SOUTHERN CALIFORNIA GAS COMPANY
NORTH - SOUTH PROJECT

Updated Report
Adelanto Compressor Station
Adelanto to Moreno Pipeline

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LIST OF ATTACHMENTS

ACRONYMS AND ABBREVIATIONS

ACOE	Army Corps of Engineers
API	American Petroleum Institute
ARC	Abrasion Resistant Coating
ARO	Abrasion Resistant Overcoat
ASL	Above Sea Level
BA	Biological Assessment
BACT	best available control technology
BCC	Birds of Conservation Concern
bgs	below ground surface
BLM	Bureau of Land Management
BO	Biological Opinion
CalTrans	California Department of Transportation
CDCA	California Desert Conservation Area
CDFW	California Department of Fish and Wildlife
CEMS	Continuous Emission Monitoring System
CERMS	Continuous Emission Rate Monitoring System
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CDFW	California Fish and Wildlife
CFR	Code of Federal Regulations
CH4	Methane
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CO	Carbon Monoxide
CO2e	Carbon Dioxide equivalent
COMS	Continuous Opacity Monitoring System
CPCN	Certificate of Public Convenience and Necessity
CPUC	California Public Utility Commission
CRHR	California Register of Historic Resources
CWA	Clean Water Act
DL	Design Limit
DLN	Dry Low NOx
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
ERC	Emission Reduction Credit
ESA	Environmental Site Assessment

FBE	Fusion Bonded Epoxy
FESA	Federal Endangered Species Act
FLMP	Forest Land Management Plan
FONA	Federal Ozone Non-attainment Area
FSH	Forest Service Handbook
FTE	Full Time Employee
FWCA	Fish and Wildlife Conservation Act
GHG	Greenhouse Gases
GIS	Geographic Information Systems
GPS	Global Positioning System
HC	Hydrocarbon
HCP	Habitat Conservation Plan
HDD	horizontal directional drill
hp	horsepower
HVAC	Heating, Ventilation and Air Conditioning
LAER	Lowest Available Emission Rates
LSAA	Lake and Streambed Alteration Agreement
MAOP	maximum allowable operating pressure
MBTA	Migratory Bird Treaty Act
MCC	Motor Control Center
MDAQMD	Mohave Desert Air Quality Management District
MLD	Most Likely Descendent
MMBtu	millions of Btu
MMscfd	millions of standard cubic feet per day
MSHCP	Multiple Species Habitat Conservation Plan
MT	Metric Tons
NAGPRA	Native American Graves Protection and Repatriation Act
NAHC	Native American Heritage Commission
NCCP	Natural Community Conservation Plan
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMFS	National Marine Fishery Service
N2O	Nitrous Oxide
NFPA	National Fire Protection Association
NH3	Ammonia
NOA	Notice of Availability
NOI	Notice of Intent
NOx	Oxides of Nitrogen
NPDES	National Pollutant Discharge Elimination System

NPS	National Park Service
NRHP	National Register of Historic Places
NTP	Notice to Proceed
NSR	New Source Review
ODC	Other Direct Costs
O&M	Operation and Maintenance
OHWM	Ordinary High Water Mark
PLS	Pressure Limiting Station
PM10	Particulate Matter up to 10 microns
ppmv	parts per million by volume
ppmvd	parts per million volumetric dry
PRPA	Paleontological Resources Preservation Act
PSEP	Pipeline Safety Enhancement Program
psig	pounds per square inch gauge
PTE	Potential to Emit
ROD	Record of Decision
ROW	rights-of-way
RWQCB	Regional Water Quality Control Board
SCADA	Supervisory Control and Data Acquisition
SCR	Selective Catalytic Reduction
SHPO	State Historic Preservation Officer
SoCalGas	Southern California Gas Company
SOx	Sulfur Oxide
SR	State Route
SSC	Species of Special Concern
SWPPP	Storm Water Pollution Prevention Plan
TBD	To Be Determined
TPY	Tons per Year
USA	Underground Service Alert
USACE	United States Army Corps of Engineers
USC	United States Code
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USGS	U.S. Geological Survey
USFS	U.S. Forestry Service
USFWS	U.S. Fish and Wildlife Service
VOC	Volatile Organic Compounds
WUS	Waters of the United States

EXECUTIVE SUMMARY

Purpose and Scope

Since filing the Application, Southern California Gas Company (SoCalGas) and San Diego Gas & Electric Company (SDG&E) have been aggressively analyzing and refining the North-South Project scope in a manner consistent with the project need. As a result of this work, we are providing an up-to-date report for the remaining two elements of the project.

The purpose of this report is to provide an updated overview of SoCalGas proposed North-South Project (PROJECT). This overview includes both a description of the engineering and analysis performed, as well as a more details on the execution approach to the PROJECT.

The scope and approach described in this report represents our current understanding at this point in time and is the basis for our estimate. Further refinements of the engineering and design will occur as the project progresses through environmental reviews, and the permitting, procurement, and construction phases of the project. This updated report includes changes to the scope, pipeline alignment, cost, schedule, and risks. It also includes new attachments.

Project Overview

The PROJECT consists of the following components:

1) the Adelanto Compressor Station Upgrade
2) the Adelanto to Moreno Pipeline and Moreno Valley Pressure Limiting Station (PLS)
3) PLS at Whitewater
4) PLS at Desert Center Station
5) PLS at Shaver Summit Station

The existing Adelanto Compressor Station will be upgraded to be powered by multiple natural gas turbine-driven compressors providing approximately 30,000 site horsepower (hp) of compression, capable of delivering 800 million standard cubic feet per day (MMscfd) of natural gas at 850 pounds per square inch gauge (psig) pressure for transmission to the Moreno Valley Pressure Limiting Station.

The Adelanto to Moreno Pipeline will be an approximately 63 miles long, 36 inch pipeline, extending from the Adelanto Compressor Station to the Moreno Valley PLS. The pipeline is planned to have approximately 20 mainline valves with blow down stations at approximately 5 mile spacing and will be situated in San Bernardino and Riverside Counties.

Figure 1 shows the overall pipeline alignment from the Adelanto Compressor Station to the Moreno Valley PLS.

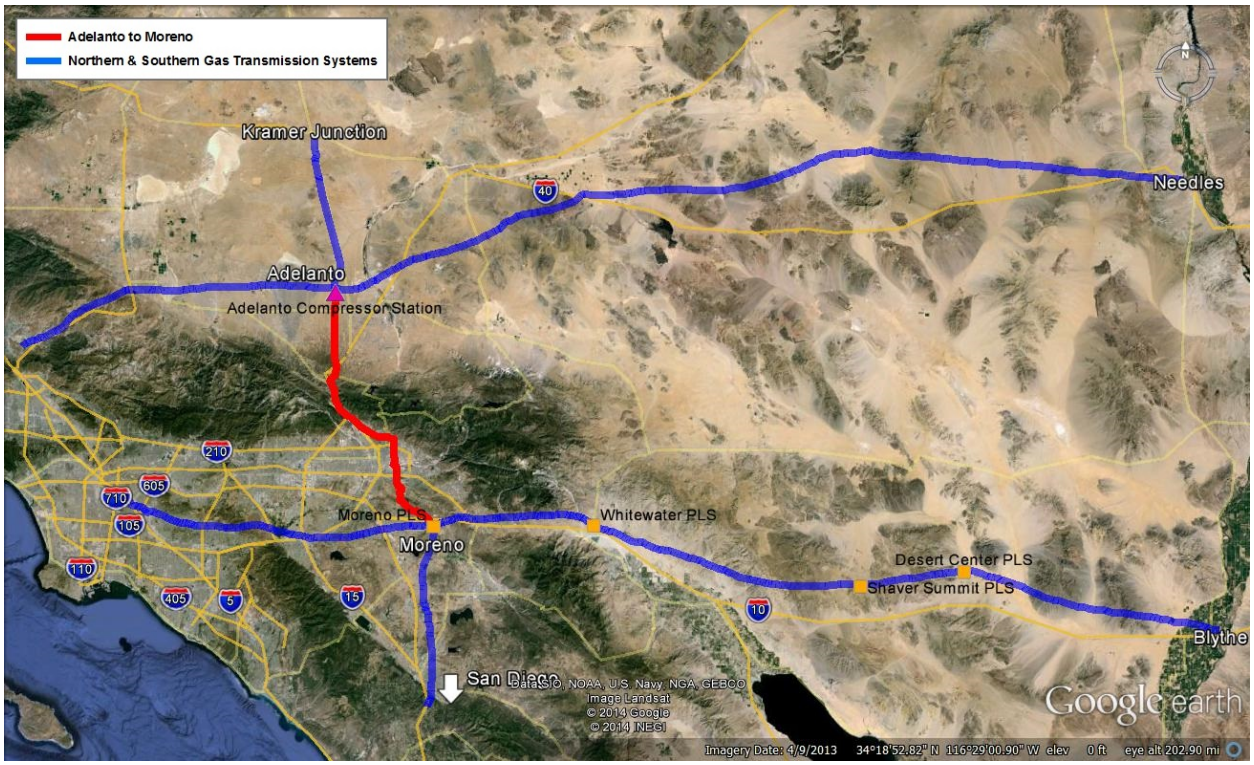

Figure 1

The Moreno Valley PLS will allow gas from the new Adelanto to Moreno Pipeline to flow into any of the existing lines at the Moreno Valley PLS (Lines 1027, 1028, 2000, 2005, 5000, and 6900).

The PLS at Whitewater will provide pressure control from existing Line 2051/5000 into Lines 2000 and 2001.

The PLS at Desert Center Station will provide pressure control from existing Line 5000 (L-5000) into Lines 1030 and 2000.

The PLS at Shaver Summit Station will provide pressure control from existing L-5000 into Lines 2000 and 2001.

Cost Summary

The estimated cost for the PROJECT is $621.3 million, including the compressor station, pipeline and pressure limiting stations as summarized in Table C-1. A more detailed cost

estimate, with estimated costs by budget categories has been included in Appendix VIII Pipeline Cost Estimate.

The cost estimate is based on 2014 dollars and has not been adjusted for inflation.

For all PROJECT materials, taxes are calculated at 9 percent.

Environmental

A preliminary environmental overview of SoCalGas' proposed PROJECT is included in this report. The analysis consists of a summary of the anticipated environmental permitting requirements; cost for labor (external consultants), permit fees, monitoring and mitigation. The Environmental Assessment section is organized according to the general tasks required for the environmental permitting process. These tasks are further described in the Environmental Project Overview subsection of the report. Each task contemplates critical activities for permitting the PROJECT and their associated costs, and outlines an approximate schedule. The cost for each task and the development of that cost is shown in Attachment XIV Environmental Table.

1.0 PROJECT COMPONENTS AND KEY DEVELOPMENT ASSUMPTIONS

This section provides an overview of the PROJECT components and key assumptions.

Adelanto Compressor Station

As developed by SoCalGas staff and operations personnel, the following are the considerations/design conditions for compressor station operation:

- Maximum Station Discharge Pressure - 850 psig
- Minimum Station Suction Pressure - 475psig
- Maximum Station Discharge Flow - 800 MMscfd
- Minimum Station Discharge Flow - 100 MMscfd
- Station Maximum Allowable Operating Pressure (MAOP) - 1,100 psig
- Compressor Horsepower - 30,000 hp
- Maximum ambient temperature for full performance - 110°F
- Minimum ambient temperature - 10°F
- Station elevation - 3,000 ft. ASL
- Onsite power generation to provide “black start” capability

Moreno Valley Pressure Limiting Station

- Install a new PLS at Moreno Valley PLS
- Design for connection of Adelanto to Moreno Pipeline to existing lines
- Provide pressure control into all existing lines at the Moreno Valley PLS

Adelanto to Moreno Pipeline

- Approximately 63-mile section of 36-inch pipeline
- Install approximately 20 mainline valves with blow-down and automatic/remote shut-in capability
- 36” pipeline design with Fusion Bonded Epoxy (FBE) coating and Abrasion Resistant Epoxy Coating – Powercrete where necessary
- Design MAOP - 1,100 psig
- Pipeline will be piggable, allowing for the passage of commonly available internal inspection tools
- Construction within dirt corridor (right-of-way plus temporary area for construction activities) is assumed to be 100 feet wide. Temporary staging areas along the

construction corridor and special crossing locations will require wider widths at these specific locations
- Based on preliminary assessment, no hazardous materials are expected to be found nor are any costs included
- Alignment traverses public and private lands within San Bernardino and Riverside Counties

Whitewater, Shaver Summit and Desert Center Pressure Limiting Stations

- Install pressure control equipment from L-5000 to the other existing SoCalGas pipelines lines in the stations at Whitewater, Shaver Summit and Desert Center Stations
- All new Pressure Limiting facilities connect to L-2000 and L-2001 independently, with a single pressure regulation run supplying both L-2000 and L-2001
- Each Pressure Limiting station run has the ability to flow into L-2000, L-2001, or both
- No consideration has been included for remote set point and control of the Pressure Limiting equipment, although the regulation control equipment specified can accommodate remote control
- Each station will be considered a separate, standalone project due to their location

2.0 ROUTE DESCRIPTION

Adelanto Compressor Station

The upgraded station will be located within the existing property owned in fee by SoCalGas in Adelanto, near the intersection of Rancho Road (Rd.) and Koala Lane (Ln.) in Adelanto. Additional property on an adjacent parcel is planned to be purchased.

Moreno Valley Pressure Limiting Station

The new Moreno Valley PLS is expected to be installed at the location of the existing Moreno Valley PLS, [redacted] in Moreno Valley. Additional land will be required to accommodate the new pressure limiting equipment, pig receiver, and the connections of the new pipeline to the existing pipelines.

Adelanto to Moreno Pipeline

Starting at the Adelanto Compressor Station, the pipeline runs approximately 63 miles in a southeasterly direction as shown in the drawings in Attachment I and described below until it reaches the Moreno Valley PLS.

[redacted] - The pipeline follows SoCalGas existing transmission line [redacted] along SoCalGas private easement and dedicated road right-of-way for the majority of the segment. The pipeline leaves the [redacted] alignment near [redacted] and follows along existing power line and Kinder Morgan fuel line corridor. The area is mostly undeveloped with light residential along the south end of the segment. Existing residential development is located on both sides of the dedicated road right-of-way. Construction in this area will require road lane closures and traffic control. The right-of-way is wide enough to accommodate the gas pipeline; however a detailed substructure analysis will need to be conducted to determine the exact alignment of the pipe. The pipeline crosses the California Aqueduct at approximate Mile Post 6.5.

[redacted] - The pipeline enters the San Bernardino National Forest and follows an existing utility corridor for the two Kinder Morgan fuel lines to the extent practical until the alignment turns easterly near Highway 138. The alignment then follows along SoCalGas existing transmission line [redacted] until the alignment exits the forest at [redacted]. Construction along this section is within mountainous terrain. Temporary construction space requirements will need to be carefully evaluated in this area during the planning stages to allow for adequate access along existing access roads to the construction corridor and temporary staging areas at strategic locations. This segment of the pipeline crosses the major freeway, Interstate (I)-15, at two locations - once on the southbound lanes and once on the northbound lanes and State Route (SR) 138, requiring coordination with Caltrans for all three crossings. The pipeline crosses the

BNSF railroad tracks at three locations. There is one large creek crossing at Cleghorn Creek. It is important to note that while this segment is within the San Bernardino National Forest, it is also in a designated Federal Energy Corridor specifically reserved for energy related projects such as the proposed pipeline.

[redacted] - The pipeline exits the San Bernardino National Forest and travels in a southerly direction along highway US 66. This segment of the pipeline crosses the Interstate (I)-15 freeway and the 215/15 interchange.

[redacted] - Pipeline construction in this segment is along existing public road right of way within an urban setting. The pipeline route follows along primary County and City roadways. Development of detailed design drawings identifying substructures will be necessary to determine the pipelines exact alignment within the roadway. Early coordination and review with the City and County public works will be necessary to complete pipeline design work and develop engineered traffic control plans to minimize traffic impacts during construction. In this segment, there are two major highway crossings, the I-210 freeway and the Interstate (I)-10 freeway. In addition to the major highway crossings, the pipeline crosses the Santa Ana River and several improved flood control channels.

[redacted] - Pipeline construction in this segment is along primarily uninhabited mountainous terrain, unimproved public roadway, and rural paved roadway. Along the rural paved roadways, light residential is on both sides of the road. Traffic control will be required in rural paved roadway areas. There is one highway crossing, the Moreno Valley Freeway (SR-60). The pipeline route ends at the Moreno Valley PLS.

Whitewater, Shaver Summit and Desert Center Pressure Limiting Stations

The new pressure limiting facilities at two stations, Whitewater and Desert Center Pressure Limiting Stations, will need to be expanded to accept the new facilities. The Shaver Summit Pressure Limiting Station will be installed approximately [redacted] east of the existing facility at SoCalGas transmission Lines (5000, 2001 and 2000). In addition, temporary work space for staging, laydown, and parking will be required at all three of the new Pressure Limiting Stations. The Whitewater Station is in open desert lands within a windmill farm. Existing access roads will be utilized for access to the station. The Shaver Summit station is in open desert lands and existing access roads along SoCalGas pipeline right of way will be utilized to access this site. The Desert Center Station is in sparsely developed lands and access to the station is off of paved roadway.

3.0 RIGHT OF WAY

The topography map for the pipeline route is shown in Attachment II and illustrates the various terrain of the 63 mile pipeline alignment. Along with the topographic information, the geological map in Attachment III shows the various geological regions and potential fault crossings that will need to be evaluated carefully during the design phase of the PROJECT.

To support the permitting and land acquisition, the estimate includes funds for legal support and outreach efforts. As part of the legal support, funds will be used for legal review of easements and property documents. Also included in the legal budget are funds to support acquisition of land, rights-of-way easements and temporary construction easements for the PROJECT.

For the pipelines and mainline valve stations, permanent easement will be required in locations where the pipeline is installed outside the public right of way. Temporary construction easement will be required adjacent to the permanent easement. Construction corridor (right-of-way plus area for construction activities) is assumed to be 100 feet wide in open dirt areas. Temporary staging areas along the construction corridor and at special crossing locations such as creek crossings, freeways and railroad tracks will require wider widths. Along the public roadways, construction corridor width will depend upon the road width, traffic control plan and available temporary construction easement adjacent to the public roadway. In open dirt areas, existing access roads which follow along established utility corridors such as powerlines, other pipelines, fiber optic utilities and SoCalGas existing transmission pipelines [redacted] will be used to access the construction corridor along the majority of the pipeline alignment. Grading and widening of the roads will be required. A total of approximately two miles of new dirt access roads will be required along several short sections of the alignment and would be designed to remain within the permanent easement after construction is completed.

A detailed breakdown of the right of way quantities and cost estimate can be found in Attachment VIII Cost Estimate.

Adelanto Compressor Station

The upgraded station will be located on SoCalGas' Adelanto Compressor Station property. Additional land acquisition will be required.

Moreno Valley Pressure Limiting Station

The new Moreno Valley PLS will require additional land to accommodate the installation of new facilities. The additional land will be adjacent to the existing PLS owned by SoCalGas.

Moreno Valley PLS is adjacent to [redacted], with access directly available from the paved street. No construction of new roads or modification to temporarily widen existing roads is anticipated for this work.

Staging, laydown and parking will be required outside the existing fenced area. During the design phase of the project, temporary construction space for the PLS will be evaluated and defined. An allowance for land acquisition and temporary construction easement is included in the cost estimate.

Adelanto to Moreno Pipeline

The description of the Adelanto to Moreno route and right of way is included in Section 2.0 Route Description.

Cost basis for private easements – Comparable sales data to estimate land costs of property interests being acquired along the route was obtained from available market and public records. Land values ranged from $125,000 per acre in remote areas where the predominant land use is undeveloped vacant land to $385,000 per acre in areas where the predominant land use consists of residential developments. It was estimated the project will require approximately 49 acres of private easements for underground pipeline facilities, 7 acres of private easements for new access roads and 4 acres of private easements for above-ground pipeline facilities including the Whitewater PLS. Acquisition costs are calculated based on the range of estimated land values and the estimated easement acreages, discounted at either 50% for subsurface pipeline facilities use or calculated at 10% for non-exclusive access roadways use. Acquisition costs for above-ground pipeline facilities use are calculated at full fee land value. This is a one-time cost during the acquisition process.

Cost basis for temporary working space – temporary work space estimates use the same range of estimated land values based on predominant land use along the route for private easements. Temporary work strip during construction was assumed to be an additional 50 feet adjacent to the pipeline right of way in dirt areas where available and 50 feet along public right of way where vacant land is available. Included in the temporary work space estimate are three 10-acre construction yard sites for laydown, staging and parking, two 10-acre sites with rail access to store pipe and materials as it is delivered from the manufacturing plants and before pipe and materials are transported to the various construction crews and four to five 5-acre dirt processing yards along the public right of way portions of the PROJECT. It was estimated the PROJECT will require approximately 213 acres of temporary work space. Acquisition costs are calculated based on the range of estimated land values and the estimated rental values for temporary work space acreages. This is also a one-time cost during the acquisition process.

Right of way acquisition costs were estimated from a budgeting analysis perspective, supported by comparable sales data, of the predominant land uses of impacted areas.

Right of way through the San Bernardino National Forest will be acquired from the USDA Forest Service by way of a Special Use Permit. It is estimated the PROJECT will require approximately 47 acres of pipeline and mainline valve station rights of way within the San Bernardino National Forest boundary. Annual rental fees are calculated based on the 2009 - 2015 Per Acre Rent Schedule published by the Bureau of Land Management in the Federal Register on October 31, 2008, which rent schedule was adopted by the USDA Forest Service by a notice in the Federal Register on November 10, 2008.

Whitewater, Shaver Summit and Desert Center Pressure Limiting Stations

The new pressure limiting facilities at all three stations are expected to require an additional 1/2 acre of land acquisition each and 1 acre each of temporary construction easement for laydown, staging and parking.

Any additional land that may be acquired at the Moreno Valley PLS is part of the pipeline Right of Way portion of the PROJECT and is included in the pipeline Land Acquisition estimates.

The three stations are directly along the pipeline alignment. All stations are in the vicinity of existing roads and have existing service roads to provide needed access to the stations. No construction of new roads or modification to the existing roads is anticipated.

Cost basis for land acquisition - Comparable sales data to estimate land costs of property interests being acquired in proximity of the PLS's was obtained from available market and public records. Vacant land values range from $1,600 per acre in remote desert areas to $26,000 per acre in rural residential areas. Acquisition costs for above-ground PLS facilities are calculated at full fee land value. This is a one-time cost during the acquisition process.

Cost basis for temporary work space - Temporary work space acquisition costs are based on the same estimate of per acre land values and the estimated rental values for temporary work space acreages. This is also a one-time cost during the acquisition process.

4.0 ENGINEERING

Detailed breakdowns of the cost estimate for the pipelines and compressor station can be found in Attachment VIII Cost Estimate.

Engineering and Design

Adelanto Compressor Station

Station Design Considerations

Overall station drawings, including the existing compression equipment as well as the pipelines and valving within the current Adelanto yard were reviewed. Station design parameters were evaluated to determine overall horsepower requirements and a "multiple units" method to satisfy both the maximum and minimum station flow rates with minimum station recycle.

Compressor station piping will be designed to take suction gas for compression from pipelines entering the station from the north, west and east, and discharge gas into the proposed pipeline that will leave the station to the south.

The compressor station operating range will vary from 100 MMscfd to 800 MMscfd, with a minimum station suction pressure of 475 psig and a maximum station discharge pressure of 850 psig. The design for the compressor station must provide full performance at all expected operating conditions up to 110°F ambient air temperature.

Additional engineering will be required to thoroughly evaluate the horsepower and flow rate requirements of the station. Gas turbine and compressor suppliers have been consulted to analyze the operating parameters of the compressor station for all operating scenarios. Preliminary compressor and driver vendor proposals indicate that multiple-unit gas turbine and compressor configurations are available that will satisfy these parameters.

These configurations would require the use of inlet combustion air cooling. Such a system would discharge a small amount of water after being processed through water treatment, similar to a water softener system.

SoCalGas will review the compressor station design at various stages of development, during preliminary and detailed phases. Reviews will be conducted by the appropriate engineering disciplines and operations, with consideration for overall system operation.

Special attention will be paid to isolation (or bonding) to eliminate interference between pipeline and compressor station cathodic protection systems.

Location for Upgraded Station

The current Adelanto Compressor Station is installed within an approximately 140,000 square foot (roughly 350 ft. x 350 ft.) area; the total parcel of land owned by SoCalGas at this location is approximately 560 ft. x 875 ft. (490,000 square feet), with the existing Adelanto Station boundaries occupying much less than half of the entire parcel.

The SoCalGas property parcel where the existing compressor station resides has sufficient room to install new compressors, auxiliary equipment south of the existing station, however, additional land acquisition is planned for ancillary facilities. The existing station would remain in place and in operation during construction.

Considerations for building outside the existing station fence include:

- Leave the current compression equipment in place

  Leaving the current equipment in place eliminates the need to deal with any potential environmental remediation immediately. The entire compressor train can be isolated from the rest of the system, vented, inerted and left in place. Disposal of equipment can be done as opportunities are presented. However, the need to remediate any spills or other environmental issues can be deferred to a future time.

  There is some potential for salvage of some existing station equipment, such as the gas cooler and the LM1500 turbine in the aftermarket/used equipment business sector. There may be some value in the existing vessels. However, they will need to be emptied, cleaned and inerted prior to removal from the site.

  Because equipment such as the LM1500 turbine, the Clark compressor, the gas aftercooler and the above ground vessels can be removed without soil disturbance, there should not be any immediate environmental mitigation of the site required.

- Maintain existing pipeline valves power and control & auxiliary generator in place

  The existing station control building is used for both compressor power and control, and pipeline valves and appurtenances power and control. Leaving the existing control building in place allows the pipeline controls systems to remain in service during construction of the new station. Maintaining remote operation of Adelanto station valves is critical to system operation during construction.

- As with the control building, the existing emergency generator would remain in service during construction.

- Better operations crew access during construction for maintenance, especially if large equipment needs to be removed for overhaul, repair, etc.

- Constructing compressor station upgrades outside the existing station fence line will allow better ingress and egress during construction. Construction progress can be expected to be better with fewer above and below ground obstructions.

- Building the new compressors outside of the existing fence also allows existing access control and security systems to remain in place, assuring compliance with any operating requirements in place for this station.

Details of Proposed Adelanto Station

- The entire turbine/compressor package will be housed in an insulated pre-engineered metal building that will provide weather protection and sound attenuation for both the turbines and compressors.

- The major component of the new compressor station is the gas compressor skid. The skid is a self-contained unit comprised of the natural gas driven turbine engine, natural gas centrifugal compressor, the starting system, fuel system, lubrication system, control system, on-skid electrical wiring and piping and manifolds.
- Intake air cooling for the gas turbine on high ambient temperature days will be needed to achieve the operating parameters without excessive horse power.
- Station piping design will allow each unit to operate independently of any other unit, providing capabilities for reduced horsepower operation when needed, or to allow maintenance on single units within the station while the remaining units remain in service.

- The compressor building will include a 10-ton overhead crane for moving heavy components during station maintenance activities.

- Housing the units in a building will increase security of the plant, while reducing operating noise.

- Housing the units in a building also provides additional working room for operators when compared to an equipment enclosure (such as that which houses the existing gas turbine), improving productivity and reducing unit down time for maintenance.

<u>Gas Turbine and Compressor Package</u>

Required compressor horsepower for the station at 110°F is approximately 30,000 horsepower.

Using the design information provided, the following was determined:

- The minimum suction pressure of 475 psig yields a compression ratio of about 1.77 with the 850 psig discharge pressure.
- For purposes of the estimate a Series-Parallel configuration was avoided.
  - Because compression is needed at flow rates above 100 MMscfd, wide-ranging performance is needed (although low flow rates may require station recycle to maintain low flows with the solutions developed).

Gas Cooler

New gas cooler will be sized to match the flow rates and anticipated compressor gas temperature discharge.

The gas cooler will be an air-to-gas cooler, using 480V, 3 phase motors in the 40 hp range to power the fans for the cooler. The cooler is an industry standard device to be provided by Smithco, GEA Rainey, Cooling Products, Inc. or similar.

Under highest station differential pressures (that is, maximum flow rate at maximum station differential pressure), discharge temperature from the compressors is expected to be about 180°F, due to the high ratio. Supplemental cooling may be required for additional discharge gas cooling on the hottest days. Air to gas coolers and gas to gas cooling equipment will be used to lower gas discharge temperature.

Site Access Control and Perimeter Security

When the station upgrades are complete, the entire station (including the portion of the property now enclosed with chain link fencing) will be enclosed with a block wall, providing increased security for the entire station. The existing perimeter security system is intended to remain in service during construction. When the station is complete a new perimeter security system would be installed to provide perimeter intrusion monitoring system.

The new block wall will include vehicle and personnel access gates to provide entry to the station. All access gates will include intrusion monitoring sensors.

Electrical Systems

With the increase in the station size and number of compressor units, the existing utility electrical supply to the station will need to be upgraded to provide normally required power for routine station demands when the station is in stand-by mode. These demands include station lighting, security, status monitoring, etc.

Station Power/Baseload Power Generation (Black Start)

Baseload station power generation is included in the design of the station. Whenever gas compression is required, the baseload power generation will start to provide all electrical power requirements to start-up and run the units and the required gas compression auxiliary equipment such as the gas cooler fans, required pumps and motors to support the compression process, unit controls, etc.

The maximum voltage anticipated is 480 VAC/3 phase/60 Hz.

Motor Control Center

The motor control center will provide all power and safety monitoring to the compressor station, including motor starters for electric motors, power distribution and control and safety shutdowns for electrical system faults.

Buildings

The buildings will be pre-engineered metal buildings, of rigid frame construction in the short direction and braced in the long direction. They will include all structural steel, exterior roofing, siding, structural members for cable tray supports and HVAC equipment within the building, doors, canopies, building trim, ventilators, etc. The buildings will be insulated and will use sound attenuation, as required.

Compressor Building

The compressor units will be housed in a building 65 ft. wide x 120 ft. long x 30 ft. high at the eaves, with the units situated perpendicular to the long axis of the building. Suction and discharge piping will be routed along the long axis of the skid, providing access to units through the center of the building.

The building is sized to provide sufficient room for the current horsepower requirements. The building will house the compressor units as well as all ancillary equipment, such as the surge control system valve and piping, unit oil tank mist eliminators, air receivers, fuel supply system piping and controls. The oil cooling system will be located outside the building.

The building includes a 10-ton overhead bridge crane to assist in moving equipment during maintenance activities. This crane includes two speed drive, pendant and remote controls, caged access ladder and platform and a walkway with hand rails along the entire bridge.

The building is proposed to include three 10 hp wall mounted air supply fans with air operated louvers, one 1/2 horsepower wall mounted supply fan with air operated louver and four roof ventilators with air operated louvers.

General layout of the building

Central to the building layout are the gas compressor skids, their intake and exhaust ductwork and the main compressors suction and discharge lines. Raised structural platforms will be installed to provide easy access to unit operating and maintenance locations.

Operations Building

The operations building is 40 ft. wide x 80 ft. long x 16 ft. high at the eaves. It includes a janitor sink, building water treatment equipment, etc. It is sized to provide the areas in Attachment V - Operations Building Interior Plan.

Electric Room

A separate room for the Motor Control Center, Uninterruptible Power Supply and batteries, Power Transformers, Communications Equipment, etc. is also 20 ft. x 40 ft., located directly behind the control room. Heating and ventilation will consist of two space heaters and power ventilation provided by a wall supply fan and roof exhaust - both with gravity dampers.

Communications Room

A communications room would measure approximately 20 ft. long x 20 ft. wide and be located between the electric room and instrument work shop. This room would house equipment that receives station operational data for transmitting to Gas Control. It will also receive and transmit command data from Gas Control, routed through the existing servers. The communications room will have an acoustical drop ceiling and conventional HVAC equipment to include cooling and heating capabilities

Instrument Work Shop

The equipment room measures approximately 20 ft. x 40 ft. The instrument work shop would provide a clean environment for inspection, service and repair of critical instrumentation components to maintain functionality. Manufactures manuals and sensitive spare parts would be kept in this controlled environment. The instrument

work shop would have an acoustical drop ceiling and conventional HVAC equipment to include cooling and heating capabilities

Operations Room

An operations room would measure 20 ft. x 60 ft. for operations personnel when present. It would have desks, office equipment, a file and station operation manual and drawing storage area, and station operations panels.

Parts Storage Building

The parts storage building would measure approximately 40 ft. x 80 ft. Heating and ventilation will consist of two space heaters and power ventilation provided by a wall supply fan and roof exhaust - both with gravity dampers. The parts storage building will have both a roll up door and personnel access door and would also be used as a work shop when performing service and maintenance on station equipment other than instrumentation equipment.

Generator/Air Compressor/Auxiliary Building

The auxiliary building would house the on-site electric generators and air compressors. Two natural gas powered generators would be installed to power all station requirements when the station is in operation. Electrical power from SoCal Edison would be supplied when the station is in bypass mode and the gas compressor(s) are not in operation.

Air compressors would supply compressed air to various instrument equipment and the emergency shutdown system and to power pneumatic tools. Heating and ventilation will consist of two space heaters and power ventilation provided by a wall supply fan and roof exhaust - both with gravity dampers. The Auxiliary building would have both a roll up door and a personnel door to provide access.

Fire Protection Building

The Fire Protection Building houses fire suppression equipment. A new water tank will be constructed in close proximity to the fire protection building.

Hazard Detection and Protection Systems

The station design includes a complete hazard detection and protection system, which will interact with the station control system. The hazard detection and protection system will include gas detection, smoke detection, rate of rise heat detection and motion detection in the Operations building.

The Compressor and Auxiliary buildings would include gas detection, smoke detection, rate of rise heat detection, UV flame detection and motion detection.

Both buildings will have flashing strobes and alarm horns to notify station occupants of gas detection system hazards. Additional flashing lights and horns will be installed in the yard to assure that station occupants are notified of a gas detector hazard alarm. There is an allowance included for fire suppression, but SoCalGas will determine the level of hazard suppression to be included in the station design.

Moreno Valley Pressure Limiting Station

The Engineering Feasibility analysis for the proposed Moreno Valley PLS began with an evaluation of the station and the tie-ins required for the Adelanto to Moreno Pipeline, the configuration of equipment and the ability to accommodate SoCalGas' requested capabilities into the station.

Initial feasibility design began with review and evaluation of current station flow paths and capabilities. Following that, a conceptual design was developed and evaluated to allow both pipelines to tie into a common header, to allow flow out of or into the new pipelines and to allow reduced pressure flows into the existing L-1027, 1028, 2000, 2005, 5000 and 6900, using existing station valves.

The Moreno Valley PLS uses a single run "worker/monitor" design to provide pressure control and overpressure protection. Actuated ball valve regulators provide pressure control. Measurement at strategic locations will provide information on the flow rate between connected facilities. Communications with SoCalGas' Gas Control are included to provide sufficient information to monitor the operating condition and performance of the station. No estimate has been included for remote set point and control of the Pressure Limiting equipment, although this can generally be easily designed into the equipment, if desired.

Location of Station

The Moreno Valley PLS is located on the [redacted] is one SoCalGas pipeline, entering the station area from the north - 30" L-2005. Extending south from the station are 16" [redacted] enter the station from the east and 2005 from the north connecting Line 2001.

Proposed Tie-Ins

The new pressure limiting station will be tied to the Adelanto to Moreno Pipeline which will be designed for a 1,100 psig MAOP.

Through tie-ins into the existing station header and use of new and existing valves within the station, gas may be flowed in either north-to-south or south-to-north directions into and out of the existing pipelines within the station.

Pipeline

The analysis for the proposed pipeline began with an evaluation of the proposed pipeline routes by studying aerial images, USGS maps, and existing utility corridors parallel to or in the vicinity of the proposed routes. The analysis was followed by multiple site visits along each of the identified possible route alternatives. Each possible alternative was reviewed in detail by multiple site visits along the proposed alignments, engineering review of difficult and challenging areas and comprehensive evaluations of selected crossings such as freeways, rivers, and bridges. The drawings in Attachment I show the proposed alignment of the pipeline.

Pipeline Design - The pipeline will be designed in accordance with 49 Code of Federal Regulation (CFR) 192 - Transportation of Natural Gas and other Gas by Pipeline: Minimum Federal Safety Standards. The proposed pipeline is 36 inches in diameter and will be designed to operate at a Maximum Allowable Operating Pressure (MAOP) of 1,100 psig. The pipe selected is 36" API 5L X70 with 0.625" wall thickness. This pipe will meet the design pressure requirements for Class 3 locations as defined in 49 CFR 192. The pipeline and its fittings will be coated with Fusion Bonded Epoxy (FBE) to a thickness of approximately 15 mils. The weld joints will be sprayed with FBE Abrasion Resistant Coating (ARC) will be used for Horizontal Directional Drills, bores without the use of casing and in areas of extremely abrasive soils (rock areas). Weld joints in abrasive soils will also be coated with ARC and inspected before backfill.

The pipeline will be designed to accommodate modern internal inspection tools to provide SoCalGas with the ability to clean and inspect the pipelines on a regular basis. In order to accommodate the tools, the pipelines will be equipped with a launcher/receiver at each end of the line. All bends along the pipeline will be designed for a minimum of 9 foot radius (r = 3R). Valves at each end of the pipeline on the launchers/receivers and along the pipeline will be full port valves to allow for the internal inspection tools to traverse the pipeline. Barred tees will be installed to keep the tools from entering tee connections.

Mainline block valve spacing will be every 5 miles meeting design requirements for Location Class 4. The exact location of mainline block valves will be determined during final design based on available open land, substructures, surface structures and access. Valve stations will be located in open areas where possible. Valves will be buried but the valve operators will be extended above grade in the open area and security fencing installed around the valve station. Valves that must be installed within the public right of way where open above ground

areas are not available will have the valve operators housed within concrete vaults. The vaults will be installed out of the travelled roadway. The operators will be pilot operated to activate a line shutdown in case of a sudden loss in pressure on the pipeline.

The engineering design estimate was broken into eleven categories, which include site investigation design development, project coordination, survey design drawings, design review, job showing, procurement, construction support, ROW documents, project closeout, and non-labor costs.

1. Site investigation includes anything required to develop design, site/archive investigations, job walks, code investigations, and interpretation and familiarization with client standards.

2. Project coordination includes project meetings both internal and external parties, project paperwork, coordination with project management and other disciplines and drawing reviews.

3. Design drawings include all physical drawings, plans, sections and details, orthographic and isometric, plotting, blueprinting, checking, and project review.

4. Design reviews includes all coordination for project and client meetings, project paper work, coordination with governmental agencies, utilities, other firms, encroachment permit and traffic plan submittal and acquisition etc.

5. Job showing includes preparation of bid specifications and support, coordination with client, contractors, and agencies, and bid evaluations and recommendations.

6. Procurement includes preparation of requests for qualifications, coordination with vendors; bid summary, bid conditioning meetings, purchase order preparation, and vendor drawing review.

7. Construction support includes office and/or field support, construction bid meetings, drawing sets for permits, status reports, survey alignment, work strip and as-built of the pipeline.

8. ROW documents includes coordination with project management and other disciplines, interdisciplinary specifications and drawing review, review of ROW documents, preparation of new easement documents, survey and legal description support.

9. Project closeout includes collection of construction records such as material records, survey as-built records of the pipeline and easements, development of pipeline

completion drawings, reconciliation of materials and equipment and recordation of easements.

10. Non-labor costs includes outside reproduction services, travel, word processing equipment, special materials and photo copies.

Adelanto to Moreno Pipeline

This portion of the PROJECT begins at the Adelanto Compressor Station and ends at the existing Moreno Valley PLS. The pipeline runs for approximately 63 miles in a generally southeasterly direction as shown on Attachment I. The line will be intertied with the existing pipelines [redacted] near Highway 138 and at Moreno Valley PLS.

The line has been specified to move approximately 800 MMscfd, providing sufficient capacity to accommodate maximum flows from the Adelanto Compressor Station.

There are approximately twenty (20) mainline valve locations for this pipeline including the valves at the launcher/receiver at each end.

Whitewater, Shaver Summit and Desert Center Pressure Limiting Stations

The new pressure limiting equipment would be designed to allow the connection of the existing pipeline facilities with different operating pressures together at each of stations. Design of the pressure limiting station will provide protection from over pressurization and allow gas to flow between the pipelines.

The analysis for the three proposed PLS's began with an evaluation of each of the three stations including their configuration and ability to meet needed capabilities.

Initial analysis began with review and evaluation of current station flow paths and capabilities. Following that, individual complete pressure limiting runs between the source of supply gas - [redacted] (also referred to as [redacted] at some locations), [redacted]1 (also referred to as [redacted] at some locations) were designed.

- All new Pressure Limiting equipment is to tie into the eastern side of the station block valves (the current upstream side).

A single run pressure limiting concept was evaluated.

Station Detail Design

Each of the Pressure Limiting Stations uses a "worker/monitor" design to provide pressure control and overpressure protection. Actuated ball valve regulators provide pressure control.

Measurement at strategic locations will provide information on the flow rate between connected facilities. Communications with SoCalGas' Gas Control are included to provide sufficient information to monitor the operating condition and performance of the station.

All of the stations are of similar design, providing the same pressure control capabilities. The locations and detailed design of the station will require research of existing records and drawings and excavation of the existing facilities at each of stations to determine available space for both the new buried and above grade facilities. The most significant differences in each of the stations are the lengths of connecting piping between the pressure limiting equipment connection at [redacted] to the tie-ins on Lines [redacted].

From east-to-west on the [redacted] pipeline system, the following stations have new Pressure Limiting Station design considerations:

Desert Center Pressure Limiting Station

This easternmost station (about 80 miles east of Whitewater Pressure Limiting Station) has the following design criteria:

Station	Flow (MMscfd)		Downstream Pressure		Upstream Pressure	
	Max	Min	Max	Min	Max	Min
Desert Center	200	0	795	600	825	600

Shaver Summit Pressure Limiting Station

This station is about 60 miles east of the Whitewater Pressure Limiting Station. It has the following design criteria:

Station	Flow (MMscfd)		Downstream Pressure		Upstream Pressure	
	Max	Min	Max	Min	Max	Min
Shaver Summit	100	0	740	550	825	600

Whitewater Pressure Limiting Station

This pressure limiting station is located on the east end of the 36-inch pipeline project. It has the following design criteria:

Station	Flow (MMscfd)		Downstream Pressure		Upstream Pressure	
	Max	Min	Max	Min	Max	Min
Whitewater	300	0	705	475	825	600

Geotechnical Investigation

Geotechnical investigation includes soil borings to determine subsurface conditions for compressor station foundation and piping installation and for pipeline installation including horizontal directional drilling and jack and bore locations. Specific information on the number and depth of borings is included for each project.

A right-of-way (ROW) reconnaissance and underground service alert (USA) field survey will be required to mark each soil boring location to ensure that the drilling equipment can access each soil boring location, to clear the area for other substructures and for the preparation of traffic control plans, as required. If a soil boring location is not accessible it will be relocated nearby to a suitable drilling location. In urban areas, where the proposed pipeline ROW is under paved roadways, the soil boring locations will be adjusted to minimize or eliminate the requirement for a traffic control plan.

In urban roadways, the soil borings will require vacuum soil extraction/hand auger borehole clearance. It is anticipated that encroachment permits will be required from various government agencies since the ROW trends parallel to roadways, and crosses numerous roadways, creeks, streams and rivers, flood control channels, city and other government lands. Physical soil property testing will be performed on samples retained from the drilling activity and will include: Moisture Content, Dry Density, Sieve Analysis, Atterberg Limits, and Corrosion (Resistivity, pH, Chloride & Sulfide). This estimate includes labor and other costs for: preliminary planning and scheduling, preparation of work permits, subcontractor oversight, and acquisition of encroachment permits from government agencies, health and safety coordination, and preparation of a summary report upon completion of field activities.

Work activities or services to be provided by other contractors as part of this work scope include the following: utility and borehole clearance, drilling, traffic control services, and laboratory testing. The costs for drilling methods are for hollow-stem auger method. Geotechnical reports

will include a site plan, boring logs, laboratory test data, site conditions, summary of the surface, subsurface, and groundwater conditions and the engineering properties of the soils encountered during the site investigation.

In addition to sub surface soil investigations a geotechnical hazards review will be performed including:

- Geologic Hazards: the potential geologic hazards along the alignment, including liquefaction, lateral spreading, differential seismic compaction, fault rupture, and ground shaking.
- Seismicity: Review of the regional seismicity including regional active faults, and maximum estimated ground shaking.
- Earthwork: Recommendations for earthwork criteria, including recommendations for site preparation, sub grade preparation, compaction, materials for fill, temporary cut and fill slopes as necessary.
- Geologic Hazards: Report will include a site plan, boring logs, laboratory test data, site conditions, summary of the surface, subsurface, design recommendations and mitigations measures.

Adelanto Compressor Station

An estimate has been included for geotechnical investigation within the work area for the upgraded compressor station and its facilities. The major investigation will focus on the major foundation areas for the compressor building, the gas cooler and the operations building.

Moreno Valley Pressure Limiting Station

No significant geotechnical investigation for soils is required for this small, self-contained facility. A geologic hazard review will be performed to identify any hazards, design recommendations or mitigation measures.

Adelanto to Moreno Pipeline

Geotechnical borings for this project are estimated to be:

- Sixty-three (63) 10-foot below ground surface (bgs) geotechnical soil borings (one boring per mile) along the pipeline right-of-way (ROW)
- Three (3) 80-foot bgs geotechnical soil borings (three borings per location) at one horizontal directional drill locations, and six (6) 80-foot bgs geotechnical borings at

six locations for identification of major fault locations crossing the pipeline alignment.

- Twenty six (26) 20 foot bgs geotechnical soil borings (one or two borings per location) at eighteen jack & bore locations.

It is estimated that three (3) days of field reconnaissance will be required to complete ROW and USA surveys prior to the start of geotechnical borings.

It is further estimated that twenty (20) days of hollow-stem auger drilling will be required and that eleven (11) days of borehole clearance may be required. This estimate includes eleven (11) days of field work by a certified traffic control subcontractor for soil borings located within paved urban roadways or highways.

Whitewater, Shaver Summit and Desert Center Pressure Limiting Stations

No significant geotechnical investigation for soils is required for these small, self-contained facilities. A geologic hazard review will be performed to identify any hazards, design recommendations or mitigation measures.

Survey

The survey estimate includes control, aerial photography, centerline staking for cultural and environmental surveys, topographic survey, ROW survey, survey mapping, plats and legal descriptions, construction staking and as-built survey. The survey costs for all preliminary surveys are based on project scope and design and engineering requirements.

Adelanto Compressor Station

Compressor Station survey has been conducted and was utilized to facilitate engineering and development of a preliminary site plan The preliminary site plan provides information on all existing facilities and provides a design grid for the station layout and construction drawing sheet layout.

Construction Survey will be required through a significant portion of the project. Survey will be required for site grading, set equipment and building foundation locations and elevations and establish project boundaries. Survey will provide all as-built locations, elevations, documentation, etc.

Moreno Valley Pressure Limiting Station

Because this is a relatively small area laser scanning will be utilized for locating existing facilities within the station fence. Potholing of the buried facilities will be necessary to obtain elevations of the existing piping for plan sections and details.

Adelanto to Moreno Pipeline

Land surveys will be conducted to establish control for aerial mapping and record survey monument information, property ownership and public and private property lines. Design drawings of the pipeline alignment will be developed from the survey information and aerial mapping. Existing utilities and other structures parallel to the pipeline alignment will be surveyed and shown on the design drawings. Substructures that are identified and potholed for elevation will be surveyed and plotted on the design profile of the drawings. The construction survey will locate and stake the pipeline alignment ahead of trenching activities, delineate and stake the right of way and working strip, and provide elevation data for trench depth and grading activities. Once pipeline and appurtenances are installed, survey of the installed facilities will be performed for as-built record documentation.

Whitewater, Shaver Summit and Desert Center Pressure Limiting Stations

Because each of these stations are located within relatively small areas laser scanning will be utilized for locating existing facilities within the station fences. Potholing of the buried facilities will be necessary to obtain elevations of the existing piping for plan sections and details.

Project Construction Management

Project Construction Management

In order to assure that the PROJECT is completed according to plans and specifications a construction management team including construction managers would be assigned to review construction progress and ensure that all construction tasks are completed; to ensure that all PROJECT inspection is current and documented; and to ensure that reporting and documentation of records is current and complete.

The project construction manager will track the project schedule, oversee the project inspectors, coordinate with the construction contractor’s project management and oversee progress billings, and contract administration.

Construction Inspection

Manufacturer Representative

The Adelanto Compressor Station Engineer, Procure, and Construct (EPC) contractor is to have a manufacturer representative on site when gas turbine/compression equipment is received to inspect it prior to installation and when being set in place and during alignment and performance testing

Chief Inspector

The duties and responsibilities of the chief inspector require being knowledgeable and experienced in all phases of inspection. The chief inspector will supervise all phases of the field quality control and technical staff assigned to the project to observe adherence to client company's construction contract drawings and specifications. He will delegate responsibilities and define limits of authority to each subordinate inspector and assure that all members of the quality control team know their respective duties.

Civil/Craft Inspection

The duties and responsibilities of the civil/craft inspector require that he perform all inspection and quality control duties relating to civil and structural installations as well as any other inspection duties as assigned by the Chief Inspector. He monitors the compliance of company's quality control standards, project specifications, codes, safety and environmental policies. He will keep a daily log of all activities and incidents and prepare appropriate report(s) for his assigned activities.

Piping/Welding Inspection

The duties and responsibilities of the piping/welding inspector require that he oversee welder qualifications, piping fabrication and installation, welding work, welding facilities, welding conditions, weld records and non-destructive examination (NDE) personnel qualifications, compliance to procedures and NDE documentation. He monitors the compliance of company's quality control standards, project specifications, codes, safety and environmental policies. He will keep a daily log of all activities and incidents and prepare appropriate report(s) for his assigned activities.

Utility Inspector

The duties and responsibilities of the Utility inspector require that he perform all inspection and quality control duties relating to the installation of the pipe such as trenching, lowering pipe into the trench, bending, coating and backfill as well as any

other inspection duties as assigned by the Chief Inspector. He monitors the compliance of company's quality control standards, project specifications, codes, safety and environmental policies. He will keep a daily log of all activities and incidents and prepare appropriate report(s) for his assigned activities.

Electrical Inspection

The duties and responsibilities of the electrical inspector require that he oversee the installation of duct bank, cable tray and conduit, installation of cable and wire, installation of equipment, grounding systems, lightning protection systems, cathodic protection systems, etc. He monitors the compliance of company's quality control standards, project specifications, codes, safety and environmental policies. He will keep a daily log of all activities and incidents and prepare appropriate report(s) for his assigned activities.

Materials Management

The duties and responsibilities of the materials manager require that he oversee and manage the inventory, issuing and documentation of materials used during construction. Once material is delivered to the site, its physical control, preservation, security and damage control is his responsibility. As part of his material control responsibilities, he will validate material type, quantities and specification for all project materials using the Bill of Materials, Material Test Reports, Purchase Orders and other purchasing information. He will maintain accurate records of installed quantities, coordinating with inspectors to assure that quantities are correct and that remaining quantities of material are adequate for the remainder of the PROJECT. He will assure that excess materials are identified and returned for credit or otherwise disposed of as directed by company. For material quality concerns and issues, Materials Management is also responsible for arranging material inspection, including company, contractor and material supplier representatives, as needed. He will track disposition of material inspection items.

Instrumentation and Control

The duties and responsibilities of the Instrumentation and Control inspector require oversight of the installation and connection of instrumentation and control equipment, such as transmitters, transducers, controllers, SCADA panels and level gauges. The individual will also monitor compliance with the company's quality control standards, project specifications, codes, safety and environmental policies. A daily log of all activities and incidents will be maintained and appropriate report(s) prepared for assigned activities.

5.0 CONSTRUCTION

Detailed breakdowns of the cost estimate for the pipelines and compressor station can be found in Attachment VIII Cost Estimate.

Adelanto Compressor Station

Construction of the Adelanto Compressor is anticipated to take approximately 10 months. The compressor station will be built as a turnkey project. Key steps of the construction include:

- Move-in/receiving – training, mobilization, and receipt of initial materials
- Shop fabrication of piping spools – fabrication, inspecting, testing, painting, and transport
- Site preparation – survey, clearing, grading, excavation, and compaction, and drainage
- Yard work – underground piping, cable tray, roadways, gravel ground cover, sidewalks, block wall, and lighting
- Inlet valve area – pipe supports, steel supports, piping, instrumentation/controls, area lighting, and paint
- Filter/separator area – foundations, equipment, piping, platforms, instrumentation/controls, area lighting, and paint
- High Pressure Gas Cooler/Heat Exchanger area – foundations, equipment installation, steel supports, piping, instrumentation/controls, area lighting, and paint
- Piping connections to existing system
- Compressor area – foundations and compressor blocks, equipment, steel supports, piping, instrumentation/controls, building erection, area lighting, and paint
- Generator area – foundations, equipment, building erection, wiring and controls
- Fire protection area – foundations, equipment, building erection, wiring and controls, and water tank
- Warehouse/shop – foundations, building erection, utilities
- Utility upgrades

- Ready for service preparation – check-out, pre-commissioning/paint, touch up, and final site clean up

- Commissioning and performance testing

Moreno Valley Pressure Limiting Station

Construction of the pressure limiting station and connection to the existing pipelines at the station will require excavations, concrete support and installation of piping and valves to provide the connections to all existing pipelines and header piping at the station.

A short shutdown will be required to install piping connections to the existing pipelines and header at the station. Pressure limiting equipment will be installed between the new pipeline and existing station piping. Controls, small piping, electrical and communications will be installed once the piping components and valves are in place. Security fencing will be installed around the perimeter of the new station dimensions. Methane detection equipment and intrusion monitoring will be installed to meet the new station layout.

Adelanto to Moreno Pipeline

Pipeline Construction Detailed Costs

Due to the diversity of the pipeline route, the pipeline is anticipated to be constructed utilizing four (4) construction spreads to be able to complete pipeline construction in approximately 15 months. Crew production rates were estimated for the various crews and shown on the table below.

Table C-8B: Adelanto to Moreno Pipeline Construction Crews and Production

Crew No.	Total Footage	Average Lineal ft. per Day	Total number of Days
Crew 1	120,912	383	315
Crew 2	52,856	614	86
Crew 3	77,088	231	333
Crew 4	90,696	334	271
Totals	**341,552**	**390**	***368**

*Includes testing, cleaning, drying and tie-in.

Assumptions

1. It was assumed that 10% of the trench will be excavated in very hard rock.
2. Excavated rock will have to be hauled off-site and clean fill imported into the trench.
3. On private lands along existing SoCalGas pipelines an additional 25-50 feet of permanent easement would be required. In new dirt areas 50 feet of permanent easement will be required. In addition to the permanent easement, 50 feet of temporary construction easement (100 foot work strip) is needed to construct the pipeline. At staging locations and special crossings such as rivers, creeks or steep slopes additional widths of temporary construction easement will be needed at these specific locations.
4. Tree removal will be minimal in most areas of construction. The areas traversed are mostly covered with small shrubs.
5. All roadway and wetland crossings will need extra work space for laydown, staging soil stockpile and parking.
6. Paved roadway crossings will be open cut.
7. State Highway crossings will be done by bore method.
8. Railroad crossings will be done by bore method.
9. The significant waterway will be crossed using a directional bore.
10. Small waterway crossings will be open cut.
11. Pipe joints are assumed to be 80 feet in length for the rural, open areas and in urban and lightly populated areas.
12. The welds on the pipeline will be coated with Fusion Bond Epoxy.
13. The pipeline will have approximately 20 mainline block valves which includes a launcher and receiver with block valve at each end for smart pigging. The block valves will be spaced no more than 5 miles apart.
14. Test leads for cathodic protection will be installed at approximately 2,000 foot intervals and all casings.
15. Estimate includes 100% x-ray.
16. Top soil segregation is included in the construction estimate but replanting or crop replacement is included in the environmental cost estimate.
17. Estimate is based on using union labor.

18. Estimate is based on working five (5) days a week, nine (9) hours each day in urban areas and six (6) days per week, ten (10) hours each day in open dirt and rural areas. For areas under encroachment permit, work hours will be accordance with the permit.
19. The pricing is based on separate contract awards - one award for the work at the Adelanto Compressor Station, one or more awards for the Adelanto to Moreno pipeline work, Moreno Valley Pressure Limiting Station, and the Pressure Limiting Stations at Whitewater PLS and eastward.
20. Once the ROW is cleared, centerline of the pipeline will be established and construction can begin.
21. Small crews will progress at critical crossing points such as streams, rivers, paved streets and highways and these crossings will be completed ahead of the mainline crew.
22. Once there are enough crossings completed the mainline crew will begin construction. Open trench will be determined by the Contractor depending on access to the ROW and room to string pipe along the trench.

Whitewater, Shaver Summit and Desert Center Pressure Limiting Stations

Construction of the three pressure limiting stations at Whitewater, Shaver Summit and Desert Center will require excavation and connections installed between the existing pipelines. A short shutdown on each pipeline will be required to install tees and valves into the existing lines connecting them together. The valves will be buried with above grade actuators and controls. SCADA equipment would be installed to the new facilities for remote operations and pressure monitoring. Methane detection and intrusion monitoring would also be installed. Existing access roads will be utilized for access. It is anticipated that each station will be expanded to accept the new facilities. Additional temporary construction easement will be required for staging, laydown and parking. Construction of each station is anticipated to require two (2) months.

6.0 ENVIRONMENTAL ANALYSIS

As noted in the Executive Summary, the purpose of this analysis is to provide an updated overview of the Project. Since the original December 2013 study was filed, in response to SoCalGas' rate making application filed on December 20, 2013, the CPUC issued a Scoping Memo and Ruling on May 5, 2014 determining that the Project is subject to CEQA and that the appropriate lead agency is the CPUC. This determination resulted in the preparation of a Proponent's Environmental Assessment (PEA) by SoCalGas. SoCalGas filed the PEA with the CPUC on June 6, 2014.

Updated environmental tasks and associated permitting costs are reflected in Attachment XIV Environmental Table. These costs are based on discussions about the permitting process with the CPUC and the San Bernardino National Forest (SBNF) and data gathered during additional reconnaissance biological surveys and Fall 2014 protocol surveys.

Task I: Data Collection and Permitting Support

This task assumes that certain preliminary project activities, such as geotechnical testing, need to occur to provide critical information to prepare engineering plans and support grading and building plans. Certain activities may require environmental permits for locations along the pipeline alignment. An example of such an approval is the permit to access land owned by the Riverside County Flood Control District. SoCalGas will prepare and submit the required permit applications to respective agencies. Task description is based upon existing development along the alignment.

Task II: Environmental Data Collection

Environmental data collection includes the various resource-focused studies needed to prepare an environmental impact report (EIR) and environmental impact statement (EIS). SoCalGas retained Dudek and BonTerra Psomas to support the environmental needs of the Project. Collectively, they are referred to herein as "Environmental Consultant." Certain data collection activities occurred as part of PEA preparation and are noted below.

Cultural and Paleontological Surveys

Cultural Resource Surveys

The Environmental Consultant conducted a literature search (California Historical Resources Information System archives and the Sacred Lands File from the Native American Heritage Commission [NAHC]). The Environmental Consultant will conduct a pedestrian field survey of the pipeline alignment and staging and PLS locations within the utility corridor. Following completion of the pedestrian survey, an evaluation of

California Register of Historical Resources (CRHR) and National Register of Historic Places (NRHP) eligibility will be conducted for each cultural resource identified within the area of potential effect. The Environmental Consultant will then prepare a technical report documenting the results.

Paleontological Resources Technical Memo

The Environmental Consultant will conduct initial paleontological literature search and synthesis of existing publicly available data for inclusion in a technical memorandum to support development of application materials.

Biological Surveys

Delineation of Potential Jurisdictional Waterbodies

The Environmental Consultant is in the process of conducting jurisdictional delineations of Waters of the US and State, including State and federal wetlands in areas where project impacts may occur. The results will be included in a jurisdictional delineation report prepared according to the procedures described in the *Arid West Supplement to the 1987 Corps Wetland Delineation Manual (2006)* and other applicable resource documents for determining federal and state jurisdictional wetlands. Based on preliminary desktop analysis there are an estimated 100 crossings that are potentially jurisdictional along the alignment based on review of available public information and preliminary field work. The jurisdictional delineation report will be prepared in support of permit applications for USACE, RWQCBs, and CDFW.

Special-Status Species

The Environmental Consultant conducted a desktop analysis and coordinated with applicable agencies (SBNF and CPUC) to identify special-status species within the project footprint. The Environmental Consultant then prepared a habitat assessment based on field results from vegetation surveys and created a vegetation map. The habitat assessment guided the protocol level field work. Focused Fall 2014 surveys for desert tortoise (*Gopherus agassazii*) and rare plants have been completed. Additional focused surveys will occur at a later date. A biological technical report will be prepared documenting the findings.

Rare Plant Surveys

As described above, the Environmental Consultant conducted vegetation mapping along the pipeline alignment and then prepared a habitat assessment based on field results from vegetation surveys. The habitat assessment guided the protocol level field work. Fall rare

plant surveys have been completed. A biological technical report will be prepared documenting the findings.

Water Resources/Flooding

SoCalGas will be hydrostatically testing the project in accordance with a testing protocol similar to that being conducted under the Pipeline Safety Enhancement Plan (PSEP).

Air Quality

Adelanto Compressor Station

Air quality requirements for the proposed project include a major source Title V federal operating permit modification to install the new natural gas turbines at Adelanto Compressor Station. This application is subject to federal and state new source review (NSR) which requires the new turbines to meet federal lowest achievable emission rates (LAER), install Best Available Control Technology (BACT), and offset the increases of emissions. The LAER/BACT for this category will be similar to SoCalGas Wheeler Ridge turbine compressor station and could require installation of a selective catalytic reduction (SCR) system and associated supporting equipment. The turbine emissions will need to be monitored continuously with a Continuous Emission Monitoring System (CEMS). SoCalGas will also need to obtain emission reduction credits (ERCs) or offsets. Finally, the federal and state greenhouse gas programs will require purchasing of carbon dioxide equivalent allowances and potential mitigation for the increase in greenhouse gas emissions.

A permit modification such as this will require a minimum permit processing time of 12 months which includes the 45 day Environmental Protection Agency (EPA), and Public Review process under Title V, as well as time to secure emission reduction credits. Time to permit could change depending on potential negotiation with the air district or the EPA over permit conditions related to startup, shutdown and transitional operating times.

Pipelines and Pressure Limiting Stations

To support preparation of a National Environmental Policy Act (NEPA)/California Environmental Quality Act (CEQA) environmental document, SoCalGas will engage in data collection that may include stationary monitoring and review of existing available public data. Calculations for estimated emissions will be performed to determine the appropriate permitting air quality requirements for the pipelines and pressure limiting stations.

Soils, Geology and Hazardous Materials

The Environmental Consultant conducted a high-level review of geology, soils and hazardous materials as part of the PEA. Additional geologic mapping will occur to identify faults along the pipeline alignment which will necessitate certain engineering design features to address potential rupture.

Risk of Upset and Safety Study

SoCalGas will prepare a System Safety and Risk of Upset Report for the Project. The report will evaluate the potential for a fire or explosion due to an accidental release of flammable natural gas from the pipeline; identify the High Consequence Areas along the proposed alignment and the class location designation for the pipeline; and identify any recommended risk avoidance, risk management, and emergency planning measures for the pipeline.

Other Resource Areas (Noise, Visual, Traffic, Land Use and Environmental Justice)

The Environmental Consultant will prepare detailed reports to address the various resource areas noted above.

Task III: Environmental Permitting Process

SoCalGas will prepare and file applications with the appropriate regulatory permitting agencies. Those agencies are anticipated to be the following:

- Federal Agency Permits/Grants/Certification
  - U.S. Forest Service (USFS): Special Use Permit
  - U.S. Army Corps of Engineers (USACE): Clean Water Act (CWA) 404 Permit (Nationwide or Individual)
  - RWQCB: CWA 401 Water Quality Certification
  - RWQCB: CWA 402 NPDES Permit

- Federal Consultations
  - USFWS: ESA Section 7/10 Consultation (informal/formal)
  - State Historic Preservation Office (SHPO): National Historic Preservation Act (NHPA) Section 106 Consultation

- State Agency Permits and Agreements
  - California Department of Fish and Wildlife (CDFW) California Endangered Species Act (CESA) 2081 (Incidental Take Permit)
  - California Department of Fish and Wildlife (CDFW): Fish &Wildlife Code 1602 (Streambed Alteration Agreement)

  - California Department of Transportation (Caltrans): Encroachment permit

- Local Agency Permits
  - Mojave Desert Air Quality Management District
  - Cities of Adelanto, Victorville, San Bernardino, Colton, Loma Linda, Moreno Valley, and Palm Springs
  - San Bernardino County South Coast Air Quality Management District
  - Riverside County

In addition to the time needed to prepare and process these applications, the following steps would be required:

1. Issue a request for proposals for third-party environmental review
2. Review consultant proposals and contract negotiation
3. Issue Notice to Proceed (NTP)
4. Synthesize data collected under Task II into an environmental review document (environmental impact statement [EIS]/ environmental impact report [EIR])
5. Review by internal SoCalGas departments
6. Incorporate comments and prepare document public noticing and comment
7. Support public process including participating in a scoping meeting
8. Respond to public comments
9. Incorporate comments and prepare final document
10. Prepare notices identifying how document will support permitting
11. Participate in permitting activities.

Task IV: Preconstruction Surveys and Mitigation Compliance

SoCalGas will conduct preconstruction clearance surveys for special-status species within 90 days of the start of construction. These surveys would be conducted in accordance with regulatory agency requirements, including seasonal restrictions. The intent of the surveys is to avoid unanticipated impacts to listed species. The implementation of mitigation measures required to address construction impacts will also occur under this task.

Task V: Construction Monitoring

SoCalGas will ensure proper construction monitoring occurs in accordance with agency approvals and best construction management practices. Additionally, required mitigation will be

implemented. The estimate includes construction restoration and revegetation costs given the length of the line and the number of streams crossed. Additionally, this task would include implementation of a Storm Water Pollution Prevention Plan (SWPPP).

Task VI: Post-Construction Monitoring and Ongoing Mitigation

Ensuring compliance with operation and maintenance requirements will require an ongoing level of effort for the life of the Project and to meet restoration success criteria established by the resource agencies.

Land Ownership / Land Use

For the state of California, Geological data was obtained from the U.S. Geological Survey (USGS) and the California Geological Survey. Fault data was downloaded from the USGS's Quaternary fault and fold database for the United States (http://earthquakes.usgs.gov/regional/qfaults/). Land ownership data was provided by the BLM (http://www.blm.gov/ca/gis/). Topography data was obtained from ESRI (http://support.esri.com/en/knowledgebase/techarticles/detail/42495) and sources for them are National Geographic, ESRI, DeLorme, HERE, UNEP-WCWC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, and IPC. USA Topo Maps - Copyright: (c)2014 National Geographic Society, i-cubed. Parcel information came from the San Bernardino Parcel Base Map - SB Assessor office (http://cms.sbcounty.gov/gis/FTPServices.aspx) and Riverside Parcel base Maps - Riverside County Information Technology (RCIT) (http://gis.rivcoit.org/GISData.aspx).

Adelanto Compressor Station

The SoCalGas property parcel where the existing compressor station resides has sufficient room to install new compressors, auxiliary equipment south of the existing station; however, additional land acquisition is planned for ancillary facilities. The majority of the parcel has been disturbed in the past.

Moreno Valley Pressure Limiting Station

All equipment and buildings for the upgraded station will be located at or near the existing Moreno Valley Pressure Limiting Station. SoCalGas will need to acquire land (approximately 100 foot wide by 150 feet long) adjacent to the pressure limiting station. One acre additional land for temporary staging adjacent/around the PLS stations is also required.

Adelanto to Moreno Pipeline

The lands crossed by the pipeline are described below:

- Undeveloped, Open Space - Includes areas with a mixture of some constructed materials, but mostly vegetation in the form of natural vegetation. Impervious surfaces account for less than 20 percent of total cover. These areas most commonly include large-lot single-family housing units, parks, golf courses, and vegetation planted in developed settings for recreation, erosion control, or aesthetic purposes.

  The proposed pipeline alignment travels through dedicated public right-of way (Koala Road) through the City of Adelanto, City of Victorville and unincorporated areas of San Bernardino County.

- Undeveloped, Low Intensity - Includes areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 20-49 percent of total cover. These areas most commonly include single-family housing units.

  The proposed pipeline remains in the dedicated public right-of-way and continues southerly on Baldy Mesa Road to Alta Mesa Road. South of Alta Mesa Road, the pipeline continues in a southerly direction following Baldy Mesa south of Alta Mesa and enters the San Bernardino National Forest. The segment from Alta Mesa Road to Whitehaven Street is primarily undeveloped with some areas of Low Intensity development.

- Shrub/Scrub - Areas dominated by shrubs; less than 5 meters tall with shrub canopy typically greater than 20 percent of total vegetation. This class includes true shrubs, young trees in an early successional stage or trees stunted from environmental conditions.

  The proposed routing within the San Bernardino National Forest is undeveloped and dominated by low shrubs. The routing along the National Forest is topographically the most challenging from a construction perspective with numerous hills and gullies creating an overall change in elevation from over 4,200 ft. to about 2,700 ft. at the southern end of the National Forest.

- Developed, High Intensity – This segment begins at the exit point of San Bernardino National forest south of Highway 138 near Swarthout Road onto US 66 and into the City of San Bernardino. This includes mostly highly developed areas where people reside or work in high numbers. Examples include apartment complexes, row houses

and commercial/industrial. Impervious surfaces account for 80 to 100 percent of the total cover.

- Developed, High Intensity - Includes highly developed areas where people reside or work in high numbers. Examples include apartment complexes, row houses and commercial/industrial. Impervious surfaces account for 80 to 100 percent of the total cover.

  This segment extends approximately 35.5 miles through the City of San Bernardino, the City of Loma Linda, the City of Colton and some unincorporated areas of San Bernardino County. The land use along the proposed route is predominantly residential except for a 2 mile segment along the Santa Ana River and the San Bernardino Airport that is predominantly industrial.

- Undeveloped, Open Space - This land use has been defined earlier in the section.

  From the Riverside County line to the Moreno Valley Pressure Limiting Station, the line follows an alignment mostly cross country along undeveloped, open space. The land is zoned for light residential, rural mountainous or open space rural depending on the final alignment selected and its location along the alignment.

Whitewater, Shaver Summit and Desert Center Pressure Limiting Stations

The existing properties have been disturbed in the past but additional land is required. One acre additional land for temporary staging adjacent/around the PLS stations is also required.

Environmental Review Methods

Environmental review of the Project was performed using existing information from a variety of sources and one day of environmental field review. Environmental resource identification included desktop research involving Geographic Information Systems (GIS), visual review of mapping, conversations with project personnel and internet searches. For the purpose of this review, potential "sensitive" areas were initially identified by reviewing maps and current GIS data, and were then confirmed in the field wherever possible. Several roadless and off-road areas were not readily accessible and were not visited. Not all waterbodies and habitat types along the route were identified and/or visited in the field.

Mapping Review

SoCalGas environmental specialists reviewed the alignment and made note of identifiable waterbody locations. Additionally, SoCalGas used a digital shape file of the pipeline centerline in GIS to view USGS topographic maps as well as recent aerial photography with available GIS ecological resource data layers. Mapping created via GIS includes aerial maps with resource data layers including but not limited to rare, endangered and

threatened species, surface waters/washes and National Wetland Inventory mapped wetlands (see Attachment X, Environmental 1 Mile Map book). Aerial photography provided an indication of the working space available at the waters crossings. Reviewing topographic maps assisted in learning the terrain and surface hydrology of the project area, such as sites that may hold water and/or could have perennial flow or areas that have steep grade.

Current mapping information and drainage crossings from the alignment sheets were compiled to prepare for field investigations of environmental sensitivity constraints and project construction challenges. All drainage crossings identified on the alignment sheets appear in the crossing table found in Attachment IX. The following additional specialty documents/databases were reviewed:

- California Natural Diversity Database Search (CNDDB), CDFW
- Western Riverside Multiple Species Habitat Conservation Plan (MSHCP) Covered Species Database, Riverside County
- California Desert Conservation Area Plan, BLM
- Forest Land Management Plan (FLMP), USFS
- West Mojave Plan Final Environmental Impact Report/Statement (EIR/EIS), BLM

Field Investigations

Field investigations included driving most of the proposed pipeline route during which Geographic Positioning Systems (GPS)-referenced photographs were taken followed by field survey of areas of interest. Field surveys consisted of visiting selected areas on foot to ground-truth the potential engineering or environmental constraints seen during map reviews. Distinctive features such as wide wash crossings identified during the desktop review were confirmed in the field. Significant features that were visited along the route sections are described in the Route Description section (Section 5.0). As previously mentioned, not all waterbody crossings were visited in the field due to access and schedule constraints. However, visits were made to most of those crossings that appeared to have the potential to pose challenges for pipeline design and/or construction.

Regulatory Background and Requirements

Requirements associated with biological resources, water resources, and cultural resources issues are expected to be central to the planning process and PROJECT compliance, since significant impacts could occur to these resources. Other resource considerations (e.g., air quality, noise, and traffic) while not specifically discussed below are addressed in the costing section, which includes performing studies for the essential resources and reporting potential and known

impacts with applicable mitigation strategies in the joint EIS/EIR mentioned in the following section.

Applicable state, federal and local laws and rules reviewed as part of Project planning are listed below. This list is preliminary and may not include all applicable regulations.

Federal Regulations

- National Environmental Policy Act
- Federal Endangered Species Act
- National Forest Management Act
- Federal Clean Water Act
- Migratory Bird Treaty Act
- Birds of Conservation Concern
- National Historic Preservation Act
- Native American Graves Protection and Repatriation Act
- Paleontological Resource Preservation Act

State Regulations

- California Environmental Quality Act
- California Endangered Species Act
- California Species of Special Concern
- California Native Plant Protection Act
- California Lake and Streambed Alteration Program
- Natural Communities Conservation Planning Act
- California Native American Graves Protection and Repatriation Act
- California Public Resources Code

Local Regulations

- Western Riverside MSHCP
- West Mojave Plan HCP

7.0 CONTINGENCY

The contingency amounts for the PROJECT were developed based on expert judgment. Expert judgment is defined by the Association for the AACE in their Recommended Practice NO. 40R-08 as judgment that has a strong basis in experience and competency in risk management and analysis.

The Project Management Institute (PMI) Project Management Body of Knowledge (PMBOK) also provides guidance on assigning contingency including in section 7.2.2.6 Reserve Analysis where is states that, "contingency reserves can provide for a specific activity, for the whole project, or both." The PMBOK includes additional guidance allowing both project- and activity-level contingency reserves in sections 7.2.3.1 Activity Cost Estimates and 7.3.3.1 Cost Baseline.

Contingencies were assigned to account for uncertainty and variability associated with the cost estimate and un-foreseeable elements of cost within the defined PROJECT scope. Risks specific to the North-South Project costs were contemplated when determining a reasonable contingency to include in the cost estimate. The tables in this section document some of these risks.

Reference Appendix XIII Pipeline Cost Estimate for the detailed and summary contingency amounts applied.

Adelanto to Compressor Station

A contingency as a percentage of base costs at the project level was assigned for the compressor station estimate. The contingency amount of 15% is based on the project team and other subject matter expert judgment.

Adelanto to Moreno Pipeline

Because SoCalGas has more experience with pipeline projects, a contingency was assigned to each detailed line-item component in the pipeline cost estimate (see the original and updated Attachment VIII Cost Estimate and the Direct Cost and Schedule Workpapers of David Buczkowski). To calculate the contingency, we analyzed each cost component, considered the risks related to the component that fall within the defined PROJECT scope, and established a contingency percentage. The contingency established is based on the project team and other subject matter expert's judgment.

Contingencies were assigned based on the general criteria below.

Contingency Range	General Basis
0 – 5%	There is relatively less uncertainty and risk associated with this component. Fewer issues are expected to arise. Scope and costs estimates are more fully developed.
5 – 15%	There is moderate uncertainty and risk associated with this component.
15 – 30%	There is significant uncertainty and risk associated with this component. These line items have specific descriptions explaining the contingency percentage.

Below are rationales for pipeline components with contingencies greater than 15%. See specific sections of this report for additional detail.

Cost Element	Line Items with Greater than 15% Contingency Applied	Rationale
Construction Labor & Engineering	• Two Lane Paved (20%) • Primary Paved Road (20%) • HDD Bores (30%) • Restore ROW/Seed, Stabilize (25%) • Temporary By-pass Road on two lane (20%) • Conventional Bores (25%) • Hydro Testing and Drying (20%) • Engineering (25%)	• Uncertainty of paving thickness and paving restoration requirements and quantity, depth and location of substructures until detailed design and permitting. Unknown ground water and sub -surface roadway (old roadways covered over) cost impacts. • Uncertainty of risk associated with HDD Bores until soil borings completed • Uncertainty on timing of re-seed, stabilize ROW, number of trips required, amount of matting needed. • Unknown design of temporary road along shoulder, grading, paving thickness and removal/restriping costs. • Uncertainty to depth of conventional bore crossings. Significant increased cost for bore depths over 20 feet. • The exact number of test sections is unknown. Water source and de-water locations not identified.

Right of Way	• Land Acquisition (25%) • Permanent Easements (30%) • Temporary Easements (30%)	• Uncertainty due to negotiated settlements. • Uncertainty due to future real estate market and economic climate.
Environmental/ Permitting	• Soils, Geology and Hazardous Materials (20%) • Environmental Clearance/Permit Process (20%) • Mitigation Compliance (25%)	• Uncertainty due to unknown level of federal inter-agency coordination efforts based on impacts to waterbodies and protected species. • Uncertainty due to results of mitigation negotiations for impacts to protected resources. • Unknown costs associated with payment of in-lieu fees for undefined mitigation ratios based on impacts.
Pressure Limiting Stations	• Land Acquisition (25%)	• Uncertainty due to negotiated settlements. • Uncertainty due to future real estate market and economic climate.

8.0 PRELIMINARY RISK ANALYSIS

While PROJECT risk is discussed throughout this report, this risk section briefly describes some of these potential risks that likely would not be covered cost contingency and is organized by the following risk categories:

- Financial/ Escalation
- Regulatory/ Environmental/ Permitting/ Public Relations
- Land Acquisition
- Engineering and Design
- Construction

The project team will continue to further develop, manage, and mitigate PROJECT risks as the PROJECT progresses. This may include development of a detailed risk register and associated mitigation approaches.

Financial/Escalation

- Costs for skilled labor and qualified resources (e.g., engineers, contractors, construction workers, and specialty consultants), materials, or other commodities increasing significantly over the project duration, beyond the escalation included in the revenue requirement.

- AFUDC and other similar costs exceed what is currently in the cost estimate. This could be caused by changes in the percentages themselves, an accelerated cash flow, or project delays.

Regulatory/ Environmental/ Permitting/ Outreach

- Significant changes to the project scope as a result of the environmental and/or regulatory review of the project.

- Significant delays in the project schedule as a result of the environmental and/or regulatory review, local community intervention, natural disaster, labor strike, etc.

- Significant work stoppages due to local agency/concerned citizen's actions.

- Changes to laws or regulations that would significantly impact project cost and/or schedule.

- Significant Title V implications on equipment and schedule.

- The PROJECT will require significant amounts of water to be completed. Regulatory restrictions and other issues related to water demands/usage may cause schedule delays and cost overruns.

Land Acquisition

- Significant escalation in land values and difficulty in acquiring property.

Engineering and Design

- Significant re-route imposed on the project.

Construction

- Unavailability of skilled labor and equipment.
- Unfavorable working conditions due to severe weather conditions.
- Extraordinary permitting restrictions that impact productivity.
- Earthquakes, fires, natural disasters, strikes or other force majeure type events.
- Significant site environmental issues. Examples could include agency ratios varying from assumptions, groundwater, and the identification of significant hazardous materials.
- Geotechnical issues varying significantly from what's assumed in this report.

9.0 PRELIMINARY INTEGRATED PROJECT PLAN

The purpose of the preliminary integrated project plan is to document the project team's approach to executing the PROJECT. The project team intends that the project plan will become an independent document and will be updated as-needed throughout the PROJECT.

Scope and Objectives

The PROJECT scope and objectives are documented throughout this updated report. A Preliminary Work Breakdown Structure is included in Attachment XI. The purpose of the Preliminary Work Breakdown Structure is to document the project team's current understanding of the organization of the effort needed to complete the PROJECT. The Work Breakdown Structure will be updated on an as-needed basis throughout the PROJECT.

Project Team/Stakeholders, Roles and Responsibilities, and Governance

As noted earlier in this report, a preliminary staffing plan has been created. Detailed roles and responsibilities will be further defined as the PROJECT progresses.

Communications

A preliminary Communications / Outreach plan has been drafted and will be updated as the PROJECT progresses.

Delivery Strategy

The delivery strategy for the compressor station is to use a design/engineer consultant to perform preliminary engineering. The project team then intends to hire an Engineer-Procure-Construct (EPC) vendor to complete engineering, procure material, and perform construction. The project team has selected this delivery strategy as opposed to other strategies (e.g., owner as general contractor) to:

- Leverage more vendor subject matter expertise due to project complexity
- Transfer more performance and cost risk to the vendor
- Reduce potential for schedule, quality and warrantee disputes

The delivery strategy for the pipeline is to complete the design and engineering using internal resources and consultants. The project team will then bid the construction of the pipeline. The project team has selected this delivery strategy as opposed to other strategies (e.g., owner as general contractor) to:

- Leverage in-house subject matter expertise in this area

- Relatively easier to competitively bid the pipelines

Cost

The current PROJECT estimate is documented in Attachment VIII Cost Estimate. The estimate will be updated throughout the PROJECT to update PROJECT stakeholders and determine any mitigation steps needed. The project team will use normal SoCalGas forecasting and reporting practices and adhere to applicable SoCalGas policies and procedures.

Schedule

A preliminary PROJECT schedule is included in this Updated Supplemental Direct Testimony of David Buczkowski. The PROJECT schedule will be further defined as the PROJECT progresses in accordance with SoCalGas policies, procedures, and practices.

Procurement and Contracting

As noted in the Delivery Strategy section above, the project team hired a preliminary design/engineer for the compressor station but intends to procure an EPC contractor to complete the design/engineering and construction. The project team anticipates that the procurement will be competitive with selection based on experience, qualifications, schedule, terms and conditions, and costs.

The project team contracted a designer/engineer for the pipelines. Once design and engineering is complete for the pipelines the project team intends to competitively bid the construction to qualified bidders.

The project team will continue to further define the procurement and contracting strategy as the PROJECT progresses. This will include a strategy and plan for material, equipment, consultants, and construction contractors.

Risk Management

See 8.0 Risk Analysis for an initial risk assessment. The project team will continue to monitor and manage risk which may include the development of a detailed risk register. The project team will also regularly report on contingency and continually assess whether or not it is reasonable to either draw down or increase the contingency funds as the PROJECT progresses and risk profile changes.

Change Management

The project team will work to mitigate the risk of significant scope changes and monitor any that do occur throughout the project. Changes will be reviewed and approved through a formal change order process and tracked using a change order log. Through the change order process, the change orders will be routed for approval in accordance with SoCalGas' approval thresholds. Change orders proposed by vendors, including contractors, will be reviewed by appropriate SoCalGas project team members for justification, support, and reasonableness.

Environmental Health & Safety (EH&S), Quality Assurance & Control (QA/QC), and Commissioning

As with SoCalGas' ongoing operations and projects, EH&S is the highest priority. EH&S, QA/QC, and Commissioning activities and responsibilities will be further defined during PROJECT planning and the procurement process while working with our design/engineering consultants and construction contractors. A Preliminary Job Specific Safety Plan (JSSP) is included in Attachment XII. The project team will adhere to applicable SoCalGas policies and procedures.

Document Control

PROJECT documents will be maintained in accordance with SoCalGas document control policies and procedures.

10.0 REFERENCES

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Attachment I

Route Maps

Southern California Gas Company
A Sempra Energy utility

Attachment II

Topography Map

Southern California Gas Company
A Sempra Energy utility

Attachment III

Geological Map

Southern California Gas Company
A Sempra Energy utility

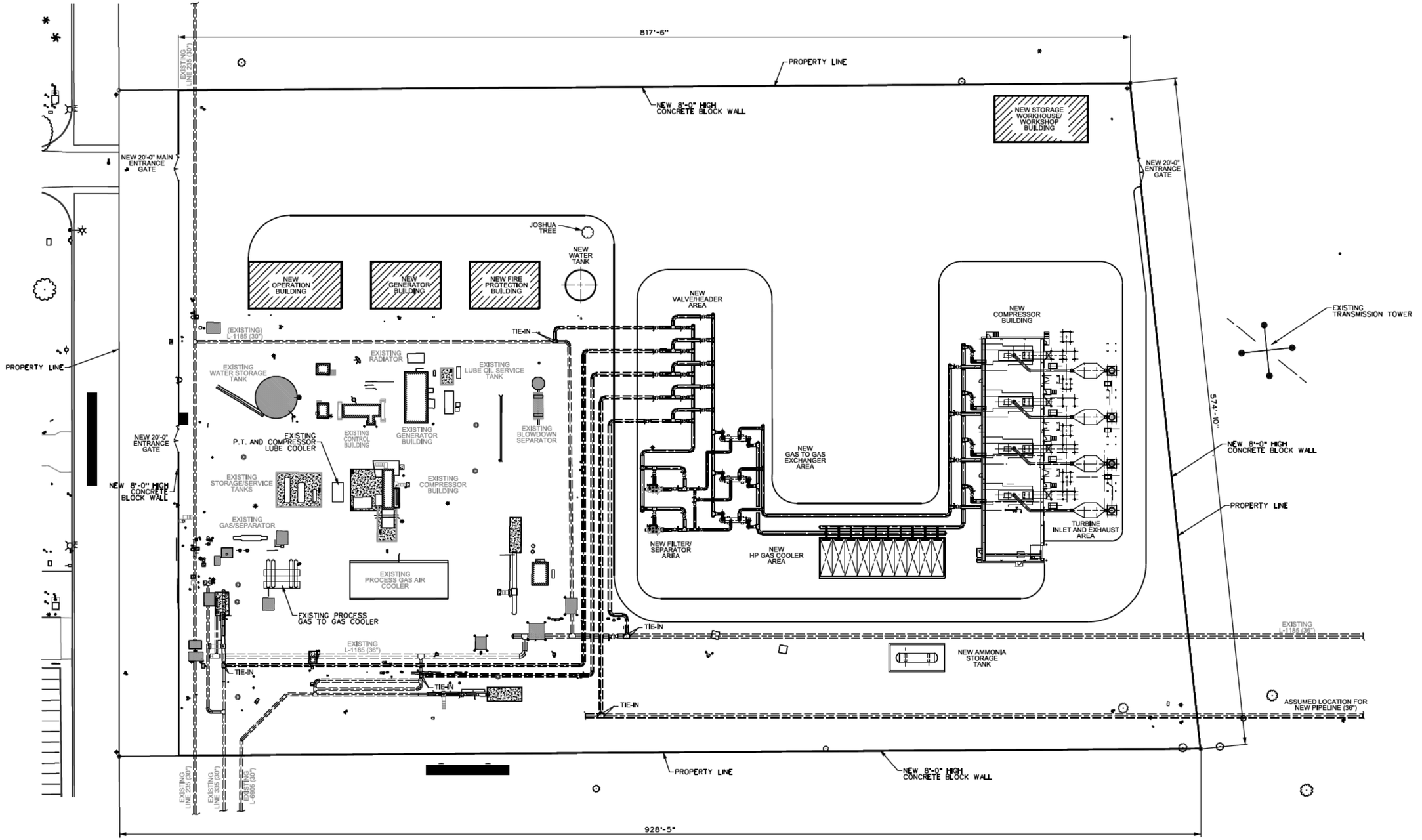
Attachment IV

Land Ownership

Southern California Gas Company
A Sempra Energy utility

Attachment V

Compressor Station Drawings



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B	10/06/14		REVISED PER EXISTING PIPELINE LAYOUT	AK MT	TR	—	—
A	09/25/14		ISSUED FOR PRELIMINARY DESIGN	AK MT	TR	—	—

	BY	DATE
ENGRD	MT	09/01/14
DRWN	AK	09/01/14
CHKD	TJR	09/08/14
APPD	TJR	09/08/14
JOB FILE	XXX	
G.W.O.	XXX	
DIST	101	
CLASS	27/38	

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Southern California Gas Company
ENGINEERING SERVICES DEPT. LOS ANGELES, CA

ADELANTO COMPRESSOR STATION PLANNING STUDY OPTION I-A FOUR COMPRESSORS

The Gas Company

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REV: C

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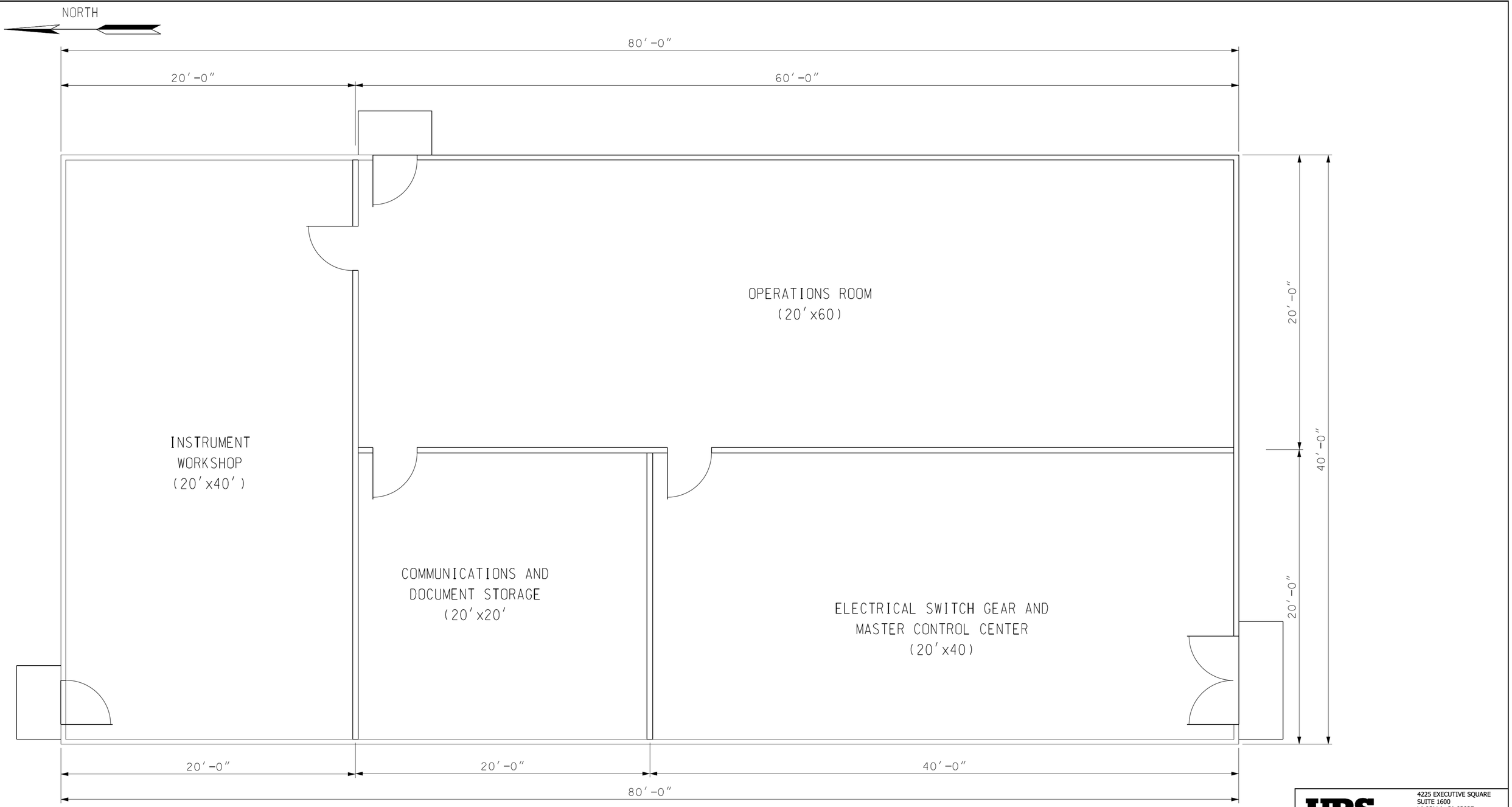

NOTE:

1. DIMENSIONS TO BE VERIFIED DURING DETAILED DESIGN.

REV	DATE	JOB FILE	DESCRIPTION	DRAWN CHECKED	DES SUPRV ENGR	PROJECT APPRVD	SOCAL APPRVD
A	11/05/14	XX	ISSUED FOR REVIEW	AK MT	TR	—	—

	BY	DATE
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DRWN	AK	09/01/14
CHKD	TJR	09/08/14
APPD	TJR	09/08/14
JOB FILE	XXX	
G.W.O.	XXX	
DIST	101	
CLASS	27/38	

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Southern California Gas Company
ENGINEERING SERVICES DEPT. LOS ANGELES, CA

ADELANTO COMPRESSOR STATION OPERATIONS BUILDING PRELIMINARY ARRANGEMENT

The Gas Company

SCALE	DRAWING NUMBER	REV
NONE	XXXXX-2001-D.STR	A

CAD FILE: 1174D203

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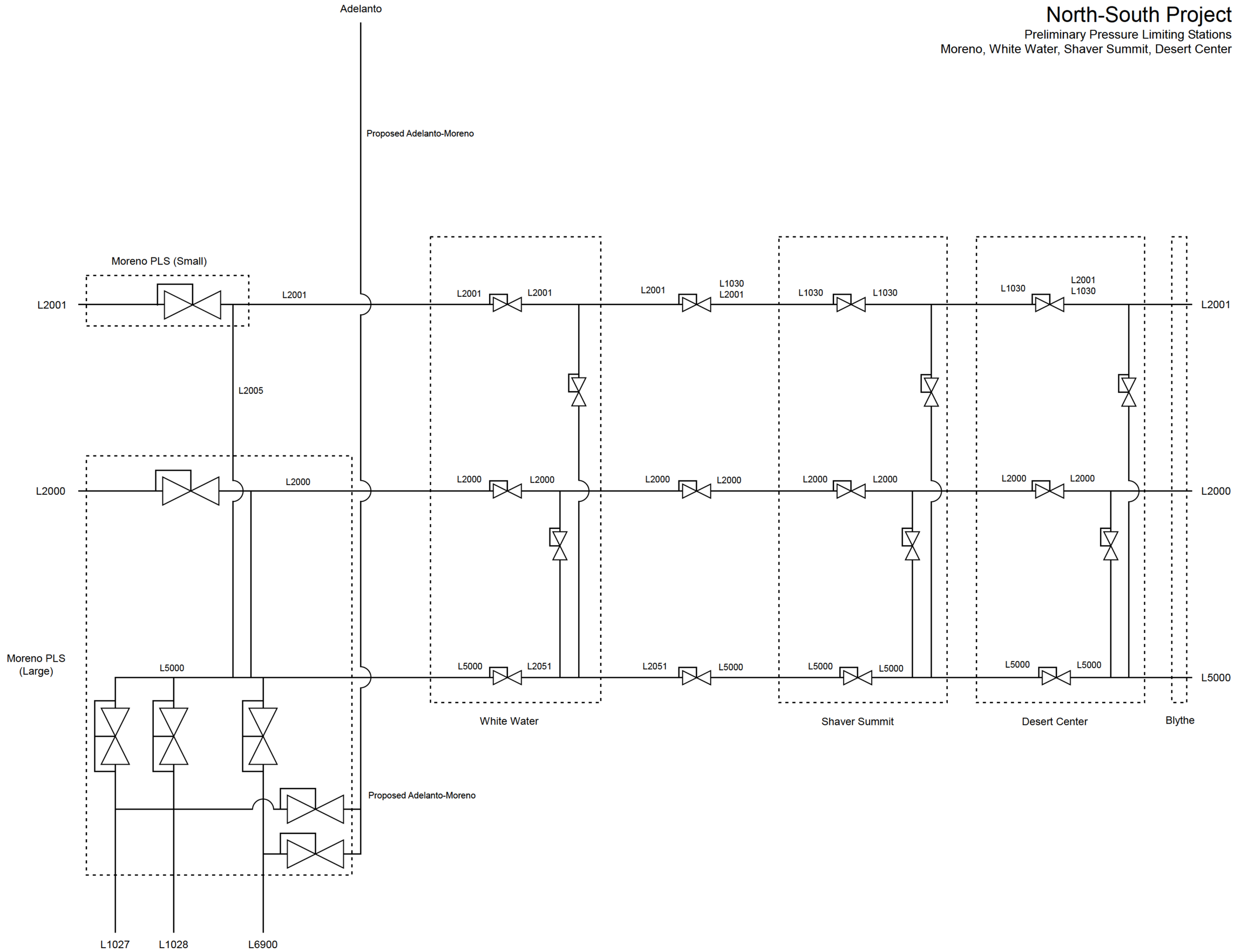
Southern California Gas Company
A Sempra Energy utility

Attachment VI

Pressure Limiting Station Drawings

North-South Project

Preliminary Pressure Limiting Stations
Moreno, White Water, Shaver Summit, Desert Center



Southern California Gas Company
A Sempra Energy utility

Attachment VII

Cultural Resources Summary

Cultural Resources Summary

Cultural resources information for existing conditions in the proposed Project area was obtained from the California Historic Resources Information System (CHRIS). The CHRIS maintains regional offices that manage cultural resource records for known cultural resource locations and related technical studies. Sources reviewed consisted of recorded archaeological and historic sites records on the Proposed Project route. The CHRIS maintains regional offices that manage site records for known cultural resource locations and related technical studies. The regional office for San Bernardino County is the San Bernardino Archaeological Information Center (SBAIC) housed at the San Bernardino County Museum, Redlands, and the regional office for Riverside County is the Eastern Information Center (EIC), housed at the University of California, Riverside. A review at the SBAIC was done on December 10, 2012 of the known cultural resource locations on the draft route, with a phone call to the EIC on December 11, 2012 using the draft maps. A pedestrian survey was not conducted as part of the analysis of Project critical issues.

Previously recorded Cultural Resources along the Project route.

Site number	Brief Description
SBR-113H	Prehistoric habitation site, and an historic hog farm operation, in National Register Crowder Canyon Archaeological District
SBR-114H	Prehistoric habitation site and historic homestead debris, in National Register Crowder Canyon Archaeological District
SBR-421	Prehistoric habitation site in National Register Crowder Canyon Archaeological District
SBR-713	Prehistoric habitation site in National Register Crowder Canyon Archaeological District
SBR-2910H	National Old Trails Highway, Eligible for National Register, on California Register-3926
SBR-3772	Lithic scatter located in National Register Crowder Canyon Archaeological District
SBR-4252H	Baldy Mesa Road
SBR-4272H	Santa Fe and Salt Lake Trail/Old Spanish Trail/Mojave Trail-California Historical Landmark (577)
SBR-6793H	Historic Railroad-Atchison, Topeka and Santa Fe, Eligible for National Register
SBR-6847	Historic Railroad-Old Kite Route, part of Atchison, Topeka and Santa Fe Railway
SBR-8092H	Mill Creek Zanja-California Historical Landmark (43), National Register 77-329
SBR-10330H	Southern Pacific Railroad
36-015497	Baseline Road-California Point of Historical Interest

Southern California Gas Company
A Sempra Energy utility

Attachment VIII

Cost Estimate

Total Direct Capital Costs

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	*Year 7 Labor Only*	Years 7 - 26
Adelanto - Moreno Pipeline									
Labor	$ 17,495,082	$ 742,703	$ 1,951,587	$ 2,443,095	$ 3,232,845	$ 3,620,187	$ 4,289,666	$ 1,215,000	$ -
Non-Labor	$ 467,050,111	$ 1,982,375	$ 7,971,950	$ 8,815,399	$ 108,203,058	$ 94,612,625	$ 243,281,704	$ -	$ 2,183,000
Total	$ 484,545,193	$ 2,725,078	$ 9,923,537	$ 11,258,494	$ 111,435,903	$ 98,232,812	$ 247,571,370	$ 1,215,000	$ 2,183,000
Compressor Station									
Labor	$ 4,613,153	$ 254,678	$ 296,865	$ 568,215	$ 939,465	$ 1,580,715	$ 973,215	$ -	$ -
Non-Labor	$ 132,138,712	$ 457,979	$ 778,205	$ 10,267,884	$ 57,430,747	$ 35,797,558	$ 27,406,340	$ -	$ -
Total	$ 136,751,864	$ 712,657	$ 1,075,070	$ 10,836,099	$ 58,370,212	$ 37,378,273	$ 28,379,555	$ -	$ -
Total Project									
Labor	$ 22,108,235	$ 997,380	$ 2,248,452	$ 3,011,310	$ 4,172,310	$ 5,200,902	$ 5,262,881	$ 1,215,000	$ -
Non-Labor	$ 599,188,822	$ 2,440,354	$ 8,750,154	$ 19,083,282	$ 165,633,805	$ 130,410,183	$ 270,688,044	$ -	$ 2,183,000
Total	$ 621,297,057	$ 3,437,734	$ 10,998,606	$ 22,094,592	$ 169,806,115	$ 135,611,085	$ 275,950,925	$ 1,215,000	$ 2,183,000
		0.6%	1.8%	3.6%	27.3%	21.8%	44.4%		0.4%

Adelanto to Moreno Pipeline - Direct Costs

Cost Element	Total Cost Estimate	Timing of Expenditures								Contingency	
		Year 1	*Year 2*	*Year 3*	*Year 4*	*Year 5*	*Year 6*	*Year 7 Labor Only*	*Years 7 - 26*	%	$
Adelanto - Moreno Pipeline											
Non-Labor											
Material Costs											
Pipe & Coating	$ 56,031,087				$ 56,031,087					5%	$ 2,801,554
Pipe Delivery	$ 10,288,855				$ 3,245,000	$ 7,043,855				5%	$ 514,443
Ells	$ 4,592,100				$ 4,592,100					5%	$ 229,605
Valves	$ 3,448,810				$ 3,448,810					10%	$ 344,881
Other Materials	$ 4,822,623				$ 1,048,000	$ 3,774,623				5%	$ 241,131
Freight (other than Pipe)	$ 1,144,256				$ 1,144,256					5%	$ 57,213
Odorization	$ 200,000					$ 200,000				10%	$ 20,000
Filter / Separator For Pipeline	$ 1,350,000					$ 1,350,000				5%	$ 67,500
Tax	$ 6,538,043				$ 6,255,833	$ 282,210				1%	$ 65,380
SUBTOTAL MATERIAL	**$ 88,415,774**										$ -
Construction Labor											$ -
Mobilization	$ 500,000					$ 500,000				5%	$ 25,000
Unload –Stockpile Pipe	$ 350,000					$ 350,000				10%	$ 35,000
Load Pipe – Haul to right-of-way	$ 1,413,720					$ 706,860	$ 706,860			5%	$ 70,686
Unpaved Rural Road	$ 13,548,020					$ 2,709,604	$ 10,838,416			10%	$ 1,354,802
Two lane Paved	$ 32,683,600					$ 6,536,720	$ 26,146,880			20%	$ 6,536,720
Low Roll	$ 10,204,901					$ 2,040,980	$ 8,163,921			10%	$ 1,020,490
Steep terrain	$ 4,809,024					$ 961,805	$ 3,847,219			10%	$ 480,902
Roll Chop Sidecut	$ 13,551,504					$ 2,710,301	$ 10,841,203			10%	$ 1,355,150
US 66 Paved	$ 17,195,904					$ 3,439,181	$ 13,756,723			15%	$ 2,579,386
Primary Paved Road	$ 95,744,880					$ 19,148,976	$ 76,595,904			20%	$ 19,148,976
Additional footage, elevation gains -5%	$ 5,089,392					$ 1,017,878	$ 4,071,514			5%	$ 254,470
HDD Bores	$ 1,495,000					$ 1,218,000	$ 277,000			30%	$ 448,500
Silt Fence	$ 1,346,400					$ 673,200	$ 673,200			5%	$ 67,320
Tier 4 emmisions equipment	$ 8,000,000					$ 1,600,000	$ 6,400,000			5%	$ 400,000
Restore ROW/Seed, Stabilize	$ 807,840						$ 807,840			25%	$ 201,960
Temporary By=Pass Road on two lane	$ 468,000					$ 234,000	$ 234,000			20%	$ 93,600
Security Fencing	$ 360,000					$ 180,000	$ 180,000			5%	$ 18,000
Conventional Bores	$ 5,335,000					$ 2,667,500	$ 2,667,500			25%	$ 1,333,750
Mainline Valves	$ 4,130,000					$ 826,000	$ 3,304,000			5%	$ 206,500
Launcher/receiver	$ 400,000						$ 400,000			5%	$ 20,000
Caliper Survey	$ 50,000						$ 50,000			5%	$ 2,500
X-Ray Services	$ 2,177,400					$ 1,527,400	$ 650,000			15%	$ 326,610
Hydro Testing and Drying	$ 2,085,000						$ 2,085,000			20%	$ 417,000
Casing Wax	$ 1,050,000						$ 1,050,000			10%	$ 105,000
Demobilization	$ 300,000						$ 300,000			5%	$ 15,000
SUBTOTAL CONSTRUCTION LABOR	**$ 223,095,585**										$ -
ROW Acquisition Labor											$ -
Property Acquisition	$ 2,775,354		$ 769,630	$ 329,842	$ 1,675,882					25%	$ 693,839
Construction Support	$ 836,208					$ 450,000	$ 386,208			10%	$ 83,621
Project Close-out	$ 195,401						$ 195,401			10%	$ 19,540
SUBTOTAL ROW ACQUISITION LABOR	**$ 3,806,963**										$ -
ROW Acquisition Land											$ -
Permanent Easements	$ 7,979,065				$ 4,667,439	$ 3,111,626			$ 200,000	30%	$ 2,393,720
Temporary Easements	$ 2,201,943				$ 1,651,457	$ 550,486				30%	$ 660,583
SUBTOTAL ROW ACQUISITION LAND	**$ 10,181,009**										$ -

Adelanto to Moreno Pipeline - Direct Costs

Cost Element	Total Cost Estimate	Timing of Expenditures								Contingency	
		Year 1	*Year 2*	*Year 3*	*Year 4*	*Year 5*	*Year 6*	*Year 7 Labor Only*	*Years 7 - 26*	%	$
Legal Services	$ 7,618,670	$ 29,000	$ 615,900	$ 910,000	$ 5,615,270	$ 325,000	$ 123,500			5%	$ 380,934
Public Relations	$ 2,425,000	$ 100,000	$ 365,000	$ 365,000	$ 565,000	$ 565,000	$ 465,000			10%	$ 242,500
Environmental/Permitting											$ -
Data Collection l Permitting Support	$ 10,000	$ 10,000								5%	$ 500
Environmental Data Collection, Screening	$ 1,154,773	$ 115,477	$ 808,341	$ 230,955						10%	$ 115,477
Environmental Clearance/Permit Process	$ 7,287,718	$ 625,000	$ 2,665,087	$ 3,997,631						20%	$ 1,457,544
Preconstruction Surveys	$ 1,300,000				$ 1,300,000					5%	$ 65,000
Mitigation Compliance	$ 13,000,000					$ 3,900,000	$ 8,600,000		$ 500,000	25%	$ 3,250,000
Construction Monitoring	$ 8,332,650					$ 2,166,530	$ 6,166,120			10%	$ 833,265
Post-construction Mitigation and Monitor	$ 1,180,000								$ 1,180,000	10%	$ 118,000
SUBTOTAL ENVIRONMENTAL PERMITTIN	**$ 32,265,141**										$ -
Geotechnical Investigation	$ 362,609	$ 129,000	$ 233,609							10%	$ 36,261
Ministerial Permits	$ 1,200,000				$ 400,000	$ 800,000				0%	$ -
Engineering	$ 11,419,938	$ 650,000	$ 1,200,000	$ 1,501,938	$ 1,400,000	$ 3,218,000	$ 3,450,000			25%	$ 2,854,985
Survey	$ -									10%	$ -
Construction Management	$ 9,802,001					$ 5,000,000	$ 4,802,001			10%	$ 980,200
SCADA	$ 2,660,000						$ 2,660,000			5%	$ 133,000
As-built	$ -									0%	$ -
Contingency	$ 55 177 996	$ 323 898	$ 1 196 915	$ 1 362 567	$ 6 777 365	$ 12 457 450	$ 32 756 803		$ 303 000	14%	$ 55,177,996
SubTotal	**$ 448,430,686**	$ 1,982,375	$ 7,854,483	$ 8,697,932	$ 99,817,499	$ 94,243,184	$ 233,652,213		$ 2,183,000		
ROW Intrustion Monitoring	$ 5,865,300						$ 5,865,300				
Methane Detection	$ 104 000						$ 104,000				
Subtotal Pipeline	**$ 454,399,986**	$ 1,982,375	$ 7,854,483	$ 8,697,932	$ 99,817,499	$ 94,243,184	$ 239,621,513		$ 2,183,000		
Pressure Limiting Stations											
Non-Labor											
Survey	$ 63,280		$ 15,820	$ 15,820	$ 15,820	$ 15,820				10%	$ 6,328
ROW Acquisition Land	$ 16,790				$ 16,790					10%	$ 1,679
Permanent Easements	$ -				$ -					30%	$ -
Material Costs	$ 6,587,858				$ 6,587,858					15%	$ 988,179
SCADA	$ 80,000					$ 80,000				5%	$ 4,000
Engineering	$ 381,200		$ 95,300	$ 95,300	$ 95,300	$ 95,300				5%	$ 19,060
Construction Management	$ 213,300					$ 159,975	$ 53,325			5%	$ 10,665
As-built	$ 120,000						$ 120,000			5%	$ 6,000
Construction Labor	$ 3,162,000						$ 3,162,000			10%	$ 316,200
Freight	$ 65,000				$ 65,000					15%	$ 9,750
Tax	$ 592,907				$ 592,907					1%	$ 5,929
Contingency	$ 1,367,790	$ -	$ 6,347	$ 6,347	$ 1,011,884	$ 18,346	$ 324,866			12%	$ 1,367,790
Subtotal Pressure Limiting Stations	$ 12,650,125	$ -	$ 117,467	$ 117,467	$ 8,385,559	$ 369,441	$ 3,660,191				
Misc. Non-Labor*											
SubTotal Adelanto - Moreno Pipeline Non-Labor	$ 467,050,111	$ 1,982,375	$ 7,971,950	$ 8,815,399	$ 108,203,058	$ 94,612,625	$ 243,281,704		$ 2,183,000		

Adelanto to Moreno Pipeline - Direct Costs

Cost Element	Total Cost Estimate	Timing of Expenditures								Contingency	
		Year 1	*Year 2*	*Year 3*	*Year 4*	*Year 5*	*Year 6*	*Year 7 Labor Only*	*Years 7 - 26*	%	$
**Misc. Non-Labor can cover any cost not included in the table above (e.g., 3rd party legal services, construction inspectors (if applicable), etc)*											
Adelanto - Moreno Pipeline											
So Cal Gas Labor											
Project Management - Pipeline	$ 3,437,500	$ 187,500	$ 500,000	$ 625,000	$ 625,000	$ 625,000	$ 625,000	$ 250,000		8%	$ 275,000
Procurement - Pipeline	$ 750,000	$ -	$ -	$ 62,500	$ 250,000	$ 375,000	$ 62,500	$ -		8%	$ 60,000
Public Relations	$ 1,078,125	$ 46,875	$ 93,750	$ 234,375	$ 234,375	$ 234,375	$ 234,375	$ -		8%	$ 86,250
Project Controls	$ 1,367,188	$ 70,313	$ 140,625	$ 187,500	$ 281,250	$ 281,250	$ 281,250	$ 125,000		8%	$ 109,375
Right-of-Way	$ 1,062,500	$ 62,500	$ 250,000	$ 187,500	$ 187,500	$ 187,500	$ 187,500	$ -		8%	$ 85,000
Project Speacilist	$ 375,000	$ -	$ -	$ 93,750	$ 93,750	$ 93,750	$ 93,750	$ -		8%	$ 30,000
Administrative Asst.	$ 562,500	$ -	$ -	$ 93,750	$ 93,750	$ 187,500	$ 187,500	$ -		8%	$ 45,000
Engineering - Pipeline	$ 937,500	$ 62,500	$ 125,000	$ 125,000	$ 125,000	$ 125,000	$ 125,000	$ 250,000		8%	$ 75,000
Operations - Pipeline	$ 1,375,000	$ -	$ 62,500	$ -	$ -	$ 250,000	$ 812,500	$ 250,000		8%	$ 110,000
Construction Management - Pipeline	$ 1,375,000	$ -	$ -	$ -	$ 250,000	$ 250,000	$ 750,000	$ 125,000		8%	$ 110,000
ROW Intrustion Monitoring	$ 229,240	$ -	$ -	$ -	$ -	$ -	$ 229,240	$ -		8%	$ 18,339
Methane Detection	$ 24,998	$ -	$ -	$ -	$ -	$ -	$ 24,998	$ -		8%	$ 2,000
Environmental										8%	$ -
Geotechnical Permitting Support	$ 225,000	$ 22,500	$ 56,250	$ 56,250	$ 56,250	$ 33,750	$ -		$ -	8%	$ 18,000
Cultural and Paleontological Surveys	$ 260,000	$ 26,000	$ 65,000	$ 65,000	$ 65,000	$ 39,000	$ -		$ -	8%	$ 20,800
Wetland and Stream Delineation	$ 260,000	$ 26,000	$ 65,000	$ 65,000	$ 65,000	$ 39,000	$ -		$ -	8%	$ 20,800
Special-Status Species	$ 260,000	$ 26,000	$ 65,000	$ 65,000	$ 65,000	$ 39,000	$ -		$ -	8%	$ 20,800
Rare Plant Surveys	$ 260,000	$ 26,000	$ 65,000	$ 65,000	$ 65,000	$ 39,000	$ -		$ -	8%	$ 20,800
Water Resources	$ 260,000	$ 26,000	$ 65,000	$ 65,000	$ 65,000	$ 39,000	$ -		$ -	8%	$ 20,800
Air Quality	$ 260,000	$ 26,000	$ 65,000	$ 65,000	$ 65,000	$ 39,000	$ -		$ -	8%	$ 20,800
Soils, Geology and Hazardous Materials	$ 260,000	$ 26,000	$ 65,000	$ 65,000	$ 65,000	$ 39,000	$ -		$ -	8%	$ 20,800
Environmental Clearance/Permit Process	$ 440,000	$ 22,000	$ 88,000	$ 110,000	$ 110,000	$ 110,000	$ -		$ -	8%	$ 35,200
Preconstruction Surveys	$ 200,000	$ -	$ -	$ -	$ -	$ 200,000	$ -		$ -	8%	$ 16,000
Construction Monitoring	$ 300,000	$ -	$ -	$ -	$ -	$ 90,000	$ 210,000		$ -	8%	$ 24,000
Post-construction Mitigation and Monitor	$ 125,000	$ -	$ -	$ -	$ -	$ -	$ -	$ 125,000	$ -	8%	$ 10,000
Company Expenses	$ 514,600	$ 31,500	$ 35,900	$ 31,500	$ 231,500	$ 35,900	$ 148,300	$ -	$ -	8%	$ 41,168
Contingency	$ 1,295,932	$ 55,015	$ 144,562	$ 180,970	$ 239,470	$ 268,162	$ 317,753	$ 90,000	$ -	8%	$ 1,295,932
SubTotal Adelanto - Moreno Pipeline Labor	$ 17 495 082	$ 742 703	$ 1 951 587	$ 2 443 095	$ 3 232 845	$ 3 620 187	$ 4 289 666	$ 1 215 000	$ -		

Date		PROJECT COST ESTIMATE - Material Costs							File name	AFE	
By		Project Name - North South Project - Adelanto to Moreno Valley									
	Project Length	63	miles					Average Per ton		$1,887	per ton
		Quantity	Units	Material		Labor and Equipment		Per diem			
Task				Unit	Total	Unit	Total	Unit	Total		
No.	Task Description			Cost	Cost	Cost	Cost	Cost	Cost	TOTAL	Notes
1	Pipe, 36-inch, API 5Lx -X70 .625 wt	359,750	ft	$139.00	$50,005,272	$0.00	$0.00		$0.00	$50,005,272	
	Pipe footage	332,640									
	Equations	-									
	Elevation Gains - 3%	9,979									
	Extra Pipe for re-route, loss in shipping/cutting - 5%	17,131									
2	Pipe, Casing, 42-in, API 5Lx X60, .625 wall FBE Coated	5,050.00	ft	$260	$1,313,000	$0.00	$0.00	$ -	$0.00	$1,313,000	
3	Coating FBE 16 mils	359,750	ft	$10.00	$3,597,502	$0.00	$0.00	$ -	$0.00	$3,597,502	
4	Pipe Freight	359,750	ft	$0	$0	$28.60	$10,288,855	$ -	$0.00	$10,288,855	
5	Double Joining	359,750	ft	$7	$2,428,314	$0.00	$0	$ -	$0.00	$2,428,314	
6	Powercrete Coating -30 mils	4,500	ft	$50	$225,000	$0.00	$0	$ -	$0.00	$225,000	
7	Ell, 3R 45 degrees 0.625 X-70 FBE coated	300	EA	$8,541	$2,562,300		$0	$0	$0	$2,562,300	
8	Ell, 3R 90 degrees0.625 X-70 FBE coated	150	EA	$13,532	$2,029,800	$0	$0	$0	$0	$2,029,800	
9	Valves - 36-inch ANSI 600 full port BW ends 13,000lbs MLV	20.00	EA	$107,280	$2,145,600	$0	$0	$0	$0	$2,145,600	
10	Valves - 36-inch ANSI 600 full port BW endsReceiver/Launcher 13000lbs	2.00	EA	$107,280	$214,560.00	$0.00	$0.00	$ -	$0.00	$214,560	
11	Valves - 36-inch ANSI 600 full port BW ends 13,000lbs PL Cross Over 4000/4002	3.00	EA	$107,280	$321,840.00	$0.00	$0.00	$ -	$0.00	$321,840	
12	Valves - 12-inch ANSI 600 full port Flanged ends Blowdown	44.00	EA	$16,893	$743,292.00	$0.00	$0.00	$ -	$0.00	$743,292	
13	Valves - 10-inch ANSI 600 full port flanged ends Receiver/Launcher 5750lbs	2.00	EA	$11,759	$23,518.00	$0.00	$0.00	$ -	$0.00	$23,518	
14	Tee, 36 -inch, 0.625, X-70 FBE Coated	3.00	EA	$7,258	$21,774.00	$0.00	$0.00	$ -	$0.00	$21,774	
15	Tee, 36 X36X12-inch, 0.625 x.375, X70 FBE Coated	32.00	EA	$6,507	$208,224.00	$0.00	$0.00	$ -	$0.00	$208,224	
16	SCADA Equipment	14.00	EA	$125,000	$1,750,000.00	$65,000.00	$910,000.00	$ -	$0.00	$2,660,000	
17	Intrusion Monitoring	63.00	Mi	$30,100	$1,896,300.00	$0.00	$0.00	$ -	$0.00	$1,896,300	
18	Methane Detection equipment	20.00	Ea	$5,200	$104,000.00	$0.00	$0.00	$ -	$0.00	$104,000	
19	Vault, Concrete Pre-fab for Buried Valve/Actuator	5.00	EA	$35,000	$175,000.00	$0.00	$0.00	$ -	$0.00	$175,000	
20	Casing End Seals	30	EA	$450	$13,500.00	$0.00	$0.00	$ -	$0.00	$13,500	
21	Casing insulators	535	sets	$275	$147,125.00	$0.00	$0.00	$ -	$0.00	$147,125	
22	Launcher/ Receiver Barrels	2.00	ea	$80,000	$160,000.00	$0.00	$0.00	$ -	$0.00	$160,000	
23	Valve Actuators/wit extensions and line break controls f/36-inch Valve	14.00	ea	$93,500	$1,309,000.00	$0.00	$0.00	$ -	$0.00	$1,309,000	
24	Valves, piping for launchers and receiver	1.00	Lot	$55,000	$55,000.00	$0.00	$0.00	$ -	$0.00	$55,000	
25	CP equipment -Rectifiers	2.00	EA	$35,000	$70,000.00	$0.00	$0.00	$ -	$0.00	$70,000	
	Test head, 36-inch, Assembly	6.00	EA	$80,000	$480,000.00	$0.00	$0.00	$ -	$0.00	$480,000	
26	Misc materials -Pipe Wrap, ETS Cans, Lids, CP Wire, Line Markers	1.00	lot	$295,000	$295,000.00	$0.00	$0.00	$ -	$0.00	$295,000	
27	Misc. Pipe materials -12-inch pipe and ells for blowdown, Flanges, blinds,Bolts, insulating kits, pig sigs, vent pipe, instrument piping,valves and components	1.00	EA	$350,000	$350,000.00	$0.00	$0.00	$ -	$0.00	$350,000	
	Tax	9%			$6,538,043		$0		$0	$6,538,043	
	Freight	8%			$1,144,256		$0		$0	$1,144,256	
	Odorization	1	EA	$200,000.00	$200,000.00	$0	$0	$0	$0	$200,000	
	Filter / Separator	1	EA	$1,350,000.00	$1,350,000.00	$0	$0	$0	$0	$1,350,000	
	Sub-total				$81,877,219		$11,198,855		$0	$93,076,074	
	Contingency	0%			$0		$0		$0.00	$0	

Date		PROJECT COST ESTIMATE - Material Costs						File name	AFE	
By		Project Name - North South Project - Adelanto to Moreno Valley								
	Project Length	63	miles				Average Per ton		$1,887	per ton
		Quantity	Units	Material		Labor and Equipment		Per diem		
Task				Unit	Total	Unit	Total	Unit	Total	
No.	Task Description			Cost	Cost	Cost	Cost	Cost	Cost	TOTAL	Notes
	TOTAL COST:				$81,877,219		$11,198,855		$0.00	$93,076,074	
	TOTAL HOURS:										

Date		PROJECT COST ESTIMATE - Construction Costs								F le name	AFE	
By		Project Name - North South Project - Adelanto to Moreno Valley										
	Project Length	63	miles									
		Quantity	Units	Construction Cost		Environmental Delays (20% of Unit Cost)			Productivity Adjustments (15%)				
Task				Unit	Total	Footage	Unit	Total	Footage	Unit	Total		
No.	Task Description			Cost	Cost		Cost	Cost		Cost	Cost	TOTAL	Notes
1	Mobilization	1	ea	$500,000	$500,000		$0.00	$0.00		$0.00	$0.00	$500,000	
2	Load pipe and ship to R/W	332,640	ea	$4.25	$1,413,720		$0.00	$0.00		$0.00	$0.00	$1,413,720	
3	Mile 0 to Mile 5.5 -Unpaved Rural Road	29,040	ft	375	10,890,000	-	$75.00	$0	-	$56.25	$0	$10,890,020	
4	Mile 5.5 to Mile 11.16 -Two lane Paved	29,885	ft	505	15,091,925	-	$101.00	$0	-	$75.75	$0	$15,091,925	
5	Mile 11.16 to Mile 13.19 - Low Roll	10,718	ft	355	3,804,890	-	$71.00	$0	-	$53.25	$0	$3,804,890	
	Mile 13.19 to Mile 20.93 -Cross Country National Forest	40,867	ft	-	-	-	$0.00	$0	-	$0.00	$0	$0	
	Steep terrain	5,808	ft	690	4,007,520	5,808	$138.00	$801,504	-	$103.50	$0	$4,809,024	
	Roll Chop Sidecut	21,928	ft	515	11,292,920	21,928	$103.00	$2,258,584	-	$77.25	$0	$13,551,504	
	Low Roll	13,131	ft	355	4,661,505	13,131	$71.00	$932,301	-	$53.25	$0	$5,593,806	
6	Mile 20.93 to Mile 27.83 US 66 Paved	36,432	ft	472	17,195,904		$94.40	$0	-	$70.80	$0	$17,195,904	
7	Mile 27.83 to Mile 54.25	139,498	ft	-	-	-	$0.00	$0	-	$0.00	$0	$0	
	Primary Paved Road	134,898	ft	660	89,032,680	-	$132.00	$0	23,760	$99.00	$2,352,240	$91,384,920	
	Two lane paved	4,600	ft	505	2,323,000	-	$101.00	$0	-	$75.75	$0	$2,323,000	
	Mile 54.25. to Mile 63	46,200	ft	-	-	-	$0.00	$0	-	$0.00	$0	$0	
	Low Roll	2,271	ft	355	806,205	-	$71.00	$0	-	$53.25	$0	$806,205	
	Rural Unpaved Road	7,088	ft	375	2,658,000	-	$75.00	$0	-	$56.25	$0	$2,658,000	
	Primary Paved Road	6,606	ft	660	4,359,960	-	$132.00	$0	-	$99.00	$0	$4,359,960	
	Two Lane Paved	30,235	ft	505	15,268,675	-	$101.00	$0	-	$75.75	$0	$15,268,675	
	Total Footage - Horizontal Length	332,640											
	Additional footage, elevation gains -3%	9,979	ft	510	5,089,392	-	$102.00	$0	-	$76.50	$0	$5,089,392	
	Silt Fence	53,856	ft	25	1,346,400		$0.00	$0		$0.00	$0	$1,346,400	
	Tier 4 emmisions equipment	1	lot	8,000,000	8,000,000		$0.00	$0		$0.00	$0	$8,000,000	
	Restore ROW/Seed, Stabilize	53,856	ft	15	807,840		$0.00	$0		$0.00	$0	$807,840	
	Temporary By=Pass Road on two lane	7,800	ft	60	468,000		$0.00	$0		$0.00	$0	$468,000	
11	Non-Cased Conventional Bores -3	450	ft	970	436,500		$0.00	$0		$0.00	$0	$436,500	
	Conventional Cased Bores -15	5,050	ft	$970	$4,898,500.00		$0.00	$0.00		$0.00	$0.00	$4,898,500	
12	HDD Bores - 1	2,300	ft	650	1,494,998		$0.00	$0.00		$0.00	$0.00	$1,495,000	
13	Main Line Valve Stations	16	ea	130,000	2,080,000		$0.00	$0.00		$0.00	$0.00	$2,080,000	
	Main Line Valve Launcher Reciever	2		130,000	260,000							$260,000	
	MainLine Valve Fault Crossing	4	ea	130,000	520,000							$520,000	
14	Main Line Valve and Interconnect Station to Line 4000/4002	1	Ea	750,000	750,000		$0.00	$0.00		$0.00	$0.00	$750,000	
15	Security Fencing MLV's 50X75	18	ea	20,000	360,000		$0.00	$0.00		$0.00	$0.00	$360,000	
17	Launcher/ Receiver Barrel	1	ea	400,000	400,000		$0.00	$0.00		$0.00	$0.00	$400,000	
18	Hydro Test	11	ea	$175,000	$1,925,000.00		$0.00	$0.00		$0.00	$0.00	$1,925,000	
	Clean and Dry	1	ea	$160,000	$160,000.00		$0.00	$0.00		$0.00	$0.00	$160,000	
21	Caliper Survey	1	Lot	$50,000	$50,000.00		$0.00	$0.00		$0.00	$0.00	$50,000	
22	De-Mobilization	1	ea	$300,000	$300,000.00		$0.00	$0.00		$0.00	$0.00	$300,000	
23	Sub Total	$ -	$ -	$0.00	$212,653,534			$3,992,389			$2,352,240	$218,998,185	
24													
25	Casing Wax	15	ea	70,000	1,050,000	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$1,050,000	
26	X-Ray Services (2 man Crews)	1,146	crew days	$1,900	$2,177,400	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$2,177,400	
27	ROW Intrusion Monitoring	63	Mi	63,000	3,969,000		$0.00	$0.00		$0.00	$0.00	$3,969,000	
28	MainLine Valve Fault Crossing	4	ea	130,000	520,000							$520,000	
29	Unload pipe and Stockpile at yard	1	ea	$350,000	$350,000		$0.00	$0.00		$0.00	$0.00	$350,000	
	Tax	0.00%			$0			$0			$0	$0	
	Freight	0.00%			$0			$0			$0	$0	
	Sub-total				$220,719,934			$3,992,389			$2,352,240	$227,064,585	
	Contingency	0%			$0			$0			$0	$0	
	TOTAL COST:				220,719,934			3,992,389			2,352,240	$227,064,585	
	TOTAL HOURS:											$0	

Date:		PROJECT COST ESTIMATE: Construction Management								File name:	AFE	
By:		Project Name: - North South Project - Adelanto to Moreno Valley										
									8	9	10	hrs per day
	Project Length	63	miles						Average Per diem		160	per day
									Average hourly rate		52	per hour average
		Quantity	Units	Days		Labor and Equipment		Mileage Re-imt		Per diem		
Task				Working	Per Diem	Unit	Total	Unit	Total	Unit	Total	
No.	Task Description			Days	Days	Cost	Cost	Cost	Cost	Cost	Cost	TOTAL
1	**Chief Inspector**	**2,970**	**Man Hours**	**330**	**462**	**$65**	**$193,050**	**15**	**$2,772**	**160**	**$73,920**	**$269,742**
2	**Safety Inspector**	**2,970**	**Man Hours**	**330**	**462**	**$65**	**$193,050**	**15**	**$2,772**	**160**	**$73,920**	**$269,742**
3	**Environmental Coordinator**	**2,970**	**Man Hours**	**330**	**462**	**$65**	**$193,050**	**15**	**$2,772**	**160**	**$73,920**	**$269,742**
4	**Material Coordinator**	**2,700**	**Man Hours**	**300**	**420**	**$52**	**$140,400**	**15**	**$2,520**	**160**	**$67,200**	**$210,120**
5	**Schedule Coordinator**	**2,700**	**Man Hours**	**300**	**420**	**$52**	**$140,400**	**15**	**$2,520**	**160**	**$67,200**	**$210,120**
6	**Clerk**	**2,970**	**Man Hours**	**330**	**462**	**$52**	**$154,440**	**15**	**$2,772**	**160**	**$73,920**	**$231,132**
7	**Training**	**480**	**Man Hours**			**$100**	**$48,000**			**160**	**$0**	**$48,000**
												$0
	Crew 1 - Mile 0 to Mile 21	**750 ft/day**										**$0**
8	**Rigth-of-way Clearing -Inspector**	**1,480**	**Man Hours**	**148**	**207**	**$52**	**$76,960**	**15**	**$1,243**	**160**	**$33,152**	**$111,355**
9	**Pot hole inspector**	**1,480**	**Man Hours**	**148**	**207**	**$52**	**$76,960**	**15**	**$1,243**	**160**	**$33,152**	**$111,355**
10	**Trenching inspector**	**1,480**	**Man Hours**	**148**	**207**	**$52**	**$76,960**	**15**	**$1,243**	**160**	**$33,152**	**$111,355**
11	**Stringing inspector**	**1,480**	**Man Hours**	**148**	**207**	**$52**	**$76,960**	**15**	**$1,243**	**160**	**$33,152**	**$111,355**
12	**Bending inspector**	**1,480**	**Man Hours**	**148**	**207**	**$52**	**$76,960**	**15**	**$1,243**	**160**	**$33,152**	**$111,355**
13	**Welding Inspector**	**1,480**	**Man Hours**	**148**	**207**	**$58**	**$85,840**	**15**	**$1,243**	**160**	**$33,152**	**$120,235**
14	**X-ray welds/repairs**	**1,480**	**Man Hours**	**148**	**207**	**$58**	**$85,840**	**15**	**$1,243**	**160**	**$33,152**	**$120,235**
15	**Coating inspector**	**1,480**	**Man Hours**	**148**	**207**	**$52**	**$76,960**	**15**	**$1,243**	**160**	**$33,152**	**$111,355**
16	**Lowering inspector**	**1,480**	**Man Hours**	**148**	**207**	**$52**	**$76,960**	**15**	**$1,243**	**160**	**$33,152**	**$111,355**
17	**Backfill inspector**	**1,480**	**Man Hours**	**148**	**207**	**$52**	**$76,960**	**15**	**$1,243**	**160**	**$33,152**	**$111,355**
18	**Right-of way Clean-up**	**1,480**	**Man Hours**	**148**	**207**	**$52**	**$76,960**	**15**	**$1,243**	**160**	**$33,152**	**$111,355**

Date:		PROJECT COST ESTIMATE: Construction Management									File name:	AFE	
By:		Project Name: - North South Project - Adelanto to Moreno Valley											
										8	9	10	hrs per day
	Project Length	63	miles							Average Per diem		160	per day
										Average hourly rate		52	per hour average
		Quantity	Units	Days		Labor and Equipment		Mileage Re-imt		Per diem			
Task				Working	Per Diem	Unit	Total	Unit	Total	Unit	Total		
No.	Task Description			Days	Days	Cost	Cost	Cost	Cost	Cost	Cost	TOTAL	Notes
												$0	
	Crew 2 Mile 21 to Mile 43	**375 ft/day**								-		$0	
19	**Pot hole inspector**	**2,790**	**Man Hours**	**310**	**434**	**$52**	**$145,080**	**15**	**$2,604**	**160**	**$69,440**	**$217,124**	
20	**Trenching inspector**	**2,790**	**Man Hours**	**310**	**434**	**$52**	**$145,080**	**15**	**$2,604**	**160**	**$69,440**	**$217,124**	
21	**Stringing inspector**	**2,790**	**Man Hours**	**310**	**434**	**$52**	**$145,080**	**15**	**$2,604**	**160**	**$69,440**	**$217,124**	
22	**Bending inspector**	**2,790**	**Man Hours**	**310**	**434**	**$52**	**$145,080**	**15**	**$2,604**	**160**	**$69,440**	**$217,124**	
23	**Welding Inspector**	**2,790**	**Man Hours**	**310**	**434**	**$58**	**$161,820**	**15**	**$2,604**	**160**	**$69,440**	**$233,864**	
24	**X-ray welds/repairs**	**2,790**	**Man Hours**	**310**	**434**	**$58**	**$161,820**	**15**	**$2,604**	**160**	**$69,440**	**$233,864**	
25	**Coating inspector**	**2,790**	**Man Hours**	**310**	**434**	**$52**	**$145,080**	**15**	**$2,604**	**160**	**$69,440**	**$217,124**	
26	**Lowering inspector**	**2,790**	**Man Hours**	**310**	**434**	**$52**	**$145,080**	**15**	**$2,604**	**160**	**$69,440**	**$217,124**	
27	**Backfill inspector**	**2,790**	**Man Hours**	**310**	**434**	**$52**	**$145,080**	**15**	**$2,604**	**160**	**$69,440**	**$217,124**	
28												$0	
												$0	
												$0	
	Crew 3 Mile 43 to Mile 63	**375/ft/day**										$0	
29	**Pot hole inspector**	**2,248**	**Man Hours**	**281**	**393**	**$52**	**$116,896**	**15**	**$2,360**	**160**	**$62,944**	**$182,200**	
30	**Trenching inspector**	**2,248**	**Man Hours**	**281**	**393**	**$52**	**$116,896**	**15**	**$2,360**	**160**	**$62,944**	**$182,200**	
31	**Stringing inspector**	**2,248**	**Man Hours**	**281**	**393**	**$52**	**$116,896**	**15**	**$2,360**	**160**	**$62,944**	**$182,200**	
32	**Bending inspector**	**2,248**	**Man Hours**	**281**	**393**	**$52**	**$116,896**	**15**	**$2,360**	**160**	**$62,944**	**$182,200**	
33	**Welding Inspector**	**2,248**	**Man Hours**	**281**	**393**	**$58**	**$130,384**	**15**	**$2,360**	**160**	**$62,944**	**$195,688**	
34	**X-ray welds/repairs**	**2,248**	**Man Hours**	**281**	**393**	**$58**	**$130,384**	**15**	**$2,360**	**160**	**$62,944**	**$195,688**	
35	**Coating inspector**	**2,248**	**Man Hours**	**281**	**393**	**$52**	**$116,896**	**15**	**$2,360**	**160**	**$62,944**	**$182,200**	
36	**Lowering inspector**	**2,248**	**Man Hours**	**281**	**393**	**$52**	**$116,896**	**15**	**$2,360**	**160**	**$62,944**	**$182,200**	
37	**Backfill inspector**	**2,248**	**Man Hours**	**281**	**393**	**$52**	**$116,896**	**15**	**$2,360**	**160**	**$62,944**	**$182,200**	
38									**$0**		**$0**	**$0**	
	Crew 4 -Special Crossing Crews/Fab Yard								**$0**		**$0**	**$0**	
44	**Trenching inspector-3**	**8,370**	**Man Hours**	**930**	**1,302**	**$52**	**$435,240**	**30**	**$15,624**	**160**	**$208,320**	**$659,184**	
45	**Welding Inspector-3**	**8,370**	**Man Hours**	**930**	**1,302**	**$58**	**$485,460**	**30**	**$15,624**	**160**	**$208,320**	**$709,404**	
46	**Coating inspector-3**	**8,370**	**Man Hours**	**930**	**1,302**	**$52**	**$435,240**	**30**	**$15,624**	**160**	**$208,320**	**$659,184**	
47	**Backfill inspector-3**	**8,370**	**Man Hours**	**930**	**1,302**	**$52**	**$435,240**	**30**	**$15,624**	**160**	**$208,320**	**$659,184**	
48	**Boring Inspector/coordinator-3**	**8,370**	**Man Hours**	**930**	**1,302**	**$58**	**$485,460**	**30**	**$15,624**	**160**	**$208,320**	**$709,404**	
							$6,621,590		**$152,603**		**$3,027,808**	**$9,802,001**	
	Contingency	0%					**$0**				**$0**	**$0**	

Date:		PROJECT COST ESTIMATE: Construction Management								File name:	AFE	
By:		Project Name: - North South Project - Adelanto to Moreno Valley										
									8	9	10	hrs per day
	Project Length	63	miles						Average Per diem		160	per day
									Average hourly rate		52	per hour average
		Quantity	Units	Days		Labor and Equipment		Mileage Re-imt		Per diem		
Task				Working	Per Diem	Unit	Total	Unit	Total	Unit	Total	
No.	Task Description			Days	Days	Cost	Cost	Cost	Cost	Cost	Cost	TOTAL
	TOTAL COST						**$6,621,590**		**$152,603**		**$3,027,808**	**$9,802,001**
	TOTAL HOURS											-

Date:		PROJECT COST ESTIMATE -Land Acquisition Labor Costs								File name:	AFE	
By:		Project Name - North South Project - Adelanto to Moreno Valley										
	Project Length	63	miles									

		Quantity	Units	Material		Labor and Equipment					Per diem			
Task				Unit	Total	Unit	Total	Work Days	Per Diem	Mileage	Unit	Total		
No.	Task Description			Cost	Cost	Cost	Cost			Expense	Cost	Cost	TOTAL	Notes
	Feasibility Study Due Diligence													
1	**Right-of- Supervisor**	**2,080.00**	**Man Hours**		**$0.00**	**$125**	**$260,000**	**260**	**364**	**$4,368**	**$150**	**$54,600**	**$318,968**	
2	**Right-of-way agent**	**2,080.00**	**Man Hours**		**$0.00**	**$100**	**$208,000**	**260**	**364**	**$4,368**	**$125**	**$45,500**	**$257,868**	
3	**Right-of-way agent**	**2,080.00**	**Man Hours**		**$0.00**	**$100**	**$208,000**	**260**	**364**	**$4,368**	**$125**	**$45,500**	**$257,868**	
4	**Legal Support**	**-**	**Man Hours**		**$0.00**	**$650**	**$0**				**$0**	**$0**	**$0**	See legal Detail estimate
5	**Office and administrative**	**2,080.00**				**$50**	**$104,000**	**260**	**364**	**$4,368**	**$100**	**$36,400**	**$144,768**	
6	**Office and Supplies**	**12.00**	**months**			**$0**	**$0**				**$10,000**	**$120,000**	**$120,000**	
7	**Sub Total**	**8,320.00**	**$ -**		**$0.00**		**$780,000**			**$17,472**		**$302,000**	**$1,099,472**	
8														
9	**Property Acquisition**													
10	**Right-of- Supervisor**	**2,200.00**	**Man Hours**		**$0.00**	**$125**	**$275,000**	**275**	**385**	**$4,620**	**$150**	**$57,750**	**$337,370**	
11	**Right-of-way agent**	**2,080.00**	**Man Hours**		**$0.00**	**$100**	**$208,000**	**260**	**364**	**$4,368**	**$125**	**$45,500**	**$257,868**	
12	**Right-of-way agent**	**2,080.00**	**Man Hours**		**$0.00**	**$100**	**$208,000**	**260**	**364**	**$4,368**	**$125**	**$45,500**	**$257,868**	
13	**Right-of -way agent**	**2,080.00**	**Man Hours**		**$0.00**	**$100**	**$208,000**	**260**	**364**	**$4,368**	**$125**	**$45,500**	**$257,868**	
14	**Right-of-Way Agent**	**2,080.00**	**Man Hours**		**$0.00**	**$100**	**$208,000**	**260**	**364**	**$4,368**	**$125**	**$45,500**	**$257,868**	
15	**Legal Support**	**-**	**Man Hours**		**$0.00**	**$650**	**$0**				**$0**	**$0**	**$0**	See legal Detail estimate
16	**Office and administrative**	**2,400.00**				**$50**	**$120,000**	**300**	**420**	**$5,040**	**$100**	**$42,000**	**$167,040**	
17	**Office and Supplies**	**14.00**	**months**			**$0**	**$0**				**$10,000**	**$140,000**	**$140,000**	
18	**Sub Total**	**12,920.00**	**$ -**		**$0.00**		**$1,227,000**			**$27,132**		**$421,750**	**$1,675,882**	
19														
20	**Construction Support**	**-**												
21	**Right-of- Supervisor**	**1,120.00**	**Man Hours**		**$0.00**	**$125**	**$140,000**	**140**	**196**	**$2,352**	**$150**	**$29,400**	**$171,752**	
22	**Right-of-way agent**	**880.00**	**Man Hours**		**$0.00**	**$100**	**$88,000**	**110**	**154**	**$1,848**	**$125**	**$19,250**	**$109,098**	
23	**Right-of-way agent**	**880.00**	**Man Hours**		**$0.00**	**$100**	**$88,000**	**110**	**154**	**$1,848**	**$125**	**$19,250**	**$109,098**	
24	**Right-of -way agent**	**880.00**	**Man Hours**		**$0.00**	**$100**	**$88,000**	**110**	**154**	**$1,848**	**$125**	**$19,250**	**$109,098**	
25	**Right-of-Way Agent**	**880.00**	**Man Hours**		**$0.00**	**$100**	**$88,000**	**110**	**154**	**$1,848**	**$125**	**$19,250**	**$109,098**	
26	**Office and administrative**	**1,840.00**	**Man Hours**		**$0.00**	**$50**	**$92,000**	**230**	**322**	**$3,864**	**$100**	**$32,200**	**$128,064**	
27	**Office and Supplies**	**10.00**	**months**		**$0.00**	**$0**	**$0**				**$10,000**	**$100,000**	**$100,000**	
28	**Sub Total**	**6,480.00**	**Man Hours**		**$0.00**	**$0**	**$584,000**			**$13,608**	**$0**	**$238,600**	**$836,208**	
29														
30	**Project Close-out**	**-**												
31	**Right-of- Supervisor**	**520.00**	**Man Hours**		**$0.00**	**$125**	**$65,000**	**65**	**91**	**$1,092**	**$150**	**$13,650**	**$79,742**	
32	**Right-of-way agent**	**520.00**	**Man Hours**		**$0.00**	**$100**	**$52,000**	**65**	**91**	**$1,092**	**$125**	**$11,375**	**$64,467**	
33	**Office and administrative**	**520.00**	**Man Hours**		**$0.00**	**$50**	**$26,000**	**65**	**91**	**$1,092**	**$100**	**$9,100**	**$36,192**	
34	**Office and Supplies**	**3.00**	**months**		**$0.00**	**$0**	**$0**				**$5,000**	**$15,000**	**$15,000**	
35	**Sub Total**	**1,560.00**	**Man Hours**		**$0.00**	**$0**	**$143,000**			**$3,276**		**$49,125**	**$195,401**	
	Tax	9.00%			**$0.00**		**$0**					**$0**	**$0**	
	Freight	9.00%			**$0.00**		**$0**					**$0**	**$0**	
	Sub-total				**$0.00**		**$2,734,000**			**$61,488**		**$1,011,475**	**$3,806,963**	
	Contingency	0%			**$0.00**		**$0**					**$0**	**$0**	
	TOTAL COST:				**$0.00**		**$2,734,000**			**$61,488**		**$1,011,475**	**$3,806,963**	
	TOTAL HOURS:												**29,280**	

Date	9/16/2014			**PROJECT COST ESTIMATE - Land and ROW Costs**											File name	AFE	
By	RB	EEF		**Project Name - North South Project - Adelanto to Moreno Valley**													
		Project Length		63	miles												
		Pipe Diameter		36	inches												
			Acre	Square Footage	Predominant	Duration	Franchise Cost		Private Easement				Temporary Easement				
Task			Quantity	Quantity	Land Use	Needed	Unit	Total	Acre	Sq Ft	Total Acre	Total Sq Ft	Acre	Sq Ft	Total Acre	Total Sq Ft	
No.		Task Description				(in months)	Cost	Cost	Cost	Cost	Cost	Cost	Cost	Cost	Cost	Cost	TOTAL
	Mile Post	**Acquisition type**															
1	**MP 0 to MP 5.5**	New 25 foot Permanent Right of Way additional to 50 foot existing	**17**	**725,710**	**Residential**				**$385,000**	**$8.84**	**$3,207,050**		**$0**	**$0.00**	**$0**		**$3,207,050**
2		Temporary dirt processing yard	**5**	**217,800**	**"**	**6**			**$0**	**$0.00**	**$0**		**$11,550**	**$0.27**	**$57,750**		**$57,750**
3		50 foot temporary Construction Easement along side existing 50 foot wide easement	**33**	**1,451,855**	**"**	**6**			**$0**	**$0.00**	**$0**		**$11,550**	**$0.27**	**$384,962**		**$384,962**
4		New Permanent Easement MLV Station	**0**	**7,841**	**"**				**$385,000**	**$8.84**	**$69,300**		**$0**	**$0.00**	**$0**		**$69,300**
5	**MP 5.5 to 11.16**	50 foot temporary Construction Easement along side existing 50 foot wide easement	**25**	**1,106,424**	**Residential**	**6**			**$0**	**$0.00**	**$0**		**$11,550**	**$0.27**	**$293,370**		**$293,370**
6		Office and construction yard	**10**	**435,600**	**"**	**9**			**$0**	**$0.00**	**$0**		**$17,325**	**$0.40**	**$173,250**		**$173,250**
7		New Permanent Easement MLV Station	**0**	**7,841**	**"**				**$385,000**	**$8.84**	**$69,300**		**$0**	**$0.00**	**$0**		**$69,300**
8	**MP 11.16 to MP 13.19**	New 50 foot permanent Right of Way	**12**	**509,216**	**Residential**				**$385,000**	**$8.84**	**$2,250,325**		**$0**	**$0.00**	**$0**		**$2,250,325**
9		New 15 foot wide permanent access Road	**4**	**160,736**	**"**				**$385,000**	**$8.84**	**$142,065**			**$0.00**			**$142,065**
10		50 foot temporary Construction Easement adjacent to ROW	**12**	**509,216**	**"**	**6**			**$0**	**$0.00**	**$0**		**$11,550**	**$0.27**	**$135,020**		**$135,020**
11	**MP 13.19 to 20.93**	San Bernardino National Forest	**47**	**2,043,360**	**National Forest**	**Rent payable annually**			**$103.46**	**$0.00**	**$4,853.21**		**$0**	**$0.00**	**$0**		**$4,853**
12		New Permanent Easement MLV Station - 2 ea.	**0**	**15,682**	**"**	**Rent payable annually**			**$103.46**	**$0.00**	**$37.25**		**$0**	**$0.00**	**$0**		**$37**
13	**MP 20.93 to MP 32.5**	Temporary parking and laydown along roadway -1 each mile	**3**	**131,987**	**Residential**	**6**			**$0**	**$0.00**	**$0**		**$11,400**	**$0.26**	**$34,542**		**$34,542**
14		New Permanent Easement MLV Station- 6 ea.	**1**	**47,045**	**"**				**$380,000**	**$8.72**	**$410,400**		**$0**	**$0.00**	**$0**		**$410,400**
15	**MP 32.50 to 43.25**	Temporary parking and laydown along roadway -1 each mile	**10**	**435,600**	**Residential**	**6**			**$0**	**$0.00**	**$0**		**$10,500**	**$0.24**	**$105,000**		**$105,000**
16		Office and construction yard	**10**	**435,600**	**"**	**15**			**$0**	**$0.00**	**$0**		**$26,250**	**$0.60**	**$262,500**		**$262,500**
17		Temporary dirt processing yard	**5**	**217,800**	**"**	**12**			**$0**	**$0.00**	**$0**		**$21,000**	**$0.48**	**$105,000**		**$105,000**
18		New Permanent Easement MLV Station	**0**	**15,682**	**"**				**$350,000**	**$8.03**	**$126,000**		**$0**	**$0.00**	**$0**		**$126,000**

Notes
$385,000 per acre at 50% for permanent, non-exclusive, sub-surface easements
$385,000 per acre at 6% annual rental rate of return
$385,000 per acre at 6% annual rental rate of return
$385,000 per acre for permanent, exclusive, above-surface easements
$385,000 per acre at 6% annual rental rate of return
$385,000 per acre at 6% annual rental rate of return
$385,000 per acre for permanent, exclusive, above-surface easements
$385,000 per acre at 50% for permanent, non-exclusive, sub-surface easements
$385,000 per acre at 10% for permanent, non-exclusive, access road easements
$385,000 per acre at 6% annual rental rate of return
Annaul rent at $103.46 per acre based on BLM/Forest Service published 2009-2015 Per Acre Rent Schedule
Annaul rent at $103.46 per acre based on BLM/Forest Service published 2009-2015 Per Acre Rent Schedule
$380,000 per acre at 6% annual rental rate of return
$380,000 per acre for permanent, exclusive, above-surface easements
$350,000 per acre at 6% annual rental rate of return
$350,000 per acre at 6% annual rental rate of return
$350,000 per acre at 6% annual rental rate of return
$350,000 per acre for permanent, exclusive, above-surface easements

Date	9/16/2014			**PROJECT COST ESTIMATE - Land and ROW Costs**											File name	AFE		
By	RB	EEF		**Project Name - North South Project - Adelanto to Moreno Valley**														
		Project Length		63	miles													
		Pipe Diameter		36	inches													
			Acre	Square Footage	Predominant	Duration	Franchise Cost		Private Easement				Temporary Easement					
Task			Quantity	Quantity	Land Use	Needed	Unit	Total	Acre	Sq Ft	Total Acre	Total Sq Ft	Acre	Sq Ft	Total Acre	Total Sq Ft		
No.		Task Description				(in months)	Cost	Cost	Cost	Cost	Cost	Cost	Cost	Cost	Cost	Cost	TOTAL	Notes
	Mile Post	**Acquisition type**																
19		Temporary parking and laydown along roadway -1 each mile	**2**	**99,752**	**Residential**	**6**			**$0**	**$0.00**	**$0**		**$10,500**	**$0.24**	**$24,045**		**$24,045**	$350,000 per acre at 6% annual rental rate of return
20	**MP 43.25 to MP 48**	Temporary dirt processing yard	**10**	**435,600**	"	**6**			**$0**	**$0.00**	**$0**		**$10,500**	**$0.24**	**$105,000**		**$105,000**	$350,000 per acre at 6% annual rental rate of return
21		New Permanent Easement MLV Station- 3 ea.	**1**	**23,522**	"				**$350,000**	**$8.03**	**$189,000**		**$0**	**$0.00**	**$0**		**$189,000**	$350,000 per acre for permanent, exclusive, above-surface easements
22		50 foot temporary Construction Easement along roadway.	**22**	**953,093**	**Residential**	**6**			**$0**	**$0.00**	**$0**		**$9,810**	**$0.23**	**$214,643**		**$214,643**	$327,000 per acre at 6% annual rental rate of return
23	**MP 48 to MP 54.25**	Temporary dirt processing yard	**10**	**435,600**	"	**6**			**$0**	**$0.00**	**$0**		**$9,810**	**$0.23**	**$98,100**		**$98,100**	$327,000 per acre at 6% annual rental rate of return
24		New Permanent Easement MLV Station- 1 ea.	**0**	**7,841**	"				**$327,000**	**$7.51**	**$58,860**		**$0**	**$0.00**	**$0**		**$58,860**	$327,000 per acre for permanent, exclusive, above-surface easements
25		New 50 foot permanent Right of Way - Reche Cyn	**15**	**649,915**	**Vacant Land**				**$125,000**	**$2.87**	**$932,500**		**$0**	**$0.00**	**$0**		**$932,500**	$125,000 per acre at 50% for permanent, non-exclusive, sub-surface easements
26		50 foot temporary Construction Easement adjacent to ROW	**15**	**649,915**	"	**6**			**$0**	**$0.00**	**$0**		**$3,750**	**$0.09**	**$55,950**		**$55,950**	$125,000 per acre at 6% annual rental rate of return
27		New 15 foot wide permanent access Road	**4**	**158,994**	"				**$125,000**	**$2.87**	**$45,625**		**$0**	**$0.00**	**$0**		**$45,625**	$125,000 per acre at 10% for permanent, non-exclusive, access road easements
28	**MP 54.25 to 63**	New 50 foot permanent Right of Way - Cottonwood	**6**	**255,262**	"				**$125,000**	**$2.87**	**$366,250**		**$0**	**$0.00**	**$0**		**$366,250**	$125,000 per acre at 50% for permanent, non-exclusive, sub-surface easements
29		50 foot temporary Construction Easement adjacent to ROW	**6**	**255,262**	"	**6**			**$0**	**$0.00**	**$0**		**$3,750**	**$0.09**	**$21,975**		**$21,975**	$125,000 per acre at 6% annual rental rate of return
30		50 foot temporary Construction Easement along roadway	**25**	**1,084,208**	"	**6**			**$0**	**$0.00**	**$0**		**$3,750**	**$0.09**	**$93,338**		**$93,338**	$125,000 per acre at 6% annual rental rate of return
31		Office and construction yard	**10**	**435,600**	"	**6**			**$0**	**$0.00**	**$0**		**$3,750**	**$0.09**	**$37,500**		**$37,500**	$125,000 per acre at 6% annual rental rate of return
32		New Permanent Easement MLV Station- 2 ea.	**0**	**15,682**	"				**$125,000**	**$2.87**	**$45,000**		**$0**	**$0.00**	**$0**		**$45,000**	$125,000 per acre for permanent, exclusive, above-surface easements
33	**MP63**	New additional easement to enlarge Moreno PLS Station	**1**	**21,780**	**Vacant Land**				**$125,000**	**$2.87**	**$62,500**		**$0**	**$0.00**	**$0**		**$62,500**	$125,000 per acre for permanent, exclusive, above-surface easements
		Sub Total	**320**	**13,957,020**							**$7,979,065**				**$2,201,943**		**$10,181,009**	
		New Easement	**100**	**4,346,377**							**$7,791,375**							
		Temporary construction Easement	**153**	**6,677,312**											**$1,362,843**			
		Access Roads	**7**	**319,730**							**$187,690**							
		Office, Laydown and Construction Yards	**60**	**2,613,600**											**$839,100**			
		Total	**320**	**13,957,020**							**$7,979,065**				**$2,201,943**		**$** **10,181,009**	
		Tax		-													**$** -	
		Freight		-													**$** -	
		Sub-total															**$** **10,181,009**	
		Miscellaneous fees															**$** -	
		TOTAL COST:															**$** **10,181,009**	

Date:		PROJECT COST ESTIMATE - Legal Services						File name:	AFE	
By:		Project Name: - North South Project - Adelanto to Moreno Valley								
	Project Length	60	miles			Average Per diem				per day
										per hour average
		Quan ity	Units	Material		Labor and Equipment		Expenses		
Task				Unit	Total	Unit	Total	Unit	Total	
No.	Task Description			Cost	Cost	Cost	Cost	Cost	Cost	TOTAL
	Property Acquisition									
1	**Legal Support/ contract review**	**920.00**	**Man Hours**		**$0**	**$650**	**$598,000**	**$184**	**$0**	**$598,000**
2	**Environmental and Regulatory**	**4,690.00**	**Man Hours**		**$0**	**$650**	**$3,048,500**	**$0**	**$0**	**$3,048,500**
3	**Land Acquisition and Property Rights**	**6,111.00**	**Man Hours**		**$0**	**$650**	**$3,972,150**	**$0**	**$20**	**$3,972,170**
4										
5										
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22										
23										
24										
25										
	Tax	0.00%			**$0.00**		**$0**		**$0**	**$0**
	Freight	0.00%			**$0.00**		**$0**		**$0**	**$0**
	Sub-total				**$0.00**		**$7,618,650**		**$20**	**$7,618,670**
	Contingency	0%			**$0.00**		**$0**		**$0**	**$0**
	TOTAL COST:				**$0.00**		**$7,618,650**		**$20**	**$7,618,670**
	TOTAL HOURS:									**-**

Date:		PROJECT COST ESTIMATE - Public Outreach						File name:	AFE	
By:		Project Name: - North South Project - Adelanto to Moreno Valley								
	Project Length	60	miles			Average Per diem				per day
										per hour average
		Quan ity	Units	Material		Labor and Equipment		Expenses		
Task				Unit	Total	Unit	Total	Unit	Total	
No.	Task Description			Cost	Cost	Cost	Cost	Cost	Cost	TOTAL
	Public Relations									
1	**Information Web Site**	**1.00**	**each**		**$0.00**	**$0.00**	**$0.00**	**$100,000**	**$100,000**	**$100,000**
2	**Community out reach meetings**	**6.00**	**each**		**$0.00**	**$0.00**	**$0.00**	**$100,000**	**$600,000**	**$600,000**
3	**Public Outreach during construction**	**7**	**each**		**$0.00**	**$0.00**	**$0.00**	**$ 175,000**	**$1,225,000**	**$1,225,000**
4	**Community outreach program -**	**1.00**	**lot**		**$0.00**	**$0.00**	**$0.00**	**$ 500,000**	**$500,000**	**$500,000**
5					**$0.00**	**$0.00**	**$0.00**	**$ -**	**$0**	**$0.00**
6										
7										
8						**$0.00**	**$0.00**	**$ -**	**$0**	**$0**
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25										
	Tax	0.00%			**$0.00**		**$0**		**$0**	**$0.00**
	Freight	0.00%			**$0.00**		**$0**		**$0**	**$0.00**
	Sub-total				**$0.00**		**$0**		**$2,425,000**	**$2,425,000.00**
	Contingency	1/0/1900			**$0.00**		**$0**		**$0**	**$0**
	TOTAL COST:				**$0.00**		**$0**		**$2,425,000**	**$2,425,000**
	TOTAL HOURS:									**-**

Date:		PROJECT COST ESTIMATE-Geotechnical Investigation							File name:	AFE	
By:		Project Name: - North-South Project - Adelanto to Moreno Pipeline									
	Project Length	63	miles					Average Per diem			per day
											per hour average
		Quantity	Units	Material		Labor and Equipment		Expenses			
Task				Unit	Total	Unit	Total	Unit	Total		
No.	Task Description			Cost	Cost	Cost	Cost	Cost	Cost	TOTAL	Notes
	GeoTech Investigation										
1	**Geotechnical Engineer**	**40**	**Hours**		**$0.00**	**$200.00**	**$8,000.00**		**$0**	**$8,000**	
2	**Sr. Project Geologist/Engineer**	**128**	**Hours**		**$0.00**	**$150.00**	**$19,200.00**		**$0**	**$19,200**	
3	**Staff Geologist/Engineer**	**260**	**Hours**		**$0.00**	**$135.00**	**$35,100.00**			**$35,100**	
4	**CADD/GIS Specialist**	**80**	**Hours**		**$0.00**	**$127.00**	**$10,160.00**		**$0**	**$10,160**	
5	**Admin**	**24**	**Hours**		**$0.00**	**$68.00**	**$1,632.00**	**$ -**	**$0**	**$1,632.00**	
6											
7	**Other Direct costs**										
8	**Underground Service Alert Notofication (included in TRC labor and ODCs)**	**3**	**day**			**$0.00**	**$0.00**	**$0**	**$0**	**$0**	
9	**Geophysical Survey for Utility Clearance (City of San Bernardino)**	**3**	**day**					**$2,900**	**$8,700**	**$8,700**	
10	**Air Knife Company (Cascade) - borehole Clearance**	**11**	**day**					**$2,300**	**$25,300**	**$25,300**	
11	**Drilling Company - sixty three 10-ft borings**	**11**	**day**					**$3,500**	**$38,500**	**$38,500**	
12	**Drilling Company - twenty six 20-ft borings**	**5**	**day**					**$3,500**	**$17,500**	**$17,500**	
13	**Drilling Company - nine 80-ft borings**	**8**	**day**					**$3,700**	**$29,600**	**$29,600**	
14	**Boring Permits (80 foot borings)**	**6**	**per boring**					**$300**	**$1,800**	**$1,800**	
15	**Traffic Control (City of San Bernardino)**	**11**	**day**					**$1,500**	**$16,500**	**$16,500**	
16	**Encroachment Permits for Street Work**	**1**	**Lot**					**$68,373**	**$68,373**	**$68,373**	
17	**Analytical Testing**	**1**	**Lot**					**$45,079**	**$45,079**	**$45,079**	
18	**Field Vehicles (1 vehicle for 26 days and 1 vehicle for 11 days)**	**37**	**day**					**$100**	**$3,700**	**$3,700**	
19	**Vehicle Mileage (12 trips @200 miles/trip)**	**2400**	**miles**					**$0.60**	**$1,440**	**$1,440**	
20	**Travel Accommodations - Lodging and Meals (1 person for 26 days and 1 person for 11 days)**	**37**	**day**					**$175**	**$6,475**	**$6,475**	
21	**Miscellaneous Safety Equipment and Personal Protective Equipment / Supplies - 4-gas meter, digital camera, etc.**	**37**	**day**					**$150**	**$5,550.00**	**$5,550**	
22	**Reports**	**4.00**	**Each**					**$5,000.00**	**$20,000.00**	**$20,000.00**	
23											
24											
	Tax	0.00%			**$0.00**		**$0**		**$0**	**$0.00**	
	Freight	0.00%			**$0.00**		**$0**		**$0**	**$0.00**	
	Sub-total				**$0.00**		**$74,092**		**$288,517**	**$362,609.11**	
	Contingency	0%			**$0.00**		**$0**		**$0**	**$0**	
	TOTAL COST				**$0.00**		**$74,092**		**$288,517**	**$362,609**	
	TOTAL HOURS									**-**	

ENGINEERING AND DESIGN ESTIMATE

Client: Southern California Gas Co.(Sempra)
Project: North South Project Adelanto to Moreno Feasibility Report/Estimate
Discipline: Design (Internal use only)
File: DISCIPLINE SUMMARY SHEET

Proposal No.:
Date: **Rev. 0**
Prepared By:
Approved By:

LABOR COSTS

DESCRIPTION	QTY (*)	ENGINEERING/SURVEY HOURS				DESIGN HOURS							SR PROJ MNGR	TOTAL
		Survey	Proj Level	SR. Proj Lev	TOTAL	Draft 1	Draft 2	Des 1	Des 2	D Supervisor	TOTAL	Clerk		
1 SITE INVEST/DESIGN DEVELOP									240	66	306		72	378
2 PROJECT COORDINATION			8,632	1,564	9,996					5,736	5,736	8,532	8,552	32,816
3 DESIGN DRAWINGS	277	5,000	24	352	5,342				12,214	2,491	14,705		1,013	21,060
4 DESIGN REVIEW										240	240		240	480
5 JOB SHOWING									28	40	68	36	96	200
6 PROCUREMENT			76		76				16	8	24		76	176
7 CONSTRUCTION SUPPORT		7,437	56		7,493				24	20	44	20	128	7,685
8 PERMITTING			160		160				36	16	52		80	292
9 ROW DOCUMENTS		250			250					32	32		32	314
10 PROJECT CLOSEOUT									14	14	28	48	14	90
TOTAL	277	12,687	8,948	1,916	22,907				12,572	8,663	21,123	8,636	10,303	63,491
HOURLY LABOR RATE		$255.00	$100.00	$163 00	$193 93	$60.00	$85.00	$95 00	$127.00	$163.00	$142.44	$68.00	$198 00	$158.74
LABOR COST		$3,235,185	$894,800	$312,308	$4,442,293				$1,596,644	$1,412,069	$3,008,713	$587,248	$2,039,994	$10,078,248

(*) DELIVERABLE ITEMS — LABOR RATE MULTIPLIER : 100.0%

DISCIPLINE SCOPE OF WORK

Prepare construction dwgs for Relocations for 63 mile 36" pipeline Adelanto to Moreno Vall
Packages to include Plan/Profile alignment sheets, details, other
Includes coordination with various agencies in support.
Drawing scale 1"=20', 1"=40', 1"=100,
Engineering review and recommendations
Engineering Scope Design HDD's, evaluations, submittals for Crossings,
29 crossings, Flood Control, Caltrans, RR,

DISCIPLINE PROJECT DESIGN CRITERIA

Per SCG Construction Drawing Standards

DISCIPLINE ASSUMPTIONS & EXCEPTIONS

See Proposal letter

NON-LABOR COSTS

DESCRIPTION	QTY	UNIT	TOTAL
PROJECT MANAGEMENT SYSTEM FEE @ 1%			
OUTSIDE REPRODUCTION SERVICES		$1 25	
AUTO TRAVEL (Mileage)	20,000	$0 56	$11,100
POSTAGE AND FREIGHT			$1,200
TELEPHONE / TELEGRAPH / FAX			
Mileage	2,000	0 56	$1,110
Engineer Review Stamp Dwgs			$25,073
Soil Borings for Design and Construction Bid			$834,634
Potholing Service -Substrucutre Elevations			$428,279
Survey, Aerial, Planimetrics, (Estimate Psor 80%	6,909	$5 00	$34,544
MINISTERIAL PERMIT AND INSPECTION FEES			$1,200,000
WORD PROCESSING EQUIPMENT			
SURVEY AND FIELD EQUIPMENT		$5	
OUTSIDE COMPUTER SERVICES 50%		$5 00	
SPECIAL MATERIALS (Film, Floppy) 65%		$5 00	
IN-HOUSE COMPUTER EQUIPMT		$0.15	
AUTOCAD / MICROSTATION EQUIP		$2.40	
PHOTOCOPIES (Xerox)Bid Docs		$5 00	
DRAWING COPIES (Bond Prints) Full Size		$18 00	
DRAWING REPRODUCIBLES (Sepia Print Ink Jet		$1 00	
CADD ELECTRONIC PLOTS:	115	$50	$5,750
Airline Travel - Round Trips		$400	
TRAVEL / LIVING EXPENSES: Hotel/Mea Car Rental - Days		$118	
TOTAL NON-LABOR COSTS			$2,541,690
Contingency		TOTAL COSTS	**$12,619,938**

DESCRIPTION	QTY (*)	ENGINEERING/SURVEY HOURS				DESIGN HOURS							SR PROJ MNGR	TOTAL
		Staff Level	Proj Level	SR. Proj Lev	TOTAL	Draft 1	Draft 2	Des 1	Des 2	D Supervisor	TOTAL	Clerk		

ENGINEERING AND DESIGN ESTIMATE

Proposal No.:

Client: Southern California Gas Co.(Sempra) **Date:** **Rev. 0**

Discipline: Design (Internal use only) **Project:** North South Project Adelanto to Moreno Feasibility Report/Estimate **Prepared By:**

1. Site Investigation/Design Development :

List anything required to develop design, site/archive investigations, job walks, code investigations, report review and interpretation (list actual cost of subcontracted work on Page 1), familiarization with client standards.

Site Investigation									16	**16**		24	**40**
Develop scope/Startup Package									8	**8**		8	**16**
Research RR								16	4	**20**			**20**
Research w/ County Flood Control Districts								24	4	**28**			**28**
Research w/One Call								8	2	**10**			**10**
Research w/Utilities								40	4	**44**			**44**
Research County road departments								24	4	**28**			**28**
Research City RD, SD, SS, util								40	4	**44**			**44**
Research State Hwy's								24	4	**28**			**28**
Misc. Research/followup								40	4	**44**		40	**84**
Travel								24	12	**36**			**36**
TOTAL								**240**	**66**	**306**		**72**	**378**

2. Project Coordination:

Include all coordination hours, i.e. project meetings, client meetings, project paper work, coordination with project management and other disciplines, interdisciplinary spec and drawing review. Include travel time to and from meetings, pm updates, hours for archiving project discipline documents. Include all external coordination hours, i.e. hours for permitting and plan check and any other hours required for dealing with outside organizations (consultants, government agencies, utilities, other engineering firms, etc).

Develop Project Scheduling			4,300	20	**4,320**					200	**200**	300	200	**5,020**
Project Cost Estimate (support)			4,300	124	**4,424**					200	**200**	300	200	**5,124**
Coordination with client (meetings, phone communications)				120	**120**					500	**500**	3,500	3,500	**7,620**
Internal coordination (engineering, design, permitting)				400	**400**					3,000	**3,000**	3,500	3,500	**10,400**
Potholing coordination										400	**400**	200	80	**680**
Coordination with agency (support)				400	**400**					300	**300**	200	500	**1,400**
Coordination with other utilities				200	**200**					600	**600**	100	100	**1,000**
Misc				100	**100**					236	**236**	232	256	**824**
Prep of Prelimin Design Report				200						200	**200**	200	200	**600**
Travel			32		**32**					100	**100**		16	**148**
TOTAL			**8,632**	**1,564**	**9,996**					**5,736**	**5,736**	**8,532**	**8,552**	**32,816**

ENGINEERING AND DESIGN ESTIMATE

Proposal No.:

Client: Southern California Gas Co.(Sempra) **Date:** **Rev. 0**

Discipline: Design (Internal use only) **Project: North South Project Adelanto to Moreno Feasibility Report/Estimate** **Prepared By:**

3. Design Drawings :

List all physical drawings, plans, sections and details, orthographic and isometric. List all diagrams, schematics, P & ID's, schedules, etc. List all TRC produced "as-built" drawings. As-built drawings are defined as new drawings prepared by TRC of existing facilities or drawings of existing facilities, furnished by the client and corrected or modified by us. If this is a lump sum job, do not estimate unless you have studied the facility. "Record" drawings are defined as drawings prepared by TRC from drawings marked-up by the contractor to the as-constructed conditions and then corrected by TRC. TRC corrects record drawings only to the extent they are marked-up and furnished by the contractor. We do not verify as-built conditions of a facility unless construction support is included in this estimate. Also include hours for plotting, blueprinting, checking, and project review. Hours for archiving shall be included under PROJECT COORDINATION. Non-labor items (CADD hours, floppies, plotting / printing media, microfilming, drawing reductions, drawing scanning, etc) shall be included on Page 1.

DESCRIPTION	QTY (*)	ENGINEERING/SURVEY HOURS				DESIGN HOURS							SR PROJ MNGR	TOTAL
		Survey	Proj Level	SR. Proj Lev	TOTAL	Draft 1	Draft 2	Des 1	Des 2	D Supervisor	TOTAL	Clerk		
Survey		4,750	24	8	**4,782**									**4,782**
Cover Sheet w/Dwg Index	2								16	2	**18**		2	**20**
Alignment Sheet !"=100'	54								1,728	108	**1,836**		32	**1,868**
Alignment Sheet !"=40'	158								6,320	316	**6,636**		36	**6,672**
Detail Crossings 1"=20'	33			264	**264**				1,320	66	**1,386**		40	**1,690**
Standard Details	3			6	**6**				60	6	**66**		6	**78**
Special Details	3			6					60	6	**66**		6	**72**
Gen Notes	2			6					32	4	**36**		6	**42**
Tie-in to Compressor station details	2			6	**6**				32	4	**36**		6	**48**
Launcher/Receiver details	4			8	**8**				128	8	**136**		8	**152**
Valve site details	9			18					144	18	**162**		18	**180**
Cathodic Protextion Details	2			8	**8**				32	4	**36**		8	**52**
Fencing Details	1			2					16	2	**18**		2	**20**
line markers	1			2					16	2	**18**		2	**20**
casing details	1			2	**2**				16	2	**18**		2	**22**
structural details	2			16	**16**				40	4	**44**		16	**76**
Survey Field Vericifation		250			**250**									**250**
Pipeline As-Builts									1,108	554	**1,662**		2	**1,664**
Subtotal		**5,000**	**24**	**352**	**5,342**				**11,068**	**1,106**	**12,174**		**192**	**17,708**
PLOTTING (Dwgs x No.of times x 0.1)									40		**40**			**40**
CHECKING (Discipline/Squad/QA)									544	1,108	**1,652**		544	**2,196**
PRINTING (Dwgs x No.of times x 0.05)														
PLAN CHECK SUBMTL / CORRECT.									554	277	**831**		277	**1,108**
RECORD DRAWINGS									8		**8**			**8**
TOTAL	**277**	**5,000**	**24**	**352**	**5,342**				**12,214**	**2,491**	**14,705**		**1,013**	**21,060**

ENGINEERING AND DESIGN ESTIMATE

Proposal No.:

Client: Southern California Gas Co.(Sempra) **Date:** **Rev. 0**

Discipline: Design (Internal use only) **Project: North South Project Adelanto to Moreno Feasibility Report/Estimate** **Prepared By:**

4. Design Review

Include all coordination hours, i.e. project meetings, client meetings, project paper work, coordination with project management and other disciplines, any hours associated with drawing reviews. Include travel time to and from meetings, pm updates, hours for archiving project discipline documents. Include all external coordination hours, i.e. hours required for dealing with outside organizations (consultants, government agencies, utilities, other engineering firms, etc).

DESCRIPTION	QTY (*)	ENGINEERING/SURVEY HOURS				DESIGN HOURS							SR PROJ MNGR	TOTAL
		Staff Level	Proj Level	SR. Proj Lev	TOTAL	Draft 1	Draft 2	Des 1	Des 2	D Supervisor	TOTAL	Clerk		
Design Review Meetings Client (36)										108	**108**		108	**216**
Design Review Meetings Agencies (36)										108	**108**		108	**216**
Travel time and costs to meetings,										24	**24**		24	**48**
TOTAL										**240**	**240**		**240**	**480**

5. Job Showing :

Include hours for preparation of RFQ's, coordination with vendors, bid summary, bid conditioning meetings, drawing reproduction P.O. preparation (if required), bid specifications, Job site meetings, coordination with client, meeting notes and communications, bid evaluation/recommendation. Travel time and costs to job site, . Include hours for checking and review of bids.

Prepare Bid specs									16	24	**40**		32	**72**
Coord w/Client, contractors, agency													24	**24**
Bid Job site meeting										8	**8**		8	**16**
Job walk meeting notes/Q and A													8	**8**
Bid spec support									12		**12**	36		**48**
Bid Evaluation/Recommendation													16	**16**
Travel										8	**8**		8	**16**
TOTAL									**28**	**40**	**68**	**36**	**96**	**200**

6. Procurement:

List all items that TRC would be purchasing or providing procurement support. Include hours for preparation of RFQ's, coordination with vendors, bid summary, bid conditioning meetings, P.O. preparation (if required), vendor drawing review, shop drawing review & inspection (list inspection by outside firms on Page 1). Include hours for checking and project review.

Bill of Materials									16	8	**24**		8	**32**
Request for Materials													24	**24**
Request for Materials/mtl Quotes			20		**20**								8	**28**
Coord with Client Purchasing			16		**16**								4	**20**
Procure materials			24		**24**								4	**28**
Construction Cost Estimate			16		**16**								4	**20**
Construction Schedule													16	**16**
													8	**8**
TOTAL			**76**		**76**				**16**	**8**	**24**		**76**	**176**

ENGINEERING AND DESIGN ESTIMATE

Proposal No.:

Client: Southern California Gas Co.(Sempra) **Date:** **Rev. 0**

Discipline: Design (Internal use only) **Project: North South Project Adelanto to Moreno Feasibility Report/Estimate** **Prepared By:**

7. Construction Support:

List all construction support, identify which is office or field support. Include hours for construction bid meeting, start-up or precommisssioning assistance if applicable, and travel time to and from site.

DESCRIPTION	QTY (*)	ENGINEERING/SURVEY HOURS				DESIGN HOURS							SR PROJ MNGR	TOTAL
		SURVEY	Proj Level	SR. Proj Lev	TOTAL	Draft 1	Draft 2	Des 1	Des 2	D Supervisor	TOTAL	Clerk		
Construction Kickoff meetings									8		8	4	16	28
Survey/Stake alignment/work boundary		1,525			1,525									1,525
Construction Support Survey As=built		5,912			5,912									5,912
Develop Hydro test/tie in procedures			24		24				8		8	4	16	52
Incorporate field comments to tie in procedures												4	16	20
Conduct pre-tie in meeting w/field personnel									8		8	4	16	28
Status reports, Budget, Const Operations			32		32					16	16	4	24	76
Abandonment proceedures														
Travel										4	4		40	44
TOTAL		7,437	56		7,493				24	20	44	20	128	7,685

8. Permitting

Include all coordination hours, i.e. project meetings, client meetings, project paper work, coordination with project management and other disciplines, interdisciplinary spec and drawing review. Include travel time to and from meetings, pm updates, hours for archiving project discipline documents. Include all external coordination hours, i.e. hours for permitting and plan check and any other hours required for dealing with outside organizations (consultants, government agencies, utilities, other engineering firms, etc).

Develop Permitting List (support ROW)			16		16				16		16		16	48
Prepare per applications (support ROW)			40		40				16	8	24		16	80
Coordinate permit acquisition			40		40				4	8	12		16	68
Enviornmental documents													16	16
Permitting plan			40		40									40
Travel			24		24								16	40
TOTAL			160		160				36	16	52		80	292

9. ROW Documents

Include all coordination hours, i.e. project meetings, project paper work, coordination with project management and other disciplines, interdisciplinary spec and drawing review. Include time for archiving project discipline documents. Include all external coordination hours, i.e. hours for permitting and plan check and any other hours required for dealing with outside organizations (consultants, government agencies, utilities, other engineering firms, etc).

Review right of way documents										8	8		8	16
Survey		250			250									250
Prepare new easement documents										8	8		8	16
Legal descriptions (support)										8	8		8	16
Dity/County Reviews										8	8		8	16
TOTAL		250			250					32	32		32	314

10. Project Closeout:

Include all coordination hours, i.e. project meetings, client meetings, project paper work, coordination with project management, contractors and other disciplines, interdisciplinary spec and drawing review. Include travel time to and from job site, hours for archiving project discipline documents. Include all external coordination hours, i.e. hours required for dealing with outside organizations (consultants, contractors, inspectors and records to cover government agencies, etc).

Collect Construction Records										12	12	16	12	40
Copy Construction Records									8		8	16		24
Deliver copies for filing									4		4	16		20
Travel									2	2	4		2	6
TOTAL									14	14	28	48	14	90

Date:
By:

Southern California Gas Company
Moreno Valley PLS Tie-In
Material Cost Estimate

Task No.	Material Description	Quantity	Units	Material		Labor and Equipment		Per Diem		TOTAL	Notes
				Unit Cost	Total Cost	Unit Cost	Total Cost	Unit Cost	Total Cost		
	Major Materials										
2	Valve - 30" w/actuator and controls	1	ea	$125,000	$125,000	$0	$0	$0	$0	$125,000	
2	Valve - 24" w/actuator and controls	3	ea	$105,000	$315,000	$0	$0	$0	$0	$315,000	
3	Valve - 16" w/actuator and controls	1	ea	$75,000	$75,000	$0	$0	$0	$0	$75,000	
	36" Tee .625 wall Y-70	1	ea	$7,258	$7,258	$0	$0	$0	$0	$7,258	
4	36" x 24" Reducing Tee	2	ea	$10,500	$21,000	$0	$0	$0	$0	$21,000	
5	30" x 24" Reducing Tee	4	ea	$7,000	$28,000	$0	$0	$0	$0	$28,000	
6	24" x 16" Reducing tee	1	ea	$50,000	$50,000	$0	$0	$0	$0	$50,000	
7	Equipment Piping and Other Materials	1	lot	$55,000	$55,000	$0	$0	$0	$0	$55,000	
	Becker Precision - 24" Control Valves (Worker)	1	ea	$165,000	$165,000	$0	$0	$0	$0	$165,000	
8	Becker Precision - 24" Control Valves (Monitor)	1	ea	$120,000	$120,000	$0	$0	$0	$0	$120,000	
9	Regulator Run Equip Valves	5	ea	$225,000	$1,125,000	$0	$0	$0	$0	$1,125,000	
10	Regulator Reducing Tees	5	ea	$14,000	$70,000	$0	$0	$0	$0	$70,000	
11	Station Pipe Fittings	32	ea	$6,200	$198,400	$0	$0	$0	$0	$198,400	
12	Interconnect Pipe - 30" FBE Coated	160	ft	$260	$41,600	$0	$0	$0	$0	$41,600	
	Interconnect Pipe - 24" FBE Coated	200	ft	$200	$40,000	$0	$0	$0	$0	$40,000	
13	Interconnect Pipe - 16" FBE Coated	200	ft	$103	$20,600	$0	$0	$0	$0	$20,600	
	Gas Lost in Blowdowns for Tie-in	3	ea	$62,000	$186,000	$0	$0	$0	$0	$186,000	
14	**Subtotal - Major Materials**									$2,642,858	
15	**Minor Materials**	1	lot		$206,000					$206,000	
16	**Total**									$2,848,858	
	TOTAL COST									$2,848,858	
	TOTAL HOURS										

Date:
By:

Southern California Gas Company
Moreno Valley PLS Tie-In
Construction Labor Cost Estimate

Construction Labor

Task No.	Task Description	No. of Crews	Hours per Crew	Units	Unit Cost	Construction Cost Total Cost	TOTAL	Notes
1	Piping and Valve Fabriaction	2	160	Hours	560	$179,200		
2	Excavation Crew	1	60	Hours	525	$31,500		
	Installation and Tie-in	1	60	Hours	1500	$90,000		
	Wrap, Backfill,Cleanup and Fencing	1	60	Hours	525	$31,500		
3	Electrical - Straight Time	2	160	Hours	$375.00	$120,000		
	Instrument Connections, tubing	1	60	Hours	200	$12,000		
5	Civil/Laborers - Concrete	2	160	Hours	$375.00	$120,000		
7	Civil/Laborers - All Other Work	2	160	Hours	$375.00	$120,000		
	Security fencing, Base Material	1	24	Hours	$375.00	$9,000		
9								
	Total Station Construction Labor		904			**$713,000**		

Equipment Rental

10		Equipment Qty.	Months on Site	Rate per Month	Total Cost
11	Crane	1	1	$20,000	$20,000
12	Backhoe	2	2	$11,000	$44,000
13	Telescope Boom Trk	1	1	$20,000	$20,000
14	Forklift - Large	1	1	$20,000	$20,000
	Welder	4	1	$1,200	$4,800
15	Side Boom	2	1	$15,000	$30,000
	Total Equipment Rental				**$139,000**
16					
	Total Labor and Equipment				**$852,000**

	TOTAL COST		$852,000
	TOTAL HOURS	904	

Date:
By:

Southern California Gas Company
Moreno Valley PLS Tie-In
Construction Management Cost Estimate

Task No.	Task Description	Quantity	Units	Days		Labor and Equipment		Per Diem		TOTAL	Notes
				Working Days	Per Diem Days	Unit Cost	Total Cost	Unit Cost	Total Cost		
1	Chief Inspector	160	Hours	30	42	$65	$10,400	$160	$ 6,720	$17,120	
2	Welding Inspector -2	320	Hours	30	42	$58	$18,560	$160	$ 6,720	$25,280	
3	Electrical Inspector	80	Hours	10	10	$110	$8,800	$160	$ 1,600	$10,400	
4	Civil/Craft Inspector	60	Hours	10	10	$110	$6,600	$160	$ 1,600	$8,200	
5	Materials Manager	24	Hours	5	5	$52	$1,248	$160	$ 800	$2,048	
	Utility Inspector	160	Hours	30	42	$52	$8,320	$160	$ 6,720	$15,040	
6	**Total Inspection**						$53,928		$ -	$78,000	
	TOTAL COST						$53,928		$ -	$78,000	
	TOTAL HOURS	804									

Date:

By:

Southern California Gas Company
Moreno Valley PLS Tie-In
Engineering and Project Management Cost Estimate

Task No.	Task Description	Quantity	Units	Labor and Equipment Unit Cost	Labor and Equipment Total Cost	Contract Cost Unit Cost	Contract Cost Total Cost	TOTAL	Notes
	Hourly Engineering								
1	Sr. Mechanical Engineer	20	Hours	$126	$2,520			$2,520	
2	Mechanical Engineer	60	Hours	$113	$6,780			$6,780	
3	Sr. Structural Engineer	20	Hours	$126	$2,520			$2,520	
4	Sr. Civil Engineer	20	Hours	$126	$2,520			$2,520	
5	Sr. Electrical Engineer	20	Hours	$126	$2,520			$2,520	
6	Electrical Engineer	20	Hours	$113	$2,260			$2,260	
7	Design and Drafting	120	Hours	$61	$7,320			$7,320	
8	Project Manager	24	Hours	$140	$3,360			$3,360	
9	Administrative	8	Hours	$61	$488			$488	
10	Printing						$1,000	$1,000	
11	**Subtotal Hourly Engineering**	**312**						**$31,288**	
	Contract Engineering								
12	Geotechnical Investigation	1	Lot				$15,000	$15,000	
13	Cathodic Protection	1	Lot				$10,000	$10,000	
14	Station Controls Engineering	40	Hours			$150	$6,000	$6,000	
	Survey - 2 man crew	40	Hours	$255	$10,200			$10,200	
15	Station Laser Scanning					$10,000	$10,000	$10,000	
16	**Subtotal Contract Engineering**							**$41,000**	
	Total Engineering							**$72,000**	
	Project ManageR								
	Project Manager	80	Hours	$190	$15,200			$15,200	
	Project Manager Per Diem								
	Project Manager	14	Days	$150	$2,100			$2,100	
	Total Project Manager	**80**						**$17,300**	
	Total Engineering and Construction Manager							**$89,000**	
	TOTAL COST							$89,000	
	TOTAL HOURS	392							

Date:

By:

Southern California Gas Company
Moreno Valley PLS Tie-In
Survey Cost Estimate

Task No.	Description	Quantity	Units	Labor and Equipment Unit Cost	Labor and Equipment Total	Contract Cost Unit Cost	Contract Cost Total Cost	TOTAL	Notes
1	Survey - 2 man crew	20	Hours	$240	$4,800			$4,800	
2	Station Laser Scanning					$10,000	$10,000	$10,000	
3	**Total**							**$14,800**	

Date:
By:

Southern California Gas Company
Whitewater, Shaver Summit and Desert Center Pressure Limiting Stations
Material Cost Estimate

Task No.	Material Description	Quantity	Units	Material Unit Cost	Material Total Cost	Labor and Equipment Unit Cost	Labor and Equipment Total Cost	Per Diem Unit Cost	Per Diem Total Cost	TOTAL	Notes
	Whitewater Pressure Limiting Station										
	Major Materials										
1	Becker Precision - 24" Control Valves (Worker)	1	ea	$165,000	$165,000	$0	$0	$0	$0	$165,000	
2	Becker Precision - 24" Control Valves (Monitor)	1	ea	$120,000	$120,000	$0	$0	$0	$0	$120,000	
	Grove BT-1 Ball Valve - 24"	5	ea	$39,500	$197,500	$0	$0	$0	$0	$197,500	
3	Pipeline to Station Reducing Tees	5	ea	$14,000	$70,000	$0	$0	$0	$0	$70,000	
4	Station Piping Fittings	32	ea	$6,200	$198,400	$0	$0	$0	$0	$198,400	
	Pipe - 36"	80	lf	$260	$20,800	$0	$0	$0	$0	$20,800	
5	Pipe - 30"	80	lf	$200	$16,000	$0	$0	$0	$0	$16,000	
6	Pipe - 24"	200	lf	$103	$20,600	$0	$0	$0	$0	$20,600	
	SCADA -Equipment	1	lot	$125,000	$125,000	65000	65000			$190,000	
	Subtotal - Major Materials				$933,300					$998,300	
7	**Minor Materials**	1	lot		$248,000					$248,000	
8	**Subtotal - Whitwater PLS**				$1,181,300					$1,246,300	
9	Shaver Summit Pressure Limiting Station										
	Major Materials										
	Becker Precision - 24" Control Valves (Worker)	1	ea	$165,000	$165,000	$0	$0	$0	$0	$165,000	
	Becker Precision - 24" Control Valves (Monitor)	1	ea	$120,000	$120,000	$0	$0	$0	$0	$120,000	
	Grove BT-1 Ball Valve - 24"	5	ea	$39,500	$197,500	$0	$0	$0	$0	$197,500	
10	Pipeline to Station Reducing Tees	5	ea	$14,000	$70,000	$0	$0	$0	$0	$70,000	
11	Station Piping Fittings	32	ea	$6,200	$198,400	$0	$0	$0	$0	$198,400	
12	Pipe - 36"	80	lf	$260	$20,800	$0	$0	$0	$0	$20,800	
13	Pipe - 30"	80	lf	$200	$16,000	$0	$0	$0	$0	$16,000	
	Pipe - 24"	200	lf	$103	$20,600	$0	$0	$0	$0	$20,600	
14	SCADA -Equipment	1	lot	$125,000	$125,000	65000	65000			$190,000	
15	**Subtotal - Major Materials**				$933,300					$998,300	
16											
16	**Minor Materials**	1	lot		$248,000					$248,000	
17	**Subtotal - Shaver Summit PLS**				$1,181,300					$1,246,300	
18	Desert Center Pressure Limiting Station										
	Major Materials										
	Becker Precision - 24" Control Valves (Worker)	1	ea	$165,000	$165,000	$0	$0	$0	$0	$165,000	
	Becker Precision - 24" Control Valves (Monitor)	1	ea	$120,000	$120,000	$0	$0	$0	$0	$120,000	
	Grove BT-1 Ball Valve - 24"	5	ea	$39,500	$197,500	$0	$0	$0	$0	$197,500	
19	Pipeline to Station Reducing Tees	5	ea	$14,000	$70,000	$0	$0	$0	$0	$70,000	
20	Station Piping Fittings	32	ea	$6,200	$198,400	$0	$0	$0	$0	$198,400	
21	Pipe - 36"	80	lf	$260	$20,800	$0	$0	$0	$0	$20,800	
22	Pipe - 30"	80	lf	$200	$16,000	$0	$0	$0	$0	$16,000	
23	Pipe - 24"	200	lf	$103	$20,600	$0	$0	$0	$0	$20,600	
	SCADA -Equipment	1	lot	$125,000	$125,000	65000	65000			$190,000	
24	**Subtotal - Major Materials**				$933,300					$998,300	
25	**Minor Materials**	1	lot		$248,000					$248,000	
26	**Subtotal - Desert Center PLS**				$1,181,300					$1,246,300	
27	**Total**				$3,543,900						
28	TOTAL COST									$3,739,000	
	TOTAL HOURS										

Date:
By:

Southern California Gas Company
Whitewater, Shaver Summit and Desert Center Pressure Limiting Stations
Construction Labor Cost Estimate

Construction Labor

Task No.	Task Description	No. of Crews	Hours per Crew	Units	Construction Cost Unit Cost	Construction Cost Total Cost	TOTAL	Notes
	Whitewater Pressure Limiting Station							
1	Piping - Straight Time	2	160	Hours	$350.00	$112,000		
2	Piping - Overtime	2	160	Hours	$525.00	$168,000		
3	Electrical - Straight Time	1	160	40	$350.00	$56,000		
4	Electrical - Overtime	1	160	40	$525.00	$84,000		
5	Civil/Laborers - Straight time - Concrete	1	160	40	$325.00	$52,000		
6	Civil/Laborers - Overtime - Concrete	1	160	40	$487.50	$78,000		
7	Civil/Laborers - Straight Time - All Other Work	1	160	40	$325.00	$52,000		
8	Civil/Laborers - OverTime - All Other Work	1	160	40	$487.50	$78,000		
9	**Total Whitewater PLS Construction Labor**		1280			**$680,000**		

Equipment Rental

		Equipment Qty.	Months on Site		Rate per Month	Total Cost	TOTAL
10	Earth Auger	1	1		$10,000	$10,000	
11	Backhoe	1	1		$15,000	$15,000	
12	Telescope Beam Trk	1	1		$20,000	$20,000	
13	Forklift - Large	1	1		$20,000	$20,000	
14	Welder	2	2		$6,250	$25,000	
15	**Total Whitewater PLS Equipment Rental**					**$90,000**	
16	**Total Whitewater PLS Labor and Equipment**					**$770,000**	

Date:
By:

Southern California Gas Company
Whitewater, Shaver Summit and Desert Center Pressure Limiting Stations
Construction Labor Cost Estimate

Construction Labor

Task No.	Task Description	No. of Crews	Hours per Crew	Units	Construction Cost Unit Cost	Construction Cost Total Cost	TOTAL	Notes
	Shaver Summit Pressure Limiting Station							
1	Piping - Straight Time	2	160	Hours	$350.00	$112,000		
2	Piping - Overtime	2	160	Hours	$525.00	$168,000		
3	Electrical - Straight Time	1	160	40	$350.00	$56,000		
4	Electrical - Overtime	1	160	40	$525.00	$84,000		
5	Civil/Laborers - Straight time - Concrete	1	160	40	$325.00	$52,000		
6	Civil/Laborers - Overtime - Concrete	1	160	40	$487.50	$78,000		
7	Civil/Laborers - Straight Time - All Other Work	1	160	40	$325.00	$52,000		
8	Civil/Laborers - OverTime - All Other Work	1	160	40	$487.50	$78,000		
9	**Total Shaver Summit PLS Construction Labor**		1280			**$680,000**		

Equipment Rental

		Equipment Qty.	Months on Site	Rate per Month	Total Cost	TOTAL
10	Earth Auger	1	1	$10,000	$10,000	
11	Backhoe	1	1	$15,000	$15,000	
12	Telescope Beam Trk	1	1	$20,000	$20,000	
13	Forklift - Large	1	1	$20,000	$20,000	
14	Welder	2	2	$6,250	$25,000	
15	**Total Shaver Summit PLS Equipment Rental**				**$90,000**	
16	**Total Shaver Summit PLS Labor and Equipment**				**$770,000**	

Date:
By:

Southern California Gas Company
Whitewater, Shaver Summit and Desert Center Pressure Limiting Stations
Construction Labor Cost Estimate

Construction Labor

Task No.	Task Description	No. of Crews	Hours per Crew	Units	Construction Cost Unit Cost	Construction Cost Total Cost	TOTAL	Notes
	Desert Center Pressure Limiting Station							
1	Piping - Straight Time	2	160	Hours	$350.00	$112,000		
2	Piping - Overtime	2	160	Hours	$525.00	$168,000		
3	Electrical - Straight Time	1	160	40	$350.00	$56,000		
4	Electrical - Overtime	1	160	40	$525.00	$84,000		
5	Civil/Laborers - Straight time - Concrete	1	160	40	$325.00	$52,000		
6	Civil/Laborers - Overtime - Concrete	1	160	40	$487.50	$78,000		
7	Civil/Laborers - Straight Time - All Other Work	1	160	40	$325.00	$52,000		
8	Civil/Laborers - OverTime - All Other Work	1	160	40	$487.50	$78,000		
9	**Total Desert Center PLS Construction Labor**		1280			**$680,000**		
	Equipment Rental							
		Equipment Qty.	Months on Site		Rate per Month	Total Cost	TOTAL	
10	Earth Auger	1	1		$10,000	$10,000		
11	Backhoe	1	1		$15,000	$15,000		
12	Telescope Beam Trk	1	1		$20,000	$20,000		
13	Forklift - Large	1	1		$20,000	$20,000		
14	Welder	2	2		$6,250	$25,000		
15	**Total Desert Center Equipment Rental**					**$90,000**		
16	**Total Desert Center PLS Labor and Equipment**					**$770,000**		
	Total 3 PLS's					**$2,310,000**		
	TOTAL COST					$2,310,000		
	TOTAL HOURS		1280					

Date:
By:

Southern California Gas Company
Whitewater, Shaver Summit and Desert Center Pressure Limiting Stations
Construction Management Cost Estimate

Task No.	Task Description	Quantity	Units	Days		Labor and Equipment		Per Diem		TOTAL	Notes
				Working Days	Per Diem Days	Unit Cost	Total Cost	Unit Cost	Total Cost		
	Whitewater Pressure Limiting Station										
1	Chief Inspector	40	Hours	10	10	$150	$6,000	$150	$ 1,500	$7,500	
2	Welding Inspector	120	Hours	20	20	$125	$15,000	$150	$ 3,000	$18,000	
3	Electrical Inspector	60	Hours	10	10	$110	$6,600	$150	$ 1,500	$8,100	
4	Civil/Craft Inspector	60	Hours	10	10	$110	$6,600	$150	$ 1,500	$8,100	
5	Materials Manager	24	Hours	5	10	$110	$2,640	$150	$ 750	$3,390	
6	**Total Whitewater PLS Inspection**	**304**					**$36,840**		**$ 8,250**	**$45,090**	
	Shaver Summit Pressure Limiting Station										
7	Chief Inspector	40	Hours		10	$150	$6,000	$150	$ 1,500	$7,500	
8	Welding Inspector	120	Hours		20	$125	$15,000	$150	$ 3,000	$18,000	
9	Electrical Inspector	60	Hours		10	$110	$6,600	$150	$ 1,500	$8,100	
10	Civil/Craft Inspector	60	Hours		10	$110	$6,600	$150	$ 1,500	$8,100	
11	Materials Manager	24	Hours		5	$110	$2,640	$150	$ 750	$3,390	
12	**Total Shaver Summit PLS Inspection**	**304**					**$36,840**		**$ 8,250**	**$45,090**	
	Desert Center Pressure Limiting Station										
13	Chief Inspector	40	Hours		10	$150	$6,000	$150	$ 1,500	$7,500	
14	Welding Inspector	120	Hours	20	125	$125	$15,000	$150	$ 3,000	$18,000	
15	Electrical Inspector	60	Hours	10	110	$110	$6,600	$150	$ 1,500	$8,100	
16	Civil/Craft Inspector	60	Hours	10	110	$110	$6,600	$150	$ 1,500	$8,100	
17	Materials Manager	24	Hours	5	110	$110	$2,640	$150	$ 750	$3,390	
18	**Total Desert Center PLS Inspection**	**304**					**$36,840**		**$ 8,250**	**$45,090**	
	Total 3 PLS's Inspection						**$110,520**		**$ 24,750**	**$135,300**	
	TOTAL COST						$110,520		$ 24,750	$135,300	
	TOTAL HOURS	912									

Date:
By:

Southern California Gas Company
Whitewater, Shaver Summit and Desert Center Pressure Limiting Stations
Engineering, Survey, Land and Project Management Cost Estimate

Task No.	Task Description	Quantity	Units	Labor and Equipment Unit Cost	Labor and Equipment Total Cost	Contract Cost Unit Cost	Contract Cost Total Cost	TOTAL	Notes
	Whitewater Pressure Limiting Station								
	Hourly Engineering								
1	Sr. Mechanical Engineer	20	Hours	$126	$2,520			$2,520	
2	Mechanical Engineer	60	Hours	$113	$6,780			$6,780	
3	Sr. Structural Engineer	20	Hours	$126	$2,520			$2,520	
4	Sr. Civil Engineer	20	Hours	$126	$2,520			$2,520	
5	Sr. Electrical Engineer	20	Hours	$126	$2,520			$2,520	
6	Electrical Engineer	20	Hours	$113	$2,260			$2,260	
7	Design and Drafting	80	Hours	$61	$4,880			$4,880	
8	Project Manager	30	Hours	$140	$4,200			$4,200	
9	Administra ive	12	Hours	$61	$732			$732	
10	Printing						$1,000	$1,000	
11	**Subtotal Whitewater PLS Hourly Engineering**	**282**						**$29,900**	
	Contract Engineering								
12	Geotechnical Investigation	1	Lot				$15,000	$15,000	
13	Cathodic Protec ion	1	Lot				$15,000	$15,000	
14	Station Controls Engineering	60	Hours			$150	$9,000	$9,000	
15	Survey - 2 man crew	24	Hours	$255	$6,120	24	$6,120	$6,120	
16	Station Laser Scanning					$8,000	$8,000	$8,000	
17	Po holing						$15,000	$15,000	
18	**Subtotal Whitewater PLS Contract Engineering**							**$68,120**	
19	**Total Whitewater PLS Engineering**							**$98,020**	
	Whitewater Land Acquisition								
20	New permanet easement to enlarge White Water Station ($26,000 per acre for permanent, exclusive, above-surface easements)	**0.5**	**acre**					**$13,000**	
21	Temporary Staging/Laydown Yard ($26,000 per acre at 6% annual rate of return for 15 months)	**1**	**acre**					**$1,950**	
22	**Total Whitewater Land**							**$14,950**	
	Project Manager								
23	Project Manager	60	Hours	$190	$11,400			$11,400	
	Project Manager Per Diem								
24	Project Manager	14	Days	$150	$2,100			$2,100	
25	**Total Whitewater PLS Project Manager**	**60**						**$13,500**	
26	**Total Whitewater PLS Engineering, Land and Project Management**							**$126,470**	

Date:
By:

Southern California Gas Company
Whitewater, Shaver Summit and Desert Center Pressure Limiting Stations
Engineering, Survey, Land and Project Management Cost Estimate

Task No.	Task Description	Quantity	Units	Labor and Equipment Unit Cost	Labor and Equipment Total Cost	Contract Cost Unit Cost	Contract Cost Total Cost	TOTAL	Notes
	Shaver Summit Pressure Limiting Sta ion								
	Hourly Engineering								
27	Sr. Mechanical Engineer	20	Hours	$126	$2,520			$2,520	
28	Mechanical Engineer	60	Hours	$113	$6,780			$6,780	
29	Sr. Structural Engineer	20	Hours	$126	$2,520			$2,520	
30	Sr. Civil Engineer	20	Hours	$126	$2,520			$2,520	
31	Sr. Electrical Engineer	20	Hours	$126	$2,520			$2,520	
32	Electrical Engineer	20	Hours	$113	$2,260			$2,260	
33	Design and Drafting	80	Hours	$61	$4,880			$4,880	
34	Project Manager	30	Hours	$140	$4,200			$4,200	
35	Administra ive	12	Hours	$61	$732			$732	
36	Printing						$1,000	$1,000	
37	**Subtotal Shaver Summit PSL Hourly Engineering**	**282**						**$29,900**	
	Contract Engineering								
38	Geotechnical Investigation	1	Lot				$15,000	$15,000	
39	Cathodic Protec ion	1	Lot				$15,000	$15,000	
40	Station Controls Engineering	60	Hours			$150	$9,000	$9,000	
41	Survey - 2 man crew	48	Hours	$255	$12,240	24	$6,120	$12,240	
42	Station Laser Scanning					$8,000	$8,000	$8,000	
43	Po holing						$15,000	$15,000	
44	**Subtotal Shaver Summit PLS Contract Engineering**							**$74,240**	
45	**Total Shaver Summit PLS Engineering**							**$104,140**	
	Shaver Summit Land Acquisi ion								
46	New permanet easement to enlarge Shaver Summit Station ($1,600 per acre for permanent, exclusive, above-surface easements)	**0.5**	**acre**					$800	
47	Temporary Staging/Laydown Yard ($1,600 per acre at 6% annual rate of return for 15 months)	**1**	**acre**					**$120**	
48	**Total Shaver Summit Land**							**$920**	
	Project Manager								
49	Project Manager	60	Hours	$190	$11,400			$11,400	
	Project Manager Per Diem								
50	Project Manager	14	Days	$150	$2,100			$2,100	
51	**Total Shaver Summit PLS Project Manager**	**60**						**$13,500**	
52	**Total Shaver Summit PLS Engineering, Land and Project Management**							**$118,560**	

Date:
By:

Southern California Gas Company
Whitewater, Shaver Summit and Desert Center Pressure Limiting Stations
Engineering, Survey, Land and Project Management Cost Estimate

Task No.	Task Description	Quantity	Units	Labor and Equipment Unit Cost	Labor and Equipment Total Cost	Contract Cost Unit Cost	Contract Cost Total Cost	TOTAL	Notes
	Desert Center Pressure Limiting Station								
	Hourly Engineering								
53	Sr. Mechanical Engineer	20	Hours	$126	$2,520			$2,520	
54	Mechanical Engineer	60	Hours	$113	$6,780			$6,780	
55	Sr. Structural Engineer	20	Hours	$126	$2,520			$2,520	
56	Sr. Civil Engineer	20	Hours	$126	$2,520			$2,520	
57	Sr. Electrical Engineer	20	Hours	$126	$2,520			$2,520	
58	Electrical Engineer	20	Hours	$113	$2,260			$2,260	
59	Design and Drafting	80	Hours	$61	$4,880			$4,880	
60	Project Manager	30	Hours	$140	$4,200			$4,200	
61	Administra ive	12	Hours	$61	$732			$732	
62	Printing						$1,000	$1,000	
63	**Subtotal Desert Center PLS Hourly Engineering**	**282**						**$29,900**	
	Contract Engineering								
64	Geotechnical Investigation	1	Lot				$15,000	$15,000	
65	Cathodic Protec ion	1	Lot				$15,000	$15,000	
66	Station Controls Engineering	60	Hours			$150	$9,000	$9,000	
67	Survey - 2 man crew	24	Hours	$255	$6,120	24	$6,120	$6,120	
68	Station Laser Scanning					$8,000	$8,000	$8,000	
69	Po holing						$15,000	$15,000	
70	**Subtotal Desert Center PLS Contract Engineering**							**$68,120**	
71	**Total Desert Center PLS Engineering**							**$98,020**	
	Desert Center Land Acquisition								
72	New permanet easement to enlarge Desert Center Station ($1,600 per acre for permanent, exclusive, above-surface easements)	**0.5**	**acre**					$800	
73	Temporary Staging/Laydown Yard ($1,600 per acre at 6% annual rate of return for 15 months)	**1**	**acre**					**$120**	
74	**Total Desert Center Land**							**$920**	
	Project Manager								
75	Project Manager	60	Hours	$190	$11,400			$11,400	
	Project Manager Per Diem								
76	Project Manager	14	Days	$150	$2,100			$2,100	
77	**Total Desert Center PLS Project Manager**	**60**						**$13,500**	
78	**Total Desert Center PLS Engineering, Land and Project Management**							**$112,440**	
79	**Total 3 Pls's Engineering and Project Management**							**$357,470**	
	TOTAL COST							$357,470	
	TOTAL HOURS	1026							

Adelanto Compressor Station - Direct Costs

Cost Element	Total Cost Estimate	Timing of Expenditures Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Years 7 - 26	Contingency %	Contingency $
Compressor Station										
Non-Labor*										
Material Costs										
Turbine-driven Compressors	$ 31,596,634				$ 18,957,980	$ 12,638,654			15%	$ 4,739,495
Buildings	$ 3,932,000				$ 2,359,200	$ 1,572,800			15%	$ 589,800
Gas Cooling	$ 989,000				$ 593,400	$ 395,600			15%	$ 148,350
Selective Catalytic Reduction System/Oxidation Catalys	$ 4,791,332				$ 2,874,799	$ 1,916,533			15%	$ 718,700
Continuous Emissions Monitoring Systems (3)	$ 750,000				$ 450,000	$ 300,000			15%	$ 112,500
Aqueous Unit (Ammonia)	$ 3,500,000				$ 2,100,000	$ 1,400,000			15%	$ 525,000
Major Piping and Fittings + Valves	$ 10,944,089				$ 6,566,453	$ 4,377,636			15%	$ 1,641,613
Valves	$ -				$ -	$ -			15%	$ -
Major Electrical Equipment	$ 2,904,219				$ 1,742,531	$ 1,161,688			15%	$ 435,633
Concrete and Foundations	$ 606,015				$ 363,609	$ 242,406			15%	$ 90,902
Other Process Equipment	$ 1,601,020				$ 640,408	$ 960,612			15%	$ 240,153
Misc Process Equipment List	$ 415,800				$ 166,320	$ 249,480			15%	$ 62,370
Vendor Reps	$ 151,000					$ 60,400	$ 90,600		15%	$ 22,650
Auxiliary Generator	$ 2,000,000				$ 1,200,000	$ 800,000			15%	$ 300,000
SUBTOTAL MATERIAL	**$ 64,181,109**									
Construction Labor	$ 23,792,000					$ 1,000,000	$ 22,792,000		15%	$ 3,568,800
ROW Acquisition Labor	$ 10,000				$ 10,000					
ROW Acquisition Land	$ 90,000				$ 90,000					
Legal Services	$ 35,000				$ 35,000				15%	$ 5,250
Public Relations	$ 200,000	$ 10,000	$ 44,000	$ 44,000	$ 34,000	$ 34,000	$ 34,000		15%	$ 30,000
Environmental/Permitting + Fees										
Air Quality Related	$ -									$ -
ERC's	$ 6,993,700			$ 6,993,700					15%	$ 1,049,055
Data Collection l Permitting Support	$ -			$ -					15%	$ -
Environmental Data Collection, Screening and Impact A	$ 149,428	$ 14,943	$ 104,600	$ 29,886					15%	$ 22,414
Environmental Clearance/Permit Process	$ 1,477,409	$ 3,300	$ 63,100	$ 1,411,009					15%	$ 221,611
Preconstruction Surveys	$ 52,500					$ 52,500			15%	$ 7,875
Mitigation Compliance	$ 30,000					$ 30,000			15%	$ 4,500
Construction Monitoring	$ 249,337					$ 249,337			15%	$ 37,401
SUBTOTAL ENVIRONMENTAL PERMITTING + FEES	**$ 8,952,374**									
Ministerial Permits	$ 100,000				$ 33,333	$ 66,667			15%	$ 15,000
Maintenance Parts	$ 321,000					$ 321,000			15%	$ 48,150
Electrical Upgrade - Construction	$ 250,000					$ 250,000			15%	$ 37,500
Engineering	$ 2,908,000	$ 350,000	$ 465,000	$ 450,000	$ 675,000	$ 968,000			15%	$ 436,200
Survey	$ 355,000	$ 20,000			$ 50,000	$ 120,000	$ 165,000		15%	$ 53,250
Construction Management	$ 2,311,000				$ 100,000	$ 1,611,000	$ 600,000		15%	$ 346,650
SCADA	$ 350,000					$ 350,000			15%	$ 52,500
As-built	$ 150,000						$ 150,000		15%	$ 22,500
Freight	$ 5,134,489				$ 5,134,489				15%	$ 770,173
Tax	$ 5,776,300				$ 5,776,300				15%	$ 866,445
Contingency	$ 17,222,441	$ 59,736	$ 101,505	$ 1,339,289	$ 7,477,923	$ 4,669,247	$ 3,574,740		15%	$ 17,222,441
SubTotal Compressor Station Non-Labor	$ 132,138,712	$ 457,979	$ 778,205	$ 10,267,884	$ 57,430,747	$ 35,797,558	$ 27,406,340	$ -		
Compressor Station										
So Cal Gas Labor										
Project Managmemt - Compressor	$ 1,062,500	$ 125,000	$ 125,000	$ 187,500	$ 250,000	$ 250,000	$ 125,000		8%	$ 85,000
Procurement - Compressor	$ 250,000	$ -	$ -	$ -	$ 62,500	$ 187,500	$ -		8%	$ 20,000
Public Relations	$ 359,375	$ 15,625	$ 31,250	$ 78,125	$ 78,125	$ 78,125	$ 78,125		8%	$ 28,750
Project Controls	$ 414,063	$ 23,438	$ 46,875	$ 62,500	$ 93,750	$ 93,750	$ 93,750		8%	$ 33,125
Right-of-Way									8%	$ -
Project Speacilist	$ 125,000	$ -	$ -	$ 31,250	$ 31,250	$ 31,250	$ 31,250		8%	$ 10,000
Administrative Asst.	$ 187,500	$ -	$ -	$ 31,250	$ 31,250	$ 62,500	$ 62,500		8%	$ 15,000
Engineering - Compressor	$ 781,250	$ 31,250	$ 31,250	$ 93,750	$ 250,000	$ 250,000	$ 125,000		8%	$ 62,500
Operations - Compressor	$ 312,500	$ -	$ -	$ -	$ -	$ 125,000	$ 187,500		8%	$ 25,000
Construction Management - Compressor	$ 656,250	$ -	$ -	$ 31,250	$ 62,500	$ 375,000	$ 187,500		8%	$ 52,500
Environmental	$ 60,000	$ 30,000	$ 30,000						8%	$ 4,800
Company Expenses	$ 63,000	$ 10,500	$ 10,500	$ 10,500	$ 10,500	$ 10,500	$ 10,500		8%	$ 5,040
Contingency	$ 341,715	$ 18,865	$ 21,990	$ 42,090	$ 69,590	$ 117,090	$ 72,090	$ -	8%	$ 341,715
SubTotal Compressor Station Labor	$ 4,613,153	$ 254,678	$ 296,865	$ 568,215	$ 939,465	$ 1,580,715	$ 973,215	$ -		

Date:		PROJECT COST ESTIMATE - Material Costs										
By:		Project Name: - North South Project Compressor Station										
				Material		Labor and Equipment		Per Diem				
Task No.	Material Description	Quantity	Units	Unit Cost	Total Cost	Unit Cost	Total Cost	Unit Cost	Total Cost		TOTAL	Notes
1	Compression Equipment ("Turnkey" Supply)	4	ea	$7,899,159	$31,596,634	$0	$0	$0	$0		$31,596,634	
	Other Major Materials											
2	Major Piping fr Comp In to Cooler Out	850	ft	$175	$150,000	$0	$0	$0	$0		$150,000	
3	Major Piping to/from L-235 conn's.	1000	ft	$175	$180,000	$0	$0	$0	$0		$180,000	
4	L-1185 Interconnect Piping	275	ft	$175	$50,000	$0	$0	$0	$0		$50,000	
5	Large Pipeline Fittings	1	lot	$550,000	$550,000	$0	$0	$0	$0		$550,000	
6	Major Valves for Compressor Inst.	1	lot	$1,250,000	$1,250,000	$0	$0	$0	$0		$1,250,000	
7	Major Valve for L-1185	1	ea	$140,000	$140,000	$0	$0	$0	$0		$140,000	
8	Station Surge/Recycle Valves&Cont	3	ea	$140,000	$420,000	$0	$0	$0	$0		$420,000	
	Add Misc pipe and valves										$8,204,089	
9	Gas Cooler	1	lot	$989,000	$989,000	$0	$0	$0	$0		$989,000	
10	Station Air Compressors	2	ea	$37,500	$75,000	$0	$0	$0	$0		$75,000	
11	Extruded Hdrs	2	ea	$150,000	$300,000	$0	$0	$0	$0		$300,000	
12	MCC	1	lot	$400,000	$400,000	$0	$0	$0	$0		$400,000	
13	Electrical Transformers	1	lot	$125,000	$125,000	$0	$0	$0	$0		$125,000	
14	Duct Bank	1	lot	$75,000	$75,000	$0	$0	$0	$0		$75,000	
	Add misc electrical materials										$1,929,219	
15	Concrete/Paving	795	yd	$125	$99,375	$0	$0	$0	$0		$99,375	
16	Reinforcing Steel	35	ton	$1,200	$42,000	$0	$0	$0	$0		$42,000	
	Block Wall											
	Other Process Equipment										$ 1,601,020	
	Misc Process Equipment List										$ 415,800	
	Vendor Reps										$ 151,000	
											$ 464,640	
17	Subtotal Non-Compressor Materials										$17,611,143	
	Buildings											
19	Compressor Building	1	ea	$605,000	$600,000	$590,000	$590,000	$0	$0		$1,190,000	
20	Auxiliary Building	1	ea	$231,000	$230,000	$270,000	$270,000	$0	$0		$500,000	
21	Auxiliary Building Interior Finish	1	lot	$245,000	$245,000	$245,000	$245,000	$0	$0		$490,000	
	Adder to Building										1752000	
22	Subtotal Buildings										$3,932,000	
23	Freight				$5,134,489						$5,134,489	
24	Tax				$5,776,300						$5,776,300	
	Environmental BACT Air Quality Materials											
25	Selective Catalytic Reduction System Equipment	1	lot	$4,791,332	$4,791,332						$4,791,332	
26	Continuous Emissions Monitoring System	1	lot	$750,000	$750,000						$750,000	
27	Aqueous Unit	1	lot	$3,500,000	$3,500,000						$3,500,000	
28	Subtotal BACT Materials				$9,041,332						$9,041,332	
											.	

Date:		PROJECT COST ESTIMATE - Material Costs										
By:		Project Name: - North South Project Compressor Station										
				Material		Labor and Equipment		Per Diem				
Task No.	Material Description	Quantity	Units	Unit Cost	Total Cost	Unit Cost	Total Cost	Unit Cost	Total Cost		TOTAL	Notes
	TOTAL COST				**$57,469,130**		**$1,105,000**		**$0**		**$73,091,898**	
	TOTAL HOURS											

Date:		PROJECT COST ESTIMATE - Maintenance Parts and Tools Cost Estimate						
By:		Project Name: - North South Project Compressor Station						
		Quantity	Units	Unit Cost	Total		TOTAL	Notes
Task								
No.	Task Description							
1	**Maintenance Parts**	**2**	**lot**	**$125,500**	**$251,000**		**$251,000**	
2	**Maintenance Tools**	**2**	**lot**	**$35,000**	**$70,000**		**$70,000**	
3	**Total Maintenance Parts and Tools**						**$321,000**	
	TOTAL COST						$321,000	
	TOTAL HOURS							

Date:		PROJECT COST ESTIMATE - Baseload Power Gen Equip Cost							
By:		Project Name: - North South Project Compressor Station							
				Material					
Task No.	Material Description	Quantity	Units	Unit Cost			TOTAL	Notes	
1	**Turbine Generator Pkgs**	**2**	**ea**	**$1,000,000**	**$2,000,000**		**$2,000,000**		
2	**Generator Switchgear**	**0**	**ea**	**$190,000**	**$0**		**$0**		
3	**Generator ATS and Sync**	**0**	**ea**	**$100,000**	**$0**		**$0**		
4	**Total**				**$2,000,000**		**$2,000,000**		
	TOTAL COST						**$2,000,000**		
	TOTAL HOURS								

Date:		PROJECT COST ESTIMATE - Construction Labor Costs							
By:		Project Name: - North South Project Compressor Station							
					Construction Cost				
Task No.	Task Description	No. of Crews	Hours per Crew	Units	Unit Cost	Total Cost		TOTAL	Notes
1	**Piping - Straight Time**	6	2000	hours	$349.55	$4,194,600		$4,194,600	
2	**Piping - Overtime**	6	1000	hours	$524.33	$3,145,950		$3,146,000	
3	**Electrical - Straight Time**	6	2000	hours	$349.55	$4,194,600		$4,194,600	
4	**Electrical - Overtime**	6	1000	hours	$524.33	$3,145,950		$3,146,000	
5	**Civil/Laborers - Straight time - Concrete**	5	2000	hours	$300.00	$3,000,000		$3,000,000	
6	**Civil/Laborers - Overtime - Concrete**	5	800	hours	$450.00	$1,800,000		$1,800,000	
7	**Civil/Laborers - Straight Time - All Other Work**	4	2000	hours	$275.00	$2,200,000		$2,200,000	
8	**Civil/Laborers - OverTime - All Other Work**	4	800	hours	$412.50	$1,320,000		$1,320,000	
9	**Subtotal - Station Construction Labor**							$ 23,001,000	
	Baseload Power Generation Installation Labor								
10	**Foundations and Equipment Installation**	1		lot	$50,000	$50,000		$50,000	
11	**Buildings ("Turnkey" Installation)**	1		lot	$200,000	$200,000		$200,000	
12	**Turbine Intake/Exhaust Installation**	2		ea	$75,000	$150,000		$150,000	
13	**Subtotal - Baseload Power Generation Installation**							$400,000	
14	**Total Installation Labor**							$23,401,000	

Date:		PROJECT COST ESTIMATE - Construction Labor Costs							
By:		Project Name: - North South Project Compressor Station							
					Construction Cost				
Task No.	Task Description	No. of Crews	Hours per Crew	Units	Unit Cost	Total Cost		TOTAL	Notes
	Equipment Rental								
		Equipment Qty	**Months on Site**		**Rate per Month**	**Total Cost**		**TOTAL**	
15	**Concrete Pump**	**2**	**2**		**$7,500**	**$30,000**		**$30,000**	
16	**Earth Auger**	**1**	**2**		**$15,000**	**$30,000**		**$30,000**	
17	**3/4 Yard Excavator**	**1**	**2**		**$27,000**	**$54,000**		**$54,000**	
18	**Backhoe**	**3**	**7**		**$2,650**	**$55,650**		**$55,650**	
19	**Grader**	**1**	**3**		**$5,000**	**$15,000**		**$15,000**	
20	**Truck Mounted Hydraulic Crane - Large**	**1**	**3**		**$9,000**	**$27,000**		**$27,000**	
21	**Truck Mounted Hydraulic Crane - Small**	**1**	**6**		**$6,000**	**$36,000**		**$36,000**	
22	**Aerial Lift**	**3**	**7**		**$1,450**	**$30,450**		**$30,450**	
23	**Telescope Beam Trk**	**1**	**7**		**$7,000**	**$49,000**		**$49,000**	
24	**Forklift - Large**	**1**	**6**		**$6,000**	**$36,000**		**$36,000**	
25	**Forklift - Small**	**2**	**6**		**$3,000**	**$36,000**		**$36,000**	
26	**Generator**	**3**	**7**		**$5,000**	**$105,000**		**$105,000**	
27	**Tower Lights**	**3**	**6**		**$2,000**	**$36,000**		**$36,000**	
28	**Water Truck**	**1**	**7**		**$15,000**	**$105,000**		**$105,000**	
29	**Welder**	**3**	**7**		**$1,400**	**$29,400**		**$29,400**	
30	**Paver**	**1**	**2**		**$20,000**	**$40,000**		**$40,000**	
	Add construction savings							**-323728**	
31	**Total Equipment Rental**							**$391,000**	
32	**Total Labor and Equipment**							**$23,792,000**	
	TOTAL COST							**$23,792,000**	
	TOTAL HOURS		**11600**						

Date:		PROJECT COST ESTIMATE - Construction Management Cost									
By:		Project Name: - North South Project Compressor Station									
				Days		Labor and Equipment		Per Diem			
Task No.	Task Description	Quantity	Units	Working Days	Per Diem Days	Unit Cost	Total Cost	Unit Cost	Total Cost	TOTAL	Notes
	Craft Inspection										
1	**Chief Inspector**	**2,400**	**ManHours**	**200**	**240**	**$150**	**$360,000**	**$150**	**$36,000**	**$396,000**	
2	**Welding Inspector**	**2,400**	**ManHours**	**200**	**240**	**$125**	**$300,000**	**$150**	**$36,000**	**$336,000**	
3	**Electrical Inspector**	**2,400**	**ManHours**	**200**	**240**	**$110**	**$264,000**	**$150**	**$36,000**	**$300,000**	
4	**Civil/Craft Inspector**	**2,400**	**ManHours**	**200**	**240**	**$110**	**$264,000**	**$150**	**$36,000**	**$300,000**	
5	**Materials Manager**	**2,400**	**ManHours**	**200**	**240**	**$110**	**$264,000**	**$150**	**$36,000**	**$300,000**	
6	**Total Inspection**									**$1,632,000**	
	Construction Manager										
7	**Construction Manager**	**3,000**	**ManHours**	**240**	**360**	**$200**	**$600,000**	**$150**	**$54,000**	**$654,000**	
8	**Construction Manager Expenses**									**$25,000**	
9	**Total Construction Manager**									**$679,000**	
10	**Total Construction Management**									**$2,311,000**	
	TOTAL COST						**$2,052,000**		**$234,000**	**$2,311,000**	
	TOTAL HOURS	**15,000**									
	Number of Inspectors	**5**									

Date:		PROJECT COST ESTIMATE - Engineering Costs							
By:		Project Name: - North South Project Compressor Station							
				Labor and Equipment		Contract Cost			
Task No.	Task Description	Quantity	Units	Unit Cost	Total Cost	Unit Cost	Total Cost	TOTAL	Notes
	Hourly Engineering								
1	Sr. Mechanical Engineer	1,000	Hours	$126	$126,000			$126,000	
2	Mechanical Engineer	2,500	Hours	$113	$282,500			$282,500	
3	Sr. Structural Engineer	500	Hours	$126	$63,000			$63,000	
4	Sr. Civil Engineer	500	Hours	$126	$63,000			$63,000	
5	Sr. Electrical Engineer	1,000	Hours	$126	$126,000			$126,000	
6	Electrical Engineer	2,500	Hours	$113	$282,500			$282,500	
7	Design and Drafting	4,000	Hours	$61	$244,000			$244,000	
8	Project Manager	1,000	Hours	$140	$140,000			$140,000	
9	Administrative	300	Hours	$61	$18,300			$18,300	
10	Printing	1 Lot			$7,000			$7,000	
11	Subtotal Hourly Engineering				$1,352,300				
	Contract Engineering								
12	Geotechnical Investigation	1	Lot				$75,000	$75,000	
13	Cathodic Protection	1	Lot				$75,000	$75,000	
14	Station Controls Engineering	1,250	Hours			$150	$187,500	$187,500	
	Subtotal Contract Engineering						$337,500		
	Adder to Engineering						$ 1,218,000		
	Total Engineering							$2,908,000	
	TOTAL COST							$2,908,000	
	TOTAL HOURS	14,550							

Date:		PROJECT COST ESTIMATE - Legal Services							File name:	AFE	
By:		Project Name: - North South Project Compressor Station									
								Average Per diem			per day
											per hour average
		Quantity	Units	Material		Labor and Equipmen		Expenses			
Task				Unit	Total	Unit	Total	Unit	Total		
No.	Task Description			Cost	Cost	Cost	Cost	Cost	Cost	TOTAL	Notes
1	**Property Acquisition** **Legal Support/ contract review**	**53.85**	**Man Hours**		**$0**	**$650**	**$35,000**	**$11**	**$0**	**$35,000**	
	Tax	0.00%			**$0.00**		**$0**		**$0**	**$0**	
	Freight	0.00%			**$0.00**		**$0**		**$0**	**$0**	
	Sub-total				**$0.00**		**$35,000**		**$0**	**$35,000**	
	Contingency	0%			**$0.00**		**$0**		**$0**	**$0**	
	TOTAL COST				**$0.00**		**$35,000**		**$0**	**$35,000**	
	TOTAL HOURS									**-**	

Date		PROJECT COST ESTIMATE -Land Acquisition Labor Costs								File name	AFE	
By		Project Name - North South Project Compressor Station										
		Quantity	Units	Material		Labor and Equipment				Per diem			
Task				Unit	Total	Unit	Total	Work Days	Per Diem	Mileage	Unit	Total		
No.	Task Description			Cost	Cost	Cost	Cost			Expense	Cost	Cost	TOTAL	Notes
1	**Property Acquisition**													
2	**Right-of-way agent**	**100.00**	**Man Hours**		**$0.00**	**$100**	**$10,000**	**5**	**0**	**$0**	**$125**	**$0**	**$10,000**	
3	**Land Acquisition**				**$90,000.00**	**$0**	**$0**			**$0**		**$0**	**$90,000**	
	TOTAL COST:				**$0.00**		**$0**			**$0**		**$0**	**$100,000**	

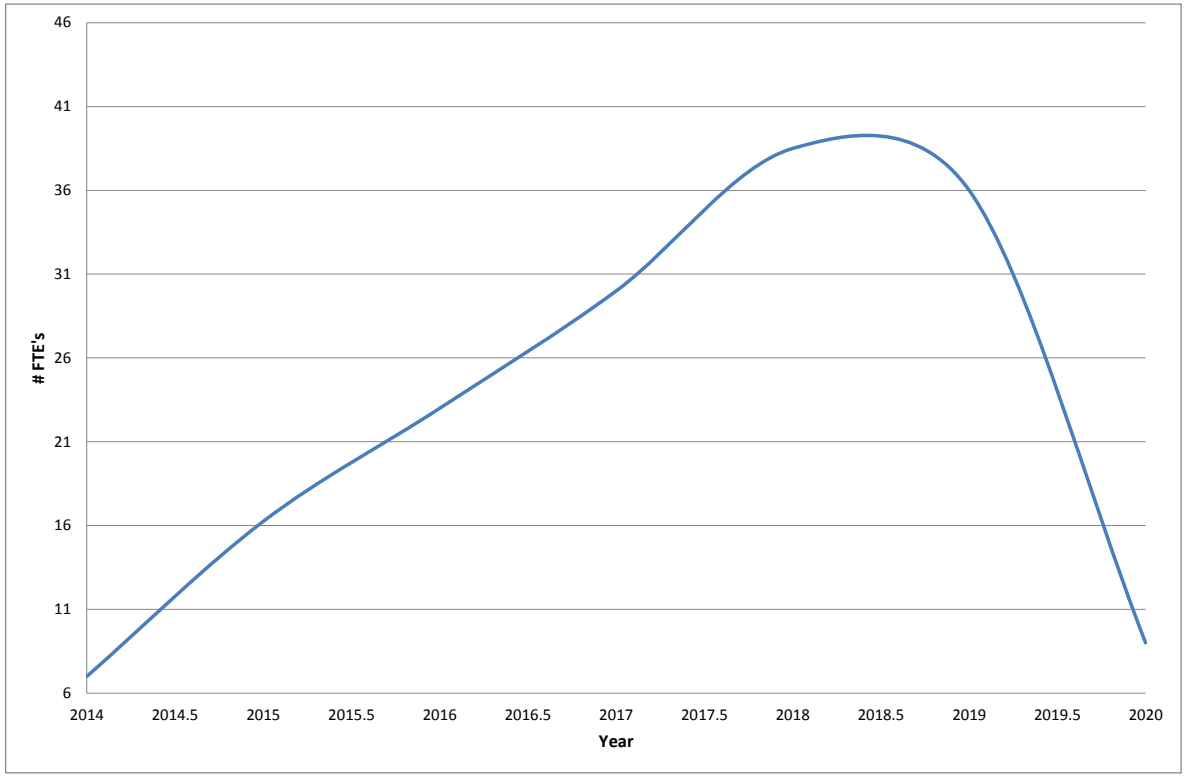
Date:		**PROJECT Cost Estimate - Survey Cost Estimate**						
By:		**Project Name: - North South Project Compressor Station**						
		Quantity	Units	Unit Cost	Total		TOTAL	Notes
Task								
No.	Task Description			Cost			TOTAL	Notes
1	Survey - 2 man crew	1500	Hours	$237	**$355,125**		**$355,000**	
	TOTAL COST						**$355,000**	
	TOTAL HOURS	1500						

Company Labor - Direct Costs

# FTE's *(not including Environmental)*	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Project Management - Pipeline	1.5	4	5	5	5	5	2
Procurement - Pipeline			0.5	2	3	0.5	
Engineering - Pipeline	0.5	1	1	1	1	1	2
Operations - Pipeline		0.5			2	6.5	2
Construction Management - Pipeline				2	2	6	1
Project Managmemt - Compressor	1	1	1.5	2	2	1	
Procurement - Compressor				0 5	1.5		
Engineering - Compressor	0.25	0.25	0.75	2	2	1	
Operations - Compressor					1	1.5	
Construction Management - Compressor			0 25	0 5	3	1.5	
Public Relations	0.5	1	2.5	2 5	2.5	2.5	
Project Controls	0.75	1.5	2	3	3	3	1
Right-of-Way	0.5	2	1.5	1 5	1.5	1.5	
Project Speacilist			1	1	1	1	
Administrative Asst.			1	1	2	2	
FTE's *(minus Environmental)*	5	11	17	24	33	34	8
Environmental	2	5	6	6	6	2	1
Total	7	16	23	30	39	36	9

Annual Company Labor Cost ($ millions)	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
FTE's (from above @**$125K/FTE**)								
Project Management - Pipeline	$ 3,437,500	$ 187,500	$ 500,000	$ 625,000	$ 625,000	$ 625,000	$ 625,000	$ 250,000
Procurement - Pipeline	$ 750,000	$ -	$ -	$ 62,500	$ 250,000	$ 375,000	$ 62,500	$ -
Engineering - Pipeline	$ 937,500	$ 62,500	$ 125,000	$ 125,000	$ 125,000	$ 125,000	$ 125,000	$ 250,000
Operations - Pipeline	$ 1,375,000	$ -	$ 62,500	$ -	$ -	$ 250,000	$ 812,500	$ 250,000
Construction Management - Pipeline	$ 1,375,000	$ -	$ -	$ -	$ 250,000	$ 250,000	$ 750,000	$ 125,000
Project Managmemt - Compressor	$ 1,062,500	$ 125,000	$ 125,000	$ 187,500	$ 250,000	$ 250,000	$ 125,000	$ -
Procurement - Compressor	$ 250,000	$ -	$ -	$ -	$ 62,500	$ 187,500	$ -	$ -
Engineering - Compressor	$ 781,250	$ 31,250	$ 31,250	$ 93,750	$ 250,000	$ 250,000	$ 125,000	$ -
Operations - Compressor	$ 312,500	$ -	$ -	$ -	$ -	$ 125,000	$ 187,500	$ -
Construction Management - Compressor	$ 656,250	$ -	$ -	$ 31,250	$ 62,500	$ 375,000	$ 187,500	$ -
Public Relations	$ 1,437,500	$ 62,500	$ 125,000	$ 312,500	$ 312,500	$ 312,500	$ 312,500	$ -
Project Controls	$ 1,781,250	$ 93,750	$ 187,500	$ 250,000	$ 375,000	$ 375,000	$ 375,000	$ 125,000
Right-of-Way	$ 1,062,500	$ 62,500	$ 250,000	$ 187,500	$ 187,500	$ 187,500	$ 187,500	$ -
Project Speacilist	$ 500,000	$ -	$ -	$ 125,000	$ 125,000	$ 125,000	$ 125,000	$ -
Administrative Asst.	$ 750,000	$ -	$ -	$ 125,000	$ 125,000	$ 250,000	$ 250,000	$ -
ROW Intrustion Monitoring	$ 229,240						$ 229,240	$ -
Methane Detection	$ 24,998						$ 24,998	$ -
Geotechnical Permitting Support	$ 225,000	$ 22,500	$ 56,250	$ 56,250	$ 56,250	$ 33,750		$ -
Cultural and Paleontological Surveys	$ 260,000	$ 26,000	$ 65,000	$ 65,000	$ 65,000	$ 39,000		$ -
Wetland and Stream Delineation	$ 260,000	$ 26,000	$ 65,000	$ 65,000	$ 65,000	$ 39,000		$ -
Special-Status Species	$ 260,000	$ 26,000	$ 65,000	$ 65,000	$ 65,000	$ 39,000		$ -
Rare Plant Surveys	$ 260,000	$ 26,000	$ 65,000	$ 65,000	$ 65,000	$ 39,000		$ -
Water Resources/Flooding	$ 260,000	$ 26,000	$ 65,000	$ 65,000	$ 65,000	$ 39,000		$ -
Air Quality	$ 260,000	$ 26,000	$ 65,000	$ 65,000	$ 65,000	$ 39,000		$ -
Soils, Geology and Hazardous Materials	$ 260,000	$ 26,000	$ 65,000	$ 65,000	$ 65,000	$ 39,000		$ -
Environmental Clearance/Permit Process	$ 500,000	$ 25,000	$ 100,000	$ 125,000	$ 125,000	$ 125,000		$ -
Preconstruction Surveys	$ 200,000					$ 200,000		$ -
Mitigation Compliance								$ -
Construction Monitoring	$ 300,000					$ 90,000	$ 210,000	$ -
Post-construction Mitigation and Monitoring	$ 125,000							$ 125,000
Subtotal Company Labor	$ 19,892,988	$ 854,500	$ 2,017,500	$ 2,761,250	$ 3,636,250	$ 4,784,250	$ 4,714,238	$ 1,125,000

Company Labor Staffing Plan



Company Expenses - Direct Costs

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7-20	Total	
Trucks						$ 108,000		$ 108,000	rental or purchase?
Helicopter		$ 4,400			$ 4,400	$ 8,800		$ 17,600	$800/hr
ROW Land Software				$ 200,000				$ 200,000	
Travel	$ 25,000	$ 25,000	$ 25,000	$ 25,000	$ 25,000	$ 25,000	$ 10,000	$ 160,000	
Mileage	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 3,500	$ 63,500	
supplies	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ 1,000	$ 31,000	
Incidentals	$ 2,000	$ 2,000	$ 2,000	$ 2,000	$ 2,000	$ 2,000	$ 2,000	$ 14,000	
Insurance									
Total	$ 42,000	$ 46,400	$ 42,000	$ 242,000	$ 46,400	$ 158,800	$ 16,500	$ 594,100	

Table 10 - Pipelines Environmental Tasks, Costs and Staffing Requirements						
Task	**Description**	**Key Activities**	**Cost Estimate per Phase**		**Total Cost**	**Cost Assumptions**
			Adelanto Compressor Station	**Adelanto to Moreno**	**North - South Project**	
I	Data Collection I Permitting Support	Geotechnical testing, wetland access, and other data collection activities requiring a permit	$0	$10,000	$10,000.00	Public agency access permits and biological monitoring costs for any ground disturbance work in biologically or culturally sensitive area
II	Environmental Data Collection, Screening and Impact Analysis	Cultural Resources	$2,253	$72,441	$74,694.00	Cultural resources data collection and report preparation based on consultant cost estimate
		Biological Resources	$2,091	$60,870	$62,961.00	Wetland and Stream Delineation and report preparation based on consultant cost estimate
			$53,670	$741,279	$794,949.00	Biological data collection and report preparation based on consultant cost estimate
		Water Resources/Flooding	$2,177	$5,381	$7,558.00	Technical report preparation based on consultant cost estimate
		Air Quality Assessment	$46,721	$7,051	$53,772.00	Modeling and technical report preparation based on consultant cost estimate
		Geology and Soils	$3,604	$12,668	$16,272.00	Technical report preparation based on consultant cost estimate
		Hazards/Hazmat	$1,373	$4,413	$5,786.00	Technical report preparation based on consultant cost estimate
		Land Use Report	$6,664	$7,285	$13,949.00	Technical report preparation based on consultant cost estimate
		Noise Report	$7,482	$19,499	$26,981.00	Technical report preparation based on consultant cost estimate
		Traffic Report	$443	$49,577	$50,020.00	Technical report preparation based on consultant cost estimate
		Visual Resources	$5,446	$14,393	$19,839.00	Technical report preparation based on consultant cost estimate
		Reliability and Safety Study	$2,268	$7,134	$9,402.00	Technical report preparation based on consultant cost estimate
		Socioeconomic/Environmental Justice Study	$236	$2,782	$3,018.00	Technical report preparation based on consultant cost estimate
		Other Support Studies/Consulting Costs (Project Mgmt, etc)	$15,000	$150,000	$165,000.00	Based on consultant cost estimate
III	Environmental Permit Process and Clearance to Proceed with Construction	Applications for Federal, State, and Local Permits	$7,871,109	$1,137,718	$9,008,827.00	Permit costs and agency staff costs
		USFS NEPA Environmental Review Process and Consistency Determination	$250,000	$1,750,000	$2,000,000.00	Consultant for USFS based on preliminary discussion with SBNF staff
		CPUC CEQA Environmental Review Process	$250,000	$3,500,000	$3,750,000.00	Consultant for CPUC based on preliminary cost discussion with CPUC staff
		Public Affairs Consultant for CEQA/NEPA Support	$100,000	$900,000	$1,000,000.00	Consultant engaged for focused CEQA/NEPA scoping, environmental document outreach efforts
IV	Preconstruction Surveys and Mitigation Compliance	Preconstruction Clearance Surveys, Baseline and Assessment Costs for Temporary Use, Hydrotest cost, including water sampling	$52,500	$1,300,000	$1,352,500.00	See Preconstruction Clearance tab
		Mitigation Cost	$30,000	$13,000,000	$13,030,000.00	Agency administrative costs assumed to be $500,000. Actual mitigation cost assumes payment to mitigation bank or in lieu fee plus long term endowment costs
V	Construction Monitoring	Bio, Cultural, SWPPP, Monitoring	$73,800	$7,700,000	$7,773,800.00	See Monitoring Costs Tab
VI	Post-construction Mitigation and Monitoring		NA	$1,000,000	$1,180,000.00	Years 1 - 5, $1,000,000 (10,000 hours)
			NA	$100,000		Years 6 - 10, $100,000 (1,000 hours)
			NA	$80,000		Years 10 - 20, $80,000 (800 hours) assumes 2 days every three months
		Subtotal	***$8,776,837***	***$31,632,491***	***$40,409,328.00***	
		Estimated Expenses (2% of total budget) (e.g., GPS units, rental cars, laptops)	$175,537	$632,650	$808,186.56	
		Total	**$8,952,374**	**$32,265,141**	**$41,217,514.56**	

Contingency Summary

	Direct Cost (minus Contingency)	Contingency %	Contingency $	Total Direct Cost
Adelanto to Moreno Pipeline	$ 426,703,475	13.8%	$ 57,841,718	$ 484,545,193
Adelanto Compressor Station	$ 119,187,709	14.7%	$ 17,564,156	$ 136,751,864
Total Project	**$ 545,891,183**	**13.8%**	**$ 75,405,874**	**$ 621,297,057**

Costs per mile

New Filed Estimate

	Adelanto to Moreno Pipeline ($M/mile)
Non-Labor	
ROW Acquisition	$0.28
Legal Services	$0.13
Public Relations	$0.04
Environmental/Permitting	$0.60
Geotechnical Investigation	$0.01
Survey	$0.00
Ministerial Permits	$0.02
Material Costs	$1.47
Construction Labor	$4.12
Engineering	$0.23
Construction Management	$0.17
SCADA	$0.04
As-built	$0.00
ROW Intrustion Monitoring	$0.09
Methane Detection	$0.00
PLS	$0.20
Company Labor	$0.28
	$7.69

Summary - Years 1 & 2

	Year 1		Year 2	
	A-M Pipeline	Compressor Station	A-M Pipeline	Compressor Station
Environmental/Permitting	$0.9	$0.0	$4.2	$0.2
PLS	$0.0	$0.0	$0.1	$0.0
ROW	$0.0	$0.0	$0.8	$0.0
Survey	$0.0	$0.0	$0.0	$0.0
Engineering	$0.8	$0.4	$1.6	$0.5
Geotechnical	$0.1	$0.0	$0.3	$0.0
Legal Services / Public Relations	$0.1	$0.0	$1.0	$0.1
SubTotal Non-Labor	$2.0	$0.5	$8.0	$0.8
Company Labor	$0.7	$0.3	$2.0	$0.3
Total	$3.4		$11.0	

ROW Intrusion Monitoring

Capital Cost - $/mile of pipeline

Element	Rates/hr or qnty.	hours or qnty.	Subtotal	
Labor Project Planning/Admin.	$ 52.88	20	$ 1,057.60	
Permit and/or citing	$ 200.00	1	$ 200.00	
Labor union install/config.	$ 41.36	40	$ 1,654.40	
Contracting costs	$ 63,000.00	1	$ 63,000.00	
Labor QA/test/config:	$ 44.13	16	$ 706.08	
Unit purchase inc tax/ship/hndl	$ 11,500.00	1	$ 11,500.00	
Other Materials/encl/mount.	$ 8,800.00	2	$ 17,600.00	
Communication Device	$ 500.00	2	$ 1,000.00	
Host system confirmation - Labor	$ 44.13	4	$ 176.52	
Host system bridge to corp - Labor	$ 44.13	1	$ 44.13	
TOTAL			$ 96,938.73	
			$ 3,638.73	Labor
			$ 93,300.00	Non-Labor

Methane Detection

Capital Cost - $/unit installed

Element	Rates/hr or qnty.	hours or qnty.	Subtotal	
Labor Project Planning/Admin.	$ 52.88	4	$ 211.52	
Permit and/or citing	$ 200.00	1	$ 200.00	
Labor union install/config.	$ 44.13	2	$ 88.26	
Labor Contract	$ 50.00	16	$ 800.00	
Labor QA/test/config:	$ 44.13	1	$ 44.13	
Unit purchase inc tax/ship/hndl	$ 2,415.00	1	$ 2,415.00	
Other Materials/encl/mount.	$ 500.00	1	$ 500.00	
Communication Device	$ 500.00	1	$ 500.00	
Host system confirmation - Labor	$ 52.88	1	$ 52.88	
TOTAL			$ 4,811.79	
			$ 396.79	Labor
			$ 4,415.00	Non-Labor

Southern California Gas Company
A Sempra Energy utility

Attachment IX

Crossing List

NORTH-SOUTH PROJECT

Adelanto to Moreno Pipeline Crossing List

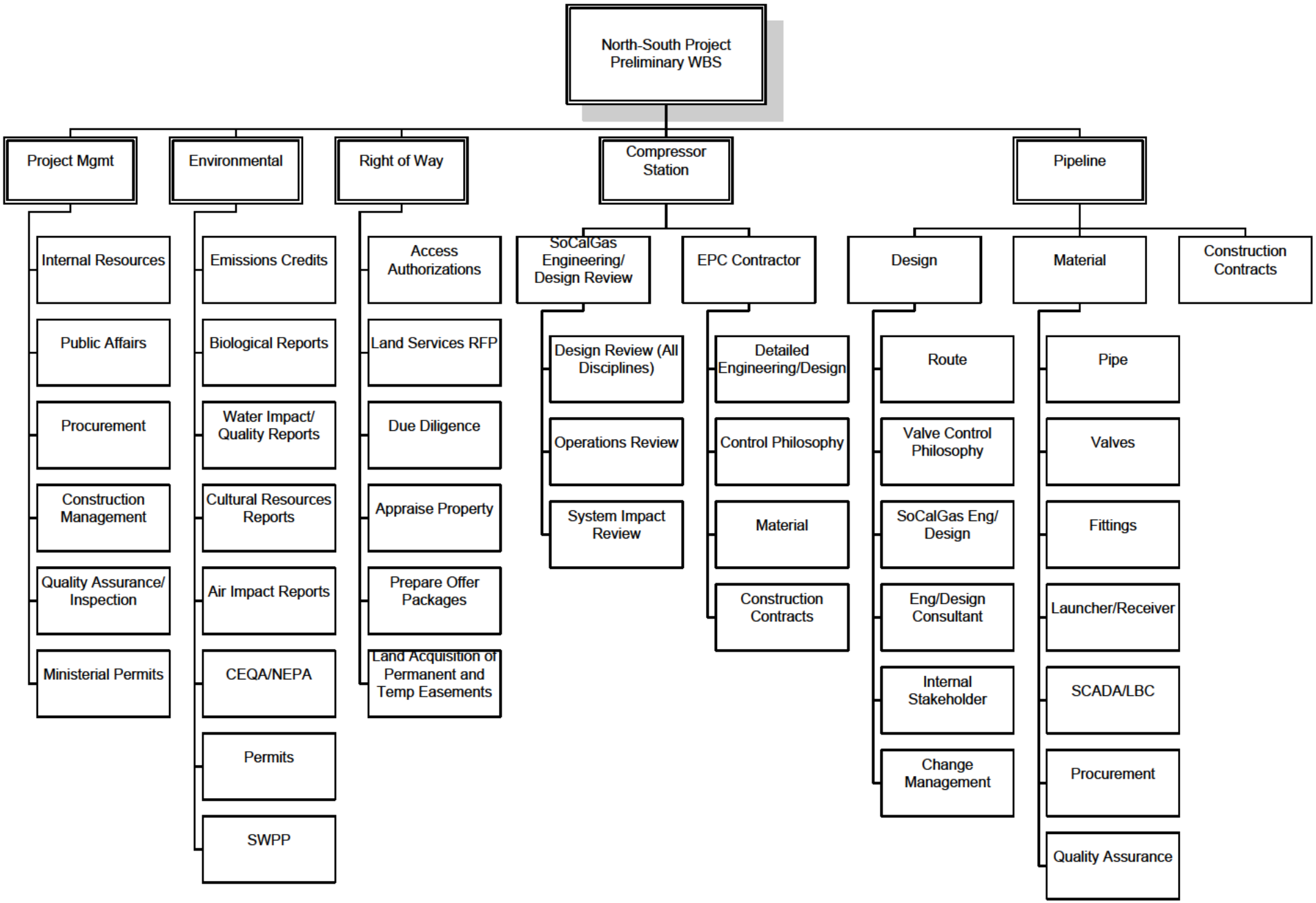
Crossing Name	Type	Agency/Utility	Comments
State Route 18 Palmdale Rd.	State Rd	Caltrans	Conventional Bore
California Aqueduct	Aqueduct	Dept of Water Resources	SPAN
UPRR	Railroad	Union Pacific	Conventional Bore
Tight ROW btw Homes	narrow ROW	N/A	
I-15 South Bound	Highway	Caltrans	Conventional Bore
I-15 North Bound	Highway	Caltrans	Conventional Bore
UPRR	Railroad	Union Pacific	Conventional Bore
UPRR	Railroad	Union Pacific	Conventional Bore
BNSF RR	Railroad	Burlington Northern Santa Fe	Conventional Bore
State Route 138	Highway	Caltrans	Conventional Bore
Wash	Water	County of SB Flood Control Dist.	Conventional Bore
Wash	Water	County of SB Flood Control Dist.	Conventional Bore
Cable Creek	Water	County of SB Flood Control Dist.	Dirt channel HDD/Conventional Bore
Devil Creek	Water	County of SB Flood Control Dist.	Concrete Box/Conventional Bore
Devil Creek Channel	Water	County of SB Flood Control Dist.	Concrete Box in 40th Street/Conventional Bore
East Twin & Warm Creeks	Water	County of SB Flood Control Dist.	Flood control basins - just a channel Lynwood
210 Fwy	Undercrossing	Caltrans	Golden Ave. underpass open cut No on/off ramps
Channel	Water	Box structure	Conventional Bore
Upper Warm Creek	Water	County of SB Flood Control Dist.	Open cut outside bridge/Conventional Bore
City Creek Channel	Watercrossing	County of SB Flood Control Dist.	Conventional Bore
Santa Ana River	Water	County of SB Flood Control Dist.	2000 Foot HDD
BNSF RR	Railroad	Burlington Northern Santa Fe	Conventional Bore
Mission Channel	Water	County of SB Flood Control Dist.	Conventional Bore
10 Fwy	Highway	Caltrans	Undercrossing ON/OFF ramps- Open cut
San Timoteo Creek	Water	County of SB Flood Control Dist.	Conventional Bore
UPRR	RR	Union Pacific	Conventional Bore
60 Fwy	Highway	Caltrans	Conventional Bore
Moreno Valley PLS Station	Station		End Pipeline

Attachment X

Environmental 1 Mile Map book

Attachment XI

Preliminary Work Breakdown Structure


North-South Project Preliminary WBS
Project Mgmt
Internal Resources
Public Affairs
Procurement
Construction Management
Quality Assurance/ Inspection
Ministerial Permits
Environmental
Emissions Credits
Biological Reports
Water Impact/ Quality Reports
Cultural Resources Reports
Air Impact Reports
CEQA/NEPA
Permits
SWPP
Right of Way
Access Authorizations
Land Services RFP
Due Diligence
Appraise Property
Prepare Offer Packages
Land Acquisition of Permanent and Temp Easements
Compressor Station
SoCalGas Engineering/ Design Review
Design Review (All Disciplines)
Operations Review
System Impact Review
EPC Contractor
Detailed Engineering/Design
Control Philosophy
Material
Construction Contracts
Pipeline
Design
Route
Valve Control Philosophy
SoCalGas Eng/ Design
Eng/Design Consultant
Internal Stakeholder
Change Management
Material
Pipe
Valves
Fittings
Launcher/Receiver
SCADA/LBC
Procurement
Quality Assurance
Construction Contracts

Attachment XII

Preliminary Job Specific Safety Plan (JSSP)

Southern California Gas Company

A Sempra Energy utility

North South Project

CONTRACTOR/SUBCONTRACTOR JOB SPECIFIC SAFETY PLAN (JSSP)

Contractor/Subcontractor Superintendent - Please complete and return this Plan prior to commencement of work.

An accepted JSSP is required prior to mobilization.

CONTRACTOR/SUBCONTRACTOR NAME: _____

PROJECT NAME: _____

NUMBER OF INDIVIDUAL WORK LOCATIONS:

DATE:

WELCOME!
It is SCG/SDG&E's intent and goal to establish and maintain the safest work-site possible. To help accomplish this task we are requiring our North-South Project Construction Contractors to submit this Job Specific Safety Plan for each awarded contract. The JSSP will ensure that all hazards at the individual job locations have been identified and measures have been put in place to ensure the protection of all employees and the general public.

To be completed by Company Representative:

Date completed Job Site Specific Safety Plan (JSSP) received by North-South Project Management team: _____

Date of Safety Meeting with Contractor/Subcontractor: _____

PRELIMINARY

Section TABLE OF CONTENTS

PRELIMINARY

GENERAL DESCRIPTION

A. SCOPE OF WORK:

Maximum number of worker personnel on site: _____

B. PROJECT TEAM

Project Manager: _____

Project Superintendent: _____

Safety Representative: _____

C. POINTS OF CONTACT IN THE EVENT OF AN EMERGENCY:

Please utilize Attachment A:

EMERGENCY NOTIFICATION & RESPONSE PLAN

D. SUBSTANCE ABUSE PREVENTION AND DETECTION

The Contractor/Subcontractor understands and has informed their employees and tier subcontractors that an active substance abuse program will be implemented on this project and includes: post incident, reasonable suspicion, and random. Please document the testing location in Attachment A.

E. FACILITIES FOR THE TREATMENT OF ON-THE-JOB INJURIES

We have identified that personnel requiring professional medical treatment for a presumed work-related injury will be transported to the following medical clinic or hospital.

Medical Clinic:

Hospital:

F. SUB-TIER CONTRACTORS

Please list all sub-tier contractors you anticipate hiring:

Subcontractor Name	Supervisor Name

PRELIMINARY

GUIDANCE FOR COMPLETING THE JOB SPECIFIC SAFETY PLAN (JSSP)

The JSSP is a project-driven pre-planning document used to ensure every project location receives proper safety assessment and planning**. Multiple copies of selections below may be required to address hazards that may be present at each project location**. Only one copy of each JSSP section is required for projects with one location.

A Job Specific Safety plan is required to be submitted by each Construction Contractor at a job location, this includes the Pipeline Contractor, Civil Contractor, Non-Destructive Testing Contractor, LNG/CNG Contractor or other contractors having a direct contract with SCG/SDG&E.

Example: The same Personal Protective Equipment may be required on all project locations, therefore only one section "O. Personal Protective Equipment" would need to be submitted.
However if the project has multiple Traffic Control/Work Zone locations, you would need to submit section "U. Traffic Control/ Work Zone Safety" for each location.

The preferred method for JSSP submittal is an electronic copy. This electronic version is the least labor intensive method of completing the JSSP.

Prior to filling out the JSSP please identify all of the individual work locations associated with the project. Making note of the individual jobsite locations during the initial job walk will be beneficial when completing the JSSP.

Things to consider when completing the JSSP:

- Are there any hazards that are unique to each project location?
- Have you determined the appropriate training for each project location?
- Have you determined the required PPE for each project location?
- Have you included safe work practices for each project location?

PRELIMINARY

Site Procedures/Job Hazard Analysis

Project Number: **Project Location Identifier:**

A. AERIAL LIFTS

Will your employees be operating aerial/scissor lifts? Yes ☐ No ☐
If yes, How will you provide the proper training?

How will you provide verification of daily inspections for all aerial/scissor lifts?

Will your employees wear fall protection when operating aerial/scissor lifts? Yes ☐ No ☐
If yes, What form of fall protection will be used?

PRELIMINARY

Project Number: **Project Location Identifier:**

B. ASBESTOS/LEAD

Will you be handling, disturbing, abating or working around any Asbestos/Lead or Asbestos/Lead containing material? Yes ☐ No ☐
If yes, please describe:

What level of training have your employee completed in regard to Asbestos and Lead?

Who is confirming if Asbestos or Lead Containing Materials are present?

Who will be performing the abatement of any Asbestos or Lead Containing Materials?

What personal protective equipment will be worn when handling Asbestos or Lead Containing Materials?

Note: Any identification of possible and/or confirmed Asbestos or Lead Containing Material must be reported to the North South Project management team.

PRELIMINARY

Project Number: **Project Location Identifier:**

C. CONCRETE/SLURRY

Will you be doing any concrete work? Yes ☐ No ☐

If yes, what type of form-work will you be using?

What type of shoring will you be using?

All form-work/shoring shall be designed by a P.E. Please provide name:

What type of fall protection will be used on form-work (i.e., decks/walls)?

What personal protective equipment will be worn when working in concrete and slurry?

PRELIMINARY

D. CRANES

Note: * **Be advised that cranes will not be allowed to operate on this job-site without a current inspection.**
* **Crane operator qualifications must be provided to North South Project management team.**

Will you be using a crane?	Yes	N☐
If yes, Will you be hiring your own crane?	Yes	N☐
Are you aware of Critical Lift Procedures?	Yes ☐	No☐
Will you be submitting a lift plan?	Yes	No☐

If no, please inform the North South Project

management team. What will you be lifting?

(If your crane requirements are more extensive than can be described here please provide a separate, complete and detailed description of your requirements.)
Where will the crane be located?

Where will the pick start and end?

Do you anticipate any picks being Critical Lifts? Yes ☐No ☐
If yes, please describe:

Please note: Anyone signaling/rigging loads must complete training for signaling/rigging. Please be prepared to provide the North South Project management team with documentation of the completed training when requested.

PRELIMINARY

E. DEMOLITION

Will your work require any demolition? Yes ☐ No ☐
If yes, please describe:

What precautions will be necessary to protect workers and other personnel?

What will you do restrict unauthorized personnel from entering demo area?

How will you barricade or demarcate the area to be demolished?

Will your work require concrete demolition or cutting? Yes ☐ No ☐
If yes, How will you protect site personnel and the public from Silica Dust?

PRELIMINARY

F. ELECTRICAL

Will you be doing any electrical work? Yes ☐ No ☐
If yes, What are the voltages you will be working with?

Will employees be handling energized electrical parts and/or lines? Yes ☐ No ☐
If yes, Describe: (This work must be confirmed and authorized by the North South Project management team):

Will you be responsible for providing temporary power for your personnel and/or the project?
Yes ☐ No ☐
If yes, describe daily maintenance procedures:

Do you have an Energy Isolation Program? Yes ☐ No ☐
If yes, please provide a copy to the North South Project management team.
If no, one will be required for this project and before work can commence.

PRELIMINARY

G. EXCAVATION/TRENCHING

Will you be moving any dirt? Yes ☐ No ☐
If yes, Who is your Competent Person for excavations?

Will you be using any heavy equipment? Yes ☐ No ☐
If yes, What type?

What is the depth of the deepest excavation?

What type of protective shoring systems will be used?

Will you be moving any dirt off-site? Yes ☐ No ☐
If yes, What special procedures will be necessary for hauling dirt on public streets?

Where will you be using Flaggers? Yes ☐ No ☐

Will you be excavating in proximity to live utilities? Yes ☐ No ☐
If yes, what procedures will you use to prevent damage?

Will you need to apply for a Cal/OSHA permit? Yes ☐ No ☐ If yes, proof of permit may be required during an audit.

PRELIMINARY

H. FALL PROTECTION

Will your employees be exposed to any fall hazards? Yes☐ No ☐
If yes, Describe:

What fall protection measures will you use?

Will your work expose your employees to floor openings, wall openings or leading edge work? Yes ☐ No ☐
If yes: Please Describe:

What procedures will you use to ensure your employees and other project personnel are not exposed to fall hazards?

Where will the inspection records for Fall Protection Equipment be stored?

PRELIMINARY

I. FORKLIFTS

Will you be operating forklifts? Yes ☐ No ☐

If yes, How will you provide the proper training?

How will the hazards associated with operating forklifts around blind spots be mitigated?

Where will the forklift daily/pre use inspection logs be kept?

What material will you be moving with forklifts?

PRELIMINARY

J. HOT WORK

Will you be performing any activities that generate heat or sparks?
Yes☐ No ☐
If yes, how will the following control measures be implemented to eliminate or reduce the possibility of a fire or explosion?

- Smoking in designated smoking areas only
- A "Hot Work" Permit is to be completed
- A "Fire Watch" is to be present when hot work is being performed
- Combustible air monitoring is to be performed if there is a potential of a combustible atmosphere.
- Combustibles within at least a 35 foot radius of the hot work are to be removed or protected.

Will you be performing Hot Work activities during potential "Red Flag" warning periods?
Yes☐ No ☐
If yes what control measures will you implement?

PRELIMINARY

K. HOUSEKEEPING

What will be your procedures for housekeeping and cleanup?

How will exits and access be kept unobstructed?

How will work areas be kept clean and free of debris?

How will trash and debris be removed from the site for disposal?

PRELIMINARY

L. LADDERS

Will your work require the use of ladders? Yes ☐ No ☐
If yes, Describe the procedure for the pre use inspection of ladders.

How often are documented ladder inspections performed?

Where are documented ladder inspections kept?

What precautions will be necessary to ensure workers maintain 3-points of contact while ascending and descending ladders (2-feet and 1- hand or 1-foot and 2-hands)?

What precautions are taken when a defective ladder is discovered on the job site?

What precautions are taken to ensure ladders do not exceed the designated weight capacity (worker and materials)?

PRELIMINARY

M. MASONRY

Will you be doing any masonry work? Yes ☐ No ☐

If yes, how will you protect impalement hazards?

What precautions will you take while cutting concrete bricks and blocks?

What personal protective equipment will be worn when cutting bricks and blocks?

What precautions will you take to protect your employees and other site workers below and around your work?

PRELIMINARY

N. MATERIAL STORAGE

Where will construction material be stored/staged?

Will you be using any flammable/combustible liquids? Yes ☐ No ☐

If yes, Where will these be stored?

What fire prevention/protection precautions will be taken?

What spill prevention precautions will be taken?

PRELIMINARY

O. PERSONAL PROTECTIVE EQUIPMENT (PPE)

Will your operations generate dust, fumes or potentially harmful gases?
Yes☐ No ☐
If yes, Please Describe:

What respirator precautions will you take?

What precautions will you take to protect other project personnel from dust, fumes or potentially harmful gases?

Will your employees be exposed to specific eye hazards? Yes☐ No ☐
If yes, Please Describe:

What additional eye protection measures will you take, besides safety glasses with side shields?

Will your employees be exposed to any potentially harmful chemicals?
Yes☐ No☐f yes, Please Describe:

What PPE requirements will be necessary to handle potentially harmful chemicals?

PRELIMINARY

What precautions will you take to protect other personnel on the project from potentially harmful chemicals?

Will you have work that requires any special PPE? Yes ☐ No ☐
If yes, Please Describe:

PRELIMINARY

Project Number: **Project Location Identifier:**

P. PIPING/PLUMBING

Will you be working with piping or plumbing? Yes ☐ No ☐
If yes, Will this piping or plumbing contain pressurized fluids and/or gas?
Yes ☐ No ☐
If yes, what precautions will be taken?

Will hot taping be performed on energized gas lines? Yes ☐ No ☐
(If yes, the North South Project management team must confirm and authorize)

If yes, Do you have a hot taping procedure for energized gas lines? Yes ☐ No ☐

What other potential hazards and precautions have you identified associated with this task?

PRELIMINARY

Project Number: **Project Location Identifier:**

Q. PUBLIC PROTECTION

Will any of your work be in close proximity to the public or employees of an existing facility?

Yes ☐ No ☐

If yes, what precautions will be necessary to protect non-construction personnel?

What precautions will be necessary to protect the public from slip, trip and fall or other hazards?

What Warning/Danger signs will be posted at the project entrance?

How will you control dust or other hazardous substances?

PRELIMINARY

Project Number: **Project Location Identifier:**

R. SCAFFOLD

Will you be using scaffolds? Yes ☐ No ☐

If yes, Who is your Competent Person for scaffolding?

What type of scaffolding?

Location?

Who will erect it?

Who will inspect it daily?

Will the nature of the scaffold require it be designed by a Registered Professional Engineer?
Yes ☐ No ☐

If yes, the stamped drawings shall be provided to the North Project Management team

Will you be using scaffolding to shore formwork or for re-shoring? Yes ☐ No ☐
If yes, the stamped drawings shall be provided to North South Project management team.

PRELIMINARY

Project Number: **Project Location Identifier:**

S. SITE OREINTATION/PRE TASK PLANNING

Where will the Site Specific Orientations be conducted?

Where will the Pre Task planning meetings be conducted?

Please list your Heat Related Illness precautions.

PRELIMINARY

Project Number: **Project Location Identifier:**

T. TOOLS

Will you be using powder-actuated tools? Yes ☐ No ☐

If yes, How will you provide the proper training?

How will the unused shots be stored?

How will the used shots be disposed?

Will you be operating lasers? Yes ☐ No ☐
If yes, How will they be provided the proper training?

Will you be operating table saws? Yes ☐ No ☐
If yes, How will you ensure guards remain in place?

Will you be using other power tools? Yes ☐ No ☐
If yes, List tool with safety precautions/guards/training necessary for operation:

PRELIMINARY

Project Number: **Project Location Identifier:**

U. TRAFFIC CONTROL /WORK ZONE SAFETY

Is the work on or adjacent to a roadway? Yes ☐ No ☐

Is a Traffic Control Plan necessary or required? Yes ☐ No ☐

Is a Traffic Control Permit required? Yes ☐ No ☐

Who will be providing traffic control?

Will paving be required after the work is completed? Yes ☐ No ☐

Is the paving work included in your traffic control plan? Yes ☐ No ☐

Will work be performed at night? Yes ☐ No ☐

What other precautions will be taken to address construction and non-construction personnel?

What personal protective equipment will be required when working on or adjacent to a roadway?

PRELIMINARY

Project Number: **Project Location Identifier:**

V. OTHER SAFETY ISSUES/CONCERNS THAT NEED TO ADDRESSED?

PRELIMINARY

Project Number: **Project Location Identifier:**

W. PLEASE LIST ALL QUALIFIED OR COMPETENT PERSONNEL AND THEIR CRAFT. PROOF OF DOCUMENTED TRAINING WILL BE REQUIRED.

Name	Craft

PRELIMINARY

This Job Specific Safety Plan has been prepared for:

_____

Project Name/Number

By a representative of:

_____

Company Name

I, as a member of the Project Team, have read and am fully aware of the contents of this Plan. Additionally, my company is aware of and understands the safety requirements governing this job-site and will, in good faith, attempt to perform all tasks in accordance with same.

_____

Signature of Project/Construction Manager

_____

Date

PRELIMINARY

ATTACHMENT A

EMERGENCY NOTIFICATION & RESPONSE PLAN

This plan outlines who is to be notified in the event of an incident, including motor vehicle incidents. An incident is defined as an "unplanned event that disrupts work activity".

Media
Media interaction is done by the North South Project Customer Communications Manager. Please do not address the media. All inquires are to be forwarded to SCG/SDG&E.

Incident Notification
Incidents to anyone on or adjacent to the project site or in SCG/SDG&E is to be reported immediately to the employee's supervisor and the North South Project management team.

Any incident or injury is to be report to the employee's supervisor and the North South Project management team.

Name	Company	Position	Phone Number
		North South Director	
		North South HSE Manager	
		Director of Field Operations	
		North South Construction Mgr	
		North South Safety Manager	

The seriousness of the injury will determine the level of reporting through the management structure. Depending on how serious the incident is will determine how far up the management structure the reporting will go. Reporting will be determined by North South Project management and safety personnel.

PRELIMINARY

Medical Information
The following is a list of those trained on the job site in First Aid and CPR. .

Name	Phone Number

Drug & Alcohol Screening
Personnel assigned to the project are required to complete a post-incident Drug & Alcohol Screening. This screening will be conducted at the following location:

Medical Clinic (Name, Location, & Phone Number)	
Hospital (Name, Location, Phone Number)	

Outline the actions that will be taken in the event of the emergencies listed below:

- Gas Leak
- Severe Weather (thunderstorm, lightning, high winds, tornado, flash flood)
- Earthquake
- Explosion/Fire
- Civil Unrest (violence, robbery)
- Terrorist Threat (bomb threat)

PRELIMINARY

- Workplace Violence

How To Turn In Alarm
How will all personnel on the job be informed of the emergency and be evacuated?

Evacuation Meeting Point
Where is the evacuation point?
How will you confirm that all personnel are accounted for?

"All Clear Signal
What will be the "all clear" signal?

Assembly Points / Responsible Person
Where are personnel to assemble in the event of an emergency?
Who will report to that location and be responsible for keep the evacuees informed?

PRELIMINARY

Attachment XIII

List of Consultants

Attachment XIII – List of Consultants

BonTerra/Psomas

Psomas is a top-ranked engineering firm that provides surveying, engineering, construction management, and environmental services throughout the Western United States.
For more information visit http://www.psomas.com

Contract Land Staff, LLC Bio

Contract Land Staff is an industry leading Right of Way Acquisition company that also provides project manangement, staffing, and consulting support.
For more information visit http://www.contractlandstaff.com/

ERM West

Environmental Resource Management (ERM) is a leading global provider of environmental, health, safety, risk, and social consulting services, focusing on sustainability.
For more information visit http://www.erm.com/

GIS Surveyors, Inc

GIS Surveyors, Inc is a progressive, solution-based Geographic Information System (GIS) consulting services firm specializing in GIS services and land surveying services.
For more information visit http://gissurveyors.com/

ICF

ICF International (ICF) provides professional consulting services and technology solutions that deliver beneficial impact in areas critical to the world's future.
For more information visit www.icfi.com

KP Environmental Inc.

KP Environmental specializes in understanding natural, cultural and physical environments, state and federal regulatory requirements, and agency and client needs.
For more information visit http://www.kpenvironmental.net/

Lettis Consultants International, Inc.

Lettis Consultants International, Inc. is an earth science company specializing in engineering geology, seismic and natural hazard investigations.
For more information visit http://www.lettisci.com/

Spec Services, Inc.

SPEC Services, Inc. is a full-service engineering and project management firm focused on planning, engineering, design, execution, and coordinating of pipeline projects.
For more information visit http://www.specservices.com/

URS Corporation Americas

URS is a leading provider of engineering, construction, and technical services for public agencies and private sector companies around the world.
For more information visit http://www.urs.com

KPMG LLP

KPMG LLP, the U.S. audit, tax and advisory services firm, operates from 87 offices with more than 23,000 employees and partners throughout the U.S http://www.kpmg.com/

Southern California Gas Company
A Sempra Energy utility

Attachment XIV

Environmental Table

Pipelines Environmental Tasks, Costs and Staffing Requirements						
Task	**Description**	**Key Activities**	**Cost Estimate per Phase**		**Total Cost**	**Cost Assumptions**
			Adelanto Compressor Station	**Adelanto to Moreno**	**North - South Project**	
I	Data Collection l Permitting Support	Geotechnical testing, wetland access, and other data collection activities requiring a permit	$0	$10,000	$10,000.00	Public agency access permits and biological monitoring costs for any ground disturbance work in biologically or culturally sensitive area
II	Environmental Data Collection, Screening and Impact Analysis	Cultural Resources	$2,253	$72,441	$74,694.00	Cultural resources data collection and report preparation based on consultant cost estimate
		Biological Resources	$2,091	$60,870	$62,961.00	Wetland and Stream Delineation and report preparation based on consultant cost estimate
			$53,670	$741,279	$794,949.00	Biological data collection and report preparation based on consultant cost estimate
		Water Resources/Flooding	$2,177	$5,381	$7,558.00	Technical report preparation based on consultant cost estimate
		Air Quality Assessment	$46,721	$7,051	$53,772.00	Modeling and technical report preparation based on consultant cost estimate
		Geology and Soils	$3,604	$12,668	$16,272.00	Technical report preparation based on consultant cost estimate
		Hazards/Hazmat	$1,373	$4,413	$5,786.00	Technical report preparation based on consultant cost estimate
		Land Use Report	$6,664	$7,285	$13,949.00	Technical report preparation based on consultant cost estimate
		Noise Report	$7,482	$19,499	$26,981.00	Technical report preparation based on consultant cost estimate
		Traffic Report	$443	$49,577	$50,020.00	Technical report preparation based on consultant cost estimate
		Visual Resources	$5,446	$14,393	$19,839.00	Technical report preparation based on consultant cost estimate
		Reliability and Safety Study	$2,268	$7,134	$9,402.00	Technical report preparation based on consultant cost estimate
		Socioeconomic/Environmental Justice Study	$236	$2,782	$3,018.00	Technical report preparation based on consultant cost estimate
		Other Support Studies/Consulting Costs (Project Mgmt, etc)	$15,000	$150,000	$165,000.00	Based on consultant cost estimate
III	Environmental Permit Process and Clearance to Proceed with	Applications for Federal, State, and Local Permits	$7,871,109	$1,137,718	$9,008,827.00	Permit costs and agency staff costs

Pipelines Environmental Tasks, Costs and Staffing Requirements						
Task	**Description**	**Key Activities**	**Cost Estimate per Phase**		**Total Cost**	**Cost Assumptions**
	Construction	USFS NEPA Environmental Review Process and Consistency Determination	$250,000	$1,750,000	$2,000,000.00	Consultant for USFS based on preliminary discussion with SBNF staff
		CPUC CEQA Environmental Review Process	$250,000	$3,500,000	$3,750,000.00	Consultant for CPUC based on preliminary cost discussion with CPUC staff
		Public Affairs Consultant for CEQA/NEPA Support	$100,000	$900,000	$1,000,000.00	Consultant engaged for focused CEQA/NEPA scoping, environmental document outreach efforts
IV	Preconstruction Surveys and Mitigation Compliance	Preconstruction Clearance Surveys, Baseline and Assessment Costs for Temporary Use, Hydrotest cost, including water sampling	$52,500	$1,300,000	$1,352,500.00	See Preconstruction Clearance tab
		Mitigation Cost	$30,000	$13,000,000	$13,030,000.00	Agency administrative costs assumed to be $500,000. Actual mitigation cost assumes payment to mitigation bank or in lieu fee plus long term endowment costs
V	Construction Monitoring	Bio, Cultural, SWPPP, Monitoring	$73,800	$7,700,000	$7,773,800.00	See Monitoring Costs Tab
VI	Post-construction Mitigation and Monitoring		NA	$1,000,000	$1,180,000.00	Years 1 - 5, $1,000,000 (10,000 hours)
			NA	$100,000		Years 6 - 10, $100,000 (1,000 hours)
			NA	$80,000		Years 10 - 20, $80,000 (800 hours) assumes 2 days every three months
		Subtotal	***$8,776,837***	***$31,632,491***	***$40,409,328.00***	
		Estimated Expenses (2% of total budget) (e.g., GPS units, rental cars, laptops)	$175,537	$632,650	$808,186.56	
		Total	**$8,952,374**	**$32,265,141**	**$41,217,514.56**	