

# **Appendix B**

## Project Description Supporting Information

## Appendix B. Project Description Supporting Information

Appendix B includes detailed project description information, including the following tables:

- Table Ap.B-1: Intra-Field Pipelines
- Table Ap.B-2: Estimated Disturbance Area within Project Site
- Table Ap.B-3: Cut and Fill Estimate [Phases I and II]
- Table Ap.B-4: Process Waste Streams
- Table Ap.B-5: Personnel Requirements and Shift Schedules

Figure B-1 (Wells with Inconclusive/Conflicting Abandonment Documentation), which shows the locations of the 6 wells that have inconclusive abandonment documentation from DOGGR, is also included at the end of this appendix.

### Table Ap.B-1: Intra-Field Pipelines

Table Ap.B-1 (Intra-Field Pipelines) provides additional details regarding the intra-field pipelines.

**Table Ap.B-1. Intra-Field Pipelines**

Service	Diameter (inches)	Pipe Material	Approximate Pipeline Length (feet)		
			Phase I	Phase II	TOTAL
Production Gathering	3 to 14	insulated carbon steel	36,868	28,905	65,773
Steam Distribution	3 to 14	insulated carbon steel	32,073	33,922	65,995
Source Water Gathering	3 to 6	carbon steel	9,758	0	9,758
Reservoir Maintenance Distribution	3 to 6	carbon steel	11,791	1,996	13,787
Fuel Gas Distribution	6	steel	4,200	0	4,200
Softened Water Transfer	12	composite	4,200	0	4,200
Separated Produced Gas	10	steel	4,200	0	4,200
Fire Water Gathering and Distribution	3 to 4	high density polyethylene or spooled fiberglass reinforced polyester	25,055	-	15,000

Source: Aera, 2016.

## Table Ap.B-2: Estimated Disturbance Area within Project Site

Table Ap.B-2 (Estimated Disturbance Area within Project Site) provides the total estimated areas of disturbance for each major Project component and Table Ap.B-3 (Cut and Fill Estimate [Phases I and II]) provides a phased cut and fill estimate for all facility areas (combined), well pads, roads, and other onsite supporting infrastructure.

**Table Ap.B-2. Estimated Disturbance Area within Project Site**

Feature	Total Proposed Grading Limits	Previously Developed/Disturbed Area within Proposed Grading Limits		Net New Disturbed Acreage	
	Acres	Acres	Percentage of Proposed Grading Limits	Acres	Percentage of Total Project Site (2112 acres)
Well Pads <sup>4</sup>	88.1	21.8	24.7	66.3	3.1
Roads	47.4	20.7	43.7	26.7	1.3
Beneficial Reuse Site Pad	2.9	0.3	10.3	2.6	0.1
Central Processing Facility Pad	13.3	5.7	42.9	7.6	0.4
Laydown Area Pads <sup>5</sup>	9.6	1.4	14.6	8.2	0.4
Office/Multipurpose Building Site Pad	3.9	0.2	5.1	3.7	0.2
Cut/Fill Slopes (not including benches)	101.7	8.1	8.0	93.6	4.4
Slope Benching	9.9	0.4	4.0	9.5	0.4
Gathering/Distribution Pipeline Corridor <sup>1</sup>	13.9	2.7	19.4	11.2	0.5
Intra-Field Electrical Distribution <sup>2</sup>	0.0 (0.004)	0.0 (0.0004)	10.0	0.0 (0.0036)	0.0
Production Group Station Pad	0.8	0.7	87.5	0.1	0.0
Steam Generation Site Pad	2.6	0.5	19.2	2.1	0.1
Storm Water Basins	9.5	1.5	15.8	8	0.4
Fresh Water Tank Pad	0.9	0.2	22.2	0.7	0.0
Other <sup>3</sup>	0.6	0.02	3.3	0.58	0.0
<b>TOTAL PROJECT</b>	<b>305.1</b>	<b>64.2</b>	<b>21.0</b>	<b>240.9</b>	<b>11.4</b>

Source: Aera, 2016.

1. Portions of pipeline corridors located outside of other categorized project features (i.e., building pads, etc.).
2. Assumptions based on 12-inch diameter poles for poles located outside of other categorized project features (i.e., building pads, etc.).
3. "Other" features located outside of other categorized project features (i.e., drain culverts, storage/staging area pads, etc.).
4. Well Pad WP6 and Laydown Area 1 are designed to be a single shared pad. For the purposes of categorizing impacts, the WP6 / Laydown Area 1 pad is treated as a Well Pad.

**Table Ap.B-3. Cut and Fill Estimate (Phases I and II) within Project Site**

Project Component	PHASE I (cubic yards)			PHASE II (cubic yards)			PROJECT TOTAL (cubic yards)		
	Cut	Fill	Net	Cut	Fill	Net	Total Cut	Total Fill	Total Net
Well pads	506,676	685,545	-178,869	1,139,727	1,091,091	48,636	1,646,403	1,776,636	-130,233
Roads	119,655	284,569	-164,914	553,794	411,018	142,776	673,449	695,587	-22,138
Central Processing Facility	234,610	118,980	115,629	0	0	0	234,610	118,980	115,629
Fresh Water Tank Pad	47,362	80	47,282	0	0	0	47,362	80	47,282
Group Station	23,804	30,035	-6,231	0	0	0	23,804	30,035	-6,231
Office and Warehouse	187,688	74,363	113,325	0	0	0	187,688	74,363	113,325
Steam Generation Site	162,694	3	162,691	0	0	0	162,694	3	162,691
Secondary Containment	0	14,873	-14,873	0	0	0	0	14,873	-14,873
Detention Basins	72,558	15,071	57,487	50,577	15,070	35,507	123,135	30,141	92,994
Lay Down Areas	0	1,809	-1,809	41,881	208,413	-166,532	41,881	210,222	-168,341
Beneficial Reuse Site	241,858	276,229	-34,371	0	0	0	241,858	276,229	-34,371
<b>Total*</b>	<b>1,596,904</b>	<b>1,501,557</b>	<b>95,347</b>	<b>1,785,979</b>	<b>1,725,592</b>	<b>60,387</b>	<b>3,382,883</b>	<b>3,227,149</b>	<b>155,734</b>

Source: Aera, 2016

\* Grading cut/fill volumes for the site entrances have not been included. They would be as follow (Aera, 2017):

- Cat Canyon: 7,452 yd<sup>3</sup> cut; 18,767 yd<sup>3</sup> fill;
- Long Canyon 1: 1 yd<sup>3</sup> cut; 21,626 yd<sup>3</sup> fill;
- Long Canyon 2: 296 yd<sup>3</sup> cut; 155 yd<sup>3</sup> fill;
- Long Canyon 3: 0 yd<sup>3</sup> cut; 0 yd<sup>3</sup> fill.

### Table Ap.B-4: Process Waste Streams

Table Ap.B-4 (Process Waste Streams) provides the listed average quantities for Phases I and II, temporary handling (staging), and final disposition of anticipated waste. A Hazardous and Non-hazardous Waste Materials Management/Transportation Plan would be developed by Aera to comply with state and federal regulations. Any waste scheduled to be transported offsite would be placed in U.S. Department of Transportation-approved containers, loaded into the appropriate vehicle (i.e., tanker truck, dry bulk carrier, bin carrier, etc.), manifested, and shipped to an appropriate waste facility.

**Table Ap.B-4. Process Waste Streams**

Type	Quantity (Average Rate)		Staging	Final Disposition
	Phase I	Phase II		
Spent non-regenerative sulfur treatment media	120.3 tons/month	35.4 tons/month	bins	Truck offsite to an appropriate recycling, treatment or disposal facility
Solid sulfur (from produced gas treating plant)	n/a	1.8 tons/day	bins	Truck offsite to an appropriate recycling, treatment or disposal facility
Produced solids (i.e., sand & fine grained sediments produced from the oil reservoir)	1.3 tons/day	3.5 tons/day	tank	Onsite beneficial reuse or truck offsite to an appropriate recycling, treatment or disposal facility
Spent caustic (sulfur dioxide scrubbers)	n/a	431.8 barrels/day	tank	Permitted well injection
Spent brine from water softening plant	4,404.5 barrels/day	13,136.8 barrels/day	tank	Permitted well injection

Source: Aera, 2016.

### Table Ap.B-5: Personnel Requirements and Shift Schedules

Table Ap.B-5 (Personnel Requirements and Shift Schedules) provides a listing of the permanent personnel requirements and contract services for surface, subsurface, and drilling support for the operational phase of the Project.

**Table Ap.B-5. Personnel Requirements and Shift Schedules**

Job Category	Personnel Count (per shift)	Shift Type <sup>1</sup>
<b>FIELD OPERATIONS</b>		
Operations Manager	1	9/80
Process Supervisor	3	9/80
Process Specialist	3	9/80
Logistics Specialist	1	9/80
Field Administrator	2	9/80
Senior Reliability Specialist (SRS)	3	9/80
Reliability Specialist- Plants (daylights)	2	12H

**Table Ap.B-5. Personnel Requirements and Shift Schedules**

Job Category	Personnel Count (per shift)	Shift Type <sup>1</sup>
Reliability Specialist- Plants (evenings)	2	12H
Reliability Specialist- Night Rider	1	12H
Reliability Specialist- Steam	2	9/80
Reliability Specialist- Production	3	9/80
Reliability Specialist- Measurement	2	9/80
SRS- Mechanic	2	9/80
SRS- Electrician	1	9/80
SRS -Instrument Tech	2	9/80
Production Engineer	2	9/80
Facilities Engineer	2	9/80
Engineering Tech	1	9/80
Field Automation Specialist	1	9/80
Health and Safety Professional	1	9/80
Environmental Professional	1	9/80
Purchasing Professional	1	9/80
Warehouse Staff	2	9/80
<b>CONTRACT SERVICES- SURFACE SUPPORT</b>		
Pumping Unit Crew- crane operator	1	9/80
Pumping Unit Crew- support	2	9/80
Maintenance Contractor Supervisor	1	9/80
General Maintenance- crew	2	9/80
General Maintenance- welder	1	9/80
Plant Maintenance- crew	2	9/80
Plant Maintenance- welder	1	9/80
Vacuum Truck	1	9/80
Tank cleaning crew	3	12H
Tank cleaning- vacuum truck	1	12H
Electrical Maintenance- crew	2	9/80
Chemical Delivery	1	9/80
Chemical support- technician	1	9/80
Capital Project- supervisor	1	9/80
Capital Project- crew	2	9/80
Capital Project- crew	2	9/80
Capital Project- welders	2	9/80
Capital Project- electrical crew	2	9/80
<b>CONTRACT SERVICES- SUBSURFACE SUPPORT</b>		
Well servicing- rig	1	12H
Well servicing- gang truck	2	12H
Well servicing- tool pusher	1	12H

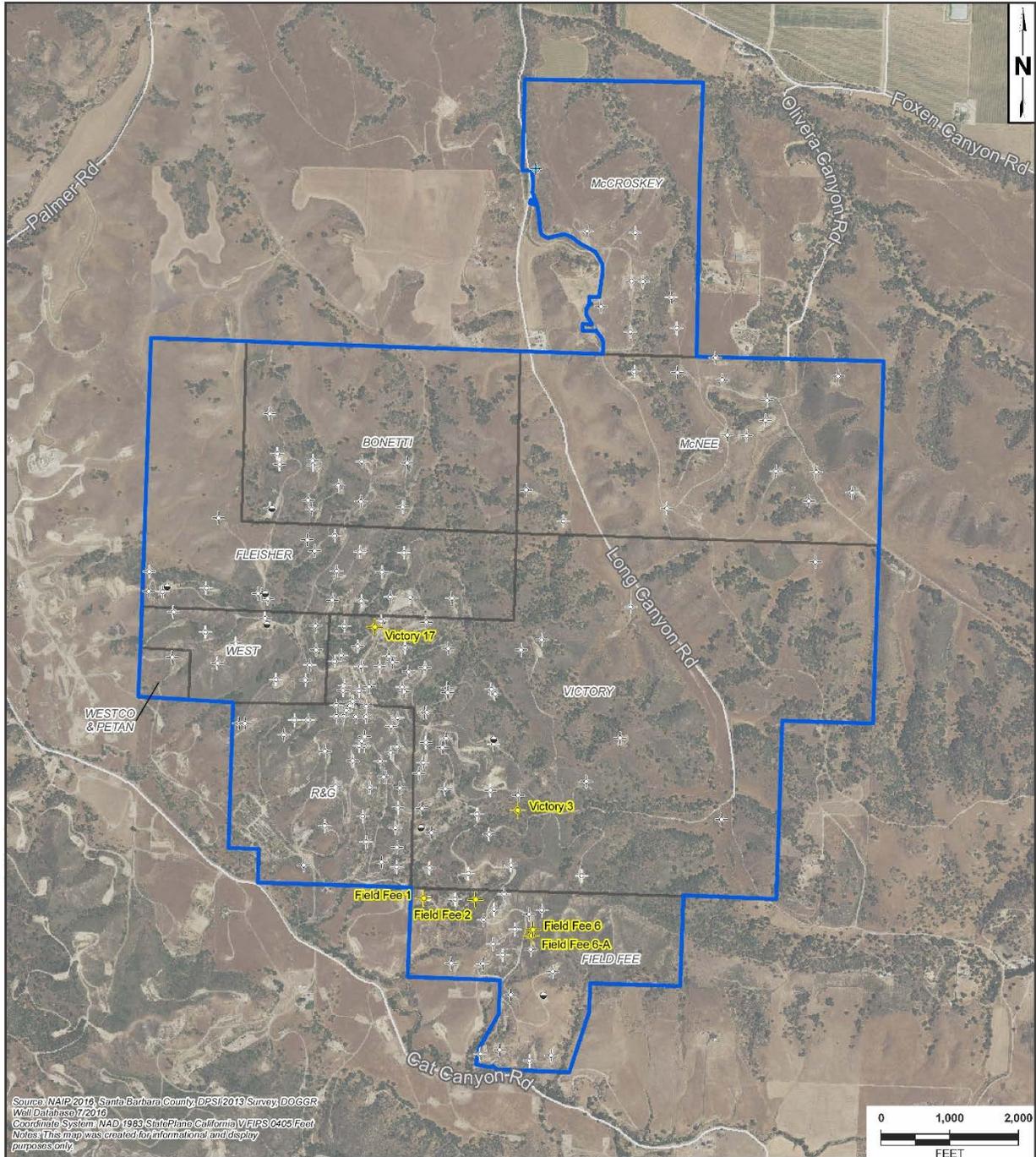
**Table Ap.B-5. Personnel Requirements and Shift Schedules**

Job Category	Personnel Count (per shift)	Shift Type <sup>1</sup>
<b>OTHER</b>		
Vacuum Truck	1	12H
R&R- rig	1	12H
R&R- gang truck	2	12H
R&R- supervisor	1	12H
R&R Vacuum Truck	1	12H
Chemical- shot truck	1	9/80
<b>DRILLING</b>		
Drilling Support - Crew	2	On-Call
Drilling Support - Backhoe	1	On-Call
Tubular transportation	2	On-Call
Gravel sand delivery	1	On-Call
Float Equipment Delivery	1	On-Call
Drilling Rig - Rig	1	24H
Drilling Rig - Rig Crew	5	12H
Drilling Rig - Safety Captain	1	12H
Drilling Rig - Tool Pusher	1	24H
Drilling Fluids - Mud Engineer	1	24H
Cementing Services - Pump truck	1	On-Call
Cementing Services - Bulk truck	1	On-Call
Cementing Services - Supervisor	1	On-Call
Logging Services - Wireline truck	1	On-Call
Logging Services - Supervisor	1	On-Call
Mud Logging	1	12H
Vacuum Services	1	On-Call
Vacuum Services - Supervisor	1	On-Call
Gravel Pack Unit	1	On-Call
Solids control support	1	On-Call
Directional drilling services - Dir. Driller	1	24H
Directional drilling services - EM Technician	1	24H
Gas Detection Services	1	On-Call
Bit Support (Delivery)	1	On-Call
Under-reamer/Stabilizer Support (Delivery)	1	On-Call
Under-Reamer Supervision	1	On-call
Rig Supervision	1	24H

Source: AERA, 2016.

Notes:

1. 9/80 shift is 9 hour workdays on 9 of 10 weekdays over a two-week period. Normal 9/80 workday hours are 6:30 am to 4:15 pm; 9/80 staff is not present on weekends or holidays. 12-hour shift change is 6:00 am and 6:00 pm, seven days a week; 12-hours shifts are fully staffed 365 days/year.



Source: Aera, 2017.

**DOGGR Well Location**

**LEGEND:**

- Aera Energy LLC Property
- Historical Lease Boundary
- Well with Record of Abandonment Issue

- Water Well
- Idle Well
- Test Well
- Plugged/Abandoned Well

**Figure B-1**

**Wells with Inconclusive/Conflicting Abandonment Documentation**