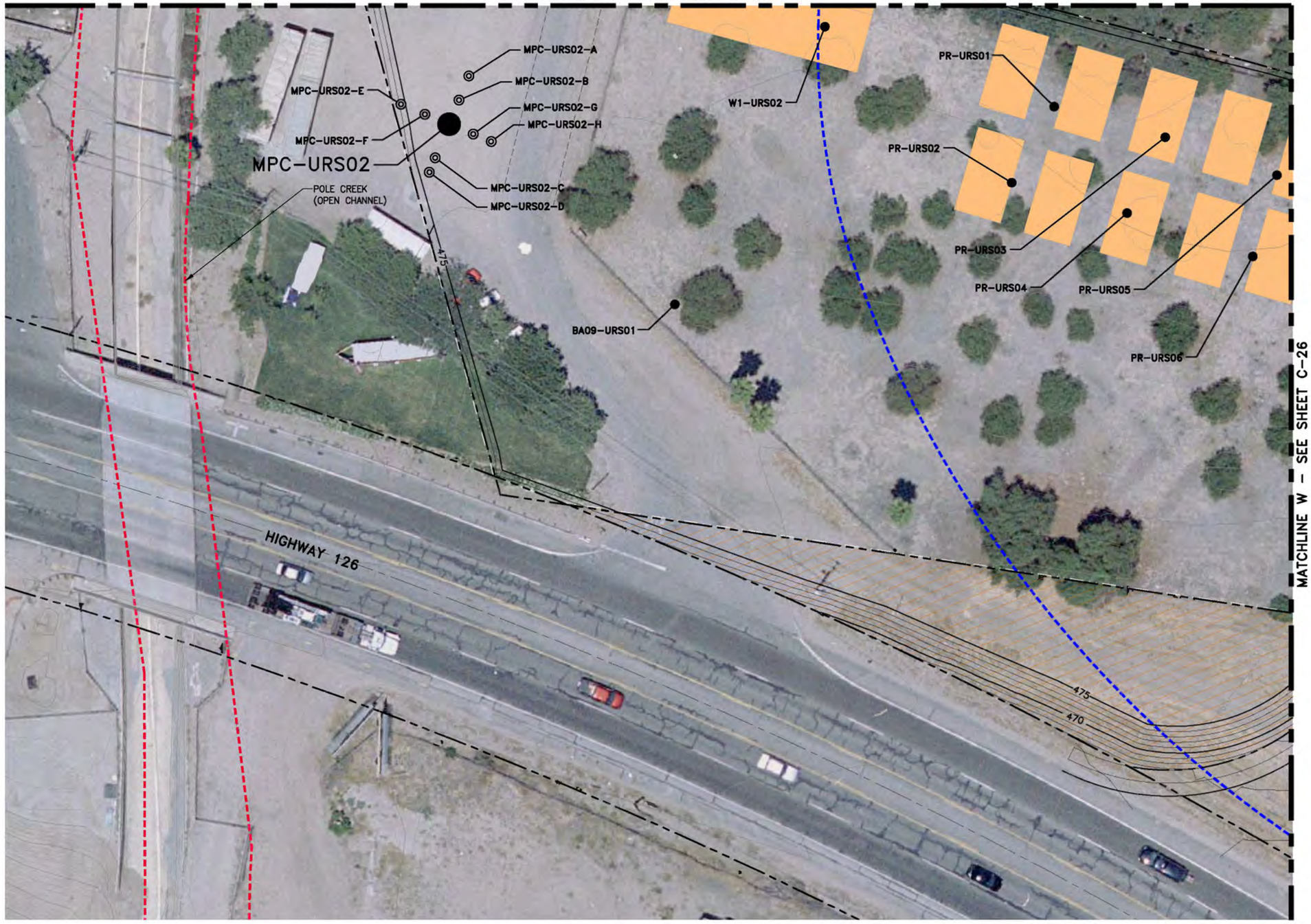
PACIFIC COAST PIPELINE (PCPL) SUPERFUND SITE
CITY OF FILLMORE, CALIFORNIA

DETAILED GRADING PLAN 15

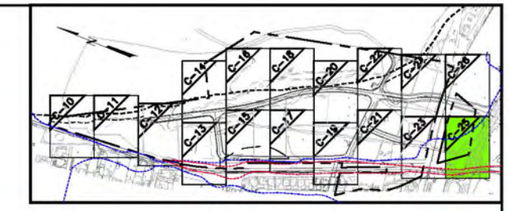
JOB NO.
DATE 4/26/13
SCALE 1"= 20'
SHEET 22 OF 43 SHEETS
SHEET NO. C-24

dahlia_mendoza Apr 30, 2013 - 3:24pm T:\chevron fillmore\Sheet\C-24.dwg

MATCHLINE T – SEE SHEET C-23



MATCHLINE W – SEE SHEET C-26



KEYPLAN
N.T.S.

NOTES:

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2. REMEDIATION AREAS TABLE SHOWN FOR REFERENCE ONLY. ACTUAL DIMENSIONS AND DEPTHS OF EXCAVATION MUST BE DETERMINED IN THE FIELD USING METHODS OUTLINED IN THIS PLAN SET AND SOIL RD AND RAWP.
3. SEE SHEETS C-50 TO C-55 FOR DETAIL ON DETENTION POND/SD PIPING.
4. SEE SHEET G-02 FOR LEGEND.

LEGEND

- PRELIMINARY AREA REQUIRING REMEDIATION TO 7 FT BGS
- FORMER PROCESS AREA
- CONCENTRATION CONTOUR OF PAHs
- DELINEATION SOIL BORING (URS, 2010)
- SOIL BORING (URS, 2006 TO 2008)
- REMEDIATION AREA SOIL BORING (URS, 2006 TO 2008)
- 570 (P) CONTOURS
- 570 (E) CONTOURS
- ACQUIRED PROPERTY

REMEDIATION AREAS:

Boring ID	Approximate Area (sf)	Removal Depth (ft)	Contaminated Stockpile Volume (cy)	(E) Grade	(P) Grade	Bottom El. ±	Constituents
MPC-URS02	46	7	12	476.6	475.0	469.6	Dibenz(a,h)anthracene

N

0 10 20 40 60
SCALE: 1"= 20'

REVISIONS			
NO.	BY.	DATE	DESCRIPTION
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NO.	BY.	DATE	DESCRIPTION

URS
Post Montgomery Center
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San Francisco, Ca 94104
Tel: 415-896-5858
Fax: 415-882-9261

DRAWN BY: D. MENDOZA
DESIGNED BY: K. ARROW
CHECKED BY: T. SWEET
APPROVED BY:

PACIFIC COAST PIPELINE (PCPL) SUPERFUND SITE
CITY OF FILLMORE, CALIFORNIA

DETAILED GRADING PLAN 16

JOB NO.
DATE 4/26/13
SCALE 1'= 20'
SHEET 23 OF 43 SHEETS
SHEET NO. C-25

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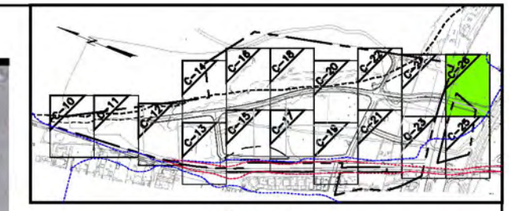
dalila_mendoza

MATCHLINE V – SEE SHEET C-24

MATCHLINE W – SEE SHEET C-25



KEYPLAN
N.T.S.

NOTE:

1. ALL BORING LOCATIONS ARE SHOWN FOR REFERENCE ONLY.
2. SEE SHEETS C-50 TO C-55 FOR DETAIL ON DETENTION POND/SD PIPING.
3. SEE SHEET G-02 FOR LEGEND.

LEGEND

- FORMER PROCESS AREA
- SOIL BORING (URS, 2006 TO 2008)
- —570— (P) CONTOURS
- —570— (E) CONTOURS
- ENTRY DRIVE SLOPE PROTECTION (7 / C-54)
- AQUIRED PROPERTY
- PROPERTY FOR TRANSFER

N

0 10 20 40 60
SCALE: 1"= 20'

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PACIFIC COAST PIPELINE (PCPL) SUPERFUND SITE
CITY OF FILLMORE, CALIFORNIA

DETAILED GRADING PLAN 17

JOB NO.
DATE 4/26/13
SCALE 1'= 20'
SHEET 24 OF 43 SHEETS
SHEET NO. C-26

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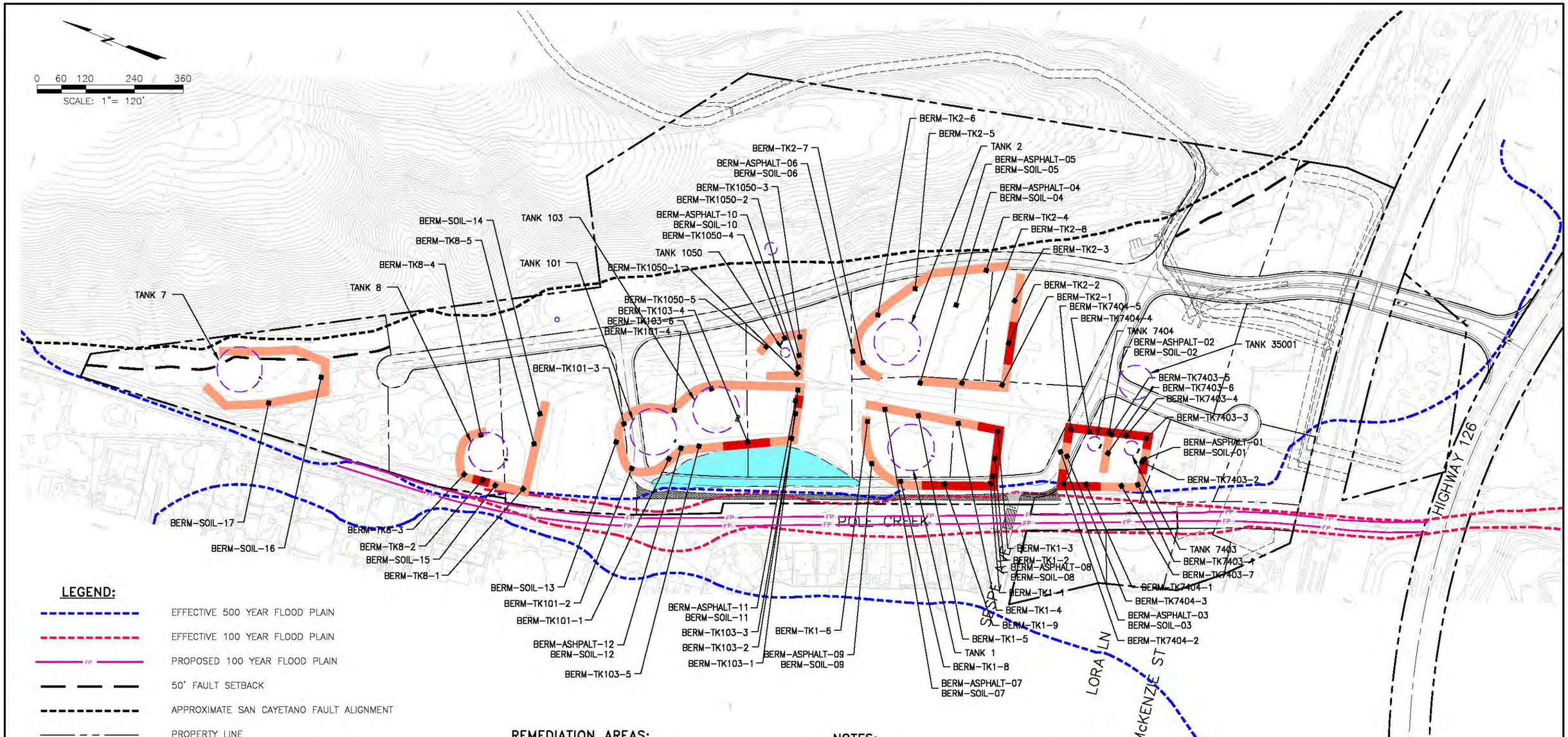

LEGEND:

- EFFECTIVE 500 YEAR FLOOD PLAIN
- EFFECTIVE 100 YEAR FLOOD PLAIN
- PROPOSED 100 YEAR FLOOD PLAIN
- 50' FAULT SETBACK
- APPROXIMATE SAN CAYETANO FAULT ALIGNMENT
- PROPERTY LINE
- BERM LIMITS AVAILABLE AS CLEAN BACKFILL AT SITE
- BERM LIMITS THAT WILL BE PLACED IN CONSOLIDATION AREA
- (E) FORMER MAIN WASTE PIT EXTENTS
- FORMER ABOVEGROUND STORAGE TANK

REMEDIATION AREAS:

Boring ID	Approximate Area (sf)	Removal Depth (ft)	Contaminated Stockpile Volume (cy)	(E) Grade	(P) Grade	Bottom El. ±	Constituents
TANK 1	2,400	–	2,025	–	–	–	Lead
TANK 2	2,100	–	804	–	–	–	Lead
TANK 8	1,750	–	282	–	–	–	Lead
TANKS 101/103	500	–	1,244	–	–	–	Lead
TANKS 7403/7404	7,000	–	700	–	–	–	Lead

NOTES:

1. ALL IMPACTED TANK BERM LIMITS ARE SHOWN SCHEMATICALLY AND ARE TO BE VERIFIED IN THE FIELD. ALL BERM SAMPLING LOCATIONS ARE SHOWN FOR REFERENCE ONLY.
2. REMEDIATION AREAS TABLE SHOWN FOR REFERENCE ONLY. IMPACTED BERM LIMITS ASSUMED TO BE EXCAVATED TO EXISTING SURROUNDING GROUND SURFACE. ACTUAL DIMENSIONS AND DEPTHS OF EXCAVATION MUST BE DETERMINED IN THE FIELD USING METHODS OUTLINED IN THIS PLAN SET AND SOIL RD AND RAWP.

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PACIFIC COAST PIPELINE (PCPL) SUPERFUND SITE
CITY OF FILLMORE, CALIFORNIA

BERM REMOVAL PLAN

JOB NO.
DATE 4/26/13
SCALE 1'= 120'
SHEET 25 OF 43 SHEETS
SHEET NO. C-27

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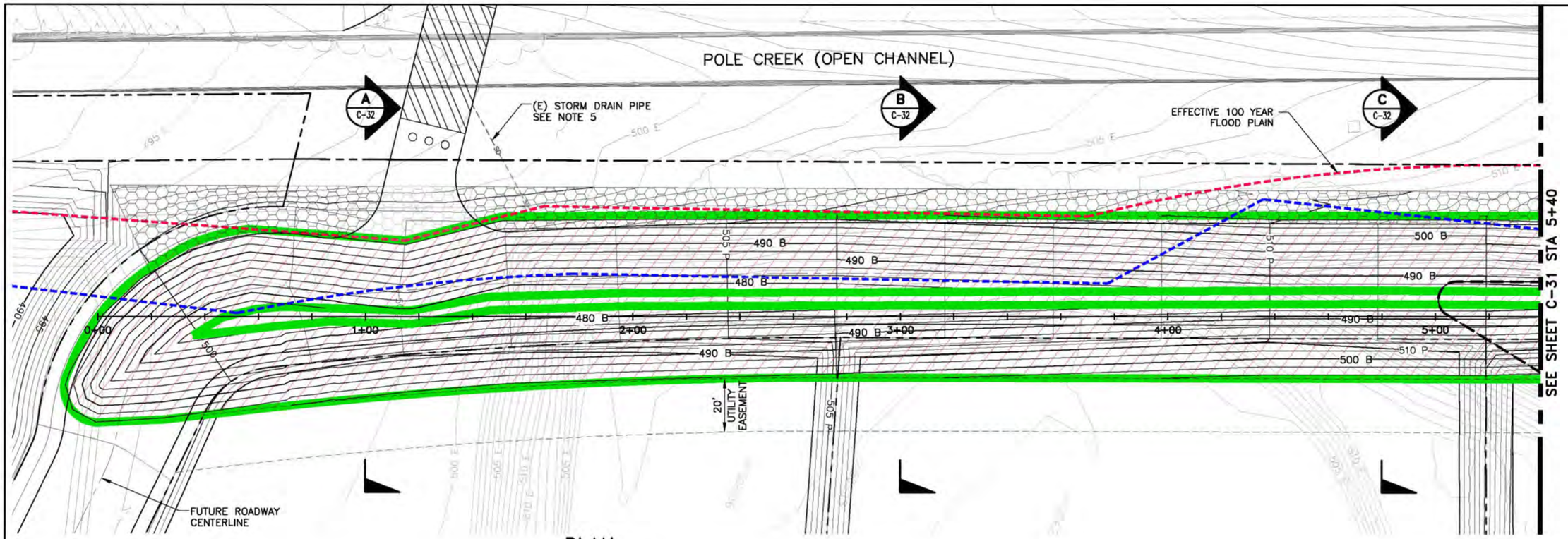
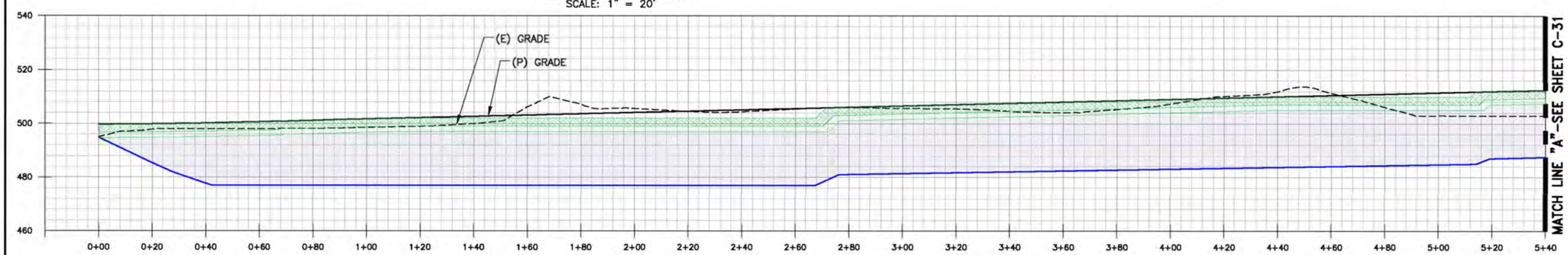


PLAN
SCALE: 1" = 20'



PROFILE
SCALE: 1" = 20'

LEGEND

- FORMER WASTE PIT AREA = 36,680 SF
- CONSOLIDATION AREA AREA = 65,925 SF APPROX. VOLUME = 20,900 CY
- CELLULAR CONFINEMENT ZONE (SEE DETAIL 2 ON SHEET C-33)
- (E) STORM DRAIN PIPE
- 500 B — DESIGN BOTTOM ELEVATION OF CONSOLIDATION AREA
- 510 E — (E) ELEVATION
- 510 P — (P) ELEVATION

NOTES:

1. THE CONSOLIDATION AREA FOOTPRINT WILL BE EXCAVATED TO DESIGN BOTTOM ELEVATIONS (25+ FT BGS) AND THE SLOPES GRADED TO THE DEPTHS SHOWN ON SHEETS C-30 TO C-32. AS SOIL IS EXCAVATED, PLACED AND COMPACTED (TO 95% RELATIVE COMPACTION AS MEASURED BY MODIFIED PROCTOR) IN THE CONSOLIDATION AREA, VOLUMES GENERATED ARE TO BE MONITORED BY ENGINEER FOR COMPLIANCE WITH THE PLANNED EXCAVATION VOLUMES INCLUDED IN THE RD/RAWP AND SHEET C-61. IF THE VOLUME IS TRENDING ABOVE THE PLAN, CONTRACTOR AND ENGINEER WILL COORDINATE BENCHING OF THE CONSOLIDATION AREA STARTING AT 9-FT BGS ALLOW VERTICAL SIDE SLOPES DOWN TO 13-FT BGS AND RESULT IN AN INCREASE OF VOLUMETRIC YIELD OF THE CONSOLIDATION AREA. SIMILARLY, WHEN FILL REACHES 9-FT BGS, BENCHING WILL BE PERFORMED AT 5-FT BGS AS-NEEDED TO UTILIZE VERTICAL SIDE SLOPES UP TO 5-FT BGS (BOTTOM OF THE ENGINEERED CAP). FILLING OF THE CONSOLIDATION AREA SHALL BE IN MAXIMUM 8-INCH THICK LOOSE LIFTS, MOISTURE CONDITIONED AND EACH LIFT COMPACTED TO 95% RELATIVE COMPACTION.
2. IF ADDITIONAL VOLUME IS NEEDED BEYOND WHAT CAN BE ACCOMMODATED USING BENCHING AND VERTICAL SLOPES DOWN TO 13-FT BGS, PART OF THE CONSOLIDATION AREA WILL BE EXPANDED TO THE EAST UNDER THE NORTHERN LOT ALONG THE NORTH-SOUTH ROADWAY.
3. A MINIMUM 5-FOOT THICK ENGINEERED CAP, CONSISTING OF A MINIMUM 3-FOOT THICK PROTECTIVE GENERAL FREE-DRAINING EROSION FILL LAYER UNDERLAIN WITH A 2-FOOT THICK LOW PERMEABILITY LAYER CONSISTING OF A GEOSYNTHETIC CLAY LINER (GCL) SANDWICHED WITHIN PROTECTIVE SANDY/GRANULAR ONSITE BORROW SOILS MEETING SITE CLEANUP CRITERIA WILL BE CONSTRUCTED OVER THE ENTIRE CONSOLIDATION AREA (AND TOED IN ALONG THE PERIMETER).
4. AN EROSION CONTROL CELLULAR CONFINEMENT GEOTEXTILE MAT IS TO BE CONSTRUCTED ALONG THE ENTIRE LENGTH OF THE CONSOLIDATION AREA BETWEEN THE POLE CREEK PROPERTY LINE AND PLANNED ROADWAY AND THE EXISTING GRADE ALONG THE SHARED PROPERTY LINE WITH POLE CREEK WILL BE MAINTAINED AND THE ON-SITE GRADES RAISED SOMEWHAT RESULTING IN A MINOR SLOPE (LESS THAN 2 FEET HIGH AND AT A SLOPE LESS THAN 4H:1V) TO ENSURE THE EXISTING POLE CREEK FLOW CHARACTERISTICS ARE NOT ALTERED BY CONSTRUCTION OF THE CONSOLIDATION AREA.
5. (E) STORM DRAIN TO BE REMOVED WITHIN 5' OF PROPERTY LINE AND REMAINING PORTION TO BE FILLED WITH CONCRETE.

0 10 20 40 60
SCALE: 1" = 20'

REVISIONS				REVISIONS			
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DESIGNED BY: K. ARROW
CHECKED BY: T. SWEET
APPROVED BY:

PACIFIC COAST PIPELINE (PCPL) SUPERFUND SITE
CITY OF FILLMORE, CALIFORNIA

CONSOLIDATION AREA
PLAN AND PROFILE
SHEET 1

JOB NO.
DATE 4/26/13
SCALE 1"= 20'
SHEET 26 OF 43 SHEETS
SHEET NO. C-30

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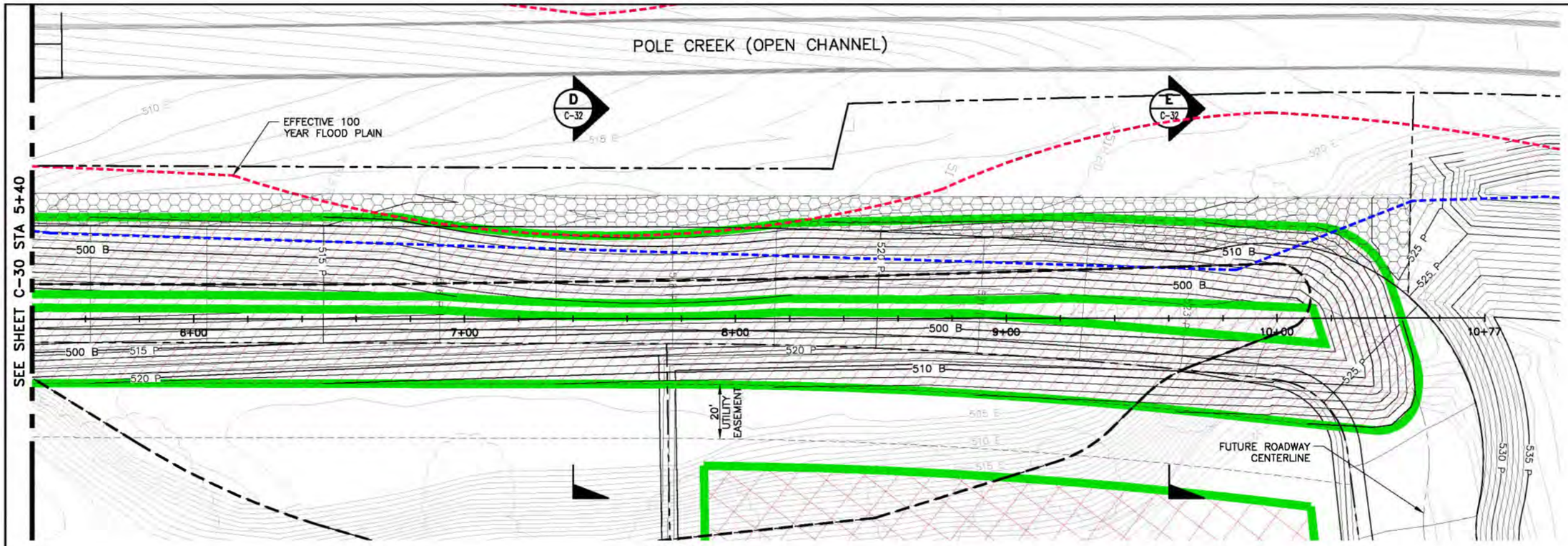
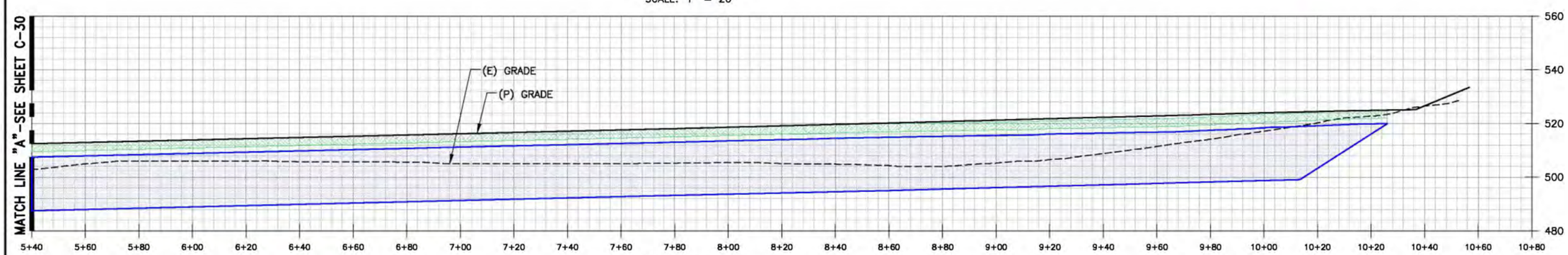


PLAN
SCALE: 1" = 20'



PROFILE
SCALE: 1" = 20'

LEGEND

- FORMER WASTE PIT AREA = 36,680 SF
- CONSOLIDATION AREA AREA = 62,925 SF APPROX. VOLUME = 20,900 CY
- CELLULAR CONFINEMENT ZONE (SEE DETAIL 2 ON SHEET C-33)
- POTENTIAL SUPPLEMENTAL CONSOLIDATION AREA: APPROX. VOLUME = 30,000 CY AVAILABLE (IF NEEDED)
- 500 B DESIGN BOTTOM ELEVATION OF CONSOLIDATION AREA
- 510 E (E) ELEVATION
- 510 P (P) ELEVATION

NOTES:

1. THE CONSOLIDATION AREA FOOTPRINT WILL BE EXCAVATED TO DESIGN BOTTOM ELEVATIONS (25+ FT BGS) AND THE SLOPES GRADED TO THE DEPTHS SHOWN ON SHEETS C-30 TO C-32. AS SOIL IS EXCAVATED, PLACED AND COMPACTED (TO 95% RELATIVE COMPACTION AS MEASURED BY MODIFIED PROCTOR) IN THE CONSOLIDATION AREA, VOLUMES GENERATED ARE TO BE MONITORED BY ENGINEER FOR COMPLIANCE WITH THE PLANNED EXCAVATION VOLUMES INCLUDED IN THE RD/RAWP AND SHEET C-61. IF THE VOLUME IS TRENDING ABOVE THE PLAN, CONTRACTOR AND ENGINEER WILL COORDINATE BENCHING OF THE CONSOLIDATION AREA STARTING AT 9-FT BGS ALLOW VERTICAL SIDE SLOPES DOWN TO 13-FT BGS AND RESULT IN AN INCREASE OF VOLUMETRIC YIELD OF THE CONSOLIDATION AREA. SIMILARLY, WHEN FILL REACHES 9-FT BGS, BENCHING WILL BE PERFORMED AT 5-FT BGS AS-NEEDED TO UTILIZE VERTICAL SIDE SLOPES UP TO 5-FT BGS (BOTTOM OF THE ENGINEERED CAP). FILLING OF THE CONSOLIDATION AREA SHALL BE IN MAXIMUM 8-INCH THICK LOOSE LIFTS, MOISTURE CONDITIONED AND EACH LIFT COMPACTED TO 95% RELATIVE COMPACTION.
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3. A MINIMUM 5-FOOT THICK ENGINEERED CAP, CONSISTING OF A MINIMUM 3-FOOT THICK PROTECTIVE GENERAL FREE-DRAINING EROSION FILL LAYER UNDERLAIN WITH A 2-FOOT THICK LOW PERMEABILITY LAYER CONSISTING OF A GEOSYNTHETIC CLAY LINER (GCL) SANDWICHED WITHIN PROTECTIVE SANDY/GRANULAR ONSITE BORROW SOILS MEETING SITE CLEANUP CRITERIA WILL BE CONSTRUCTED OVER THE ENTIRE CONSOLIDATION AREA (AND TOED IN ALONG THE PERIMETER).
4. AN EROSION CONTROL CELLULAR CONFINEMENT GEOTEXTILE MAT IS TO BE CONSTRUCTED ALONG THE ENTIRE LENGTH OF THE CONSOLIDATION AREA BETWEEN THE POLE CREEK PROPERTY LINE AND PLANNED ROADWAY AND THE EXISTING GRADE ALONG THE SHARED PROPERTY LINE WITH POLE CREEK WILL BE MAINTAINED AND THE ON-SITE GRADES RAISED SOMEWHAT RESULTING IN A MINOR SLOPE (LESS THAN 2 FEET HIGH AND AT A SLOPE LESS THAN 4H:1V) TO ENSURE THE EXISTING POLE CREEK FLOW CHARACTERISTICS ARE NOT ALTERED BY CONSTRUCTION OF THE CONSOLIDATION AREA.

0 10 20 40 60
SCALE: 1"= 20'

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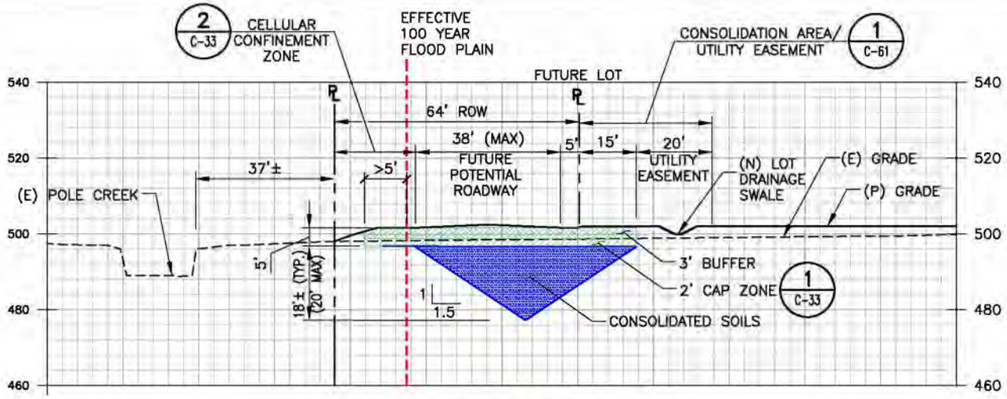
DRAWN BY: D. MENDOZA
DESIGNED BY:
CHECKED BY: T. SWEET
APPROVED BY:

PACIFIC COAST PIPELINE (PCPL) SUPERFUND SITE
CITY OF FILLMORE, CALIFORNIA

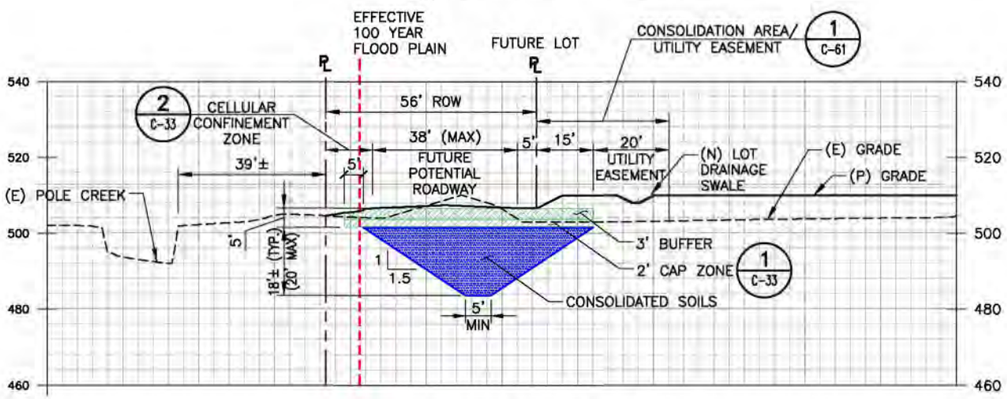
CONSOLIDATION AREA
PLAN AND PROFILE
SHEET 2

JOB NO.
DATE 4/26/13
SCALE 1"= 20'
SHEET 27 OF 43 SHEETS
SHEET NO. C-31

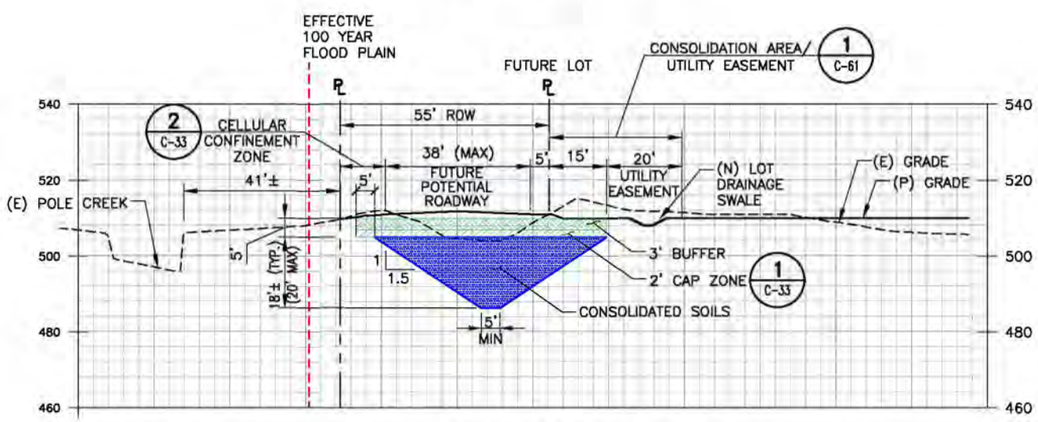
dahlia_mendoza Apr 30, 2013 - 1:19pm T:\ptmaron fillmore\Sheet\C-31.dwg



A C-30 SECTION A-A
SCALE: 1" = 20'



B C-30 SECTION B-B
SCALE: 1" = 20'



C C-30 SECTION C-C
SCALE: 1" = 20'

NOTES:

1. THE CONSOLIDATION AREA FOOTPRINT WILL BE EXCAVATED TO DESIGN BOTTOM ELEVATIONS (25+ FT BGS) AND THE SLOPES GRADED TO THE DEPTHS SHOWN ON SHEETS C-30 TO C-32. AS SOIL IS EXCAVATED, PLACED AND COMPACTED (TO 95% RELATIVE COMPACTION AS MEASURED BY MODIFIED PROCTOR) IN THE CONSOLIDATION AREA, VOLUMES GENERATED ARE TO BE MONITORED BY ENGINEER FOR COMPLIANCE WITH THE PLANNED EXCAVATION VOLUMES INCLUDED IN THE RD/RAWP AND SHEET C-61. IF THE VOLUME IS TRENDING ABOVE THE PLAN, CONTRACTOR AND ENGINEER WILL COORDINATE BENCHING OF THE CONSOLIDATION AREA STARTING AT 9-FT BGS ALLOW VERTICAL SIDE SLOPES DOWN TO 13-FT BGS AND RESULT IN AN INCREASE OF VOLUMETRIC YIELD OF THE CONSOLIDATION AREA. SIMILARLY, WHEN FILL REACHES 9-FT BGS, BENCHING WILL BE PERFORMED AT 5-FT BGS AS-NEEDED TO UTILIZE VERTICAL SIDE SLOPES UP TO 5-FT BGS (BOTTOM OF THE ENGINEERED CAP). FILLING OF THE CONSOLIDATION AREA SHALL BE IN MAXIMUM 12-INCH THICK LOOSE LIFTS, MOISTURE CONDITIONED AND EACH LIFT COMPACTED TO 95% RELATIVE COMPACTION.
2. IF ADDITIONAL VOLUME IS NEEDED BEYOND WHAT CAN BE ACCOMMODATED USING BENCHING AND VERTICAL SLOPES DOWN TO 13-FT BGS, PART OF THE CONSOLIDATION AREA WILL BE EXPANDED TO THE EAST UNDER THE NORTHERN LOT ALONG THE NORTH-SOUTH ROADWAY.
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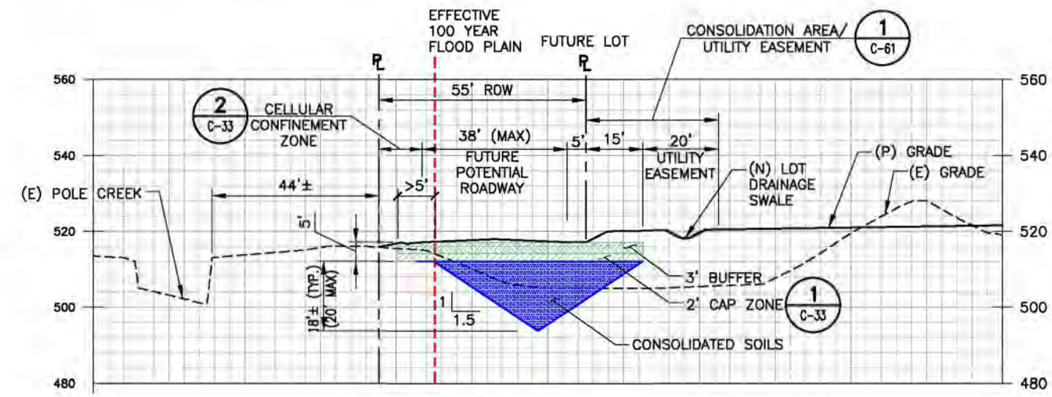
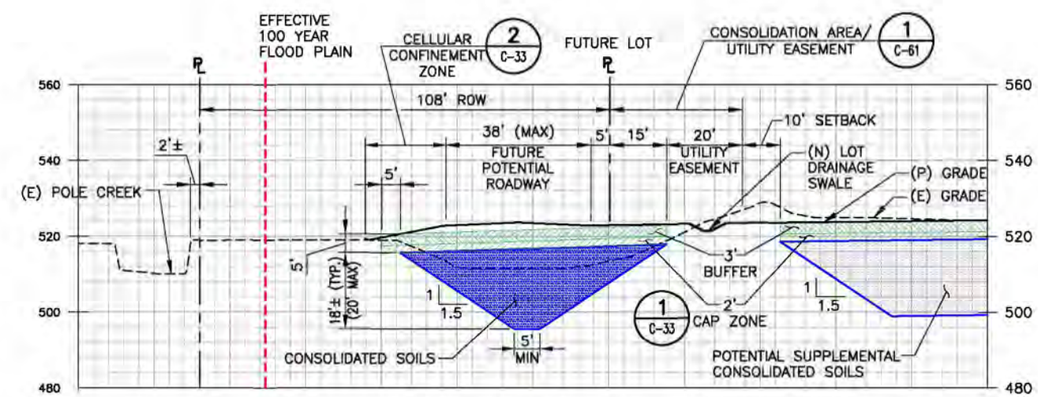
4. AN EROSION CONTROL CELLULAR CONFINEMENT GEOTEXTILE MAT IS TO BE CONSTRUCTED ALONG THE ENTIRE LENGTH OF THE CONSOLIDATION AREA BETWEEN THE POLE CREEK PROPERTY LINE AND PLANNED ROADWAY AND THE EXISTING GRADE ALONG THE SHARED PROPERTY LINE WITH POLE CREEK WILL BE MAINTAINED AND THE ON-SITE GRADES RAISED SOMEWHAT RESULTING IN A MINOR SLOPE (LESS THAN 2 FEET HIGH AND AT A SLOPE LESS THAN 4H:1V) TO ENSURE THE EXISTING POLE CREEK FLOW CHARACTERISTICS ARE NOT ALTERED BY CONSTRUCTION OF THE CONSOLIDATION AREA.
5. SEE SHEET C-50 TO C-55 FOR DETAILS ON DETENTION POND AND LOT DRAINAGE SWALES.



D C-31 SECTION D-D
SCALE: 1" = 20'



E C-31 SECTION E-E
SCALE: 1" = 20'

0 10 20 40 60
SCALE: 1" = 20'

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APPROVED BY:

PACIFIC COAST PIPELINE (PCPL) SUPERFUND SITE
CITY OF FILLMORE, CALIFORNIA

CONSOLIDATION AREA SECTION

JOB NO.
DATE 4/26/13
SCALE 1"= 20'
SHEET 28 OF 43 SHEETS
SHEET NO. C-32

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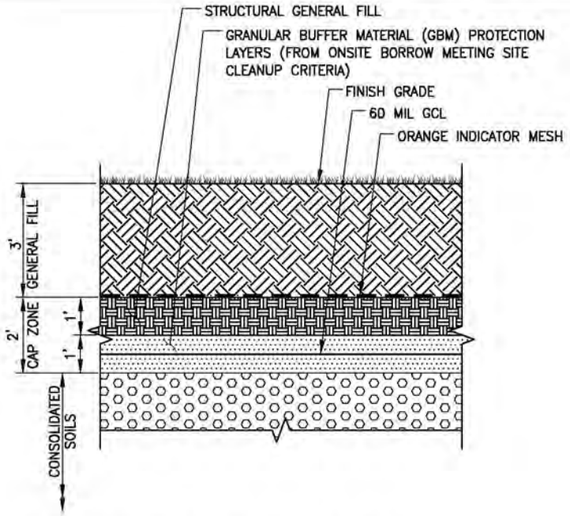
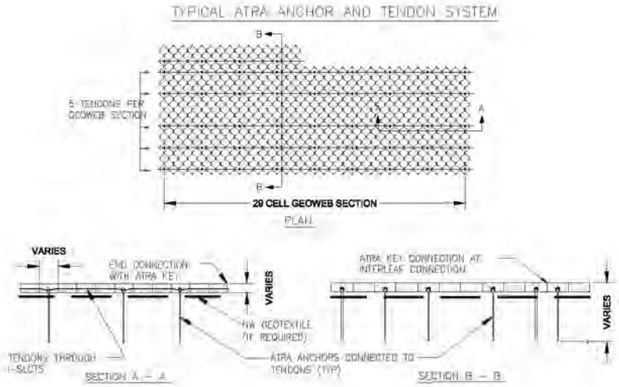
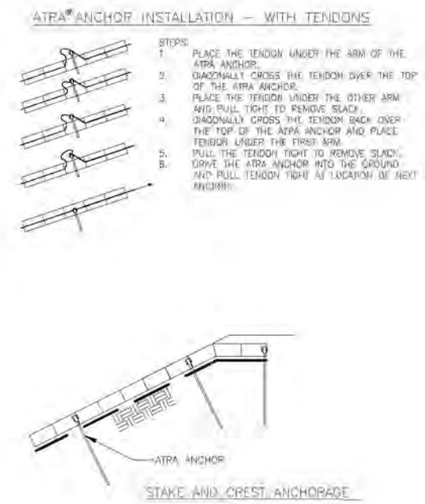


1 GCL CAP ZONE DETAIL
SCALE: 1" = 2'

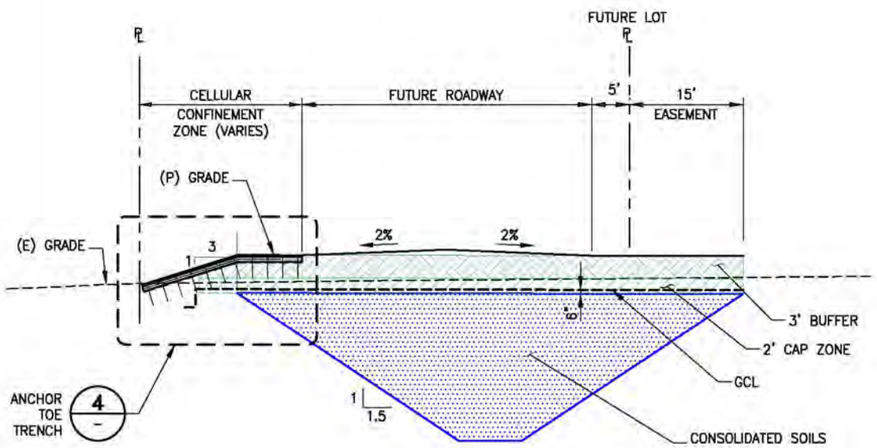




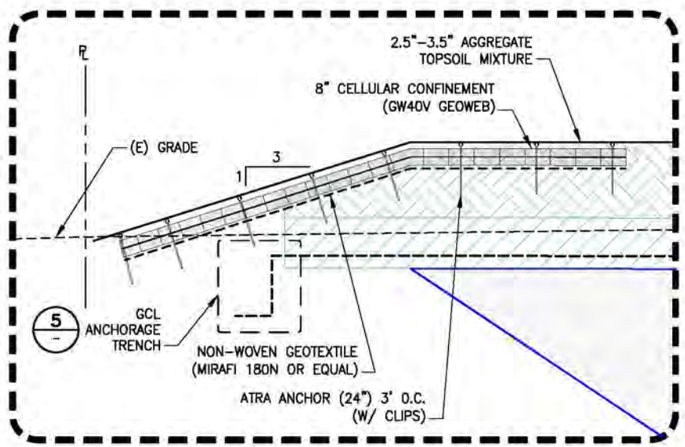
NOTE:

1. THE CELLULAR CONFINEMENT SYSTEM INFILL SHALL BE A MIXTURE OF AGGREGATE BLENDED WITH TOPSOIL TO PROMOTE VEGETATIVE GROWTH AND PROVIDE REQUIRED STRUCTURAL SUPPORT. THE AGGREGATE PORTION SHALL RANGES FROM 2.5" TO 3.5" WITH A MEDIAN STONE SIZE OF 3.0". THE PERCENTAGE VOID-SPACE WHEN COMPACTED SHALL BE AT LEAST 30%. TOPSOIL, EQUAL TO BUT NOT GREATER THAN THE AGGREGATE VOID PERCENTAGE, SHALL BE ADDED AND BLENDED PRIOR TO PLACEMENT. THE MIXTURE SHALL BE COMPACTED TO A DENSITY THAT WILL PROVIDE A MINIMUM CALIFORNIA BEARING RATIO OF 7.

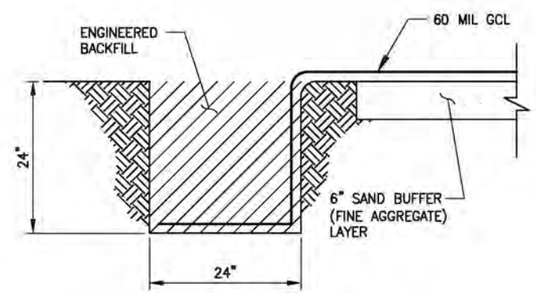
2 CELLULAR CONFINEMENT DETAILS
SCALE: N.T.S.



3 CELLULAR CONFINEMENT/CAP ALONG POLE CREEK
SCALE: 1" = 10'



4 ANCHOR TOE TRENCH
SCALE: N.T.S.



5 GCL ANCHORAGE TRENCH
SCALE: N.T.S.

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APPROVED BY:

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CITY OF FILLMORE, CALIFORNIA

CONSOLIDATION AREA
DETAIL ENLARGEMENT AND DETAILS

JOB NO.
DATE 4/26/13
SCALE AS SHOWN
SHEET 29 OF 43 SHEETS
SHEET NO. C-33

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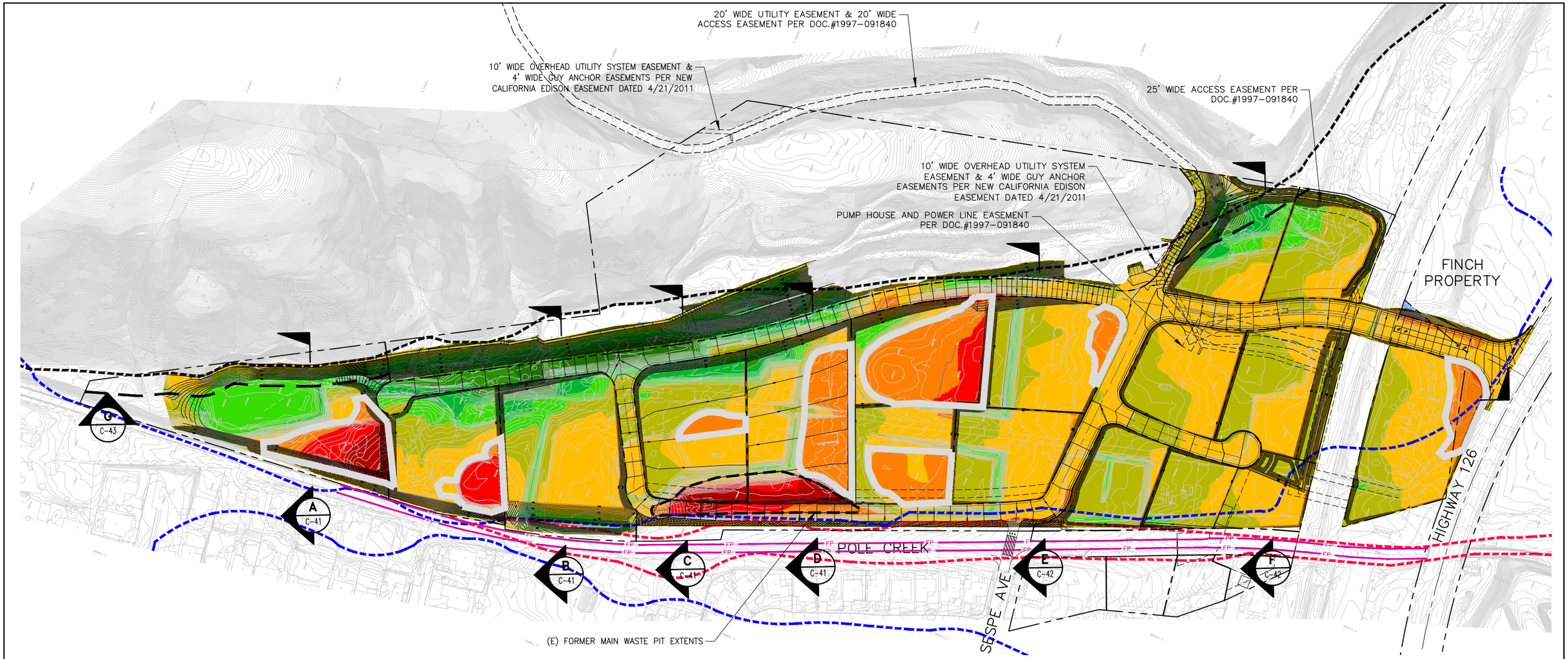

MASS GRADING COORDINATION

1. CONTRACTOR TO PROTECT (E) WELLS TO REMAIN AND INSTALL WELL CASING AND EXTENSIONS AND PROTECTIVE OUTER STEEL 24" DIAMETER RISER(S) EMBEDDED IN CONCRETE FOR FILL AREAS (SEE DETAIL 4 ON SHEET C-44), AND SIMILARLY PROTECTIVE OUTER STEEL 24" DIAMETER RISER(S) EMBEDDED IN CONCRETE BELOW (E) GRADE WITH WELL CASING REMOVAL TO ADJUST TO LOWER (P) GRADE IN AREAS OF CUT.
2. EACH LOT WITH ADJACENT DOWN SLOPES WILL INCORPORATE A 6-INCH EDGE BERM TO AVOID FLOW DOWN SLOPES AND DIRECT FLOW TO CORNER DETENTION AREAS AND OUTFLOW STRUCTURES. SEE DETAIL 5 ON SHEET C-44.
3. CUT AND FILL THICKNESS ARE MEASURED BETWEEN EXISTING GRADE AND PROPOSED ROUGH GRADE. AS PART OF MASS GRADING WITH MORE THAN 5 FEET OF FILL WILL BE OVEREXCAVATED 18-INCHES PRIOR TO FILL PLACEMENT.
4. SLOPES ADJACENT TO POLE CREEK AND LOCATED EAST OF ANY (E) TREES TO REMAIN ARE TO BE ADJUSTED AS-NEEDED TO CONFORM TO (E) TREES.

LEGEND:

- EFFECTIVE 500 YEAR FLOOD PLAIN
- EFFECTIVE 100 YEAR FLOOD PLAIN
- PROPOSED 100 YEAR FLOOD PLAIN
- APPROXIMATE SAN CAYETANO FAULT ALIGNMENT
- 50' FAULT SETBACK
- PROPERTY LINE
- PROPOSED PROPERTY LINE (SEE CIVIL PLANS)
- (E) FORMER MAIN WASTE PIT EXTENTS
- FILL AREAS REQUIRING 18-INCHES OF OVER EXCAVATION PRIOR TO FILL PLACEMENT

- 0' to 5' OF CUT
- 5' to 10' OF CUT
- 10' to 15' OF CUT
- 15' to 20' OF CUT
- 20' to 26' OF CUT
- 0' to 5' OF FILL
- 5' to 10' OF FILL
- 10' to 15' OF FILL
- 15' to 20.5' OF FILL

0 60 120 240 360
SCALE: 1"= 120'

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NO.	BY.	DATE	DESCRIPTION

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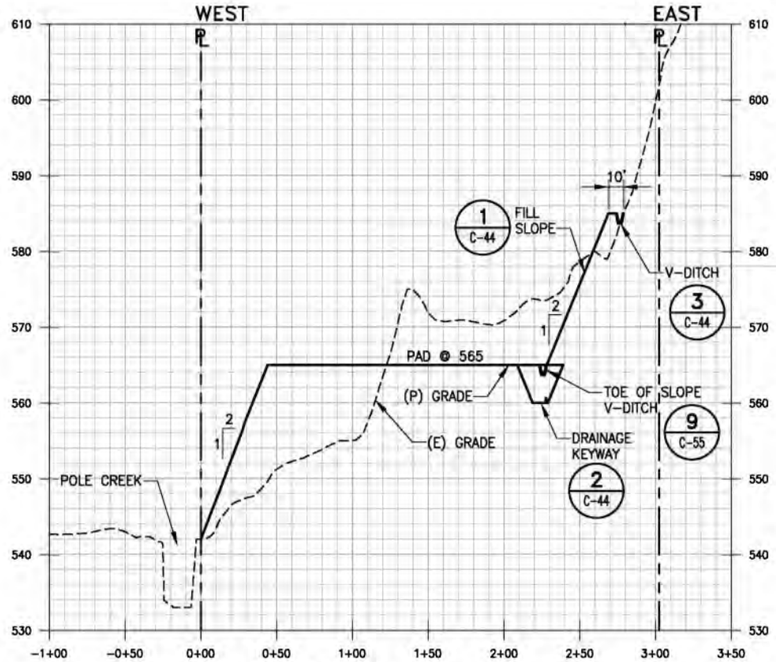
DESIGNED BY: K. ARROW
CHECKED BY: T. SWEET
APPROVED BY:

PACIFIC COAST PIPELINE (PCPL) SUPERFUND SITE
CITY OF FILLMORE, CALIFORNIA

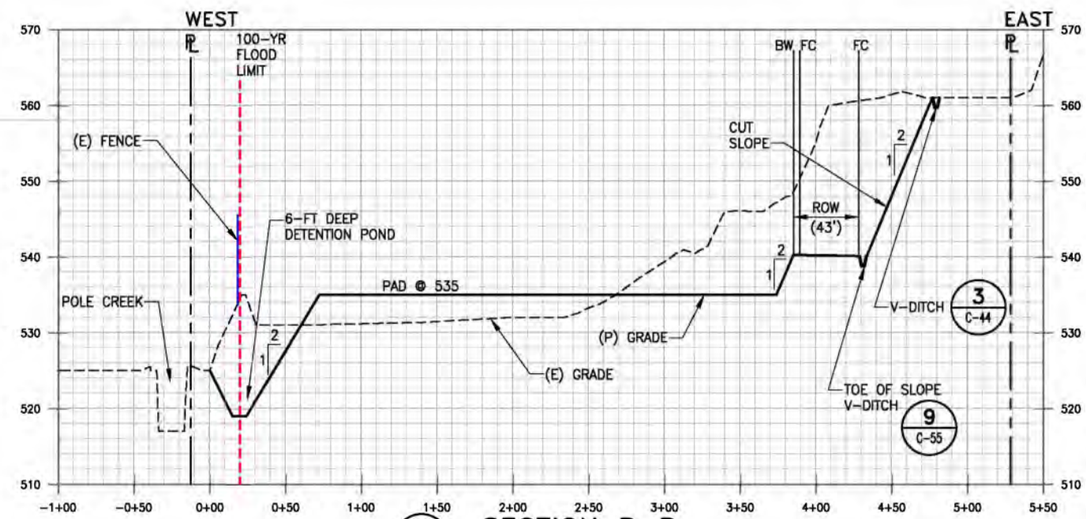
MASS GRADING PLAN

JOB NO.
DATE 4/26/13
SCALE 1'= 120'
SHEET 30 OF 43 SHEETS
SHEET NO. C-40

Apr 30, 2013 - 1:22pm T:\chevron fillmore\Sheet\C-40.dwg
dahlia_mendoza



A C-40 SECTION A–A
SCALE: 1"=50' (H) 1"=10' (V)



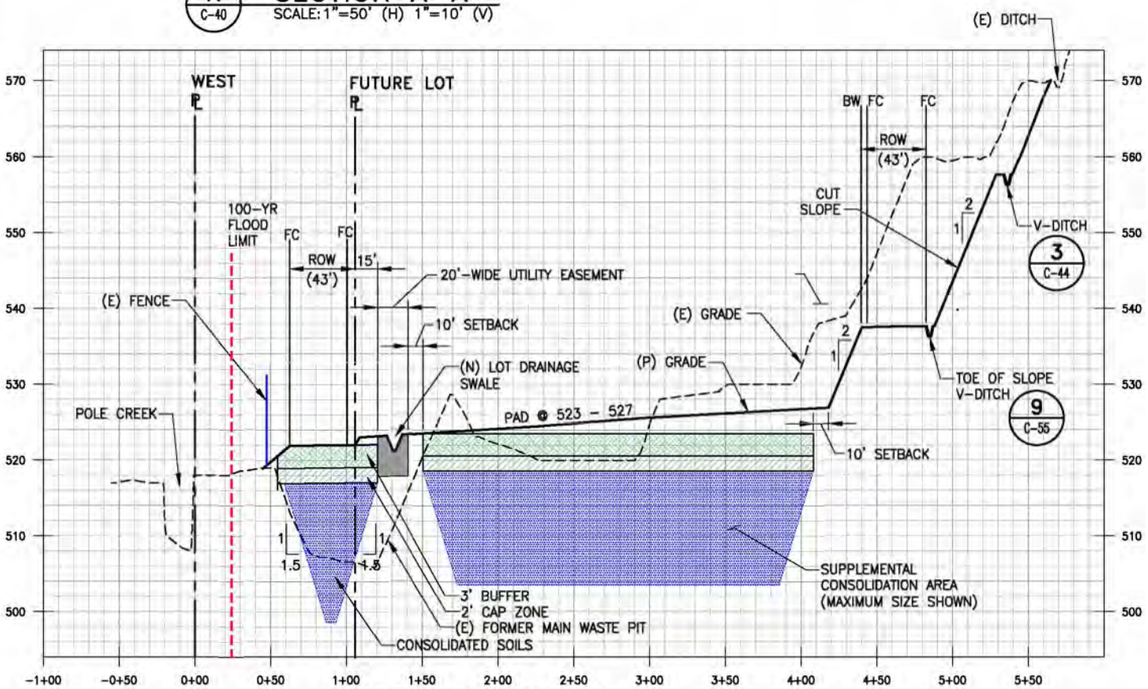
B C-40 SECTION B–B
SCALE: 1"=50' (H) 1"=10' (V)

NOTES:

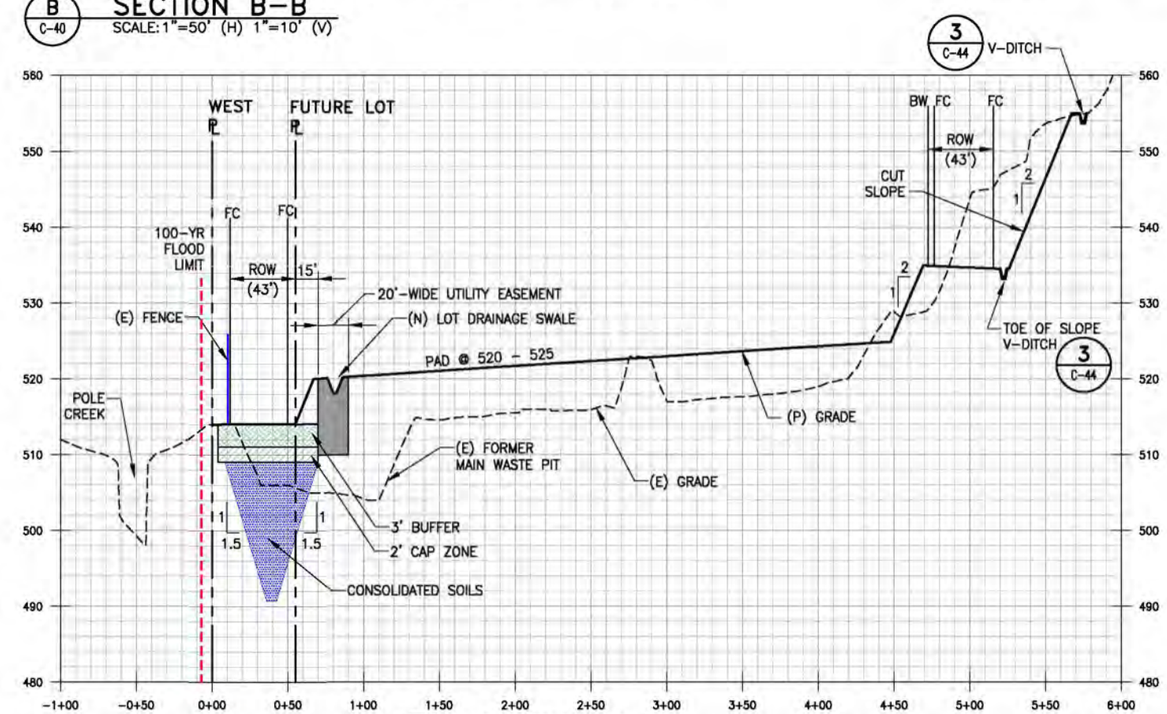
1. SEE URS GEOTECHNICAL REPORT FOR ADDITIONAL DETAIL ON EARTHWORK REQUIREMENTS.
2. FILL SLOPE TOE DRAINAGE WILL BE COLLECTED AND DAYLIGHTED AT BACK OF CURB SURFACE DRAINAGE SWALE(S).
3. CUT SLOPE TOE DRAINAGE WILL BE VIA V-DITCH.
4. SEE SHEET C-50 TO C-55 FOR DETAILS ON DETENTION POND AND LOT DRAINAGE SWALES

0 25 50 100 150
SCALE: 1"= 50'

0 5 10 20 30
SCALE: 1"= 10'



C C-40 SECTION C–C
SCALE: 1"=50' (H) 1"=10' (V)



D C-40 SECTION D–D
SCALE: 1"=50' (H) 1"=10' (V)

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CITY OF FILLMORE, CALIFORNIA

MASS GRADING SECTIONS
(A–A THROUGH D–D)

JOB NO.
DATE 4/26/13
SCALE AS SHOWN
SHEET 31 OF 43 SHEETS
SHEET NO. C-41

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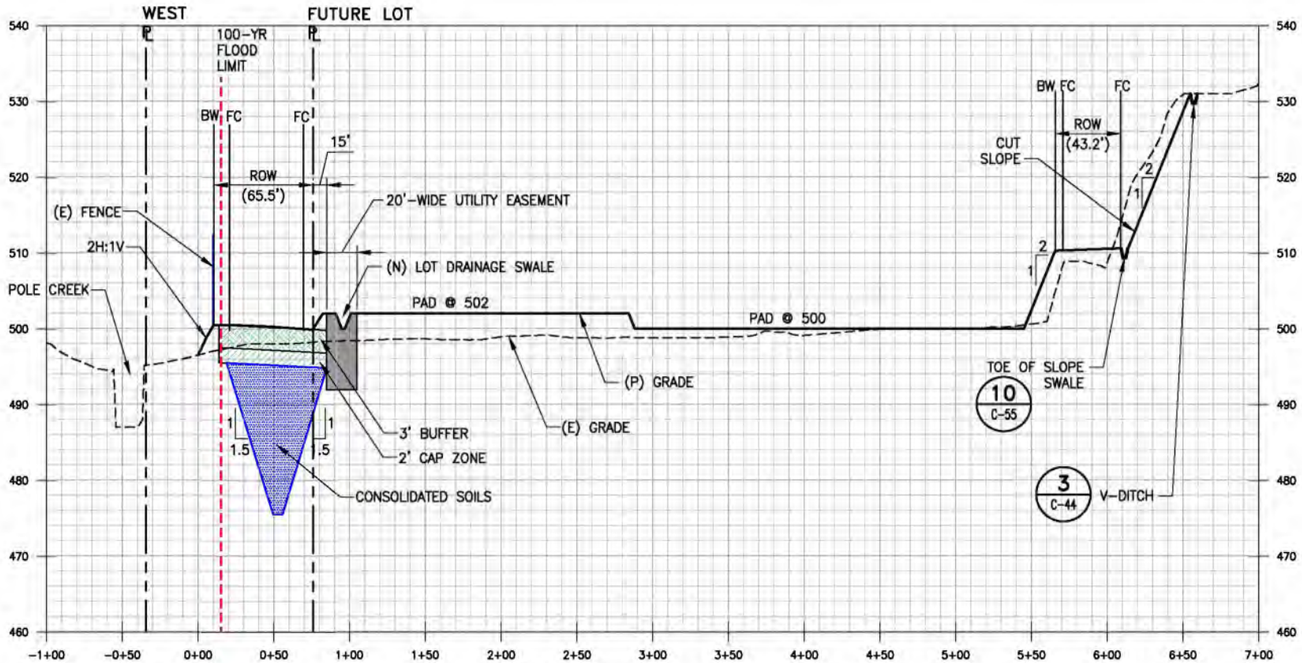
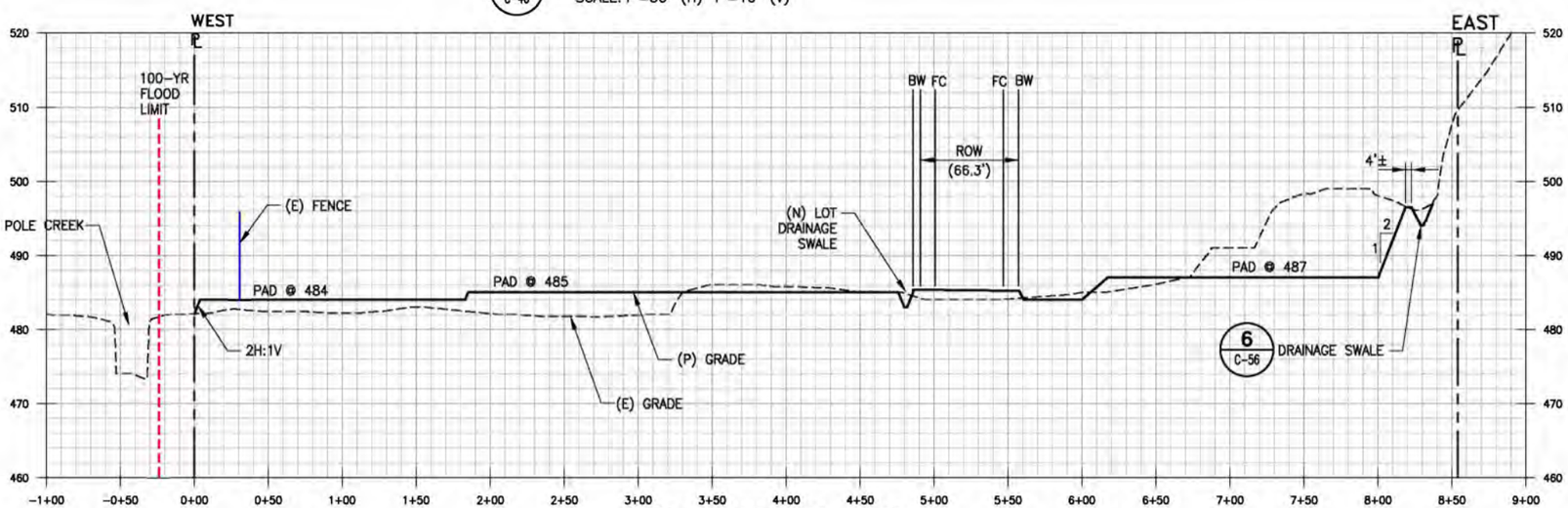


E C-40 SECTION E-E
SCALE: 1"=50' (H) 1"=10' (V)



F C-40 SECTION F-F
SCALE: 1"=50' (H) 1"=10' (V)

NOTES:

1. SEE URS GEOTECHNICAL REPORT FOR ADDITIONAL DETAIL ON EARTHWORK REQUIREMENTS.
2. FILL SLOPE TOE DRAINAGE WILL BE COLLECTED AND DAYLIGHTED AT BACK OF CURB SURFACE DRAINAGE SWALE(S).
3. CUT SLOPE TOE DRAINAGE WILL BE VIA V-DITCH.
4. SEE SHEETS C-50 TO C-55 FOR DETAILS ON DETENTION PONDS AND LOT DRAINAGE SWALES.

0 25 50 100 150
SCALE: 1"= 50'

0 5 10 20 30
SCALE: 1"= 10'

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1	KA	4/26/13	ISSUED FOR CONSTRUCTION

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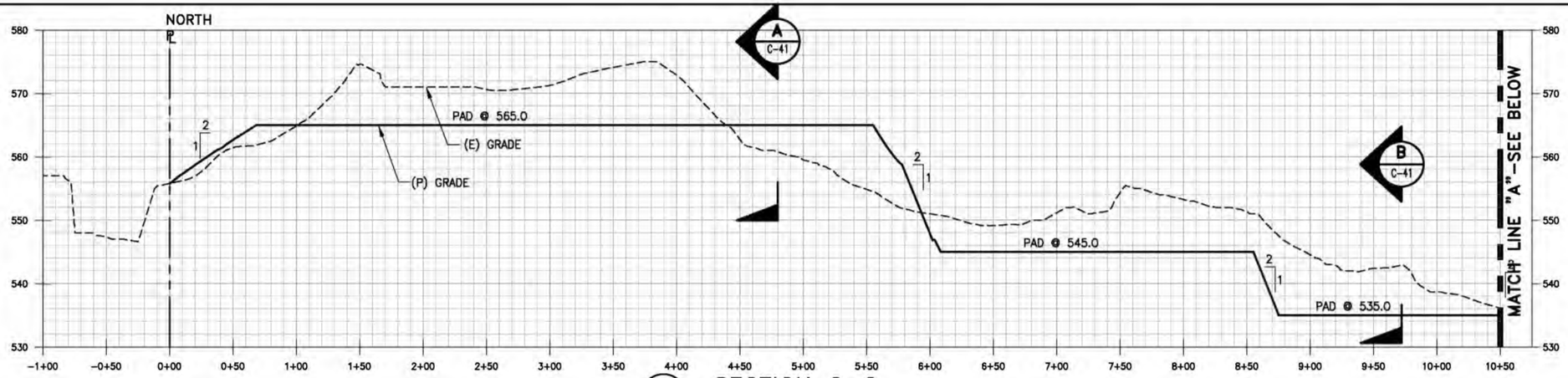
CITY OF FILLMORE, CALIFORNIA

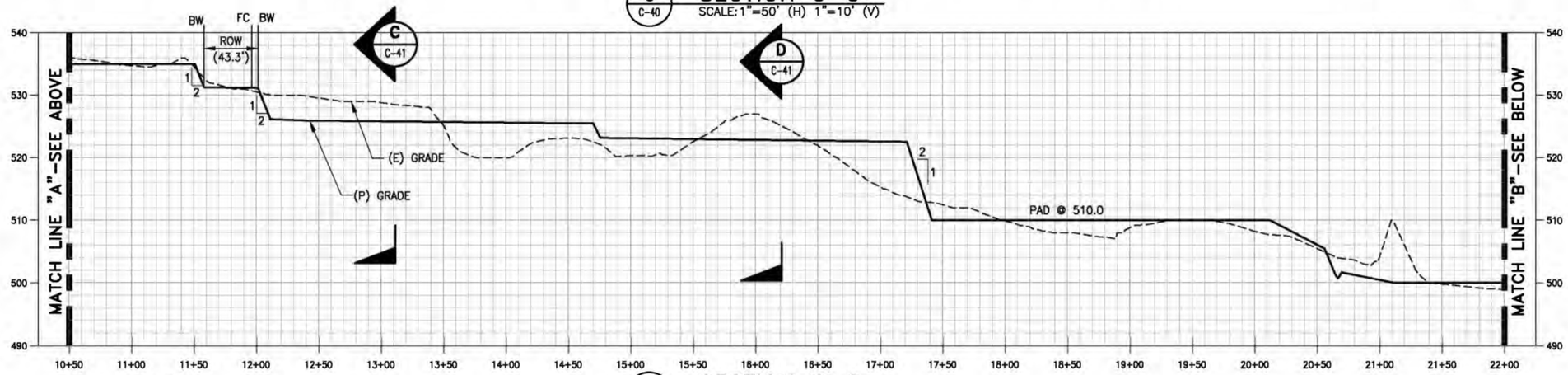
MASS GRADING SECTIONS
(E-E AND F-F)

JOB NO.
DATE 4/26/13
SCALE AS SHOWN
SHEET 32 OF 43 SHEETS
SHEET NO. C-42

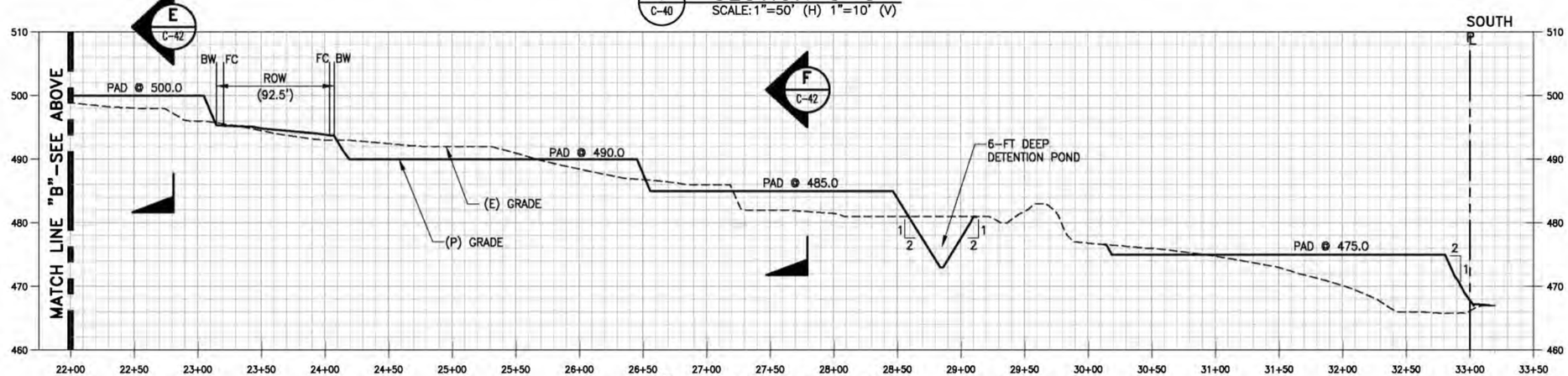
Apr 30, 2013 - 1:22pm T:\chevron fillmore\Sheet\C-42.dwg
danilo_mendoza



G C-40 SECTION G-G
SCALE: 1"=50' (H) 1"=10' (V)



G C-40 SECTION G-G
SCALE: 1"=50' (H) 1"=10' (V)



G C-40 SECTION G-G
SCALE: 1"=50' (H) 1"=10' (V)

NOTES:

1. SEE URS GEOTECHNICAL REPORT FOR ADDITIONAL DETAIL ON EARTHWORK REQUIREMENTS.
2. SEE SHEETS C-50 TO C-55 FOR DETAILS ON DETENTION POND AND LOT DRAINAGE SWALES.

0 25 50 100 120
SCALE: 1"= 50'

0 5 10 20 30
SCALE: 1"= 50'

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PACIFIC COAST PIPELINE (PCPL) SUPERFUND SITE
CITY OF FILLMORE, CALIFORNIA

MASS GRADING SECTIONS
(G-G)

JOB NO.
DATE 4/26/13
SCALE AS SHOWN
SHEET 33 OF 43 SHEETS
SHEET NO. C-43

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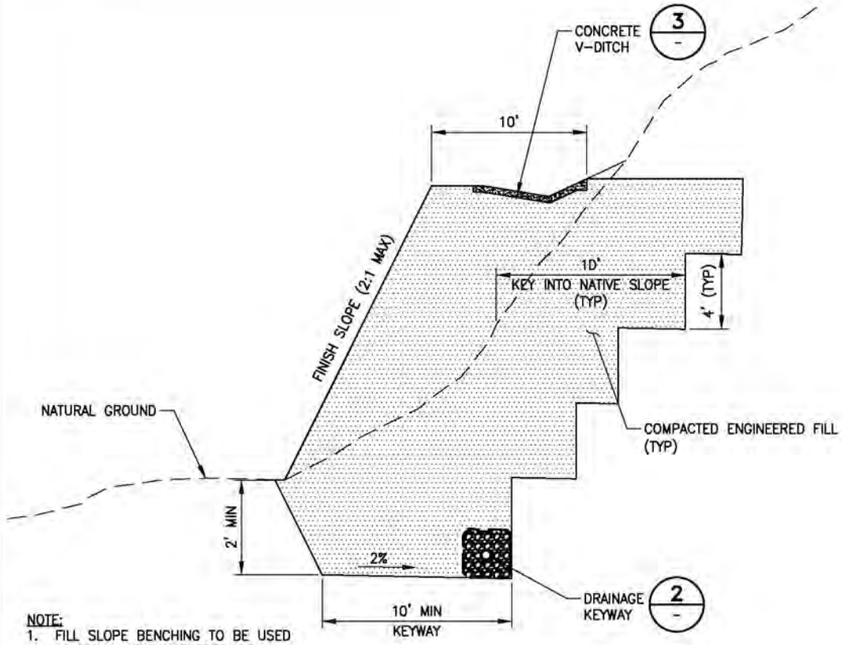
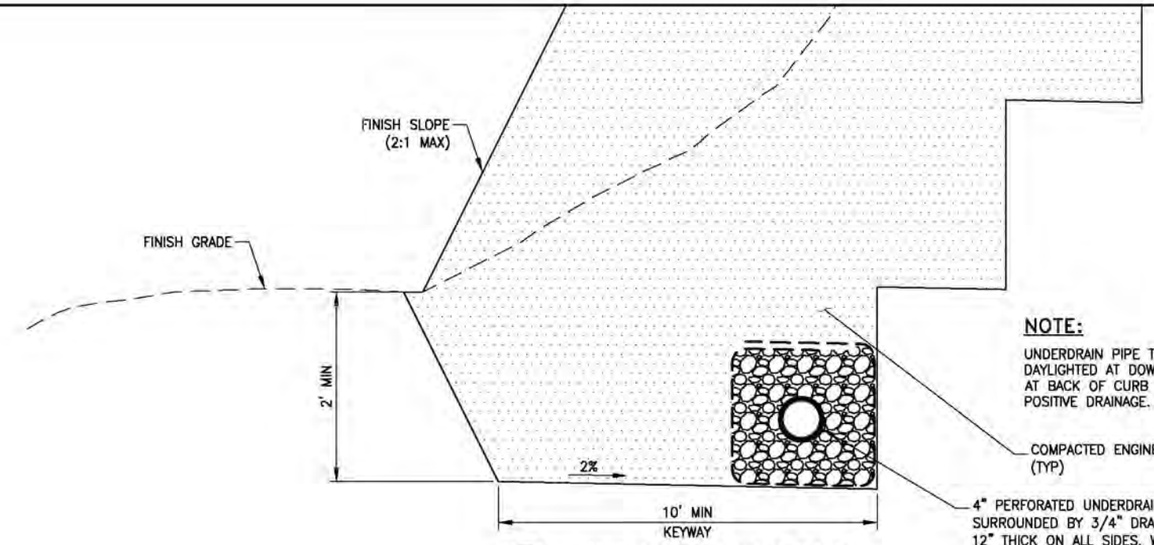


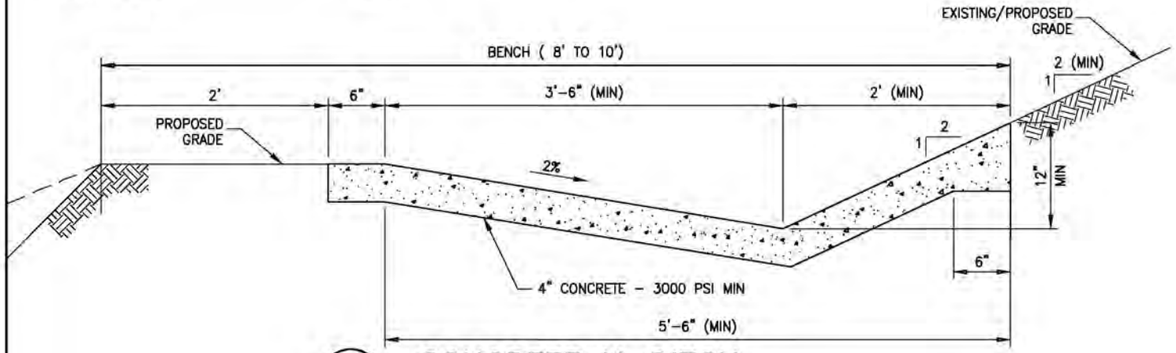
NOTE:
1. FILL SLOPE BENCHING TO BE USED IN AREAS WITH DISTURBED OR PREVIOUSLY CUT SLOPE.
2. SEE URS GEOTECHNICAL REPORT FOR ADDITIONAL DETAIL ON EARTHWORK REQUIREMENTS.

1 FILL SLOPE
SCALE: N.T.S.

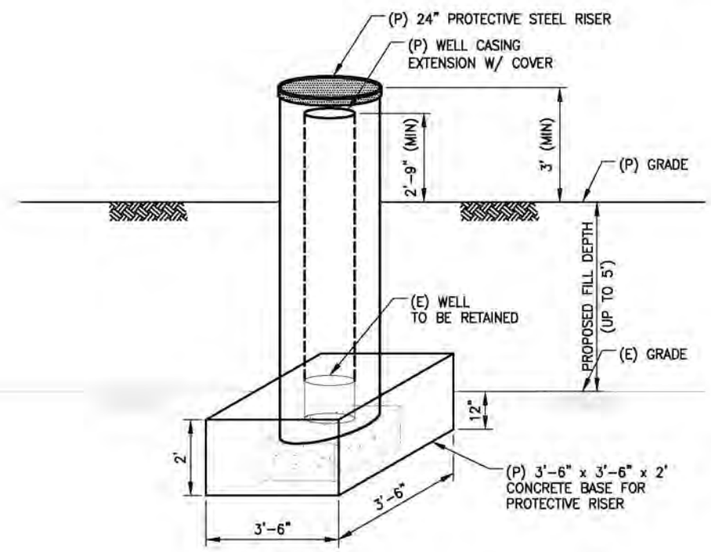


NOTE:
UNDERDRAIN PIPE TO BE SLOPED TO AND DAYLIGHTED AT DOWNSLOPE DRAINAGE SWALE AT BACK OF CURB TO SOUTH TO ACHIEVE POSITIVE DRAINAGE.

2 DRAINAGE KEYWAY
SCALE: N.T.S.

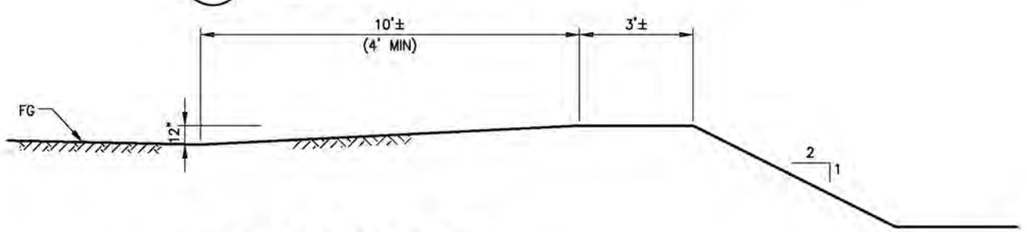


3 CONCRETE V-DITCH
SCALE: N.T.S.



NOTE
IF (E) WELL IS IN AREA OF CUT, CONTRACTOR TO EXCAVATE AS-NEEDED TO PROVIDE (N) PROTECTIVE STEEL RISER 3' (MIN) ABOVE (P) GRADE AND PROVIDE CONCRETE BASE AND WELL CASING LOWERING AS SHOWN.

4 (E) WELL PROTECTIVE RISER DETAIL
SCALE: N.T.S.



5 LOT EDGE BERM
SCALE: N.T.S.

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CITY OF FILLMORE, CALIFORNIA

MASS GRADING DETAILS

JOB NO.
DATE 4/26/13
SCALE AS SHOWN
SHEET 34 OF 43 SHEETS
SHEET NO. C-44

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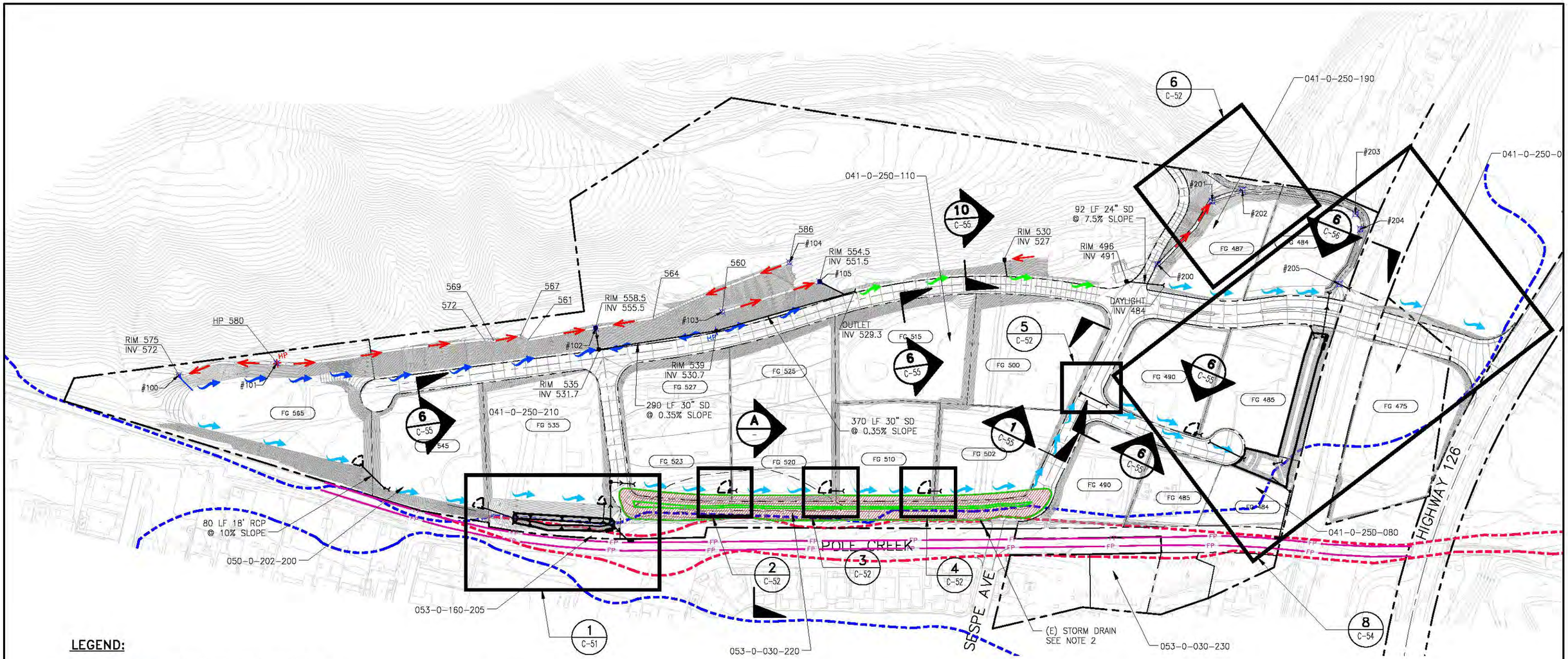

LEGEND:

- EFFECTIVE 500 YEAR FLOOD PLAIN
- EFFECTIVE 100 YEAR FLOOD PLAIN
- PROPOSED 100 YEAR FLOOD PLAIN
- PROPERTY LINE
- PROPOSED PROPERTY LINE (SEE CIVIL PLANS)
- CUT SLOPE BENCH DRAINAGE V-DITCH (3 / C-44)
- TOE OF SLOPE V-DITCH (9 / C-55)
- TOE OF SLOPE SWALE (10 / C-55)
- GRADED AREA DRAINAGE SWALE(S) (1 / C-55)
- CONSOLIDATION AREA (SEE SHEETS 4 AND 5)

NOTES:

1. (E) STORM DRAIN TO BE REMOVED WITHIN 5' OF PROPERTY LINE AND REMAINING PORTION TO BE FILLED WITH CONCRETE.
2. EACH GRADED AREA WITH ADJACENT DOWN SLOPE WILL INCORPORATE A 6-INCH EDGE BERM TO AVOID FLOW DOWN SLOPES AND DIRECT SURFACE FLOW TO CORNER DETENTION AREAS AND OUTFLOW STRUCTURES. SEE DETAIL 5 ON SHEET 12.
3. PLACE 6-INCH MINIMUM PROCESSED CONCRETE IN BOTTOM OF DRAINAGE SWALES AND DETENTION PONDS.
4. ALL SITE ROADWAYS HAVE ROADSIDE SWALES (PER DETAIL 6, SHEET C-55) EXCEPT WHERE DEEPER DRAINAGE SWALE (DETAILS 1, 9, AND 10, SHEET C-55) IS CALLED OUT.
5. COORDINATE CONTROLS SHOWN FOR SPATIAL CONTROL ONLY. CONTRACTOR TO CONFORM TO (E) CONDITIONS AS-NEEDED TO COMPLETE GRADING.

EAST SLOPE COORDINATE CONTROL PLAN

Point #	Northing	Easting
100	331452.8807	1726886.9264
101	331240.7010	1727006.0887
102	330547.8107	1727385.2123
103	330274.4392	1727540.5190
104	330167.5027	1727716.5653
105	330081.2660	1727700.8952

SWALE COORDINATE CONTROL PLAN

Point #	Northing	Easting
200	329327.7063	1728056.5707
201	329262.5853	1728251.5535
202	329204.6092	1728305.1558
203	328924.7675	1728356.9516
204	328898.7156	1728327.0305
205	328895.3585	1728181.6900

0 60 120 240 360
SCALE: 1"= 120'

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PACIFIC COAST PIPELINE (PCPL) SUPERFUND SITE
CITY OF FILLMORE, CALIFORNIA

DRAINAGE PLAN AND EROSION CONTROL PLAN

JOB NO.
DATE 4/26/13
SCALE 1"= 120'
SHEET 35 OF 43 SHEETS
SHEET NO. C-50

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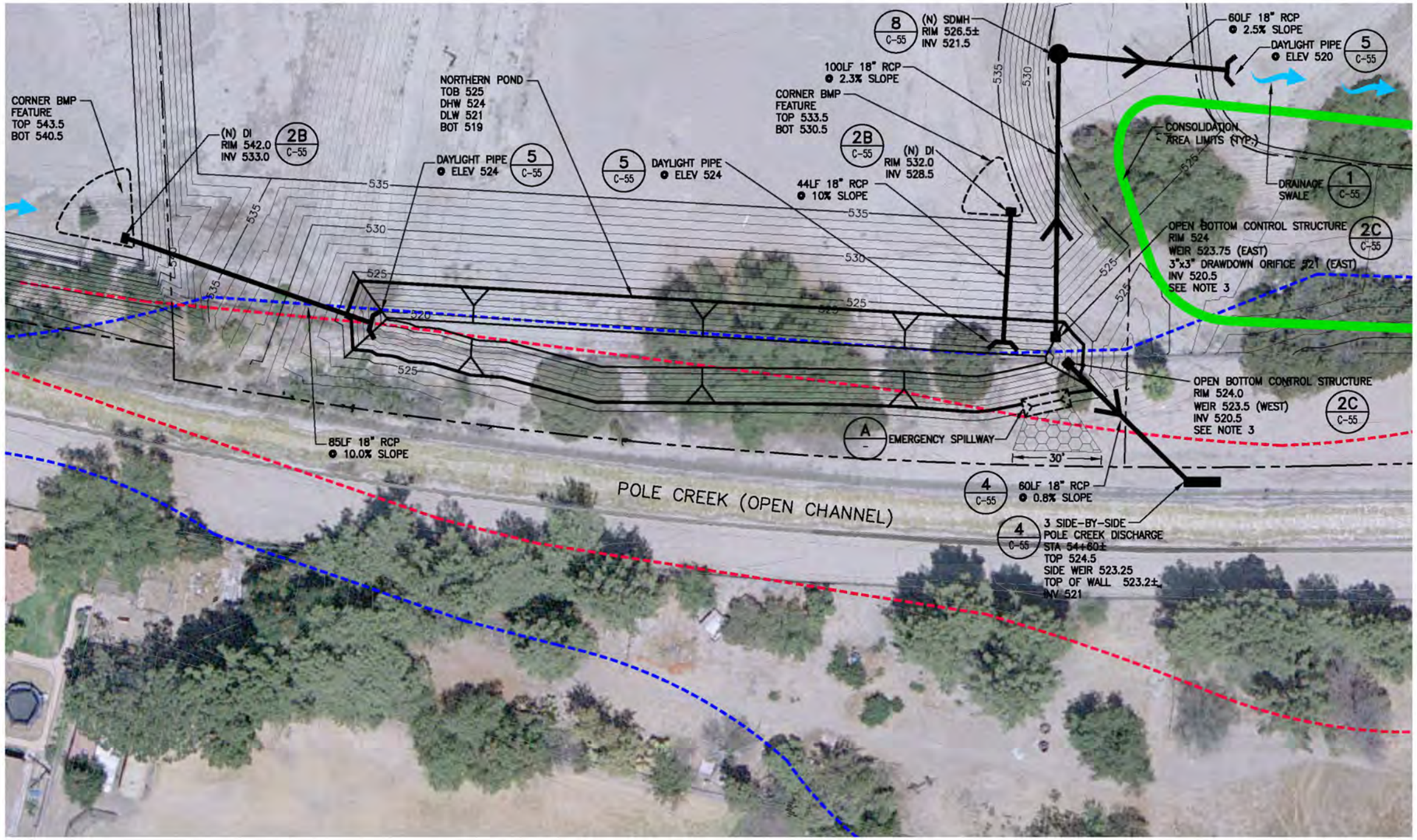


1 / C-50 ENLARGED DRAINAGE PLAN AND EROSION CONTROL PLAN

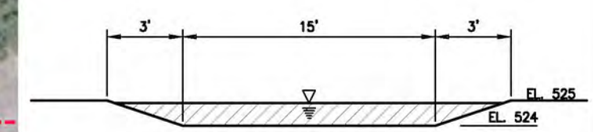
SCALE: 1" = 20'

NOTES:

1. ALL CONSTRUCTION TO BE WITHIN PROPERTY LIMITS.
2. WORK ADJACENT TO POLE CREEK TO BE ADJUSTED TO ACTUAL GRADES.
3. INLET TO HAVE NOTCHES ON ALL 4 SIDES. NOTCHES ON SHORT SIDES OF INLET TO BE 2.5' LONG AND NOTCHES ON LONG SIDES OF INLET TO BE 3.5' LONG.

LEGEND:

- EFFECTIVE 500 YEAR FLOOD PLAIN
- EFFECTIVE 100 YEAR FLOOD PLAIN
- PROPERTY LINE
- PROPOSED PROPERTY LINE (SEE CIVIL PLANS)
- GRADED AREA DRAINAGE SWALE(S) 1 / C-55
- CONSOLIDATION AREA (SEE SHEETS 4 AND 5)
- CELLULAR CONFINEMENT 2 / C-33



A / - EMERGENCY SPILLWAY

SCALE: N.T.S.

0 10 20 40 60

SCALE: 1"= 20'

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CITY OF FILLMORE, CALIFORNIA

ENLARGED DRAINAGE PLAN AND EROSION CONTROL PLAN 1

JOB NO.
DATE 4/26/13
SCALE 1'= 120'
SHEET 36 OF 43 SHEETS
SHEET NO. C-51

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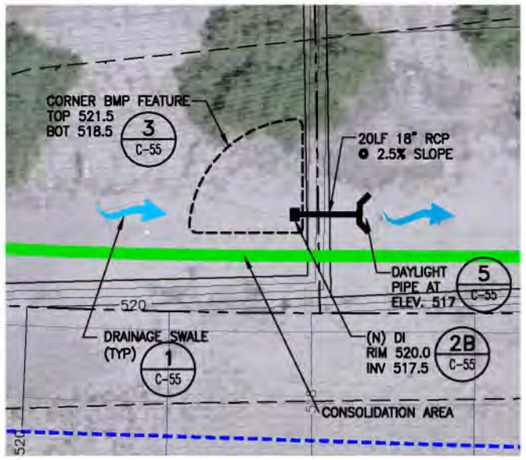
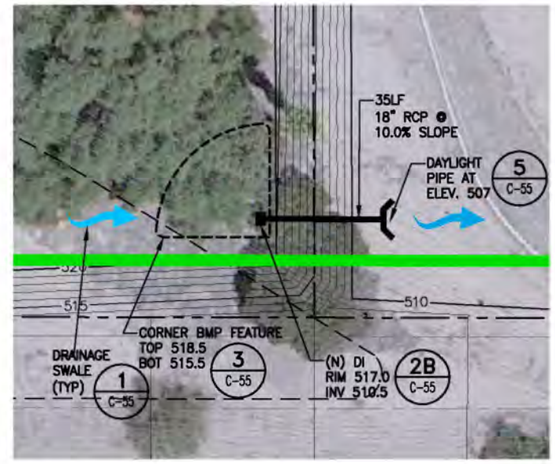


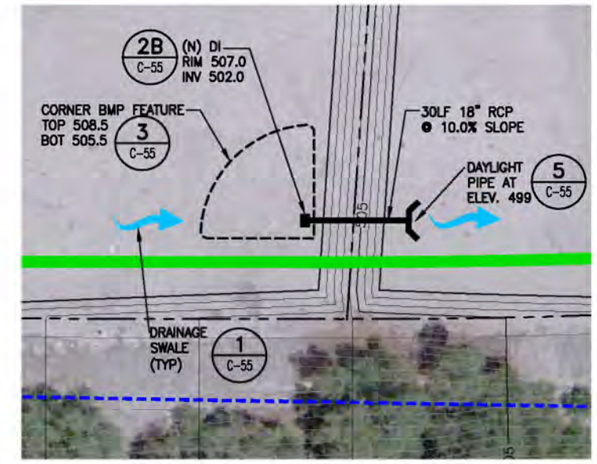
ENLARGED DRAINAGE PLAN AND EROSION CONTROL PLAN

2 / C-50 SCALE: 1" = 20'



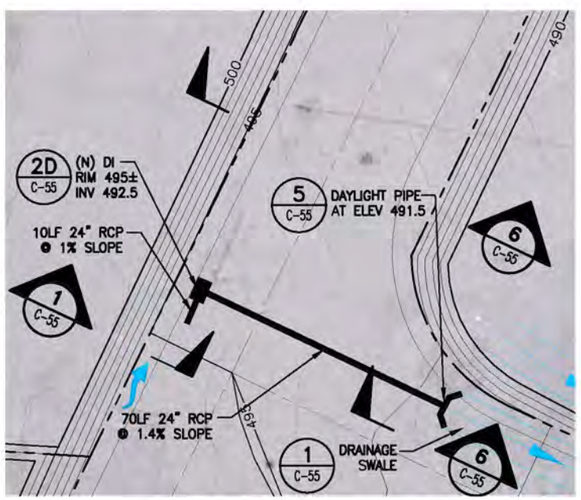
ENLARGED DRAINAGE PLAN AND EROSION CONTROL PLAN

3 / C-50 SCALE: 1" = 20'



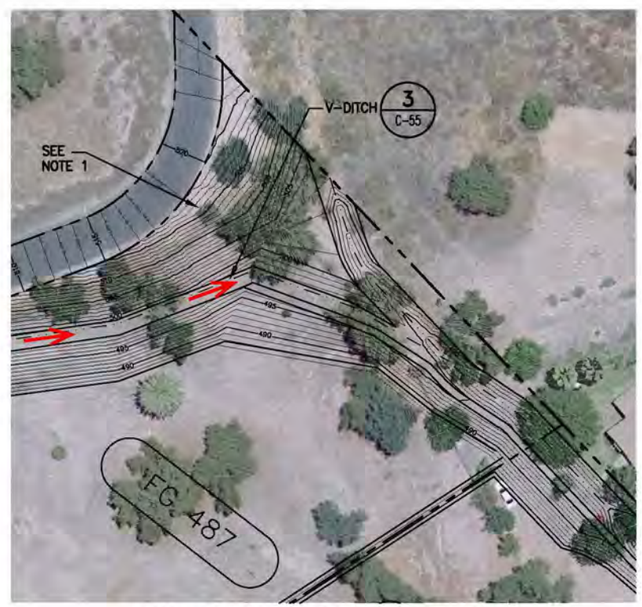
ENLARGED DRAINAGE PLAN AND EROSION CONTROL PLAN

4 / C-50 SCALE: 1" = 20'



ENLARGED DRAINAGE PLAN AND EROSION CONTROL PLAN

5 / C-50 SCALE: 1" = 20'



ENLARGED DRAINAGE PLAN AND EROSION CONTROL PLAN

6 / C-50 SCALE: 1" = 40'

NOTES:

1. (E) SMOKEHOUSE STRUCTURE TO BE FILLED WITH A 2-SACK CEMENT AND SAND SLURRY MIX.

LEGEND:

- EFFECTIVE 500 YEAR FLOOD PLAIN
- EFFECTIVE 100 YEAR FLOOD PLAIN
- PROPERTY LINE
- PROPOSED PROPERTY LINE (SEE CIVIL PLANS)
- CUT SLOPE BENCH DRAINAGE V-DITCH (3 / C-44)
- GRADED AREA DRAINAGE SWALE(S) (1 / C-55)
- CONSOLIDATION AREA (SEE SHEETS C-30 AND C-31)

0 10 20 40 60
SCALE: 1"= 20'

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CHECKED BY: T. SWEET
APPROVED BY:

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CITY OF FILLMORE, CALIFORNIA

ENLARGED DRAINAGE PLAN AND EROSION CONTROL PLAN 2

JOB NO.
DATE 4/26/13
SCALE 1"= 120'
SHEET 37 OF 43 SHEETS
SHEET NO. C-52

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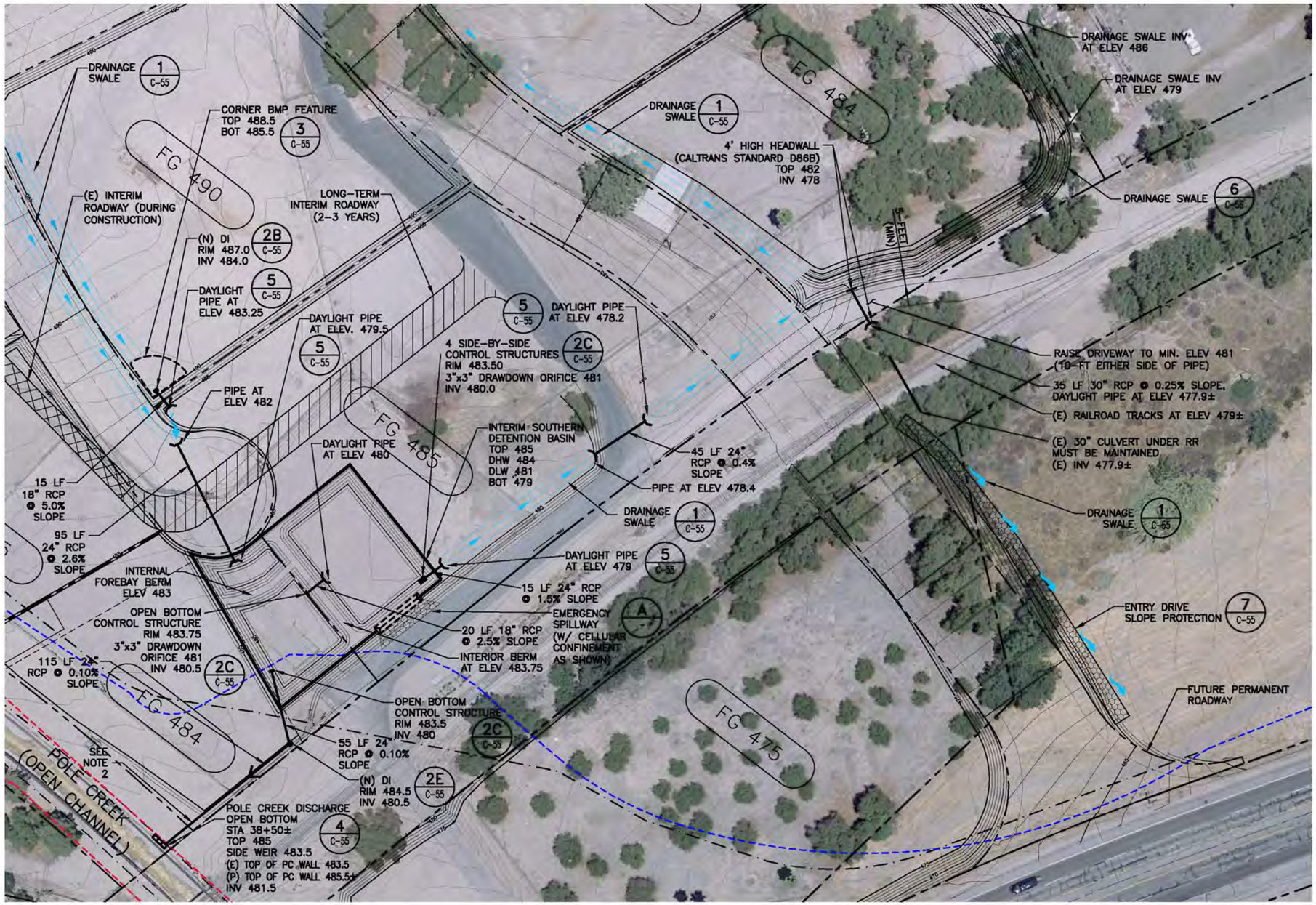


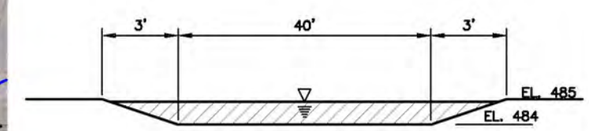
7 - ENLARGED INTERIM DRAINAGE PLAN AND EROSION CONTROL PLAN
SCALE: 1" = 40'

NOTES:

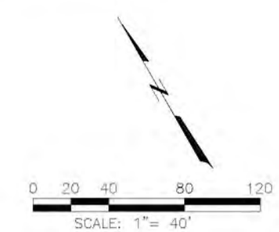
1. INSTALL TIDEFLEX CHECKMATE INLINE CHECK VALVE (OR APPROVED EQUAL) UPSTREAM OF DISCHARGE STRUCTURE.
2. OPEN BOTTOM INLETS TO HAVE 12" THICK LAYER OF DRAIN ROCK WITH NON-WOVEN FILTER FABRIC UNDER STRUCTURE.

LEGEND:

- EFFECTIVE 500 YEAR FLOOD PLAIN
- EFFECTIVE 100 YEAR FLOOD PLAIN
- PROPERTY LINE
- PROPOSED PROPERTY LINE (SEE CIVIL PLANS)
- GRADED AREA DRAINAGE SWALE(S) 1 C-55
- (E) INTERIM ROADWAY (DURING CONSTRUCTION)
- LONG-TERM INTERIM ROADWAY (2-3 YEARS)
- CELLULAR CONFINEMENT 2 C-33



A - EMERGENCY SPILLWAY
SCALE: N.T.S.



REVISIONS			
NO.	BY.	DATE	DESCRIPTION
1	KA	4/26/13	ISSUED FOR CONSTRUCTION

REVISIONS			
NO.	BY.	DATE	DESCRIPTION

URS
Post Montgomery Center
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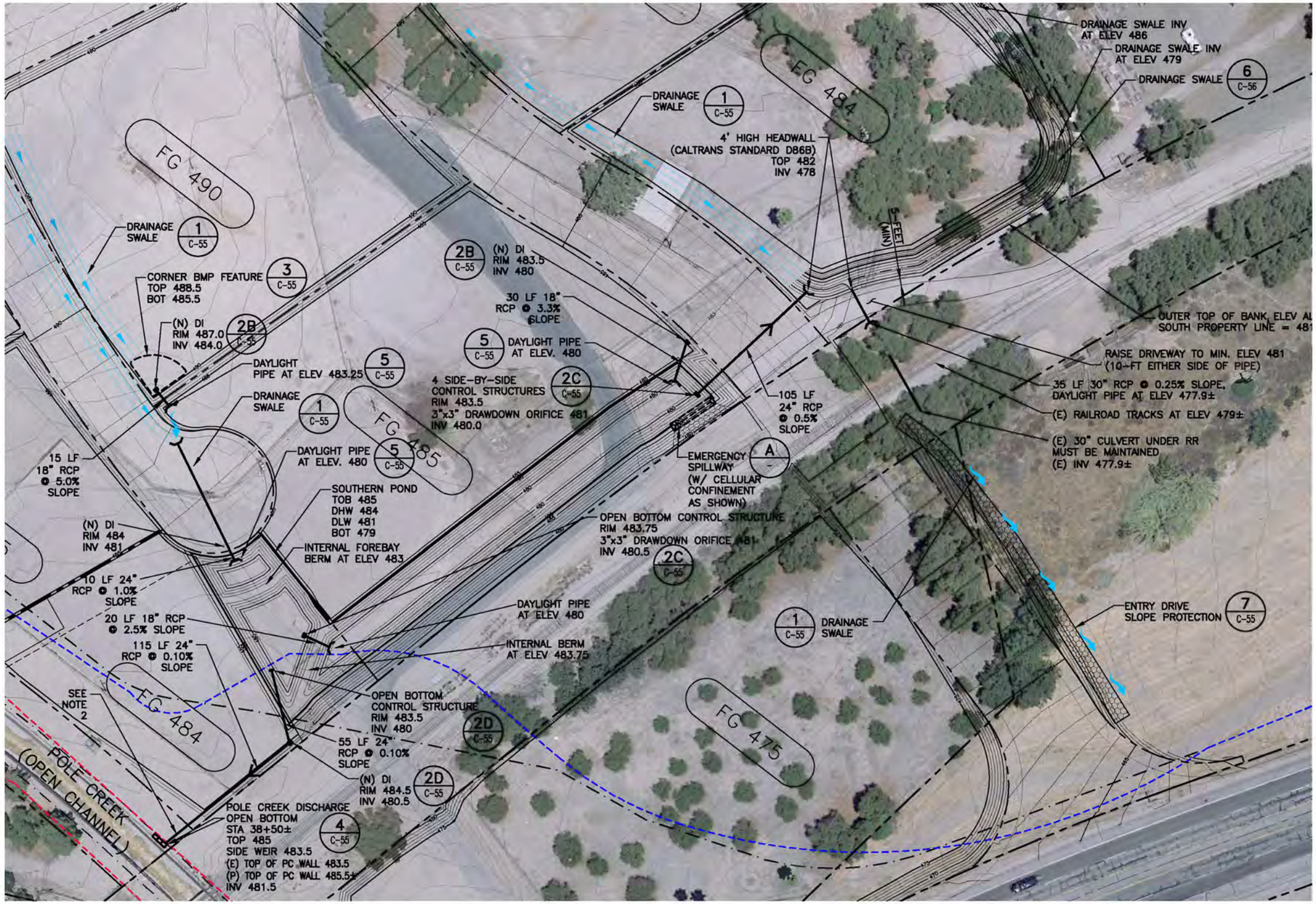
DRAWN BY: D. MENDOZA
DESIGNED BY: K. ARROW
CHECKED BY: T. SWEET
APPROVED BY:

PACIFIC COAST PIPELINE (PCPL) SUPERFUND SITE
CITY OF FILLMORE, CALIFORNIA

ENLARGED INTERIM DRAINAGE PLAN AND EROSION CONTROL PLAN 3

JOB NO.
DATE 4/26/13
SCALE 1'= 120'
SHEET 38 OF 43 SHEETS
SHEET NO. C-53

Apr 30, 2013 - 3:26pm T:\chevron fillmore\Sheet\C-53.dwg
dahlia_mendoza



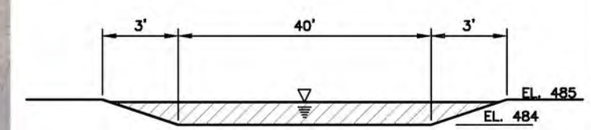
8 C-50 ENLARGED FUTURE DRAINAGE PLAN AND EROSION CONTROL PLAN
SCALE: 1" = 40'

NOTES:

1. INSTALL TIDEFLEX CHECKMATE INLINE CHECK VALVE (OR APPROVED EQUAL) UPSTREAM OF DISCHARGE STRUCTURE.
2. OPEN BOTTOM INLETS TO HAVE 12" THICK LAYER OF DRAIN ROCK WITH NON-WOVEN FILTER FABRIC UNDER STRUCTURE.

LEGEND:

- EFFECTIVE 500 YEAR FLOOD PLAIN
- EFFECTIVE 100 YEAR FLOOD PLAIN
- PROPERTY LINE
- PROPOSED PROPERTY LINE (SEE CIVIL PLANS)
- GRADED AREA DRAINAGE SWALE(S) 1 C-55
- CELLULAR CONFINEMENT 2 C-33



A - EMERGENCY SPILLWAY
SCALE: N.T.S.

0 20 40 80 120
SCALE: 1"= 40'

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1	KA	4/26/13	ISSUED FOR CONSTRUCTION

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NO.	BY.	DATE	DESCRIPTION

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DESIGNED BY: K. ARROW
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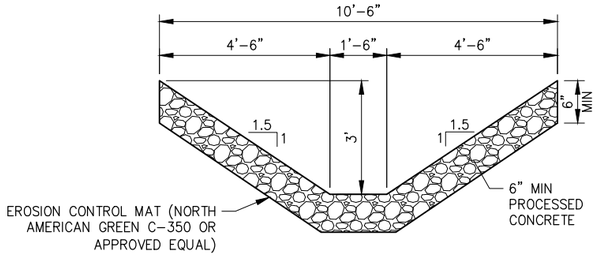
APPROVED BY:

PACIFIC COAST PIPELINE (PCPL) SUPERFUND SITE
CITY OF FILLMORE, CALIFORNIA

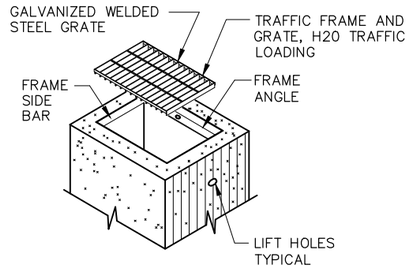
ENLARGED FUTURE DRAINAGE PLAN AND EROSION CONTROL PLAN 3

JOB NO.
DATE 4/26/13
SCALE 1"= 120'
SHEET 39 OF 43 SHEETS
SHEET NO. C-54

dahlia_mendoza Apr 30, 2013 - 3:24pm T:\chevron fillmore\Sheet\C-54.dwg



1 DRAINAGE SWALE
SCALE:NTS



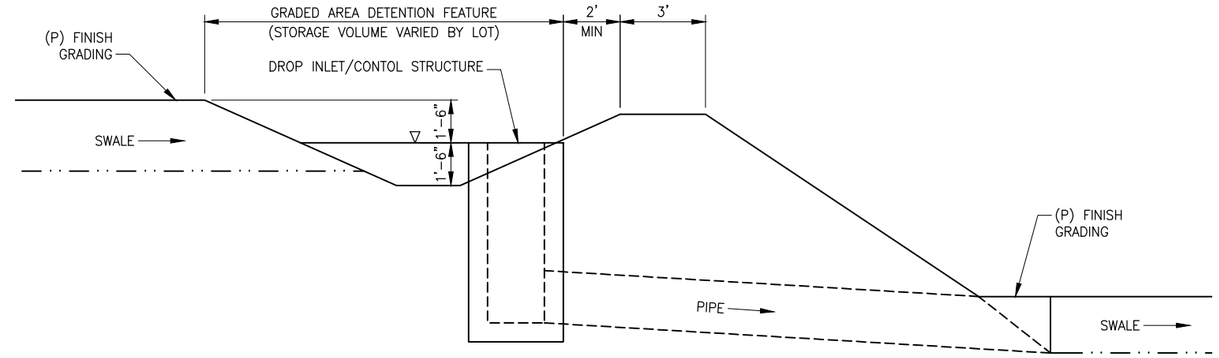
2A DRAIN INLET – 24" x 24"
SCALE:NTS

2B DRAIN INLET – 36" x 24"
SCALE:NTS

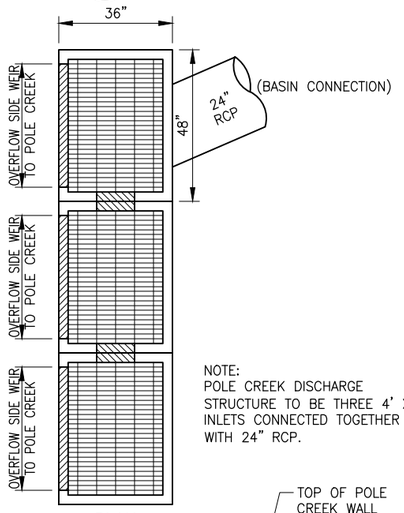
2C DRAIN INLET – 48" x 36"
SCALE:NTS

2D DRAIN INLET – 36" x 36"
SCALE:NTS

2E DRAIN INLET – 48" x 48"
SCALE:NTS

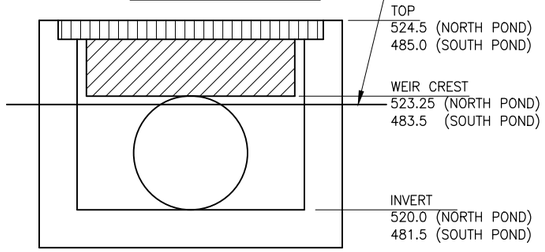


3 GRADED AREA DETENTION FEATURE
SCALE:N.T.S.



NOTE:
POLE CREEK DISCHARGE STRUCTURE TO BE THREE 4' X 3" INLETS CONNECTED TOGETHER WITH 24" RCP.

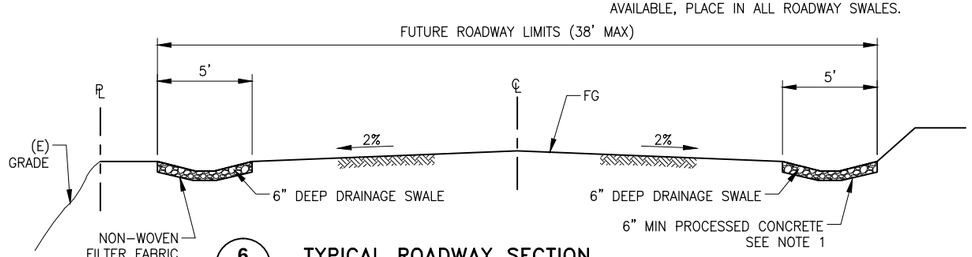
PLAN



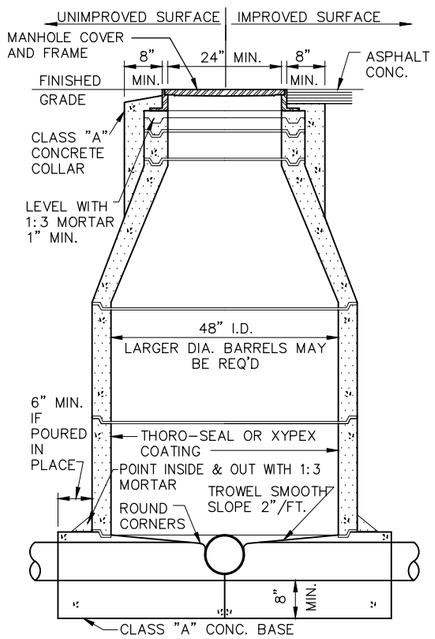
SECTION
LOOKING EAST

4 POLE CREEK DISCHARGE STRUCTURE
SCALE:NTS

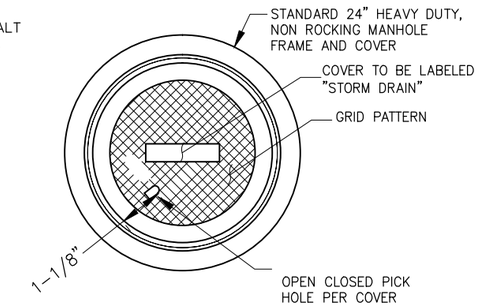
NOTE 1: PROCESSED CONCRETE OVER NON-WOVEN FILTER FABRIC (MIRAFI 180N) TO BE PLACED IN ROADWAY SWALE WITHIN WESTERN NORTH-SOUTH ROADWAY. IF ADDITIONAL PROCESSED CONCRETE AVAILABLE, PLACE IN ALL ROADWAY SWALES.



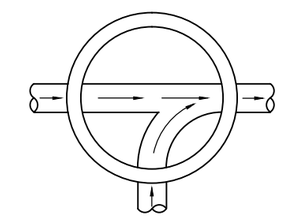
6 TYPICAL ROADWAY SECTION
SCALE:NTS



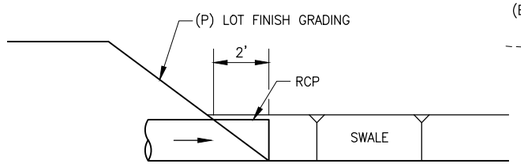
8 MANHOLE
SCALE:N.T.S.



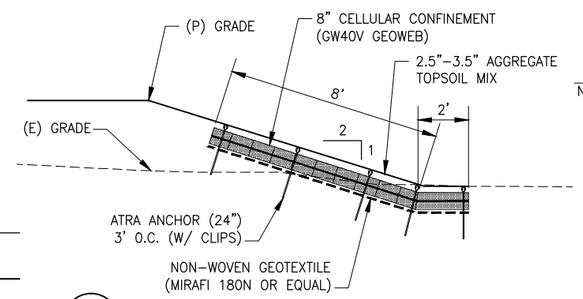
MANHOLE COVER AND FRAME



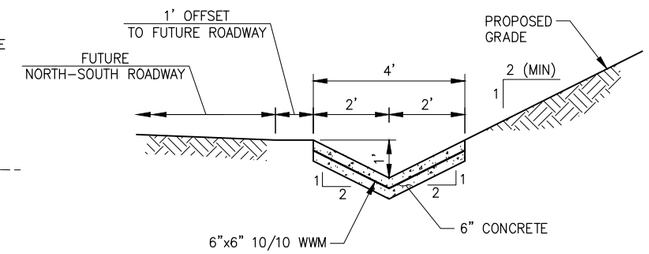
MANHOLE BASE
CHANNELIZATION PLAN



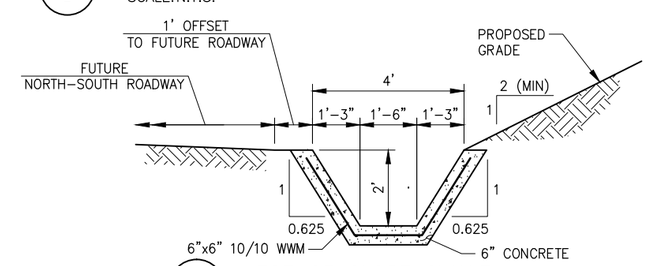
5 PIPE OUTLET
SCALE:NTS



7 ENTRY DRIVE SLOPE PROTECTION
SCALE:NTS



9 TOE OF SLOPE V-DITCH
SCALE:NTS



10 TOE OF SLOPE SWALE
SCALE:NTS

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NO.	BY.	DATE	DESCRIPTION

URS
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DRAWN BY: D. MENDOZA
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CHECKED BY: T. SWEET
APPROVED BY:

PACIFIC COAST PIPELINE (PCPL) SUPERFUND SITE
CITY OF FILLMORE, CALIFORNIA

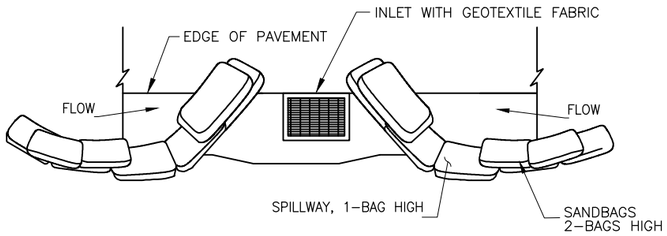
DRAINAGE DETAILS

JOB NO.
DATE 4/26/13
SCALE AS SHOWN
SHEET 40 OF 43 SHEETS
SHEET NO. C-55

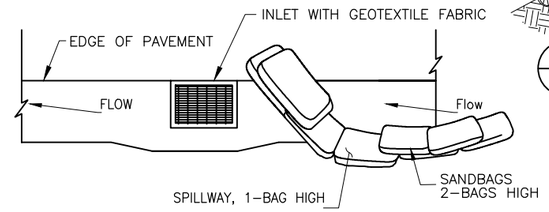
Apr 30, 2013 – 1:24pm T:\chevron fillmore\Sheet\C-55.dwg
danilo_mendoza

INLET PROTECTION NOTES:

1. INTENDED FOR SHORT–TERM USE.
2. USE TO INHIBIT NON–STORM WATER FLOW.
3. ALLOW FOR PROPER MAINTENANCE AND CLEANUP.
4. BAGS MUST BE REMOVED AFTER ADJACENT OPERATION IS COMPLETED.
5. NOT APPLICABLE IN AREAS WITH HIGH SILTS AND CLAYS WITHOUT FILTER FABRIC.
6. CONTRACTOR SHALL ALTER INLET PROTECTION FOR CURB OPEN INLETS OR FOR INLETS NOT AGAINST A CURB TO PREVENT SEDIMENT FROM ENTERING.

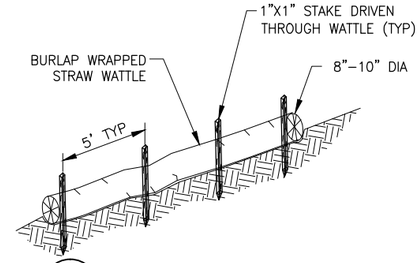


TYPICAL PROTECTION FOR INLET ON SUMP

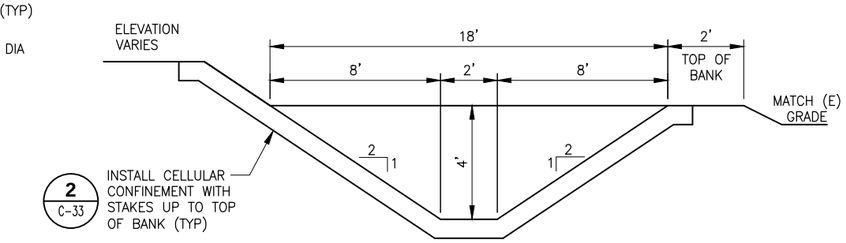


TYPICAL PROTECTION FOR INLET ON GRADE

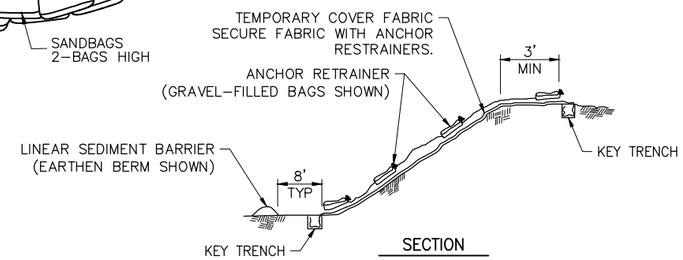
1 – INLET PROTECTION
SCALE:NTS



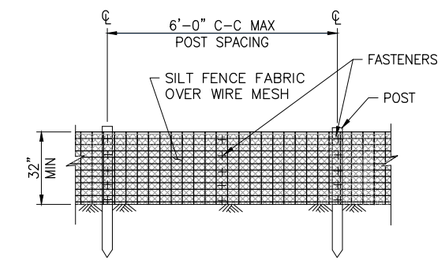
2 – STRAW WATTLE DETAIL
SCALE:NTS



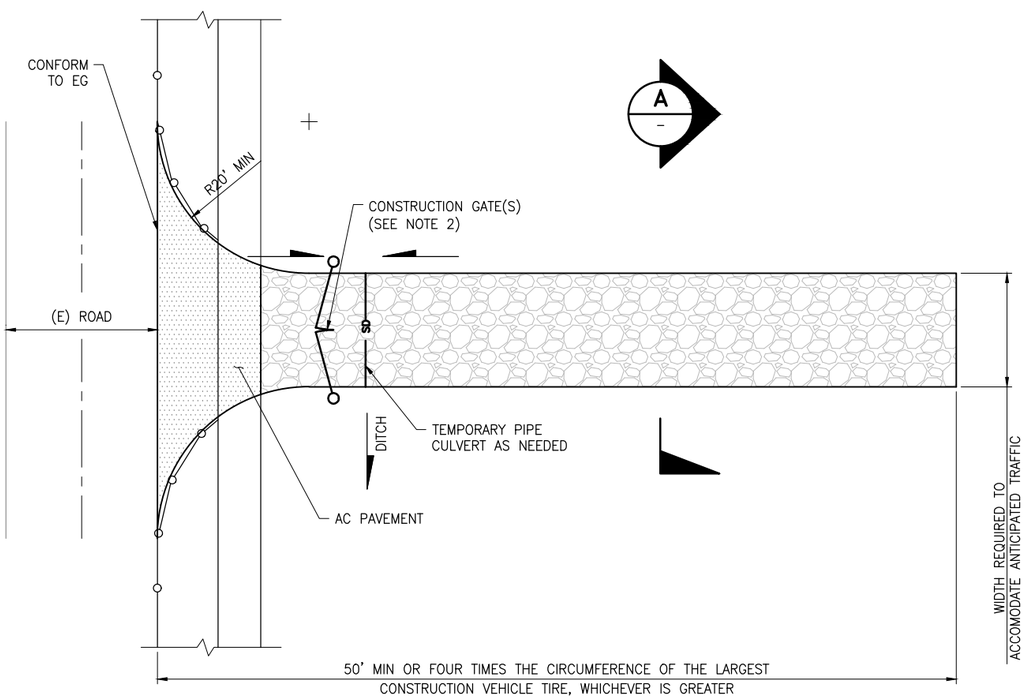
6 – DRAINAGE SWALE
SCALE:NTS



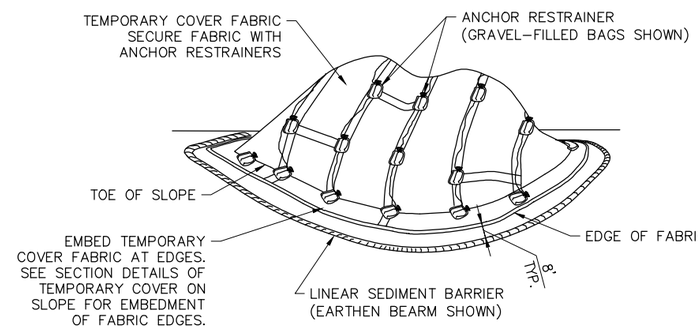
SECTION



ELEVATION

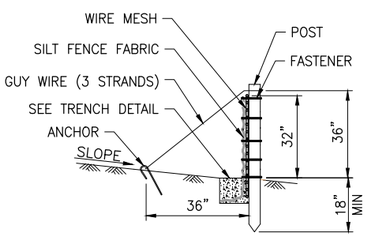


3 – STABILIZED CONSTRUCTION ENTRANCE/EXIT DETAIL
SCALE:NTS



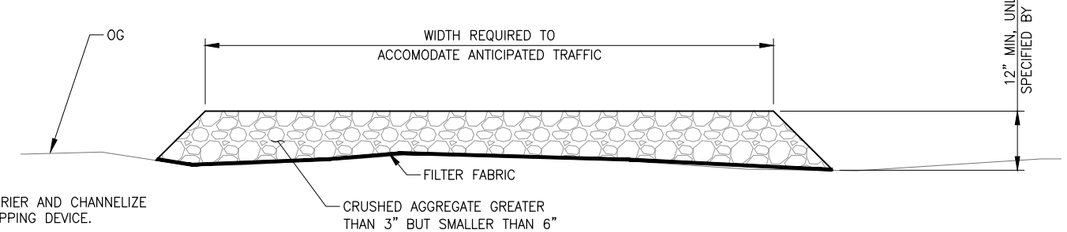
PERSPECTIVE

4 – TEMPORARY STOCKPILE COVER
SCALE:NTS



SECTION

5 – REINFORCED SILT FENCE
SCALE:NTS



NOTES:

1. CONSTRUCT SEDIMENT BARRIER AND CHANNELIZE RUNOFF TO SEDIMENT TRAPPING DEVICE.

A – SECTION
SCALE:NTS

REVISIONS				REVISIONS			
NO.	BY.	DATE	DESCRIPTION	NO.	BY.	DATE	DESCRIPTION
1	KA	4/26/13	ISSUED FOR CONSTRUCTION				

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DRAWN BY: D. MENDOZA
DESIGNED BY: K. ARROW
CHECKED BY: T. SWEET
APPROVED BY:

PACIFIC COAST PIPELINE (PCPL) SUPERFUND SITE
CITY OF FILLMORE, CALIFORNIA

EROSION CONTROL DETAILS

JOB NO.
DATE 4/26/13
SCALE 1'= 20'
SHEET 41 OF 43 SHEETS
SHEET NO. C–56

Apr 30, 2013 – 1:24pm T:\chevron fillmore\Sheet\C-56.dwg
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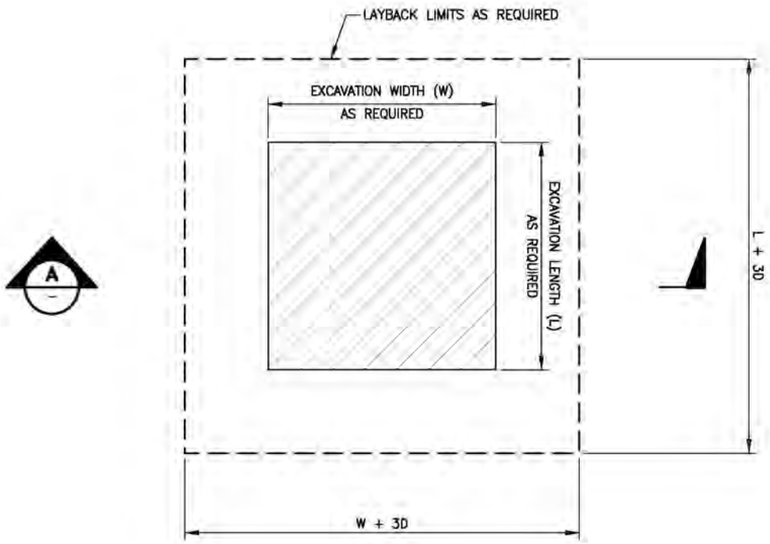
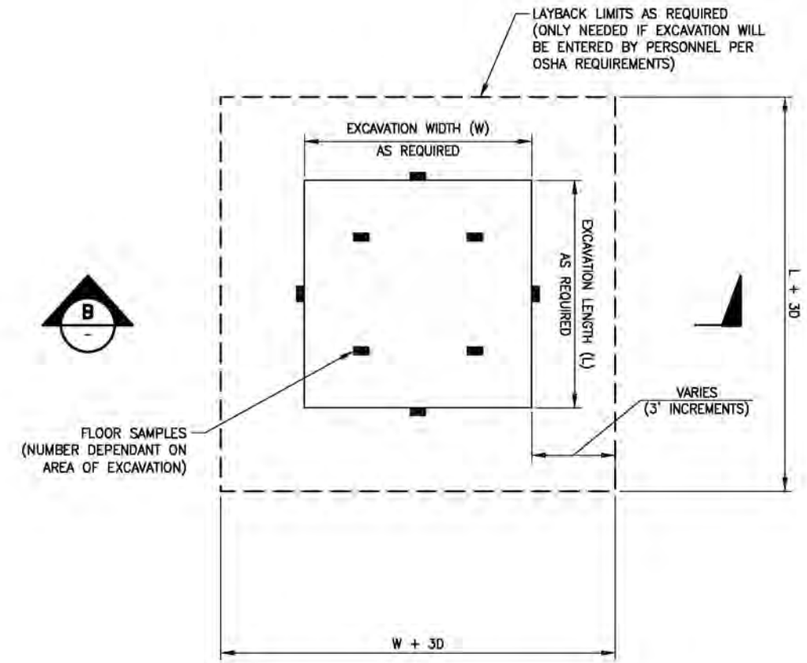


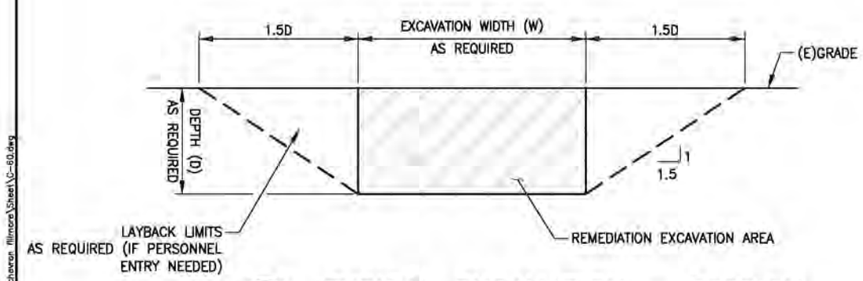
1 - TYPICAL EXCAVATION – PLAN
SCALE: N.T.S.



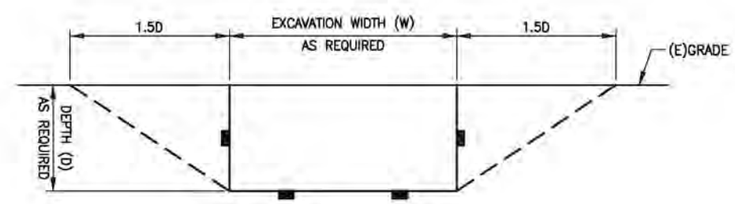
2 - TYPICAL SAMPLING – PLAN
SCALE: N.T.S.

NOTES:

1. ■ CONFIRMATORY SAMPLE LOCATIONS
   - FIELD SCREENING (LEAD)
   - LABORATORY SAMPLE COLLECTION
   - FLOOR FIELD SCREENING SAMPLES (1/400SF)
   - WALL SAMPLES 1/20LF
2. EXPANSION OF EXCAVATION LIMITS TO BE CONTROLLED BY FIELD TESTING RESULTS (AND LABORATORY CONFIRMATION). WHEN WARRANTED WILL OCCUR IN 3 FOOT INCREMENTS LATERALLY (MAX).
3. IN GENERAL, EXCAVATION WALLS ARE TO BE LEFT VERTICAL TO THE EXTENT PRACTICABLE TO MINIMIZE EXCAVATION VOLUME.
4. AFTER SAMPLING AND LABORATORY ANALYSIS CONFIRM ACTION LEVELS ARE MET, CONTRACTOR TO "BOWL-OUT" THE EXCAVATION TO SLOUGH SOIL INTO THE BOTTOM. FILL LAYERS, CONSISTING OF ONSITE BORROW MATERIAL MEETING SITE CLEANUP CRITERIA, SHALL NOT EXCEED 12-INCHES AND SHALL BE COMPACTED TO 90% RELATIVE COMPACTION (MODIFIED PROCTOR).
5. CONTRACTOR TO MOISTURE CONDITION SOILS TO ACHIEVE SUITABLE MOISTURE CONDITIONS AND RESULTANT IN-PLACE COMPACTION.
6. IT IS ASSUMED ALL SAMPLING WILL BE FROM THE EXCAVATION BUCKET AND NO ENTRY INTO THE EXCAVATION WILL BE REQUIRED.
7. CONTRACTOR TO ERECT AND PROPERLY LABEL SAFETY/ACCESS-CONTROL FENCE AS-NEEDED TO PROTECT FIELD PERSONNEL FROM OPEN EXCAVATIONS.



A - TYPICAL EXCAVATION – SECTION
SCALE: N.T.S.



B - TYPICAL SAMPLING – SECTION
SCALE: N.T.S.

REVISIONS				REVISIONS			
NO.	BY.	DATE	DESCRIPTION	NO.	BY.	DATE	DESCRIPTION
0	KA	4/26/13	ISSUED FOR CONSTRUCTION				

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DRAWN BY: D. MENDOZA
DESIGNED BY: K. ARROW
CHECKED BY: T. SWEET
APPROVED BY:

PACIFIC COAST PIPELINE (PCPL) SUPERFUND SITE
CITY OF FILLMORE, CALIFORNIA

EXCAVATION AND SAMPLING
DETAILS 1

JOB NO.
DATE 4/26/13
SCALE 1'= 20'
SHEET 42 OF 43 SHEETS
SHEET NO. C-60

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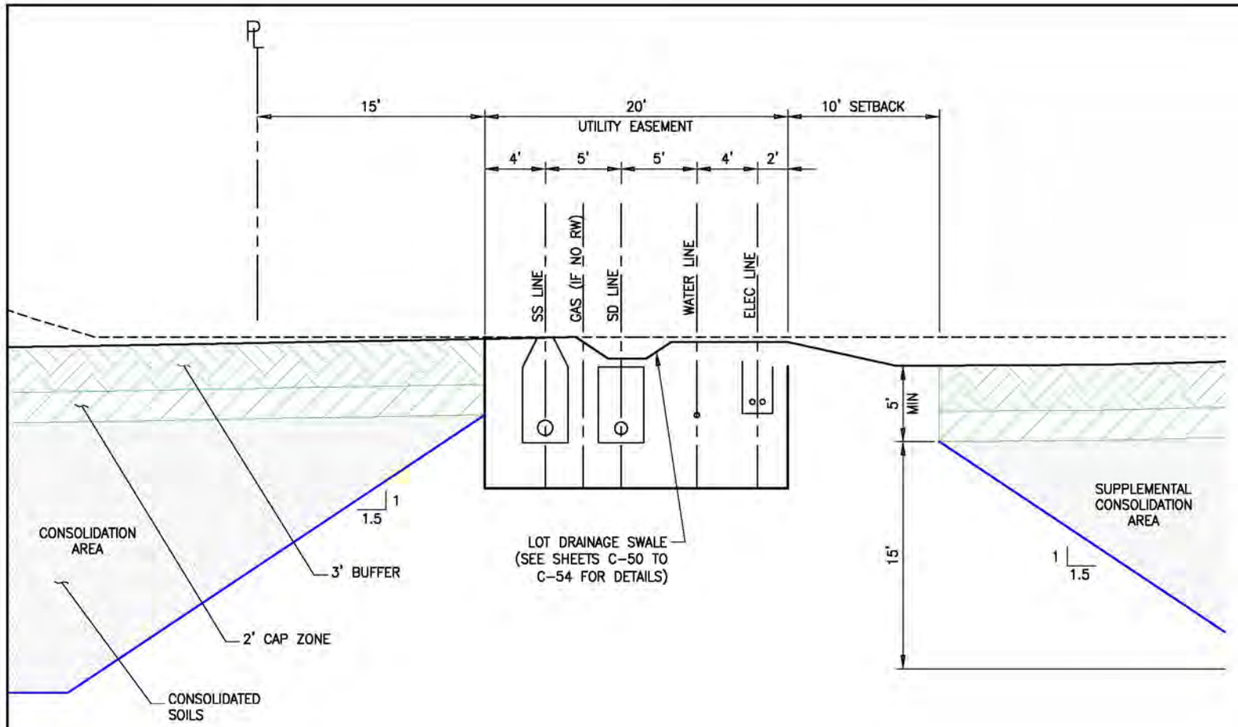
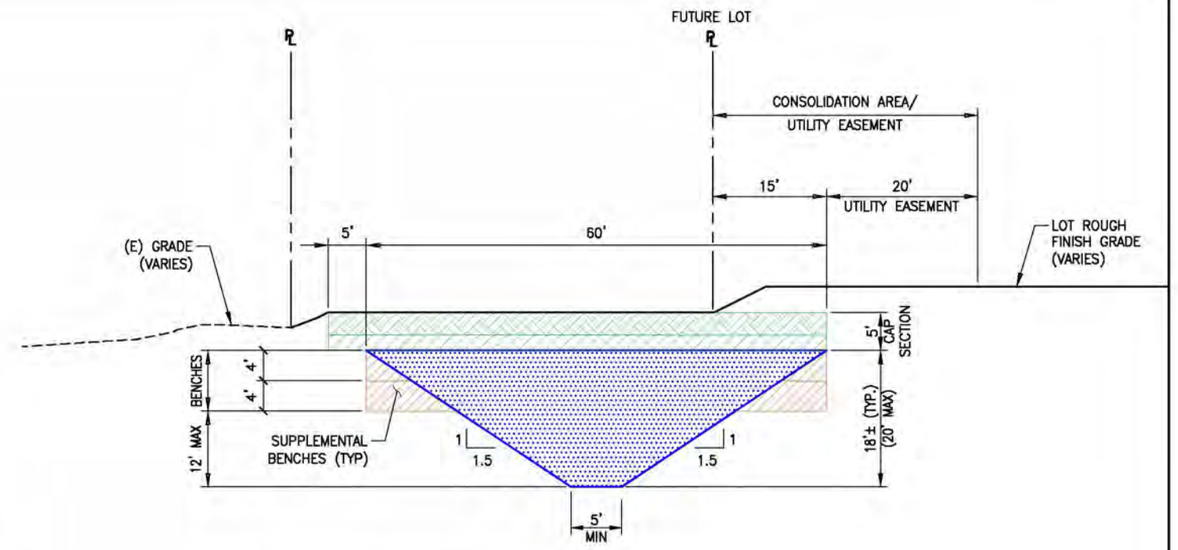


1 C-32 UTILITY EASEMENT (LOOKING NORTH)
SCALE: 1" = 5'



2 TYPICAL SECTION (LOOKING NORTH)
SCALE: 1" = 10'

	EARTHWORK SUMMARY FOR PRIMARY CONSOLIDATION AREA				SUPPLEMENTAL CONSOLIDATION AREA
	VOLUME (CY)				
Earthwork Type/Location	CUT [1] (volume of material generated from in-place density, assumed @ 85% [bank])		FILL (volume of material in-place, assumed @ 90%+ [compacted]. If Primary Consolidation Area is not sufficient to contain the volume of excavated soils, a Supplemental Consolidation Area will be constructed to the east of the Consolidation Area east of the utility corridor in lot as shown on sheet C-01)		
Remedial Excavation Areas	19,600		20,000 [2]		Up to 30,000±
Consolidation Area [3]	1.5H:1V Section	16,235	1.5H:1V Section [4]	20,500	30,000
	Cap Footprint	7,225	5' Cap Section	12,350	12,000
	Supplemental Bench(es)	2,125	Overburden	1,925	4,850
Mass Grading [5]	158,785		136,435		–

[1] As measured from existing grade;

[2] Volume of on-site borrow material needed to result in 90% in-place density;

[3] Does not include construction benching or fill outside limits of Consolidation Area (CA) footprint. Supplemental benches needed only if remedial excavation volume increases above 21,705 CY;

[4] Remedial Excavation Areas excavated material volume = 17,835 CY in-place in CA (20,500 CY capacity provides 15% buffer). Supplemental benching volume not included;

[5] Total gross earthwork assuming existing site conditions and planned future rough finish grading per Cannon Option 2C grading plan (4Q'2011 – allows 10% +/– shrinkage);

NOTES:

1. CONSOLIDATION AREA FILL OPERATIONS ABOVE 12-FT MUST CEASE UNTIL ALL REMEDIAL EXCAVATION AND LABORATARY CONFIRMATORY RESULTS REVIEWS ARE COMPLETE AND VOLUME OF MATERIAL TO BE PLACED WITHIN CONSOLIDATION AREA IS VERIFIED (I.E., REMEDIAL EXCAVATION BEYOND 9,500 CY [BANK±]).
2. SUPPLEMENTAL BENCHES NEEDED ONLY IF REMEDIAL EXCAVATION VOLUME INCREASES ABOVE 21,705 CY. (BANK)

REVISIONS				REVISIONS			
NO.	BY.	DATE	DESCRIPTION	NO.	BY.	DATE	DESCRIPTION
1	KA	4/26/13	ISSUED FOR CONSTRUCTION				

URS
Post Montgomery Center
One Montgomery Street, Suite 900
San Francisco, Ca 94104
Tel: 415-895-5858
Fax: 415-882-9261

DRAWN BY: D. MENDOZA
DESIGNED BY: K. ARROW
CHECKED BY: T. SWEET
APPROVED BY:

PACIFIC COAST PIPELINE (PCPL) SUPERFUND SITE
CITY OF FILLMORE, CALIFORNIA

EXCAVATION AND SAMPLING DETAILS 2

JOB NO.
DATE 4/26/13
SCALE 1"= 20'
SHEET 43 OF 43 SHEETS
SHEET NO. C-61

dolilio_mendoza Apr 30, 2013 - 1:24pm T:\chevron fillmore\Sheet\C-61.dwg

Pacific Coast Pipeline (PCPL) Superfund Site Remedial Grading Project Chevron Environmental Management Company Specifications – Table of Contents	
Specification Number	**Specification Section**
013233	Photographic Documentation
013300	Submittals
014516	Contractor Quality Control
015700	Temporary Controls
016000	Material and Equipment
017000	Project Closeout
017223	Field Engineering
017400	Cleaning and Clean-up
017419	Recycling and Waste Management
025613	Consolidation Area Cap
310000	Earthwork and Grading
312333	Trenching, Backfilling, and Compacting
313200	Cellular Confinement
334000	Storm Drain System

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. Section includes administrative and procedural requirements for the following:

1. Periodic construction photographs

2. Final completion construction photographs

1.2 SUBMITTALS

A. Qualification Data: For photographer.

B. Key Plan: Submit key plan of Project site with notation of vantage points marked for location and direction of each photograph. Indicate elevation of construction. Include same information as corresponding photographic documentation.

C. Digital Photographs: Submit image files within 7 calendar days of taking photographs.

1. Digital Camera: Minimum sensor resolution of [8] megapixels.

2. Format: Minimum [1600 by 1200] pixels, [400] dpi minimum, in unaltered original files, with same aspect ratio as the sensor, uncropped, date- and time-stamped, in folder named by date of photograph, accompanied by key plan file.

3. Identification: Provide the following information with each image description in file metadata tag:

a. Name of Project.

b. Name and contact information for photographer.

c. Name of Engineer.

d. Name of Contractor.

e. Date photograph was taken.

f. Description of vantage point, indicating location, direction, and elevation of construction.

g. Unique sequential identifier keyed to accompanying key plan.

D. Construction Photographs: Submit two prints of each photographic view within seven calendar days of taking photographs.

1. Format: 3-by-5-inch (76-by-127-mm) printed on paper, punched for standard three-ring binder.

2. Identification: On back of each print, provide an applied label or rubber-stamped impression with the following information:

   a. Name of Project.

   b. Name and contact information for photographer.

   c. Name of Engineer.

   d. Name of Contractor.

   e. Date photograph was taken if not date stamped by camera.

   f. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.

   g. Unique sequential identifier keyed to accompanying key plan.

PART 2 – PRODUCTS

2.1 PHOTOGRAPHIC MEDIA

A. Digital Images: Provide images in JPG format, produced by a digital camera with minimum sensor size of 8 megapixels, and at an image resolution of not less than 1600 by 1200 pixels and 400 dpi.

PART 3 – EXECUTION

3.1 CONSTRUCTION PHOTOGRAPHS

A. Photographer: Field engineer or designee to take construction photographs.

B. General: Take photographs using the maximum range of depth of field, and that are in focus, to clearly show the Work. Photographs with blurry or out-of-focus areas will not be accepted.

   1. Maintain key plan with each set of construction photographs that identifies each photographic location.

C. Digital Images: Submit digital images exactly as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.

   1. Date and Time: Include date and time in file name for each image.

   2. Field Office Images: Maintain one set of images accessible in the field office at Project site, available at all times for reference. Identify images in the same manner as those submitted to

D. Preconstruction Photographs: Before commencement of excavation, take photographs of Project site and surrounding properties, including existing items to remain during construction, from different vantage points, as directed by Project Engineer.

1. Flag excavation areas before taking construction photographs.

2. Take 20 photographs to show existing conditions adjacent to property before starting the Work.

E. Periodic Construction Photographs: Take 20 photographs weekly, with timing each month adjusted to coincide with the cutoff date associated with each Application for Payment. Select vantage points to show status of construction and progress since last photographs were taken.

F. Project Engineer-Directed Construction Photographs: From time to time, Project Engineer will instruct photographer about number and frequency of photographs and general directions on vantage points. Select actual vantage points and take photographs to show the status of construction and progress since last photographs were taken.

G. Time-Lapse Sequence Construction Photographs: Take 20 photographs as indicated, to show status of construction and progress since last photographs were taken.

1. Frequency: Take photographs weekly.

2. Vantage Points: Following suggestions by Project Engineer and Contractor, photographer to select vantage points. During each of the following construction phases, take not less than two of the required shots from same vantage point each time to create a time-lapse sequence as follows:

a. Commencement of the Work, through completion of construction.

H. Final Completion Construction Photographs: Take 20 color photographs after date of Substantial Completion for submission as Project Record Documents. Project Engineer will inform photographer of desired vantage points.

1. Do not date stamp.

I. Additional Photographs: Project Engineer may request photographs in addition to periodic photographs specified.

1. Three calendar days' notice will be given, where feasible.

2. In emergency situations, take additional photographs within 24-hours of request.

3. Circumstances that could require additional photographs include, but are not limited to, the following:

a. Special events planned at Project site.

b. Immediate follow-up when on-site events result in construction damage or losses.

c. Substantial Completion of a major phase or component of the Work.

d. Extra record photographs at time of final acceptance.

e. Owner's request for special publicity photographs.

PART 4 - MEASUREMENT AND PAYMENT – NOT USED

End of Section

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. The work of this section consists of submittal requirements before and during construction.

1.2 SUBMITTAL AND APPROVAL PROCEDURES

A. As soon as possible after the Notice of Award and before beginning any work, submit a Construction Progress Schedule and Schedule of Values as a package. The Chevron Representative will review the Progress Schedule and the Schedule of Values for format and content.

1. Construction Progress Schedule: Submit two copies of the Construction Progress Schedule (normally in bar chart form) showing the estimated starting and completion dates for each part of the work. Payment will not be issued until an acceptable Construction Progress Schedule is submitted and approved by the Chevron Representative.

B. Waste Management Plan prepared in accordance with Section 017419.

1.3 SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES

A. General Procedures:

1. As specified in the individual sections, forward submittals to the Chevron Representative a minimum of 14 days before the need for approval. Unless a different number is specified, submit two copies of each shop drawing, two specimens of each sample, and two copies of all other submittals requested, all of which will be retained by the Chevron Representative.

2. Coordinate all submittals and review them for legibility, accuracy, completeness and compliance with the contract requirements. Forward submittals as a package that are related to each other or that affect one another to facilitate coordinated review.

3. Submittals shall be provided to the Chevron Representative 14 calendar days prior to beginning work. The submittal shall be provided in a format that clearly states the name of the project, the name of the submittal, the date and all critical product information (materials used, manufacturer or vendors name, address, phone number and fax number). Submittals may be faxed or emailed to the Chevron Representative.

4. Submittals will not be accepted for review if an incorrect number of submittals are submitted, critical data is not included on the form, submittals are not coordinated, or submittals do not show evidence of the Contractor's approval.

B. The Chevron Representative reserves the right to require submittals in addition to those called for in individual sections.

C. Specific Procedures:

1. Shop Drawings: Identify each copy of shop drawings with the project name and sheet number in the lower right hand corner.

2. Samples: Samples shall be large enough to illustrate clearly the functional characteristics and the full range of color, texture, or pattern of material or item.

3. Manufacturers' Literature: Submit only pertinent pages; mark each copy of standard printed data to identify products referenced in the specification section.

D. Chevron Representative Review:

1. If submittals are approved, the Chevron Representative will notify the Contractor of acceptance within 5 working days. A list of approved submittals will be emailed to the Contractor, noting the date of approval for each submittal.

2. If submittals are not approved, the Chevron Representative will return all copies to the Contractor with reasons for rejection. The Contractor shall resubmit, identifying changes.

3. Any work done before approval by the Chevron Representative shall be at the Contractor's own risk.

E. Approved Equals:

1. For each item proposed as an "approved equal," submit supporting data, including:

a. Drawings and samples as appropriate.

b. Comparison of the characteristics of the proposed item with that specified.

c. Changes required in other elements of the work because of the substitution.

d. Name, address, and telephone number of vendor.

e. Manufacturer's literature regarding installation, operation, and maintenance, including schematics for electrical and hydraulic systems, lubrication requirements, and parts lists. Describe availability of maintenance service, and state source of replacement materials.

2. A request for approval constitutes a representation that the Contractor:

   a. Has investigated the proposed item and determined that it is equal or superior in all respects to that specified.

   b. Shall provide the same warranties for the proposed item as for the item specified.

   c. Has determined that the proposed item is compatible with interfacing items.

   d. Shall coordinate the installation of an approved item and make all changes required in other elements of the work because of the substitution.

   e. Waives all claims for additional expenses that may be incurred as a result of the substitution.

3. Construction Materials: The Contractor is encouraged to submit products for approval that are made out of recycled or environmentally responsible material. Every effort will be made by the Chevron Representative to approve these materials.

1.4 PROJECT RECORD DOCUMENTS (AS-BUILT CONSTRUCTION DRAWINGS)

A. Contractor shall provide and maintain a complete and accurate set of As-Built construction drawings on the site. Changes shall be clearly marked in red and shall be neatly printed with adequate information provided to identify the change and all related adjustments.

B. Upon completion of the project, the Contractor shall furnish to the Chevron Representative the complete set of As-Built Drawings, with red-lined field changes legibly marked on plans. Printing shall be legible and neat, performed by an accomplished draftsman, with notes included describing the change.

C. Refer to 01 7000, Project Closeout, for detailed information regarding closeout documents.

PART 2 – PRODUCTS– NOT USED

PART 3 – EXECUTION – NOT USED

PART 4 - MEASUREMENT AND PAYMENT – NOT USED

End of Section

PART 1 GENERAL

1.1 SECTION INCLUDES

A. The work of this section consists of preparing and executing a quality control program.

1.2 QUALITY ASSURANCE

A. General: The quality of all work shall be the responsibility of the Contractor. Inspect all work often enough to ensure that the quality of materials, workmanship, construction, finish, and functional performance is in compliance with applicable specifications and drawings.

B. Quality Control Staff: The Contractor's job supervisory staff may be used for quality control, supplemented as necessary by additional technicians. The Contractor’s designated Quality Control Supervisor shall be employed full time at the project site whenever contract work is in progress.

1.3 QUALITY CONTROL ORGANIZATION

A. The Contractor shall identify a Quality Control (QC) System Manager who shall be responsible for overall management of the project and have the authority to act in all QC matters for the Contractor. The QC System Manager for this Contract shall be an approved, qualified, hazardous material removal engineer, or comparable individual, to ensure compliance with the Contract Documents. This person shall demonstrate the ability to perform correctly the duties required to the satisfaction of Chevron and shall be physically at the project site whenever work is in progress and will be in charge of the Contractor’s Quality Control program for this project. All Contractor’s submittals for approval shall be reviewed and modified or corrected as needed by the QC System Manager of the QC System Manager’s authorized assistants and approved correct prior to forwarding of such submittals to the EPA.

B. Personnel: The personnel of the QC staff shall be fully qualified by experience and technical training to perform their assigned responsibilities and shall be directly hired by and work for the Contractor.

PART 2 PRODUCTS NOT USED

PART 3 EXECUTION

3.1 OFF-SITE CONTROL

A. Items that are fabricated off-site shall be inspected for quality control at the place of fabrication.

3.2 ON-SITE CONTROL

A. Notify the Chevron Representative at least 24 hours in advance of the initial and follow-up phases.

B. Preparatory: Perform before beginning each feature of work.

1. Review control submittal requirements with personnel directly responsible for the quality control work.

2. Ensure that provisions have been made to ensure that materials meet the requirements of the specifications.

3. Examine the work area to ensure that all preliminary work has been completed.

4. Verify all field dimensions and advise the Chevron Representative of discrepancies.

5. Ensure that necessary equipment and materials are at the project site and that they comply with approved shop drawings and submittals.

C. Initial: As soon as work begins, inspect a representative portion of a particular feature of work for quality of workmanship. Review inspection procedures to ensure compliance with contract requirements.

D. Follow-Up: Inspect as work progresses to ensure compliance with contract requirements until completion of work.

3.3 CONTRACTOR'S RESPONSIBILITIES

A. Contractor shall supply materials and equipment that meet the requirements and standards set forth in the Specifications.

B. Where specific certificates concerning materials and/or equipment are required, Contractor shall secure payment for and prompt delivery of such certificates to the Chevron Representative. Such certificates shall be executed by qualified firms acceptable to the Chevron Representative, shall include all information required by the Specifications, and shall refer specifically to materials to be used in the project.

C. The Contractor shall provide the Chevron Representative with samples of materials and manufacturer's cut sheets as required in the submittal sections of the specifications.

D. The Contractor shall notify the Chevron Representative as indicated in specific Specification sections prior to expected time for Work requiring approval or observation. This includes times for placing concrete and asphalt concrete paving. Invoice sheets (or copies of invoice sheets) noting amounts and type of

materials delivered shall be provided to the Chevron Representative immediately upon delivery to the site.

3.4 ENFORCEMENT

A. The Contractor shall stop work on any item or feature pending satisfactory correction of any deficiency noted by the quality control staff or the Chevron Representative. Construction shall not proceed on any feature of work containing uncorrected work.

3.5 COMPLETION INSPECTION AND "PUNCH LIST" ITEMS

A. At the completion of all work or any increment thereof, the QC System Manager shall conduct a completion inspection of the work and develop a "punch list" of items which do not conform to the approved Plans and Specifications. Such a list shall include the estimated date by which the deficiencies will be corrected. The QC System Manager or his/her staff shall make a second completion inspection to ascertain that all deficiencies have been corrected and so notify the Chevron Representative. The completion inspection and any deficiency corrections required by this paragraph will be accomplished within the time stated for completion of the entire work or any particular increment thereof if the project is divided into increments by separate completion dates.

3.6 DOCUMENTATION

A. The Contractor shall maintain current records of quality control operations, activities and tests performed including the work of suppliers and subcontractors. These records shall be on an acceptable form (sample form attached) and indicate a description of trades working on the project, the numbers of personnel working, the weather conditions encountered, any delays encountered and acknowledgment of deficiencies noted along with the corrective actions taken on current and previous deficiencies. In addition, these records shall include factual evidence that required activities or tests have been performed, including but not limited to the following:

1. Type and number of control activities and tests involved.
2. Results of control activities or tests.
3. Nature of defects, causes for rejection, etc.
4. Proposed remedial action.
5. Corrective actions taken.

B. These records shall cover both conforming and defective or deficient features and shall include a statement that supplies and materials incorporated in the work comply with the requirements of the contract.

PART 4 MEASUREMENT AND PAYMENT – NOT USED

End of Section

PART 1 GENERAL

1.1 SECTION INCLUDES

A. The work of this section consists of providing temporary controls.

PART 2 PRODUCTS NOT USED

PART 3 EXECUTION

3.1 HOUSEKEEPING

A. Keep project neat, orderly, and in a safe condition at all times.

B. Provide enough containers for collecting construction debris and construction materials to be recycled.

C. Wet down dry materials to prevent blowing dust. As a minimum, wet down materials a minimum of two times daily to prevent blowing dust.

3.2 DISPOSAL

A. All removed material that cannot be used in construction becomes the property of the Contractor and shall be disposed of outside the project area.

B. Immediately remove rubbish from the project site. Place other construction debris in refuse containers at least daily. Dispose of refuse at least weekly, in a legal manner, at public or private dumping areas outside the project area.

3.3 AIR AND WATER POLLUTION CONTROL

A. The Contractor shall supply all expertise, labor, equipment, and materials necessary to reasonably reduce air and water pollution by any material or equipment used during construction.

B. Do not allow waste materials to be washed into streams or bodies of water.

3.4 DUST SUPPRESSION

A. Control dust from construction operations per the Dust Suppression and Air Monitoring Plan.

B. Provide positive means to prevent airborne dust from disposing into the atmosphere. Wet down dry materials a minimum of two times daily to ensure that no dust is transported to adjacent sites.

C. Contractor shall respond with supplemental dust suppression in response to results of site air monitoring to reduce emissions as required. See the Dust Suppression and Air Monitoring Plan prepared by URS for additional information.

3.5 DETOURS AND ROAD CLOSURES

A. The Contractor shall provide signage and flagmen to clearly define detour routes and road closures if necessary. Traffic flow shall be clearly routed around construction operations in an unimpeded flow.

PART 4 MEASUREMENT AND PAYMENT – NOT USED

End of Section

PART 1 GENERAL

1.1 SECTION INCLUDES

A. The work of this section consists of the general procedures for handling, storing and protecting material and equipment.

1.2 TRANSPORTATION AND HANDLING

A. Arrange deliveries of materials in accordance with construction schedules; coordinate to avoid conflict with work and conditions at the site. Deliver materials in undamaged condition, in manufacturer's original containers or packaging, with identifying labels intact and legible. Contractor is encouraged to obtain materials in biodegradable or recyclable and reusable packaging that uses the minimum amount of packaging possible.

1.3 STORAGE AND PROTECTION

A. Store materials in accordance with manufacturer's instructions, with seals and labels accessible for inspection.

B. Interior Storage: Maintain temperature and humidity within the ranges required by manufacturer's instructions.

C. Exterior Storage:

1. Store products subject to damage by the elements in weather tight enclosures.

2. Store fabricated products above the ground, on blocking or skids; prevent soiling or staining. Cover products subject to damage or deterioration with impervious sheet coverings; provide adequate ventilation to avoid condensation.

D. Protection After Installation: Provide adequate coverings as necessary to protect installed materials from damage resulting from natural elements, traffic, and subsequent construction. Remove when no longer needed.

PART 2 PRODUCTS NOT USED

PART 3 EXECUTION NOT USED

PART 4 MEASUREMENT AND PAYMENT – NOT USED

END OF SECTION

PART 1 GENERAL

1.1 SECTION INCLUDES

A. The work of this section consists of final cleanup, closeout submittals and final inspection procedures.

PART 2 PRODUCTS NOT USED

PART 3 EXECUTION

3.1 CLEANING

A. Before scheduling the final inspection, remove all tools, equipment, surplus materials and rubbish. Pick up all construction debris from the site. At time of final inspection, project shall be thoroughly clean and ready for use. Sidewalks and streets shall be swept clean of silt and debris.

3.2 CLOSEOUT SUBMITTALS

A. Submit warranties for materials as specified in individual sections before final inspection request.

B. Submit As-Built Drawings showing all changes clearly marked on a set of prints. As-Built Drawings will not be accepted unless changes are clearly shown, with notes neatly printed and including all relevant information necessary to describe the change. Changes shall be made by an accomplished draftsman.

C. As-built Drawings shall be submitted in printed copy and electronic format acceptable to the Chevron Representative.

3.3 SUBSTANTIAL COMPLETION AND FINAL INSPECTION

A. Submit written certification that project, or designated portion of project, is substantially complete, and request a final inspection. Chevron Representative will make an inspection within 3 days of receipt of request.

1. When work is determined to be substantially complete, Chevron Representative will prepare a list of deficiencies to be corrected before final acceptance and issue a Letter of Substantial Completion.

2. If work is not determined to be substantially complete, Chevron Representative will notify Contractor in writing. After completing work, including list of deficiencies to be corrected, Contractor shall resubmit written certification that project is complete, and request a new final inspection.

3.4 ACCEPTANCE OF WORK

A. After all deficiencies have been corrected; a Letter of Acceptance will be issued to the Contractor.

PART 4 MEASUREMENT AND PAYMENT – NOT USED

END OF SECTION

PART 1 GENERAL

1.1 INITIAL WORK LAYOUT

A. Contractor shall coordinate with Chevron-retained licensed surveyor to set initial construction stakes establishing lines, slopes, and grades for road work, and reference and base lines and bench marks. Contractor shall execute the work in accordance with these stakes, and re quest all additional staking he deems necessary to execute the work.

B. Contractor shall preserve all stakes and marks.

C. Existing Monuments: All bench marks, land corners, and triangulation points, established by other surveys, existing within the construction area shall be preserved. If existing monuments interfere with the work, secure written permission before removing them.

1.2 LAYOUT OF WORK

A. Contractor to coordinate with Chevron-retained licensed surveyor to set a base line and bench mark for each area of the work. Contractor shall lay out the work by accurately measuring from these controls. All work improperly located due to Contractor's errors or omissions shall be corrected by him at no additional expense to Chevron.

B. Contractor shall preserve controls thus established.

C. Locations and elevations shown on the drawings are subject to final field adjustment by Chevron Representative before construction. Contractor shall immediately notify the Chevron Representative of apparent errors discovered on the drawings or in the initial stakeout. If changes in stakeout are required, Contractor shall cooperate with Chevron Representative in prompt establishment of the field control for altered or adjusted work.

D. Existing Monuments: All bench marks, land corners, and triangulation points, established by other surveys, existing within the construction area shall be preserved. If existing monuments interfere with the work, secure written permission before removing them.

1.3 QUANTITY SURVEYS:

A. Quantity surveys shall be conducted, and the data derived from these surveys shall be used in computing the quantities of work performed and the actual construction completed and in place.

B. The Chevron Representative shall conduct the original and final surveys and make the computations based on them. The Contractor shall conduct the surveys for any periods for which progress payments are requested and shall make the computations based on these surveys. All surveys conducted by the Contractor shall be conducted

under the direction of a representative of the Chevron Representative, unless the Chevron Representative waives this requirement in a specific instance.

C. The Chevron-retained surveyor shall conduct the original and final surveys and surveys for any periods for which progress payments are requested. All these surveys shall be conducted under the direction of a representative of the Chevron Representative, unless the Chevron Representative waives this requirement in a specific instance. The Chevron Representative shall make such computations as are necessary to determine the quantities of work performed or finally in place. The Contractor shall make the computations based on the surveys for any periods for which progress payments are requested.

D. Promptly upon completing a survey, the Chevron-retained surveyor shall furnish the originals of all field notes and all other records relating to the survey or to the layout of the work to the Chevron Representative, who shall use them as necessary to determine the amount of progress payments. The Chevron-retained surveyor shall retain copies of all such material furnished to the Chevron Representative.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION – NOT USED

End of Section

PART 1 GENERAL

1.1 REQUIREMENTS INCLUDED

A. Contractor shall execute clean-up activities during progress of the Work and at the completion of the Work.

1.2 DISPOSAL REQUIREMENTS

A. Contractor shall conduct cleaning and disposal operations to comply with Local, County, State and Federal codes, ordinances, regulations and anti-pollution laws.

PART 2 PRODUCTS NOT USED

PART 3 EXECUTION

3.1 DURING CONSTRUCTION

A. The Contractor shall execute periodic clean-up to keep the work, the site, and adjacent properties free from accumulations of waste materials, rubbish, and windblown debris resulting from construction operations. Clean-up shall be performed at the end of each day to ensure that catch basins and/or perimeter construction best management practices (BMPs) are protected from silt, the site is wet down a minimum of twice daily to prevent wind-blown dust from entering adjacent sites, all litter (drink cans, wrappers, construction debris) is placed in covered refuse containers and site is left neat and safe.

3.2 WASTE DISPOSAL

A. Contractor shall generate the least amount of waste possible by reusing, salvaging, or recycling of unwanted materials including rock and dirt, concrete, bricks, asphalt, metals, cardboard, wood and glass.

B. Green waste free of construction debris may be hauled off site when practical.

C. The Contractor shall provide containers for the collection and disposal of waste materials generated.

D. The Contractor shall be responsible for loading, hauling, and off-site disposal of all construction waste generated while performing the work of this contract.

PART 4 MEASUREMENT AND PAYMENT – NOT USED

END OF SECTION

PART 1 GENERAL

1.1 DESCRIPTION

A. The work of this section consists of recycling and waste management goals, a recycling and waste management plan, recycling, reuse, sorting, and a list of recycling centers and haulers.

1.2 SUBMITTALS

A. As specified in Section 013300, submit:

1. Waste Management Plan.

1.3 QUALITY ASSURANCE

A. At least one week prior to commencement of work, Contractor shall meet with Chevron Representative to review Recycling and Waste Management Plan.

1.4 RECYCLING

A. Contractor's Waste Management Plan shall comply with the following goal and practices, taken from the Presidio Trust Policy for Waste Minimization in Construction and Demolition.

1. Goal: To promote the efficient use of resources, reduce disposal costs and divert material from landfill by aggressively increasing reuse and recycling.

2. Best Practice: When planning a demolition project, utilize the following hierarchy to minimize waste. Assess the feasibility of each option before choosing one or a combination of these.

a. Salvage all possible elements and materials form building/s for "value-added" reuse.

b. In the case of demolition, separate materials on-site, in different containers for recycling.

c. Demolish and separate recyclable and compostable materials from the waste at an external transfer site.

B. Contractor is encouraged to recycle the following materials to the maximum extent possible.

1. Asphalt Paving.

2. Concrete and Concrete Masonry Units.

3. Wood Waste (Dimensional Lumber and Broken Crates and Pallets).

4. Metals.

1.5 MATERIALS SORTING

A. Materials shall be sorted on site for recycling and reuse.

PART 2 PRODUCTS NOT USED

PART 3 EXECUTION NOT USED

PART 4 MEASUREMENT AND PAYMENT NOT USED

END OF SECTION

PART 1 GENERAL

1.1 SUMMARY

A. Work to be performed under this specification includes the labor, supervision, materials, QA/QC tests, transportation and equipment required to construct the Consolidation Area Cap. Construction consists of furnishing all labor, equipment, tools, appliances and materials for performing all operations necessary for the construction and installation of the cap as indicated on the construction drawings and described herein.

1.2 RELATED WORK

A. Related Sections

1. Section 310000: Earthwork and Grading

2. Section 312333: Trenching, Backfilling, and Compacting

1.3 REFERENCES

A. American Society for Testing and Materials (ASTM):

1. C33: Concrete Aggregates

2. ASTM D 638, “Standard Test method for Tensile Properties of Plastics.”

3. ASTM D 1004, “Test Method for Initial Tear Resistance of Plastic or Film Sheeting.”

4. ASTM D 2216, “Test Method for Laboratory Determination of Water (Moisture) Content of Soil, Rock, and Soil-aggregate Mixtures.”

5. ASTM D 4354, “Standard Practice for Sampling of Geosynthetics for Testing.”

6. ASTM D 4643, “Standard Test Method for Determination of Water (Moisture) Content of Soil by the Microwave Oven Method.”

7. ASTM D 4759, “Standard of Practice for Determining the Specification Conformance of Geosynthetics.”

8. ASTM D 4833, “Standard Test Method for Index Puncture Resistance of

9. Geotextiles, Geomembranes and Other Related Products.”

10. ASTM D 5084, “Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter.”

11. ASTM D 5199, “Measuring Nominal Thickness of Geotextiles and Geomembranes.”

12. ASTM D 5321, “Standard Test Method for Determining the Coefficient of Soil and Geosynthetic or Geosynthetic and Geosynthetic Friction by the Direct Shear Method.”

13. ASTM D 5887, “Test Method for Measurement of Index Flux through Saturated Geosynthetic Clay Liner Using Flexible Wall Permeameter.”

14. ASTM D 5888, “Identification, Storage, and Handling of Geosynthetic Clay Liners.”

15. ASTM D 5889, “Standard Practice for Quality Control of Geosynthetic Clay Liners.”

16. ASTM D 5890, “Test Method for Swell Index of Clay Mineral Component of Geosynthetic Clay Liners.”

17. ASTM D 5891, “Standard Test Method for Fluid Loss of Clay Component of Geosynthetic Clay Liners.”

18. ASTM D 5993, “Standard Test Method for Measuring Mass Per Unit Area of Geosynthetic Clay Liners.”

19. ASTM D 6102, “Standard Guide for Installation of Geosynthetic Clay Liners.”

20. ASTM D 6243, “Standard Test Method for Determining the Coefficient of Soil and GCL or Geosynthetic and GCL Friction by the Direct Shear Method.”

21. ASTM D 6496, "Standard Test Method for Determining Average Bonding Peel Strength Between the Top and Bottom Layers of Needle-Punched Geosynthetic Clay Liners"

22. ASTM D 6768, "Standard Test Method for Tensile Strength of Geosynthetic Clay Liners"

23. ASTM E 96, "Standard Test Methods for Water Vapor Transmission of Materials"

1.4 DEFINITIONS

A. Bentonite- Clay soils comprised primarily of sodium montmorillonite, characterized by high swelling potential and low hydraulic conductivity.

B. Construction Quality Assurance (CQA) Officer- The professional representative of the CQA monitoring firm shall be responsible for implementation of the CQA plan.

C. Geomembrane- An essentially impermeable membrane of high density polyethylene (HDPE) containing 2 to 3 percent carbon black or titanium dioxide for ultraviolet light resistance.

D. Geosynthetic Clay Liner (GCL)- Manufactured liner material consisting of a layer of granular bentonite affixed to a minimum average 60 mil thick smooth surface HDPE or LLDPE geomembrane liner by chemical adhesives.

E. INSTALLER-Party responsible for GCL handling, transporting, storing, deploying, protecting, sampling, patching (damaged GCL) and temporary restraining (against wind and thermal/solar expansion) at the construction site.

F. Lot- Group of consecutively numbered rolls from the same manufacturing line.

G. MANUFACTURER- The party responsible for the production and quality of the GCL panels.

H. Minimum Average Roll Value (MARV)- The minimum average value of a particular physical property of a material.

I. OWNER- Chevron.

J. Overlap- The width of material of a GCL panel in contact with an adjacent GCL panel. The distance measures perpendicular from the overlying edge of one panel to the underlying edge of the other.

1.5 SUBMITTALS

A. Product Data (MANUFACTURER): Submit the following to ENGINEER prior to shipping material to the site.

1. Geomembrane:

a. Certification stating that the geomembrane meets the product requirements in Section 2.3, Table 1.

b. Copy of quality control tests performed by geomembrane supplier (if different from MANUFACTURER).

c. Copy of quality control tests performed by MANUFACTURER.

2. Bentonite:

a. Certification stating that the bentonite meets the product requirements.

b. Copy of quality control tests performed by bentonite supplier.

c. Copy of quality control tests performed by MANUFACTURER.

3. GCL:

a. Certification stating that the GCL meets the product requirements in Section 2.3, Table 1.

b. Copy of quality control tests performed by MANUFACTURER.

c. Permeability testing on typical product.

d. Laboratory test data on typical product for Free Swell (ASTM D 5890).

B. Qualifications (INSTALLER):

1. Submit the name of INSTALLER, resume of installation supervisor/field engineer to be assigned to the project, and list of projects completed by INSTALLER that involved geomembranes supported GCLs.

C. Submit Quality Control Plan and Installation Procedures (MANUFACTURER) three (3) weeks prior to installation, including:

1. Copy of MANUFACTURER's quality control plan including list of quality control tests performed and typical testing frequencies.

2. Recommended installation procedures.

3. Panel layout drawing identifying panels and overlaps.

D. Certificates, product data, and material and installation warranties (if applicable).

1. Geotextile (filter fabric)

1.6 QUALIFICATIONS

A. INSTALLER shall meet the following requirements

1. Have experience in constructing lining/closure projects using GCL products.

2. Have experience installing GCLs on at least 5 projects and have installed a minimum of 2,000,000 square feet of GCL materials. Review of proposed installation procedures by the project engineer may relieve the Installer experience requirements on a project-specific basis.

1.7 QUALITY ASSURANCE

A. The OWNER will engage the services of a CQA officer, and Construction Quality Assurance (CQA) Laboratory for monitoring the quality and installation of the GCL unless otherwise specified.

B. The INSTALLER shall aid the CQA officer in the product sampling by providing personnel and equipment necessary to move, cut and protect GCL rolls and panels.

1.8 DELIVERY, STORAGE, AND HANDLING

A. General: Conform to the MANUFACTURER's requirements and ASTM D5888 unless otherwise specified.

B. Delivery:

1. Deliver material to the site only after the CQA Officer accepts required submittals.

2. Material shall be covered with a waterproof, tightly-fitting, plastic covering resistant to ultraviolet degradation.

3. Ship less than one month prior to scheduled installation.

4. Each roll shall be marked with the following information:

   a. manufacturer's name;
   b. product identification;
   c. lot or batch number;
   d. roll number; and
   e. roll dimensions

C. Storage:

1. Store rolls in space allocated by ENGINEER. Space should be at high ground level or elevated above ground surface.

2. Stack no more than 3 rolls high.

3. Protect rolls from precipitation, other sources of moisture, mud, dirt, dust, puncture, cutting or any other damaging or deleterious conditions.

4. Preserve integrity and readability of roll labels.

D. Handling:

1. Use appropriate handling equipment to MANUFACTURER's recommendations to load, move, or deploy GCL rolls.

2. Handling of rolls shall be done in a competent manner such that damage does not occur to the product or to its protective wrapping. Follow handling procedures outlined in ASTM D 5888.

3. Damage to protective covering due to mishandling or sampling must be repaired immediately. Repairs shall be such that the GCL roll is protected from moisture or other deleterious conditions.

4. INSTALLER is responsible for off-loading, storage, and transporting material form storage area to installation site.

PART 2 PRODUCTS

2.1 GRANULAR BUFFER MATERIAL (GBM)

A. GBM shall have the following grain size characteristics:

Sieve Size	Percent Passing
3/8”	100
#4	95-100
#10	70-95
#40	10-80
#200	0-7

B. GBM shall be placed as per Drawings and Specifications.

C. All GBM to be used for cap construction shall be tested for conformance with the gradation at a rate of one sieve analysis for every 500 cy with a minimum of one test for each source area.

D. All GBM to be used for cap construction shall be tested for conformance with the site cleanup criteria. One suite of analyses shall be performed for each 1,000 cy of material.

2.2 GCL GENERAL PROPERTIES

A. The GCL and its components shall exhibit properties and testing that meet or exceed the minimum average values shown in Section 2.3, Table 1.
B. The GCL shall conform to the requirements of the Testing Laboratory Services. No GCL shall be installed until the requirements of this Section have been met, and approval of Engineer has been obtained.
C. 6’ - overlap guideline shall be imprinted on one edge of the component of the GCL to be placed upward in the field as a means for providing quality assurance of the overlap dimension. Lines shall be printed in easily visible, non-toxic ink.

2.3 GEOMEMBRANE SUPPORTED GCL MATERIAL PROPERTIES

A. GSE GundSeal Smooth HDPE:

1. Meet the requirements of Table 1:

Table 1: GSE GundSeal Geosynthetic Clay Liner (Smooth HDPE)

Tested Property	Test Method	Frequency	Minimum Average Value					
Finished GCL Property			15 mil	20 mil	30 mil	40 mil	60 mil	80 mil
Bentonite Coating[1], lb/ft^2	ASTM D 5993	1/40,000 ft^2	> 0.75					
Effective Hydraulic Conductivity, cm/sec	ASTM D	periodically	< 4 x 10^{-12}					
Bentonite Moisture Content	ASTM D 2216	1/40,000 ft^2	25% Typical					
GCL Tensile Strength[3], lb/in	ASTM D 6768	1/200,000 ft^2	20	42	63	84	130	173
Geomembrane Property[2]								
Thickness, mil Lowest individual reading	ASTM D 5199	1/100,000 ft^2	15.0 13.5	20 18	30 27	40 36	60 54	80 72
Density, g/cm^3	ASTM D 1505	1/200,000 ft^2	0.94	0.94	0.94	0.94	0.94	0.94
Tensile Properties Tensile Break Strength, lb/in Elongation at Break, %	 ASTM D 6693 ASTM D 6693	 1/200,000 ft^2 1/200,000 ft^2	 44 500	 76 500	 114 700	 152 700	 228 700	 304 700
Puncture Resistance, lb	ASTM D 4833	1/200,000 ft^2	20	36	54	72	108	144
Sodium Bentonite Property								
Hydraulic Flux: Bentonite, m^3/m^2/sec	ASTM D 5887	periodically	≤ 1 x 10^{-8}					
Hydraulic Conductivity, cm/sec	ASTM D 5887	periodically	≤ 5 x 10^{-9}					
Swell Index, ml/2 g	ASTM D 5890	1/60,000 lb	≥ 24					
Fluid Loss, ml	ASTM D 5891	1/60,000 lb	≤ 18					
TYPICAL ROLL DIMENSIONS								
Roll Width[4], ft			17.5	17.5	17.5	17.5	17.5	17.5
Roll Length[4], ft			200	200	200	180	180	150
Roll Area, ft^2			3,500	3,500	3,500	3,150	3,150	2,625
Roll Weight, lb			4,200	4,200	4,200	4,200	4,200	4,200

NOTES:
- [1]0% moisture content.
- [2]See specific GSE HD geomembrane product data sheet for additional information.
- [3]4 in wide sample, 12 in/min. Values are representative of the geomembrane tensile yield strength.
- [4]Roll lengths and widths have a tolerance of ± 1%.

2.4 GCL PACKING AND LABELING

A. New GCLs shall be supplied in rolls wrapped in relatively impermeable and opaque protective covers and marked or tagged with the following information:

1. MANUFACTURER's name
2. product identification
3. lot or batch number

4. roll number
5. roll dimensions

2.5 GCL TRANSPORTATION

A. Transportation of the GCL, to the site, shall be the responsibility of the MANUFACTURER. The MANUFACTURER shall be liable for all damages to the materials incurred prior to and during transportation to the site.

2.6 MANUFACTURING QUALITY CONTROL

A. The GCL shall be subject to quality control and conformance testing to assure that the materials provided meet the minimum performance requirements. In most cases, sampling can be carried out on a sacrificial portions of the material. Consequently, repair of sampled locations should not be required.

1. Quality Control Tests

a. MANUFACTURER shall verify that the geomembrane backing of the GCL meets the corresponding manufacturer's specification for that product.

b. MANUFACTURER shall verify the proper mass per unit area of bentonite has been added to the product.

c. All materials shall be tested in accordance with MANUFACTURER's quality control program. The MANUFACTURER shall perform testing. Samples not satisfying the MANUFACTURER's specifications shall result in the rejection of the applicable rolls. At the MANUFACTURER's discretion and expense, additional testing of individual rolls may be performed to more closely identify the non-complying rolls and/or to qualify individual rolls.

d. The MANUFACTURER shall certify the quality of the rolls. The quality control certificate shall include:

1) roll number and identification

2) sampling procedures

3) results of all quality control tests, including a description of test methods used

2.7 STRUCTURAL GENERAL FILL

A. Borrow materials used for structural general fill above the Consolidation Area cap shall have a maximum particle size of 1.5-in within the first 12-inches of same. Particles larger than 1.5 inches shall not be protruding from the surface of the subgrade where cap is to be placed

B. All structural general fill to be used for cap construction shall be tested for conformance with the gradation at a rate of one sieve analysis for every 500 cy with a minimum of one test for each source area.

C. All structural general fill to be used for cap construction shall be tested for conformance with the site cleanup criteria. One suite of analyses shall be performed for each 1,000 cy of material.

2.8 GENERAL FILL

A. General fill shall be non-expansive, predominantly granular soil, free of organic matter and deleterious substances, and not containing materials over 4 inches in the greatest dimension.

B. All general fill to be used for cap construction shall be tested for conformance with the gradation at a rate of one sieve analysis for every 500 cy with a minimum of one test for each source area.

C. All general fill to be used for cap construction shall be tested for conformance with the site cleanup criteria. One suite of analyses shall be performed for each 1,000 cy of material.

2.9 ORANGE INDICATOR MESH

A. The delineation material shall be an orange snow fence material, Resinet OSF60.

PART 3 EXECUTION

3.1 FILLING AND BACKFILLING

A. Filling and backfilling shall be in accordance with Sections 310000 and 312333.

3.2 GCL MATERIAL INSTALLATION PROCEDURES

A. General: The GCL installation should follow general guidelines provided by ASTM D 6102 unless otherwise specified.

3.3 PREPARATION OF FOUNDATION LAYER SURFACE

A. The foundation soil layer surface shall be rolled to a smooth level surface, be free of stones typically greater than 0.50 inch diameter, and prepared as otherwise specified in Section 31 00 00 –Earthwork and Grading

3.4 GCL PLACEMENT

A. Once the subgrade is accepted by the INSTALLER and approved by ENGINEER, GCL rolls shall be delivered to the working area in their original packaging. Immediately prior to deployment, the packaging shall be carefully removed without damaging the GCL. The GCL shall be placed such that the geomembrane side of the GCL faces upward unless otherwise directed by engineer.

B. Equipment used to deploy the GCL must be track or rubber tired with 40 psi maximum ground pressure and is subject to approval by the ENGINEER. Equipment shall not cause rutting of the subgrade surface, shall not make sharp turns, and shall not be driven over the GCL, unless proper demonstration of GCL survivability and approval of ENGINEER can be obtained. Any damage to the subgrade or the GCL shall be the responsibility of the CONTRACTOR to replace or put back to the pre-installation conditions.

C. Care shall be taken to minimize the extent to which the GCL is dragged across the subgrade in order to avoid damage to the GCLs bentonite surface. A temporary geosynthetic subgrade covering slip sheet or rub sheet may be used, as necessary, to reduce friction damage during placement.

D. Care shall be taken to not entrap objects or moisture beneath the GCL.

E. The individual deployed rolls (panels) shall be placed so that overlapping edges are parallel to the direction of the slope. The panels shall be placed to ensure a minimum overlap of 12 inches between panels.

F. All GCL shall be placed and maintained flat on the underlying surface, with no wrinkles or folds, especially at the exposed edges of the panels.

G. All exposed bentonite (product deployed bentonite side up) GCL panels shall be covered the same day as they are deployed with a geomembrane or equivalent.

H. Product deployed geomembrane side up, bentonite side down, shall be ultimately covered with a minimum12 inch thick layer of cover soil within one week of deployment. Exposed bentonite at seams shall be protected.

I. If the bentonite becomes hydrated before the cover soil layer is placed, it shall be tested and replaced, as necessary, to meet the specified maximum allowable moisture contents listed (generally ≤ 30%).

J. During windy conditions, the GCL edges shall be weighted down, if necessary, with a sufficient number of filled sandbags or underlying soil material to prevent damage to the GCL.

K. The GCL material shall be cut with a sharp utility knife with a hook blade, or other approved device. Do not damage adjacent or underlying materials while cutting the GCL.

L. The INSTALLER shall examine the GCL surface and remove any harmful foreign objects.

M. Do not install GCL during periods of rain or in areas of ponded water or unusually moist soils.

3.5 GCL PLACEMENT

A. The minimum dimension of the longitudinal overlap shall be 6 in. End-of-roll overlapped seams shall be similarly constructed, with a minimum overlap of 12 in in all directions. Do not sew or use mechanical connections to hold the panels together. No additional

granular bentonite is required for the GCL overlap areas with bentonite to edge of geomembrane.

B. Seams at the ends of the panels shall be constructed such that they are shingled in the direction of the grade to prevent the potential for runoff flow to enter the overlap zone.

3.6 GCL DETAIL WORK

A. The GCL shall be sealed around any penetration and embedded structures in accordance with the Construction Drawings and GCL MANUFACTURER's recommendation.

3.7 GCL DEFECTS AND DAMAGE REPAIR

A. If the GCL is defective or damaged (torn, punctured, perforated, etc.) during installation, it may be possible to repair it by cutting a patch to fit over the damaged area. The patch shall be obtained from a new GCL roll and shall be cut to size such that a minimum overlap of 12 in is achieved around all of the damaged area. The patch shall be placed with the bentonite side down. Adhesion tape may be used to hold the patch in place, while cover soil is being placed.

3.8 FIELD QUALITY CONTROL AND QUALITY ASSURANCE

A. General

1. Field quality control is the responsibility of the INSTALLER. The INSTALLER must document that the installation proceeds in accordance with the requirements of this Specification Section.

2. Field construction quality assurance (CQA) is the responsibility of the ENGINEER or OWNER's authorized representatives who shall be assisted by the INSTALLER. CQA consists of inspections, field-testing, laboratory testing, and record keeping.

B. During Installation, the INSTALLER, along with the OWNER's authorized CQA representatives, shall inspect:

1. Material Storage and Handling. Verify that the material is carefully unloaded and protected against ground moisture, rainfall, and other damaging conditions. Material should be stored and handled in accordance with ASTM D 5888. GundSeal rolls should be stored in a well-drained area and covered with a tarpaulin or equivalent until the time of deployment.

2. Bentonite Moisture Content. Ensure that the delivered product has not become prehydrated during the transportation. The bentonite can be air-dried or sun-dried just prior to installation if necessary for localized areas of elevated bentonite moisture or hydration. Hydrated areas of bentonite should be covered with GundSeal patch, alternately, or removed.

3. Subgrade. The surface upon which the GundSeal is installed should be smooth and free of wheel ruts, debris, roots, sticks, and rocks larger than 1.0 in. Site

specific compaction requirements should be followed in accordance with the project plans and specifications. At a minimum, the site should be smooth rolled the level of compaction such that installation equipment and other construction vehicles traffic does not cause rutting greater than 1.0 in deep. Furthermore, all protrusions extending more than 0.5 in from the subgrade shall be removed, crushed, or pushed into the subgrade.

a. In applications where the product is the sole barrier, subgrade surfaces consisting of gravel or granular soils may not be acceptable due to their large void content. For these applications, the subgrade shall be greater than 80% fines and contain no particles larger than 1 in. In all high head, water containment applications, i.e. maximum water depth greater than 1 ft.

b. Immediately prior to deployment of the GCL, the subgrade shall be final compacted to fill in any remaining voids or desiccation cracks and to ensure that no sharp irregularities or abrupt elevation changes exist greater than 1.0 in. The surfaces to be lined shall be maintained in this condition and free of standing water. GCL can be deployed on a frozen subgrade, if the subgrade would meet all the conditions as previously outlined if unfrozen.

c. The subgrade surface and preparation should be inspected and certified by the CQA inspector prior to GundSeal placement. Upon approval by the CQA inspector, it is the geosynthetic installer's responsibility to communicate to the engineer of any changes in the condition of the subgrade that might render it out of compliance, with any of the requirements of the project specification or ASTM Standard D 6102.

4. Overlapped Seams. Verify that the material is installed and aligned with the proper overlap distance between panels. Minimum standard lengthwise overlap distance is 6 in and minimum standard widthwise overlap distance is 1 ft. Overlap distance should be adjusted for site specific subgrade conditions. Welded Geomembrane Seams. When the GundSeal geomembrane backing seams are fusion or extrusion welded, standard installation procedures, CQA practices, and seam testing procedures should be utilized as outlined in the *GSE Geomembrane Installation Quality Assurance Manual.*

5. Bentonite Prehydration. For applications that require prehydration of the bentonite at seam overlap areas and adjacent to structures, ensure the bentonite is adequately prehydrated. This should be accomplished by unfolding and exposing overlap seam areas and structures after the material is installed and subsequently liberally spraying the bentonite coating with tap water. In addition to spraying the bentonite coating of exposed contact areas, the structure surface and overlap geomembrane backing should also be prehydrated as the bentonite coating of the GCL. Compatibility of the bentonite with the hydrating liquid (other than tap water) should be verified with a bentonite free swell test (ASTM D 5890 or a simplified variation).

6. Repairs and Patches. Verify that the installed material is not damaged. For isolated areas where the geomembrane backing is punctured or torn, or where the bentonite coating has been dislodged during installation, the area should be patched. Patches with GundSeal should be placed over the damaged area with the bentonite coating directly against the damaged area. Patches should extend a minimum 1 ft outward around the perimeter of the damaged area.

7. Dislodging of the Bentonite Coating. Verify that the GundSeal product is deployed and covered in a manner that does not scrape or dislodge the bentonite coating. To add protection to the bentonite layer of GundSeal, a thin spunbonded geotextile is attached to the bentonite surface to minimize the potential for dislodging and/or scraping the bentonite layer during installation. In areas where the bentonite coating has been scraped or dislodged, bentonite should be replaced by patching the affected area. For dislodged bentonite at roll edges resulting from material handling, the overlap distance should be increased to account for the bentonite loss.

8. Debris in the Overlapped Seams. Verify that no soil or other debris migrates into GundSeal overlap seams, or between GundSeal and the overlying geomembrane in an encapsulated mode.

9. Material Wrinkles and Fishmouths. Verify that the deployed GundSeal liner does not contain wrinkles or fishmouths. Wrinkles that cannot be pulled out manually should be (1) patched or (2) cut out and the area subsequently patched. Patches are made from the same base GundSeal material with the same specified overlap distances extending around the affected area(s).

10. Bentonite Protection Deployed Bentonite Side Down. When GundSeal is installed bentonite side down (geomembrane side up), no additional daily covering is necessary to protect the bentonite. Caution should be taken, however, to protect the exposed perimeter panel edges from water pooling and subsequently flowing below the liner. This can be accomplished by confirming the perimeter of the deployed GundSeal material lies flat and in intimate contact with the subgrade soil by manually adjusting material. Alternately, temporary ballast, such as sandbags or soil, may be placed on top of the GundSeal material in areas to prevent material bridging over the subgrade.

C. During soil cover operations, the INSTALLER, along with the OWNER's authorized CQA representatives, shall inspect:

1. Material Inspection. The OWNER's authorized CQA representatives shall inspect each panel of GCL placed before the GCL is covered.

2. General Soil Cover Operations. Verify that GundSeal is covered with soil 1) in a timely manner, 2) in a careful manner, and 3) with adequate soil thickness ≥1 ft.

3. Subgrade Moisture Conditions. The following general recommendations are provided for moisture characteristics of soils, the intent being to cover the GundSeal before bentonite migration/displacement due to construction would cause concern:

a. If the subgrade is relatively dry (approaching the "wilting point" moisture content that makes it difficult for vegetation to grow), GundSeal should be covered within five days.

b. If the subgrade is damp to moist (approaching the "field capacity" moisture content that allows lush vegetation), GundSeal should be covered within three days.

c. If the subgrade is moist to wet (approaching saturation), it is advisable to cover GundSeal by the end of the following day.

4. CQA Observation of Soil Cover Operations. Verify that the soil spreading operations are performed in accordance with the specifications and do not cause damage to the lining system.

5. Contractor Observation of Soil Cover Operations. In the absence of CQA monitoring during soil cover operations, the contractor performing soil covering should provide a ground person in front of the spreading activities at all times. The primary responsibility of the ground person is (a) to establish and maintain adequate grade control of the cover soil layer, (b) to manually reduce or flatten wrinkles in the installed liner in advance of soil spreading, and (c) to identify and caution against any potential damage to the lining system.

D. The INSTALLER and the OWNER's authorized CQA representatives shall verify proper installation procedures are followed for all other specified installation precautions.

E. The INSTALLER shall aid the OWNER's authorized CQA representatives in collecting samples for testing as follows:

1. According to the requirements of the CQA Plan.

2. Each conformance sample shall be a minimum of 2 feet long and run the entire width of the roll.

3. Under direction of the OWNER's authorized CQA representatives, the INSTALLER shall mark the roll number and machine direction on each sample.

F. Field Testing:

1. The OWNER's authorized CQA representatives shall conduct the following conformance tests only if the material is suspected of prehydration:

a. moisture content (ASTM D 2216)

b. mass per unit area (ASTM D 5993)

2. Reported values shall be the average of 5 specimens taken from the sample.

3.9 GCL ACCEPTANCE

A. The INSTALLER shall retain ownership and responsibility of the GCL until the ENGINEER accepts it.

B. The ENGINEER will accept the GCL installation after:

1. All required documentation from the MANUFACTURER and INSTALLER has been received and accepted.

2. Test reports verifying material properties have been received and accepted by the OWNER's authorized CQA representatives.

3. The OWNER's authorized CQA representatives have completed final inspection and confirms that all noted defects have been repaired.

PART 4 MEASUREMENT AND PAYMENT NOT USED

END OF SECTION

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

B. Geotechnical Investigation, prepared by URS, dated Feburary 28, 2013.

C. County of Ventura Public Works Agency requirements, Land Development Manual, Chapter 6.

D. County of Ventura Grading Permit Change Order, dated May, 2013.

1.2 SUMMARY

A. Work included in this section:

1. Grading.
2. Fill material.
3. Excavation.
4. Filling and backfilling.

1.3 RELATED WORK

A. Related Sections

1. Section 025613: Consolidation Area Cap
2. Section 312333: Trenching, Backfilling, and Compacting

1.4 SUBMITTALS

A. Provide submittals as specified in Division 1.

B. Certificates and data.

1.5 QUALITY ASSURANCE

A. California Department of Transportation (CDT):

1. Standard Specifications: Section 17 and 19. CAL/OSHA, Title 8.

1.6 SITE CONDITIONS

A. General:

1. The Contractor shall conduct his operations and schedule his cleanup so as to cause the least possible obstruction and inconvenience to public traffic, pedestrians, and adjacent existing facilities.

2. Protect open excavations, trenches, and the like with fences, covers, and railings as required to maintain safe pedestrian and vehicular traffic passage.

3. Prevent erosion of freshly graded areas during construction and until such time as permanent drainage and erosion control measures have been installed.

4. All bench marks, monuments, signs, and other reference points shall be maintained; if disturbed or destroyed, they shall be replaced by the Chevron-retained surveyor.

5. Earthwork operations shall be conducted so as to prevent windblown dust and dirt from interfering with the surrounding normal operations. Contractor shall assume liability for all claims related to windblown dust and dirt. Water shall be applied in conformance with applicable provisions of Section 17 of the CDT Standard Specifications and with Section 1590 (e) of CAL/OSHA, Title 8.

6. The Contractor is responsible for conforming with all Storm Water Pollution Prevention/Erosion Control Plans and Notice of Intent (N.O.I.) from the State Water Resources Control Board. No work may begin until permit/N.O.I. has been issued.

B. Environmental Requirements: When unfavorable weather conditions necessitate interrupting filling and grading operations, areas shall be prepared by compaction of surface and grading to avoid collection of water. Adequate temporary drainage shall be provided to prevent erosion. After interruption, compaction specified in last layer shall be reestablished before resuming work.

1.7 EXCAVATION

A. Provide materials, services, and equipment required for excavating below grade; and backfilling, compacting, and grading as required for the completion of the work.

PART 2 PRODUCTS

2.1 FILL MATERIALS

A. General: All fill material, including from onsite sources, shall comply with the criteria presented herein.

B. All select backfill shall be tested for conformance with the criteria above at a rate of one set of tests per 1,000 cy or a minimum of one set of tests for each source.

2.2 BORROW MATERIALS

A. All onsite borrow materials to be used for backfill of remedial backfill areas shall be tested for conformance with site cleanup criteria at a rate of 1 suite of tests per 1,000 cy.

B. The material obtained from the project excavations, consisting of soil approved by the Chevron Representative, shall be used as fill, provided that all organic material, rubbish debris and other objectionable materials contained therein are first removed. However, rocks obtained from project excavations will be permitted in the fill if broken down to sizes smaller than 6 inches and mixed with sufficient soil to avoid nesting.

PART 3 EXECUTION

3.1 EXCAVATION

A. General:

1. All supports and shoring required for the sides of excavations or for protection of adjacent existing improvements shall be provided and maintained by the Contractor. The adequacy of such systems shall be the complete responsibility of the Contractor. Earth regardless of character and subsurface conditions, shall be excavated to depths shown on drawings and to the neat dimensions of the footings wherever practicable.

2. Piping, rocks, pieces of concrete or other obstructions, if encountered during the excavation/scarifying operations, shall be removed and properly disposed of.

3. Bottoms of all excavations and trenches shall be subject to inspection and testing by the Chevron Representative. Corrective measures as directed by the Chevron Representative shall be executed promptly.

B. Removal of Excess Excavated Material: Excess material shall be removed by the Contractor off the site in a legal manner.

C. Shoring

1. Excavations shall be supported in accordance with the California Industrial Accident Commission and CAL/OSHA

2. The proposed shoring designs shall be reviewed for approval by Chevron Representative.

3.2 GRADING

A. General:

1. All areas covered by the project, including excavated and filled areas and adjacent transition areas, shall be uniformly graded so that finished surfaces are at the elevations shown on the Contract Drawings.

2. Finished surfaces and surfaces to receive paving and aggregate base shall be smooth, compacted, and free from irregular surface drainage.

3. Ditches, gutters, and swales shall be finished to permit proper surface and subsurface drainage.

3.3 FILLING AND BACKFILLING

A. General:

1. Compaction by jetting shall not be permitted.

2. All areas to receive fills shall be scarified to a depth of 12" and uniformly moisture conditioned as required to obtain the required compaction.

3. Fill material shall be spread in uniform lifts of not more than 8" in uncompacted thickness for Consolidation Area, and 12” at remedial excavation areas. Prior to commencing compaction, fills shall be brought to a uniform water content that will permit proper compaction by either aerating the material if it is too wet, or spraying the material with water if it is too dry. Each lift shall be thoroughly mixed before compaction to assure uniform distribution of water content. All fills shall be brought to suitable elevations above grade to provide for anticipated settlement and shrinkage thereof.

3.4 COMPACTION AND TESTING

A. General:

1. Testing shall be provided by an independent testing agency retained by Chevron. Schedule for testing shall be provided to the Chevron Representative a minimum of 48 hours in advance so that Chevron Representative can be present when testing is scheduled.

2. All compaction testing shall be in accordance with the latest revision of ASTM D1557.

3. Compaction testing during grading operations may include nuclear test equipment for moisture content and density conforming to ASTM 2922 and 3017.

4. Backfill soils shall be compacted to a percentage of the maximum dry density as listed below:

a. Fill in Consolidation Area: 95%

b. Subgrade of fill within top 3 feet under existing pavement for planned roadway or building areas: 95%

c. Remedial Excavation Areas: nominal compaction around and for first foot above piping, and as required above thereafter: 90%

5. Where fill is required and no immediate or future construction is planned (such as planting areas), each layer of fill and scarified subgrade shall be compacted to not less than 90% maximum density.

6. All compaction shall be performed using compacting rollers, pneumatic or vibrator compactors, or other equipment and mechanical methods approved by the Chevron Representative.

3.5 DUST CONTROL

A. The Contractor shall prevent the formation of an airborne dust nuisance by cleaning, sweeping, and sprinkling with water, or other means as necessary of work areas until the project is completed and accepted. The amount of water used shall not be excessive to cause soil carry-over or wash-off outside the boundaries of the work area. If soil wash-off occurs, the Contractor shall immediately notify the Chevron Representative.

3.6 WATER CONTROL AND TEMPORARY DRAINAGE FACILITIES

A. Contractor shall provide means to convey water away from excavations so that softening of foundation bottoms, footing undercutting, and soil changes detrimental to subgrade stability and foundation will not occur.

B. Temporary drainage facilities shall be provided to prevent mixing of clean water with water that may have been contaminated as a result of contact with hazardous waste affected soil. Contractor shall provide sand bag desilting ponds sufficient to contain silty water prior to discharge.

C. In the event that water in containment ponds is found to be contaminated by visual inspection or odorous water, discolored water, oil sheens, solids etc. are detected, Contractor shall identify the source of contamination and implement best management practices to contain the contaminated water onsite and remediate the situation in accordance with the Storm Water Pollution Prevention Plan and dispose the contaminated water as instructed by the Chevron Representative. Contractor shall discharge only clean water into existing drainage facilities.

D. Temporary drainage facilities shall be installed where shown on the drawings and all applicable notes as specified therein. Trench excavations for utilities shall not be used for temporary drainage ditches.

3.7 FIELD QUALITY CONTROL

A. All excavation, filling, and compaction shall be performed under the direct observation of the Chevron Representative. The Contractor shall cooperate with the Chevron Representative in all aspects of the work. Any materials placed or improvements constructed in the absence of the Chevron Representative's approval to proceed shall be presumed to be defective and, at the discretion of the Chevron Representative shall be removed and replaced at no cost to Chevron. The Chevron Representative shall be notified at least 4 working days prior to required observation or testing.

B. Finish soil grade tolerance at the completion of grading:

1. Other areas: +0 to ±0.02 feet

PART 4 MEASUREMENT AND PAYMENT – NOT USED

END OF SECTION

SECTION 312333
TRENCHING, BACKFILLING, AND COMPACTING

PART 1 GENERAL

1.1 SUMMARY

A. Work included in this section:

1. Trenching and backfilling for underground utilities.

2. Furnishing and installing utility line marking.

1.2 SUBMITTALS

A. Provide submittals as specified in Division 1.

B. Certificates and data.

1. Select backfill material.

2. Certificate of compliance for pipe base and pipe zone materials.

3. Independent testing and laboratory reports: submit results of specified tests.

C. Samples: 24–inch stripes of utility marking tape.

1.3 QUALITY ASSURANCE

A. California Department of Transportation (CDT):

1. Standard Specifications.

2. Standard Test Methods: No. 202.

B. CAL/OSHA Construction Safety Orders.

C. Contractor to assist Chevron Representative with the collection of any backfill material for testing by Chevron.

PART 2 PRODUCTS

2.1 SELECT BACKFILL MATERIAL

A. Select backfill shall be granular, free from clay or organic matter with the following criteria:

Maximum Plasticity Index:	10
Maximum Particle Size:	2 inches
Percent Passing No. 200 Sieve:	10 to 20%
Minimum R-Value:	20

B. All aggregate from onsite sources shall be tested for conformance with the gradation at a rate of one sieve analysis for every 500 cy with a minimum of one test for each source area.

C. Bedding Material:

1. Shall be clean, sound, and durable natural sand.

2.2 MARKING TAPE

A. Capable of being inductively detected electronically.

B. Construction: Metallic foil laminated between two layers of impervious plastic film not less than 3 inches wide. Total thickness of tape shall not be less than 0.005 inch (5 mil) plus or minus 10 percent manufacturing tolerances.

1. Film: Inert plastic. Each film layer shall be not less than 0.0005 inch thick (0.5 mil).

2. Foil: Not less than 0.00035 inch thick (0.035 mil).

3. Adhesive: Compatible with foil and film.

C. Imprint: 3/4-inch or larger bold black letters.

D. Legend: Identify buried utility line tape with imprint such as “Caution: Sewer Line Below.” Repeat identification at approximately 24-inch intervals.

E. Background Color: APWA color code and as specified below:

Color	Utility
Safety Red	Electric
High Visibility Safety Yellow	Gas, Oil, Steam, Dangerous Materials
Safety Alert Orange	Telephone, Communications, Cable Television
Safety Precaution Blue	Water System, Irrigation
Safety Green	Sanitary Sewer, Storm Sewer
Safety Brown	Force Mains, Reclaimed Water, and Effluent Lines

F. Manufacturer: Lineguard, Inc., Wheaton, Illinois; Reef Industries, Inc., Houston, Texas; Thor Enterprises, Inc., Sun Prairie, Wisconsin; or approved equivalent.

2.3 UNDERDRAIN

A. PVC Perforated Pipe, ASTM D3034-08, Bell and Spigot connections.

PART 3 EXECUTION

3.1 PREPARATION

A. General:

1. Prior to trenching, the Contractor shall perform a full underground utility survey.

3.2 TRENCH EXCAVATION

A. General:

1. Excavation shall include removal of all water and materials that interfere with construction.

2. Excavation shall include the construction and maintenance of bridges required for vehicular and pedestrian traffic, support for adjoining utilities.

3. It shall be the Contractor's responsibility to direct vehicular and pedestrian traffic through or around his work area at all times.

4. The Contractor shall relocate, reconstruct, replace or repair, at his own expense, all improvements which are in the line of construction or which may be damaged, removed, disrupted or otherwise disturbed by the Contractor. Except as specified in other Sections or shown on the Contract Drawings, this provision applies to all surface improvements of whatever nature such as walls, fences, above-grade utilities, landscaping, paving, structures, or other physical features whether shown on the Contract Drawings or not and to all subsurface improvements such as utilities which are indicated on the Contract Drawings or marked in the field. The Contractor shall connect such utilities to existing systems and leave all in a workable and operating condition. The cost of this work shall be considered as included in other items of work and no additional compensation will be allowed therefore.

B. Excavation Bracing:

1. The excavation shall be supported and excavation operations shall be conducted in accordance with the California Industrial Accident Commission and CAL/OSHA.

C. Excavated Material:

1. All excavated material not required for backfill shall be immediately removed and properly disposed of in a legal manner by the Contractor.

2. Materials excavated in streets and roadways shall be laid alongside the trench no closer than two feet from the trench edge and kept trimmed to minimize inconvenience to public traffic.

3. Provisions shall be made whereby all storm and waste water can flow uninterrupted in gutters or drainage channels.

3.3 PIPE CULVERTS

A. Trench Width: Allow 12 inches of space on each side of pipe.

B. Where rock, hardpan, or other unyielding material is encountered, remove 6 inches of material below pipe grade, 12 inches wider than pipe diameter. Fill with select backfill. Compact to 90 percent of maximum density.

C. If foundation is unstable at grade established, remove unsuitable material under and around pipe a minimum of one pipe diameter on each side of pipe to depth directed. Replace with select backfill. Compact to 90 percent of the maximum density.

D. Provide a firm foundation of uniform density throughout length of pipe and, if directed, camber in direction parallel to pipe centerline.

E. Place select or granular backfill on each side of pipe in layers not to exceed 6 inches in depth for entire width of trench, and to an elevation 1 foot above the top of the pipe. Uniformly compact with mechanical tampers giving special attention to compaction under pipe haunches. Bring compacted backfill up evenly on each side of pipe to avoid unequal pressure. When backfilling a pipe in a fill section, place and compact backfill a minimum width equal to the pipe diameter or span on each side of the pipe. Compact each layer to 95 percent of the maximum density. Do not permit construction equipment over pipe without adequate protection.

3.4 PIPE BEDDING

A. Trenches shall be excavated below the subgrade of the pipe invert to a minimum depth of 4 inches.

B. 4 inch minimum of bedding material consisting of fine to coarse sand shall be placed at the bottom of the trench to support the pipes. Engineer will determine the suitability of the trench bottom. Highly weathered bedrock shall be removed and replaced with bedding material as necessary.

3.5 TRENCH BACKFILL

A. Prior to trench backfill, the condition of the trench and laying of pipe must be inspected and approved by the Chevron Representative.

B. Select backfill material as specified shall be used for backfill. After the pipe has been properly laid and inspected, select backfill material shall be placed on both

sides of the pipe and compacted to subgrade elevation. The backfill shall be placed in 8 inch maximum lift thicknesses and compacted to the specified compaction criteria.

C. Compaction by jetting of trench backfill is not permitted.

3.6 BACKFILL COMPACTION

A. Compaction testing will be in accordance with the latest revision of ASTM D1557.

B. The first foot above piping shall be nominally compacted (87 percent of maximum dry density); subsequent lifts shall be compacted to 85 percent, except below pavement areas and structural slabs to 95 percent.

C. Backfill shall be compacted with hand or pneumatic tampers; do not machine tamp.

3.7 TRENCH SURFACING

A. General: In unimproved areas, the trench surface shall be restored to its original condition. No mounds of earth shall be left along the trench.

3.8 MARKING TAPE

A. The Contractor shall install tape in backfill directly over each buried utility line as shown. Place tape by plowing or during final backfilling.

B. Where utilities are buried in a common trench, identify each line by a separate warning tape. Bury tapes side by side directly over the applicable line.

3.9 INSTALLATION OF GEOTEXTILE

A. The geotextile shall be handled in such a manner as to ensure that it is not damaged in any way. The Contractor shall replace the geotextile at his or her own cost if damage occurs to the geotextile to the extent that it is no longer usable as determined by the Chevron Representative.

B. The geotextile shall be installed to the lines and grades as shown on the contract drawings and as described herein.

C. The geotextile shall be rolled down the slope in such a manner as to continuously keep the geotextile in tension by self-weight. The geotextile shall be securely anchored in an anchor trench where applicable, or by other approved or specified methods.

D. In the presence of wind, all geotextiles shall be weighted by sandbags or approved equivalent. Such anchors shall be installed during placement and shall remain in place until replaced with cover material.

E. The contractor shall take necessary precautions to prevent damage to adjacent or underlying materials during placement of the geotextile.

F. The geotextile shall not be exposed to precipitation prior to being installed and shall not be exposed to direct sunlight for more than 15 days after installation.

G. The geotextile shall be seamed using heat seaming or stitching methods as recommended by the manufacturer and approved by the Chevron Representative. Sewn seams shall be made using polymeric thread with chemical resistance equal to or exceeding that of the geotextile. All sewn seams shall be continuous. Seams shall be oriented down slopes perpendicular to grading contours unless otherwise specified. For heat seaming, fusion welding techniques recommended by the manufacturer shall be used.

H. The contractor shall not use heavy equipment to traffic above the geotextile without approved protection.

I. The geotextile shall be covered as soon as possible after installation and approval by the Chevron Representative.

J. Material overlying the geotextile shall be carefully placed to avoid wrinkling or damage to the geotextile.

3.10 TOLERANCES

A. Top Surface of General Backfilling: Plus or minus one (1) inch from required elevations.

3.11 FIELD QUALITY CONTROL

A. Compaction testing will be preformed in accordance with ASTM D1557.

B. If tests indication work does not meet specified requirements, remove work, replace, compact, and retest.

PART 4 MEASUREMENT AND PAYMENT – NOT USED

END OF SECTION

PART 1 – GENERAL

1.1 DESCRIPTION

A. The work covered by this section includes the furnishing of all labor, materials, equipment and incidentals for construction and installation of the Cellular Confinement (Geocell) Load Support System, as shown on the Construction Drawings.

1.2 RELATED WORK

A. Section 310000: Earthwork and Grading

1.3 REFERENCES

A. The American Society of Testing and Materials (ASTM)

B. American Association of State Highway and Transportation Officials (AASHTO)

C. Construction Specifications Institute (CSI) format specifications

1.4 SUBMITTALS

A. Submit product data, drawings and samples.

B. Submit current product quality assurance test data and independent laboratory test results indicating compliance with specified performance. No material will be considered as an equivalent to the geocell material unless it meets all areas of this section without exception. Manufacturers seeking to supply what they call equivalent material must submit records, data, independent test results, samples, certifications, and documentation deemed necessary by the Engineer of Record to prove equivalency. The Engineer of Record will approve or disapprove other manufacturers materials within 10 days after all submitted information is studied and tested.

C. If aggregate/topsoil mix meeting this specification cannot be sourced from onsite, Contractor shall provide product data for Chevron approval prior to purchase.

1.5 QUALITY ASSURANCE

A. Product manufacturers shall provide certification of compliance with all applicable testing procedures and related specifications upon written request. Request for certification shall be submitted by the purchasing agency no later than the date of order placement.

B. Product manufacturers shall also have a minimum of 5 years experience producing products for Load Support Systems.

C. The manufacturer shall provide data showing that the high-density polyethylene resin used to produce the geocell sections has been tested using an appropriate number of seam

samples and varying loads to generate data indicating that the seam peel strength shall survive a loading of at least 95 kg (209 lbf) for a minimum of 10,000 hours.

D. The Contractor shall provide references for at least three projects where the Contractor has installed geocell systems.

E. The contractor shall check all materials delivered to the site to ensure that the correct materials have been received.

F. Materials shall be stored on site in a manner that ensures that no damage occurs to any of the materials. Damaged materials shall be replaced at the Contractor's expense.

G. No material will be considered as an equivalent to the geocell material specified herein unless it meets all areas of this specification without exception and is approved by Chevron. Manufacturers seeking to supply what they represent as equivalent material must submit records, data, independent test results, samples, certifications, and documentation deemed necessary by the Chevron Representative to prove equivalency. The Chevron Representative shall approve or disapprove other manufacturers materials within 10 days after all submitted information is studied and tested.

PART 2 – PRODUCTS

2.1 Description

A. The geocell system consists of an assembly of fully surface-textured H.D.P.E. sheet strips connected in series, using full-depth ultrasonic spot-welded seams, aligned perpendicular to the longitudinal axis of the strips. When expanded, the interconnected strips form the walls of a flexible, three-dimensional cellular confinement structure into which the specified infill materials can be placed. The system can include:

1. Geocells
2. Temporary Stake Anchors
3. Cell Infill Material

2.2 Geocell Base Material

A. Polyethylene used to make strips for geocell sections shall have a density of 0.935 - 0.965 g/cm3 (58.4 - 60.2 lb/cu.ft) tested per ASTM D1505.

B. Polyethylene used to make strips for geocell sections shall have an Environmental Stress Crack Resistance (ESCR) of 3000 hour tested per ASTM D1693.

C. The resin manufacturer's certification of polyethylene density and ESCR shall be available upon request from the manufacturer.

D. Carbon black shall be used for ultra-violet light stabilization. Carbon black content shall be 1.5% - 2% by weight through the addition of a carrier with a certified carbon black content. The carbon black shall be homogeneously distributed throughout the material.

E. The manufacturer shall certify the percentage of carbon black.

2.3 Strip Properties

A. Strips used to make geocell sections shall have a sheet thickness, of 1.27 mm -5% +10% (50 mil -5% +10%) tested per ASTM D5199. Thickness shall be determined in the flat, before any surface texturing or other surface disruption.

B. Perforations shall be such that the peak friction angle between the surface of the perforated plastic and a #40 silica sand at 100% relative density shall be no less than 85% of the peak friction angle of the silica sand in isolation when tested by the direct shear method per ASTM D 5321. The quantity of perforations shall remove 19.6% ± 3% of the cell wall area.

2.4 Cell Seam Peel Strength Test

A. Cell seam strength shall be uniform over the full depth of the cell. Minimum seam peel strengths shall be: 2840 N (640 lbf) for the 200 mm (8.0 in) depth cell, 2130 N (480 lbf) for the 150 mm (6.0 in) depth cell, 1420 N (320 lbf) for the 100 mm (4.0 in) depth cell, 1060 N (240 lbf) for the 75 mm (3.0 in) depth cell. Short-term peel strength shall be tested per Appendix A.

B. Seam hang-strength test shall be performed on all resin or pre-manufactured sheet or strips for a period of 168 hours (7 days) minimum in a temperature-controlled environment that undergoes change on a 1-hour cycle from room temperature to 54°C (130°F). Room temperature is defined in ASTM E41. Long-term peel strength shall be tested per Appendix B.

2.5 Geocell Dimensions

A. The geocell sections shall be fabricated using strips of sheet polyethylene each having a length of 3.61 m (11.8 ft). Polyethylene strips shall be connected using full-depth, ultrasonic spot-welds aligned perpendicular to the longitudinal axis of the strip. Weld spacing shall be 445 mm ± 2.5 mm (17.5 in ± 0.10 in). The ultrasonic weld melt-pool width shall not exceed 25 mm (1.0 in).

B. The geocell sections shall be 8-inches deep ("GW30V8WWLL" by Presto Systems or approved equal). "8" indicates the cell depth in inches, "WW" and "LL" indicate the expanded section width and length in number of cells.

C. The area of expanded cells shall be 460 sq. cm (71.3 sq. in).

2.6 Geosynthetic Components

A. The bottom geosynthetic layer shall consist of non-woven geotextile fabric.

B. Geo-composite Drainage Systems

C. Geo-composite drainage systems, including geotextile-wrapped perforated pipes and sheet drainage cores, may be incorporated as sub-drains and interceptor drains. Product selection and application shall be determined by the Presidio Trust Representative.

2.7 Stake Anchors

A. Geocell sections may be temporarily anchored with ATRA® anchors or J-hook stakes prior to placing the infill material. The stake layout shall be as required to shape the geocell sections to the specified dimensions. The stake diameter and length shall be suitable to hold the geocell sections in tension for the given foundation soil conditions.

2.8 Infill Material

A. Aggregate/Topsoil Mix

1. The cellular confinement system infill shall be a mixture of aggregate blended with topsoil to promote vegetative growth and provide required structural support. The aggregate portion shall range from 2.5-inches to 3.5-inches with a median stone size of 3.0-inches. The percentage void-space when compacted shall be at least 30% topsoil, equal to but not greater than the aggregate void percentage, and shall be added and blended prior to placement. The mixture shall be compacted to a density that will provide a minimum California Bearing Ratio of 7.

2. Topsoil shall be sourced from a local supplier.

PART 3 – EXECUTION

3.1 Examination

A. Verify that site conditions are as indicated on the Construction Drawings.

B. Verify that layout of the proposed work is in accordance with the Construction Drawings.

C. Verify that all required materials delivered to the site comply with the Contract Specifications.

3.2 Site Preparation

A. Where subgrade soils are encountered that are weaker than the assumed design strength, the contractor shall excavate the affected areas and replace the excavated material with suitable fill under the direction of the Chevron Representative.

3.3 Geosynthetic Installation

A. The geosynthetic shall be installed per the manufacturer and/or Engineer of Record's recommendations and/or specifications.

3.4 Geocell Installation

A. The geocell sections shall be placed directly on the prepared subgrade or subbase and infilled with the specified infill material. The geocell section thickness shall be as indicated on the Construction Drawings.

B. The geocell sections shall be expanded into position at the grades and lines shown on the Construction Drawings. The orientation of expanded sections shall be as indicated on the Construction Drawings. Individual geocell sections can be held in their expanded positions with steel stakes driven inside selected outer cell walls prior to filling or other suitable methods. Stretcher frames may be used when dimensional tolerances are required. When properly expanded, the typical plan dimensions of individual cells should measure between 287 mm (11.3 in) long by 320 mm (12.6 in) wide (nominal ± 10%).

C. The edges of adjacent geocell sections shall be inter-leafed or butt-jointed according to which side-wall profiles abut. In all cases, the upper surfaces of adjoining geocell sections shall be flush at the joint. Inter-leaf side connections between expanded geocell sections. Welded edge seams should be overlapped and aligned when stapling. Abut end connections between geocell sections. The longitudinal centerlines of abutting external cells should be aligned and stapled at the cell wall contact point.

D. Adjoining sections shall be stapled together using a Stanley Bostitch P50-10B pneumatic stapler using 1/2 inch SB103020 wire staples (or other approved stapler and staples).

E. Refer to the manufacturer's standard drawings for additional details regarding panel connections.

F. The geocell sections shall be anchored in position prior to placing infill material by using either temporary stakes, by hand placement of infill material into the corner cells, or by other suitable methods.

G. At catch basins, utilities, or other obstructions, the geocell sections shall be stretched into position and cut around the perimeter of the obstruction to allow the geocell sections to slip over the obstruction and placed flat on the prepared surface.

3.5 Placement of Infill Soil

A. The specified infill material shall be placed into the expanded cells with equipment appropriate for the site conditions such as a backhoe or a front-end loader. The maximum drop height into the cells shall be limited to a maximum of 1 m (3 ft) to avoid damage or displacement of the cell walls.

B. Overfill the cells and level to a minimum 50 mm (2 in) above the top of the cells walls. A front-end loader may be used to place the infill provided that it only traffics above geocell sections that have been filled and covered with the minimum 50 mm (2 in) of additional material. The infill material shall be compacted to a minimum density of 90%

Standard Proctor Dry Density and the surface graded to the minimum specified height of compacted overfill material. This may be accomplished by back-blading with a straight edged loader bucket. A tolerance of plus or minus 12.5 mm (1/2 in) is acceptable. The infill material shall be vegetated as specified.

END OF SECTION

PART 1 GENERAL

1.1 SUMMARY

A. Work to be performed under this specification includes the installation, inspection, testing and acceptance of storm drainage utilities. Construction consists of furnishing all labor, equipment, tools, appliances and materials for performing all operations necessary for the construction and installation of storm drainage piping and structures, complete and ready for operation, as indicated on the construction drawings and described herein.

1.2 REFERENCES

A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ACI INTERNATIONAL (ACI)

ACI 346	(2001) SPECIFICATION FOR CAST-IN-PLACE CONCRETE PIPE

AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)

AASHTO M 198	(2005) STANDARD SPECIFICATION FOR JOINTS FOR CONCRETE PIPE, MANHOLES AND PRECAST BOX SECTIONS USING PREFORMED FLEXIBLE JOINT SEALANTS

ASTM INTERNATIONAL (ASTM)

ASTM C 1103M	(2003) STANDARD PRACTICE FOR JOINT ACCEPTANCE TESTING OF INSTALLED PRECAST CONCRETE PIPE SEWER LINES (METRIC)
ASTM C 14	(2007) STANDARD SPECIFICATION FOR CONCRETE SEWER, STORM DRAIN, AND CULVERT PIPE
ASTM C 1433	(2007) STANDARD SPECIFICATION FOR PRECAST REINFORCED CONCRETE BOX SECTIONS FOR CULVERTS, STORM DRAINS, AND SEWERS
ASTM C 1433M	(2007A) STANDARD SPECIFICATION FOR PRECAST REINFORCED CONCRETE BOX SECTIONS FOR CULVERTS, STORM DRAINS, AND SEWERS (METRIC)
ASTM C 14M	(2005A) STANDARD SPECIFICATION FOR CONCRETE SEWER, STORM DRAIN, AND CULVERT PIPE (METRIC)

ASTM C 231	(2004) STANDARD TEST METHOD FOR AIR CONTENT OF FRESHLY MIXED CONCRETE BY THE PRESSURE METHOD
ASTM C 270	(2007) STANDARD SPECIFICATION FOR MORTAR FOR UNIT MASONRY
ASTM C 443	(2005A) STANDARD SPECIFICATION FOR JOINTS FOR CONCRETE PIPE AND MANHOLES, USING RUBBER GASKETS
ASTM C 443M	(2007) STANDARD SPECIFICATION FOR JOINTS FOR CONCRETE PIPE AND MANHOLES, USING RUBBER GASKETS (METRIC)
ASTM C 478	(2007) STANDARD SPECIFICATION FOR PRECAST REINFORCED CONCRETE MANHOLE SECTIONS
ASTM C 478M	(2007) STANDARD SPECIFICATION FOR PRECAST REINFORCED CONCRETE MANHOLE SECTIONS (METRIC)
ASTM C 506	(2007) STANDARD SPECIFICATION FOR REINFORCED CONCRETE ARCH CULVERT, STORM DRAIN, AND SEWER PIPE
ASTM C 506M	(2007) STANDARD SPECIFICATION FOR REINFORCED CONCRETE ARCH CULVERT, STORM DRAIN, AND SEWER PIPE (METRIC)
ASTM C 507	(2007) STANDARD SPECIFICATION FOR REINFORCED CONCRETE ELLIPTICAL CULVERT, STORM DRAIN, AND SEWER PIPE
ASTM C 507M	(2007) STANDARD SPECIFICATION FOR REINFORCED CONCRETE ELLIPTICAL CULVERT, STORM DRAIN, AND SEWER PIPE (METRIC)
ASTM C 55	(2006E1) CONCRETE BRICK
ASTM C 655	(2007) REINFORCED CONCRETE D-LOAD CULVERT, STORM DRAIN, AND SEWER PIPE
ASTM C 76	(2007) STANDARD SPECIFICATION FOR REINFORCED CONCRETE CULVERT, STORM DRAIN, AND SEWER PIPE
ASTM C 76M	(2007) STANDARD SPECIFICATION FOR REINFORCED CONCRETE CULVERT, STORM DRAIN, AND SEWER PIPE (METRIC)

ASTM C 877	(2002; E 2005) EXTERNAL SEALING BANDS FOR CONCRETE PIPE, MANHOLES, AND PRECAST BOX SECTIONS
ASTM C 877M	(2002; E 2005) EXTERNAL SEALING BANDS FOR CONCRETE PIPE, MANHOLES, AND PRECAST BOX SECTIONS (METRIC)
ASTM C 923	(2007) STANDARD SPECIFICATION FOR RESILIENT CONNECTORS BETWEEN REINFORCED CONCRETE MANHOLE STRUCTURES, PIPES AND LATERALS
ASTM C 923M	(2007) STANDARD SPECIFICATION FOR RESILIENT CONNECTORS BETWEEN REINFORCED CONCRETE MANHOLE STRUCTURES, PIPES AND LATERALS (METRIC)
ASTM C 924	(2002) TESTING CONCRETE PIPE SEWER LINES BY LOW-PRESSURE AIR TEST METHOD
ASTM C 924M	(2002) TESTING CONCRETE PIPE SEWER LINER BY LOW-PRESSURE AIR TEST METHOD (METRIC)
ASTM D 1056	(2007) STANDARD SPECIFICATION FOR FLEXIBLE CELLULAR MATERIALS - SPONGE OR EXPANDED RUBBER
ASTM D 1171	(1999) RUBBER DETERIORATION - SURFACE OZONE CRACKING OUTDOORS OR CHAMBER (TRIANGULAR SPECIMENS)
ASTM D 1557	(2002E1) STANDARD TEST METHODS FOR LABORATORY COMPACTION CHARACTERISTICS OF SOIL USING MODIFIED EFFORT (56,000 FT-LBF/FT3) (2700 KN-M/M3)
ASTM D 2167	(1994; R 2001) DENSITY AND UNIT WEIGHT OF SOIL IN PLACE BY THE RUBBER BALLOON METHOD
ASTM D 6938	(2007A) STANDARD TEST METHOD FOR IN-PLACE DENSITY AND WATER CONTENT OF SOIL AND SOIL-AGGREGATE BY NUCLEAR METHODS (SHALLOW DEPTH)
ASTM F 1417	(1992; R 2005) STANDARD TEST METHOD FOR INSTALLATION ACCEPTANCE OF PLASTIC GRAVITY SEWER LINES USING LOW PRESSURE AIR

1.3 SUBMITTALS

A. The following shall be submitted in accordance with Section 01 33 00:

1. SD-03 Product Data

REINFORCED CONCRETE PIPE
CATCH BASIN PRECAST STRUCTURE
FRAMES AND GRATES

2. SD-06 Test Reports

LEAKAGE TESTS
DEFLECTION TESTS

1.4 DELIVERY, STORAGE, AND HANDLING

A. Delivery and Storage

1. Materials delivered to site shall be inspected for damage, unloaded, and stored with a minimum of handling. Materials shall not be stored directly on the ground. The inside of pipes and fittings shall be kept free of dirt and debris. The Contractor shall have a copy of the manufacturer's instructions available at the construction site at all times and shall follow these instructions unless directed otherwise by the Contracting Officer.

B. Handling

1. Materials shall be handled in a manner that ensures delivery to the trench in sound, undamaged condition. Pipe shall be carried to the trench, not dragged.

PART 2 PRODUCTS

2.1 PIPE FOR CULVERTS AND STORM DRAINS

A. Pipe for culverts and storm drains shall be of the sizes indicated and shall conform to the requirements specified.

2.2 MISCELLANEOUS MATERIALS

A. Concrete

1. Unless otherwise specified, concrete and reinforced concrete shall conform to the requirements for 3000 psi concrete. The concrete mixture shall have air content by volume of concrete, based on measurements made immediately after discharge from the mixer, of 5 to 7 percent when maximum size of coarse aggregate exceeds 37.5 mm (1-1/2 inches). Air content shall be determined in accordance with ASTM C 231. The concrete covering over steel reinforcing shall not be less than 25 mm (1

inch) thick for covers and not less than 40 mm (1-1/2 inches) thick for walls and flooring. Concrete covering deposited directly against the ground shall have a thickness of at least 75 mm (3 inches) between steel and ground. Expansion-joint filler material shall conform to ASTM D 1751, or ASTM D 1752, or shall be resin-impregnated fiberboard conforming to the physical requirements of ASTM D 1752.

B. Mortar

1. Mortar for pipe joints, connections to other drainage structures, and brick or block construction shall conform to ASTM C 270, Type M, except that the maximum placement time shall be 1 hour. The quantity of water in the mixture shall be sufficient to produce a stiff workable. Water shall be clean and free of harmful acids, alkalies, and organic impurities. The mortar shall be used within 30 minutes after the ingredients are mixed with water. The inside of the joint shall be wiped clean and finished smooth. The mortar head on the outside shall be protected from air and sun with a proper covering until satisfactorily cured.

C. Precast Concrete Segmental Blocks

1. Precast concrete segmental block shall conform to ASTM C 139, not more than 200 mm (8 inches) thick, not less than 200 mm (8 inches) long, and of such shape that joints can be sealed effectively and bonded with cement mortar.

D. Precast Reinforced Concrete Drain Inlets

1. Precast reinforced concrete drain inlets shall be as specified on the drawings. Joints between precast concrete risers and tops shall be full-bedded in cement mortar and shall be smoothed to a uniform surface on both interior and exterior of the structure.

E. Frame and Cover for Gratings

1. Frame and cover for gratings shall be specified on the drawings. Weight, shape, size, and waterway openings for grates and curb inlets shall be as indicated on the plans.

2.3 RESILIENT CONNECTORS

A. Flexible, watertight connectors used for connecting pipe to manholes and inlets shall conform to ASTM C 923M (ASTM C 923).

2.4 HYDROSTATIC TEST ON WATERTIGHT JOINTS

A. Concrete

1. A hydrostatic test shall be made on the watertight joint types as proposed. Only one sample joint of each type needs testing; however, if

the sample joint fails because of faulty design or workmanship, an additional sample joint may be tested. During the test period, gaskets or other jointing material shall be protected from extreme temperatures which might adversely affect the performance of such materials. Performance requirements for joints in reinforced and non-reinforced concrete pipe shall conform to AASHTO M 198 or ASTM C 443M (ASTM C 443).

PART 3 EXECUTION

3.1 EXCAVATION FOR PIPE CULVERTS, STORM DRAINS, AND DRAINAGE STRUCTURES

A. Excavation of trenches, and for appurtenances and backfilling for culverts and storm drains, shall be in accordance with the applicable portions of Section 310000 Earthwork and Grading and the requirements specified below.

B. Trenching

1. The width of trenches at any point below the top of the pipe shall be as specified on the drawings. Sheeting and bracing, where required, shall be placed within the trench width as specified. Contractor shall not over-excavate. Where trench widths are exceeded, redesign with a resultant increase in cost of stronger pipe or special installation procedures will be necessary. Cost of this redesign and increased cost of pipe or installation shall be borne by the Contractor without additional cost to Chevron.

C. Removal of Rock

1. Rock in either ledge or boulder formation shall be replaced with suitable materials to provide a compacted earth cushion having a thickness between unremoved rock and the pipe of at least 200 mm (8 inches) or 13 mm (1/2 inch) for each meter (3 feet) of fill over the top of the pipe, whichever is greater, but not more than three-fourths the nominal diameter of the pipe. Where bell-and-spigot pipe is used, the cushion shall be maintained under the bell as well as under the straight portion of the pipe.

D. Removal of Unstable Material

1. Where wet or otherwise unstable soil incapable of properly supporting the pipe, as determined by the Chevron Representative, is unexpectedly encountered in the bottom of a trench, such material shall be removed to the depth required and replaced to the proper grade with select granular material and compacted. When removal of unstable material is due to the fault or neglect of the Contractor while performing shoring and sheeting, water removal, or other specified requirements, such removal and replacement shall be performed at no additional cost to Chevron.

3.2 BEDDING

A. The bedding surface for the pipe shall provide a firm foundation of uniform density throughout the entire length of the pipe.

3.3 DRAINAGE STRUCTURES

A. Inlets

1. Construction shall be as specified on the drawings; complete with frames and covers or gratings. Pipe connections to concrete manholes and inlets shall be made with flexible, watertight connectors.

3.4 BACKFILLING

A. Backfilling Pipe in Trenches

1. After the pipe has been properly bedded, selected material from excavation or borrow, at a moisture content that will facilitate compaction, shall be placed along both sides of pipe in layers not exceeding 150 mm (6 inches) in compacted depth. The backfill shall be brought up evenly on both sides of pipe for the full length of pipe. The fill shall be thoroughly compacted under the haunches of the pipe. Each layer shall be thoroughly compacted with mechanical tampers or rammers. This method of filling and compacting shall continue until the fill has reached an elevation of at least 300 mm (12 inches) above the top of the pipe. The remainder of the trench shall be backfilled and compacted by spreading and rolling or compacted by mechanical rammers or tampers in layers not exceeding 8 inches. Tests for density shall be made as necessary to ensure conformance to the compaction requirements specified below. Where it is necessary, in the opinion of the Owner’s Representative, that sheeting or portions of bracing used be left in place, the contract will be adjusted accordingly. Untreated sheeting shall not be left in place beneath structures or pavements.

B. Movement of Construction Machinery

1. When compacting by rolling or operating heavy equipment parallel with the pipe, displacement of or injury to the pipe shall be avoided. Movement of construction machinery over a culvert or storm drain at any stage of construction shall be at the Contractor's risk. Any damaged pipe shall be repaired or replaced.

3.5 COMPACTION

A. General Requirements

1. Cohesionless materials include gravels, gravel-sand mixtures, sands, and gravelly sands. Cohesive materials include clayey and silty gravels, gravel-silt mixtures, clayey and silty sands, sand-clay mixtures, clays, silts, and

very fine sands. When results of compaction tests for moisture-density relations are recorded on graphs, cohesionless soils will show straight lines or reverse-shaped moisture-density curves, and cohesive soils will show normal moisture-density curves. Compaction shall be performed in accordance with Section 310000 Earthwork and Grading.

B. Minimum Density

1. Backfill over and around the pipe and backfill around and adjacent to drainage structures shall be compacted at the approved moisture content to the following applicable minimum density, which will be determined as specified below.

   a. Under paved roads, streets, parking areas, and similar-use pavements including adjacent shoulder areas, the density shall be not less than 90 percent of maximum density for cohesive material and 95 percent of maximum density for cohesionless material, up to the elevation where requirements for pavement subgrade materials and compaction shall control.

   b. Under unpaved or turfed traffic areas, density shall not be less than 90 percent of maximum density for cohesive material and 95 percent of maximum density for cohesionless material.

   c. Under non-traffic areas, density shall be not less than that of the surrounding material.

C. Determination of Density

1. Testing shall be the responsibility of the Contractor and performed at no additional cost to Chevron. Testing shall be performed by an approved commercial testing laboratory or by the Contractor subject to approval. Tests shall be performed in sufficient number to ensure that specified density is being obtained. Laboratory tests for moisture-density relations shall be made in accordance with ASTM D 1557 except that mechanical tampers may be used provided the results are correlated with those obtained with the specified hand tamper. Field density tests shall be determined in accordance with ASTM D 2167 or ASTM D 6938. When ASTM D 6938 is used, the calibration curves shall be checked and adjusted, if necessary, using the sand cone method as described in paragraph Calibration of the referenced publications. ASTM D 6938 results in a wet unit weight of soil and ASTM D 6938 shall be used to determine the moisture content of the soil. The calibration curves furnished with the moisture gauges shall be checked along with density calibration checks as described in ASTM D 6938. Test results shall be furnished the Owner's Representative. The calibration checks of both the density and moisture gauges shall be made at the beginning of a job on each different type of material encountered and at intervals as directed.

3.6 PIPELINE TESTING

A. Leakage Tests

1. Lines shall be tested for leakage by low pressure air or water testing or exfiltration tests, as appropriate. Low pressure air testing for concrete pipes shall conform to ASTM C 924M (ASTM C 924). Testing of individual joints for leakage by low pressure air or water shall conform to ASTM C 1103M (ASTM C 1103). Prior to exfiltration tests, the trench shall be backfilled up to at least the lower half of the pipe. If required, sufficient additional backfill shall be placed to prevent pipe movement during testing, leaving the joints uncovered to permit inspection. Visible leaks encountered shall be corrected regardless of leakage test results. When the water table is 600 mm (2 feet) or more above the top of the pipe at the upper end of the pipeline section to be tested, infiltration shall be measured using a suitable weir or other device acceptable to the Contracting Officer. An exfiltration test shall be made by filling the line to be tested with water so that a head of at least 600 mm (2 feet) is provided above both the water table and the top of the pipe at the upper end of the pipeline to be tested. The filled line shall be allowed to stand until the pipe has reached its maximum absorption, but not less than 4 hours. After absorption, the head shall be reestablished. The amount of water required to maintain this water level during a 2-hour test period shall be measured. Leakage as measured by the exfiltration test shall not exceed 0.2 gallons per inch in diameter per 100 feet of pipeline per hour. When leakage exceeds the maximum amount specified, satisfactory correction shall be made and retesting accomplished.

END OF SECTION

Appendix B
Soil Operation, Maintenance and Monitoring Plan Outline

PACIFIC COAST PIPELINE SUPERFUND SITE
SOIL OPERATION, MAINTENANCE, AND MONITORING PLAN OUTLINE

TABLE OF CONTENTS

1.0 OPERATION AND MAINTENANCE (O&M) OVERVIEW
- 1.1 INTRODUCTION
- 1.2 O&M PLAN GOAL AND OBJECTIVES
- 1.3 HAZARD SUMMARY
- 1.4 O&M PERSONNEL ROLES AND RESPONSIBILITIES
  - 1.4.1 Project Coordinator
  - 1.4.2 O&M Professional

2.0 SITE DESCRIPTION
- 2.1 PREVIOUS SITE INVESTIGATIONS AND CLEANUP
- 2.2 POST-CLEANUP SITE CONDITIONS

3.0 SUMMARY OF CAP AND DRAINAGE SYSTEMS

4.0 O&M ACTIVITIES
- 4.1 ROUTINE CAP INSPECTIONS
- 4.2 DRAINAGE SYSTEM INSPECTIONS
- 4.3 RESPONSE FOR UNPLANNED EVENTS
- 4.4 CAP MAINTENANCE AND REPAIR
- 4.5 DRAINAGE SYSTEM REPAIR

5.0 FIVE-YEAR REVIEW

6.0 INTRUSIVE WORK ACTIVITIES

7.0 REPORTING AND RECORD-KEEPING
- 7.1 NOTIFICATION REQUIREMENTS
- 7.2 INSPECTION SUMMARY REPORTS
- 7.3 NOTIFICATION AND REPORTING OF INTRUSIVE WORK
- 7.4 FIVE-YEAR REVIEW REPORTS
- 7.5 RECORD-KEEPING AND RETENTION

8.0 SITE ACCESS

9.0 REFERENCES

FIGURES

Site Plan Map
Site Plan Map Showing Areas with Cap and Drainage Systems
Site Survey with Elevations
Cross-Section Cap Designs

TABLES

Inspection Schedule
Summary of Cap Systems
Summary of Drainage Systems
Baseline Settlement Marker Data

APPENDICES

Legal Description and Assessor's Parcel Map
As-Built Drawings and Specifications
Cap and Drainage System Inspection Form
Emergency Response Cap System Inspection Form