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March 20, 2017

Mike Monasmith, Project Manager
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Subject: Mission Rock Energy Center (15-AFC-02) Supplemental Responses to Data Requests
Data Request Set 2, Data Request No. 132
Data Request Set 3, Data Request Nos. 154, 157-158

Dear Mike:

Mission Rock Energy Center, LLC (the Applicant) submits supplemental responses to California Energy Commission Staff Data Requests, Set 2 (132) and Set 3 (154 and 157-158) for the Mission Rock Energy (15-AFC-02) Application for Certification.

Please contact me at 916-359-4805 if you have questions about this matter.

Sincerely,

Douglas M. Davy, Ph.D.
Project Manager

Attachment

cc: Mitch Weinberg, Calpine Corporation
Barbara McBride, Calpine Corporation
Jill Van Dalen, Calpine Corporation
Samantha Neumyer, Ellison Schneider, Harris, and Donlan, LLP

SUPPLEMENTAL RESPONSES

Data Requests Set 2, Data Request No. 132
Data Requests Set 3, Data Request No. 154, 157-158

In support of the

Application for Certification

For the

Mission Rock Energy Center

15-AFC-02

Prepared for

Calpine Corporation

March 2017

CH2M Hill Engineers, Inc.
2485 Natomas Park Drive, Suite 600
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Acronyms and Abbreviations

AFC	Application for Certification
Applicant	Mission Rock Energy Center, LLC
BMP	best management practices
CEC	California Energy Commission
DR	Data Request
DRR	Data Request Response
LLC	Limited Liability Corporation
MREC	Mission Rock Energy Center

SECTION 1

Introduction

Mission Rock Energy Center, LLC (Applicant) provides these supplemental responses to Data Requests Set 2, Data Request 132 and Data Requests Set 3, Data Requests 154, 157 and 158.These responses provide additional information relating to the additional routing options and locations for two of the linear facilities, the natural gas pipeline route (DR 132) and possible new location of generator tie-line pole #18 (DR 154) associated with the Mission Rock Energy Center (MREC) (15-AFC-02) requested by California Energy Commission (CEC) Staff. Also included is additional information about vegetation management along the generator tie-line (DRs 157-158).

SECTION 2

Supplemental Responses

Supplemental responses to Staff's Data Requests 132 and 154 relating to possible (1) routing of the natural gas supply pipeline to avoid the Ventura County Jail's wastewater treatment piping system and (2) a possible new location for generator tie-line pole #18, outside the boundaries of a historic-era archaeological site are provided below. There is also a discussion of vegetation management along the generator tie-line that supplements previous responses to Data Requests 157 and 158.

2.1 Data Request Response 132: Natural Gas Pipeline

As described in the AFC, the natural gas supply pipeline would exit the southwestern corner of the project site to Shell Road, a private thoroughfare, and would be installed in Shell Road for 0.28 miles to the point where Shell Road meets Todd Road (Figure DR134-1, resubmitted and found at the end of this section). From there, the pipeline would continue in the same direction (southwest), crossing under Todd Barranca using horizontal directional drilling techniques. It would then turn to the northeast, following the south/west side of Todd Barranca to the Southern Pacific Railroad tracks for about 0.42 miles. This is the most direct routing from the project site to the intertie point with Southern California Gas lines 404 and 406, an additional 1.7 miles further southwest along the railroad tracks.

2.1.1 Additional Pipeline Routings

In response to Staff's Data Request 132, Applicant provided two additional possible routings of the natural gas pipeline (see Figure DR132-1). Data Request Response 132 is reproduced below (Mission Rock Energy Center, LLC 2017a; TN#: 215138):

> The routing feasibility would be determined in consultation with the Southern California Gas Company (SoCalGas), who would be responsible for design and construction of the gas facilities necessary to provide service.
>
> A) With Route A, beginning at the MREC site and working back to interconnection with SoCalGas lines 404 and 406, the natural gas pipeline would enter the project site in the same right-of-way as the generator tie-line and recycled water pipeline and would cross Todd Barranca in this same right-of-way, instead of following Shell Road to a separate crossing of the Barranca. All of the Route A rights-of-way have been previously surveyed for biological and cultural resources except for approximately 625 feet of pipeline route between the existing Todd Barranca gas pipeline crossing point shown in the AFC and the Route A crossing point for the natural gas pipeline, recycled water line, and generator tie-line. This 625-foot section has been evaluated for biological resources and considered for cultural resources at a general level and for cultural resources of the built environment, but has not be subject to pedestrian surveys for archaeological resources. Based on the surveys that have already been conducted, potential environmental effects would be similar to those previously described for the natural gas pipeline, recycled water pipeline, and generator tie-line. Route A would be 2.58 miles long. It would require revised right-of-way agreements for the existing right-of-way to accommodate a natural gas pipeline and a new right-of-way agreement for the 625-foot-long segment that was not part of any of the existing right-of-way agreements.
>
> B) With Route B, the natural gas pipeline would also enter the project site in the same right-of-way as the recycled water pipeline and generator tie-line, instead of following

Shell Road to Todd Barranca. Where the generator tie-line turns north and departs from the recycled water pipeline, Route B would also turn north, following the generator tie-line route as far as the railroad right-of-way. Route B would then turn to the west-southwest along the railroad right-of-way to the point of interconnection with SoCalGas lines 404 and 406. All of the Route B right-of-way has been previously surveyed for cultural and biological resources. Potential environmental effects would be the same as previously described for the natural gas pipeline, recycled water pipeline, and generator tie-line. Route B is approximately 2.14 miles long. It would require revised right-of-way agreements for the existing rights-of-way to accommodate a natural gas pipeline.

As shown in Figure DR132-1, there is only one segment of the additional natural gas pipeline routings that would differ from what was analyzed in the AFC:

- Route A: This route would run for about 675 feet along the south/west side of Todd Barranca in an area not part of other project linear rights-of-way as described in the AFC.
- Route B: This route would run entirely in areas previously considered for linear facility rights-of-way in the AFC (generator tie-line and recycled water supply line).

2.1.2 Environmental Analysis

The following explains how the environmental analysis of the project would differ from that found in the AFC, for each of the AFC environmental disciplines. Each discipline is listed and the differences are summarized in Table 1. Disciplines requiring additional discussion are addressed individually in the narrative after the table.

Table 1. Summary of Environmental Analysis, Natural Gas Pipeline Routings

Environmental Discipline	Description	Analyses
Air Quality	Additional 675 feet of pipeline trenching (route A) could mean additional fugitive dust	See additional discussion
Biological Resources	Additional pipeline route (A) could affect different biological resources	See additional discussion
Cultural Resources	Additional pipeline route (A) could have previously undiscovered cultural resources	See additional discussion
Geology Hazards and Resources	No significant differences	No further analysis
Hazardous Materials Management	No difference	No further analysis
Land Use	Additional pipeline route (A) involves slightly different land uses	See additional discussion
Noise and Vibration	No significant differences	No further analysis
Paleontological Resources	Additional pipeline route (A) could have previously undiscovered paleontological resources	See additional discussion

Table 1. Summary of Environmental Analysis, Natural Gas Pipeline Routings

Environmental Discipline	Description	Analyses
Public Health	No significant differences	No further analysis
Socioeconomics	No difference	No further analysis
Soils	Additional 675 feet of pipeline trenching (route A) could mean additional erosion	See additional discussion
Traffic and Transportation	No significant differences	No further analysis
Visual Resources	No significant differences, pipeline is not visible after installation	No further analysis
Waste Management	No significant differences	No further analysis
Water Resources	No significant differences	No further analysis
Worker Safety and Fire Protection	No difference	No further analysis

Air Quality—Gas line Route A is 675 feet longer than the route described in the AFC and therefore excavations may cause more fugitive dust during construction than what was previously described. This difference would be negligible and temporary, however, and well controlled using best management practices. Also, any additional fugitive dust would be more than offset by the fact that the natural gas pipeline and recycled water supply pipeline could be installed at the same time and possibly in the same trench between the project site and Todd Barranca (a distance of 0.32 miles). This could reduce construction time and effort and consequential fugitive dust.

Biological Resources—Per CEC standards found in CEC Siting Regulations, Appendix B(g)(13)(B), biological reconnaissance surveys are conducted "within 1 mile of the project site and 1,000 feet from the outer edge of linear facility corridors." Field surveys for the MREC AFC were conducted according to this standard and encompassed the entire area of the natural gas pipeline reroute (which is both less than one mile from the project site and less than 1,000 feet from the other linears (generator tie-line, recycled water line, and Shell Road AFC-described route of the gas pipeline). In addition, protocol surveys for least Bell's vireo were conducted within 500 feet either side of generator tie-line tower #3, which encompasses a 500 feet of the 675-foot-long new gas pipeline right-of-way segment. No additional biological resources or wetlands were noted within the area of gas line Route A that were not previously discussed and reported in the AFC and subsequent documents.

Cultural Resources—All of the Route B right-of-way was previously surveyed for cultural resources as it is within the generator tie-line and part of the recycled water pipeline rights-of-way. Route A includes 675 feet of right-of-way not previously surveyed for the AFC. Intensive cultural resources pedestrian survey of this additional gas line route segment was completed on January 26, 2017 by CH2M archaeologists Gloriella Cardenas, M.A., RPA and Natalie Lawson, M.A., RPA. An approximately 100-foot-wide right-of-way was surveyed in 15 meter-wide (50-foot-wide) transects. The surveyors walked straight-line transects, inspecting the ground for signs of archaeological deposits and features of the historic built environment. This area is located within the area covered by the literature search conducted for the AFC and did not contain previously recorded cultural resources. The survey did not result in the discovery or recording of cultural resources. The ground surface was highly visible in areas not covered by vegetation (roadways, rows between orchard trees).

Land Use—The route as described in AFC would run in Shell Road, adjacent to the Ventura County Todd Road Jail on the north and the Jail's wastewater treatment facility on the south. With the new route, the natural gas pipeline would avoid the jail and run within or on the margins of agricultural fields (Route A). Route B would involve more routing through existing agricultural fields and less routing adjacent to fields within the Southern Pacific railroad right-of-way.

Paleontological Resources—The paleontological sensitivity of the 675 feet of Route A is not different than the sensitivity of the other linear routes. Pedestrian survey of these areas was not conducted for the AFC because of the low paleontological sensitivity, per the AFC:

> The Older Quaternary alluvium of the foot-slopes on the margin of the valley possess low paleontological sensitivity; the subaerial deposition regime of alluvium usually precludes fossil preservation and no records have been found of fossil sites in similar settings. The Holocene alluvium that blankets the floor of the Santa Clara River Valley also possesses low paleontological sensitivity. However, terrace sets mapped within about one half-mile of the Santa Clara River suggests variability in fluvial depositional regimes over time. At depths greater than about 10 feet (3 meters) it is possible that older sediments within a half-mile of the river may contain fossil material and these deposits are therefore designated to be of moderate paleontological sensitivity at depth (AFC Page 5.8-8).

Similarly, due to the low paleontological sensitivity of the additional 675 feet of Route B, pedestrian surveys are not needed.

Soils—Gas line Route A is 675 feet longer than the route described in the AFC and therefore excavations may cause more erosion during construction than what was described there. This difference would be negligible and temporary. Any potential impacts will be well controlled and mitigated using best management practices. Also, any additional erosion would be more than offset by the fact that the natural gas pipeline and recycled water supply pipeline could be installed at the same time and possibly in the same trench between the project site and Todd Barranca (a distance of 0.32 miles). This could reduce construction time and effort and consequential soil erosion potential.

2.2 Data Request 154: Generator Tie-Line Pole #18

CEC Staff issued Data Request #154 on February 7, 2017 (reference #TN215811) in which Staff expresses concerns that generator tie-line pole #18 may be located within the boundaries of a the Flats/El Arco/Camp 900 historic-era labor camp that may be a historic property. The standing remains of the camp have been demolished but artifact concentrations are be scattered intermittently around the former camp site, a stream terrace of Ellsworth Barranca which the generator tie-line route crosses at its extreme southwestern edge. Applicant responded to the data request as follows (Mission Rock Energy Center, LLC 2017b; TN#: 216075):

> The Flats/El Arco/ Camp 900 housing camp referenced in the Background to Data Requests 154-156 was identified by the Applicant during archival research completed before the archaeological surveys of the generator tie line were conducted on behalf of the Mission Rock Energy Center in 2015. The Applicant notes that the surveys of the terrace conducted by Staff are largely outside the generator-tie corridor and buffer zone for the MREC inside an avocado orchard.

2.2.1 Pole Location Change

Applicant proposed a possible new location for generator tie-line pole #18 that would avoid concerns about the Flats Camp artifact scatters (see Figure DR154-1, resubmitted and found at the end of this section). The

additional, proposed location for pole # 18 is at the edge of an orchard south of the former location, across Ellsworth Barranca from the Flats Camp archaeological site and entirely outside of its boundary.

2.1.2 Environmental Analysis

The following explains how environmental analysis of the project would differ from that found in the AFC, for each of the AFC environmental disciplines. Each discipline is listed and considered briefly in Table 2. Disciplines requiring additional discussion are addressed individually below after the table.

Table 2. Summary of Environmental Analysis, Generator Tie-Line Pole #18 Possible New Location

Environmental Discipline	Description	Analyses
Air Quality	No significant differences. Contruction methods the same in each location.	No further analysis
Biological Resources	Location could affect different biological resources	See additional discussion
Cultural Resources	Location could affect different cultural resources	See additional discussion
Geology Hazards and Resources	No significant differences	No further analysis
Hazardous Materials Management	No difference	No further analysis
Land Use	No significant differences; both locations on orchard margins	No further analysis
Noise and Vibration	No significant differences	No further analysis
Paleontological Resources	Location could affect paleontological resources	See additional discussion
Public Health	No difference	No further analysis
Socioeconomics	No difference	No further analysis
Soils	No significant differences	No further analysis
Traffic and Transportation	No significant differences	No further analysis
Visual Resources	No significant differences – new pole location slightly further from publicly accessible areas	No further analysis
Waste Management	No difference	No further analysis
Water Resources	No significant differences	No further analysis
Worker Safety and Fire Protection	No difference	No further analysis

Biological Resources— As the change in generator tie-line alignment is relatively slight, biological surveys and determinations would not require updating with additional information. The possible new pole #18

location is well within the previous survey area, is on the edge of a cleared roadway, and would not result in removal of biological resources habitat, much like the previous location.

Cultural Resources—The possible new location of pole #18 has been previously subject to pedestrian archaeological survey, as it is within the boundaries of the right-of-way and survey area as defined for the previous location of tower #18. There would be no potential impacts to cultural resources with the new location. The tower location is outside of the boundaries of the Flats Camp archaeological site and the nearby camp-associated wastewater treatment system site.

Paleontological Resources—The paleontological sensitivity of the new tower location has been considered as part of the previous analysis as this location is within the boundaries of the right-of-way for the previous pole #18 location. Pedestrian survey of these areas was not conducted for the AFC because of the low paleontological sensitivity, and are similarly not required for the possible new location of pole #18.

2.3 Data Request Response 157-158: Vegetation Management

Staff Data Requests 157 and 158 (Set 3, issued February 7, 2017, TN#: 215811) requested a vegetation management plan describing possible tree and other vegetation removal for construction of the project linears (generator tie-line, natural gas and recycled water pipelines). In Data Request Response, Set 3 (154-158) filed on February 16, 2017 (TN#: 216075), the Applicant objected to providing the site and elevations plans and drawings requested under Data Requests 157 and 158 on the basis that this information requires site-specific detailed design to be performed that would normally be done after project approval as part of final construction planning and engineering. Without waiving its objections, the Applicant offers the following information, about the extent of vegetation removal that will be needed for the pipelines and generator tie-line to cross tree rows at the project site's southern boundary, Todd Barranca, and along Ellsworth Barranca.

Ventura County's Tree Protection Regulations[1] provide for the altering, felling, or removal of "Protected Trees," as defined in the regulations. Whether a tree is a "Protected Tree" depends on the species, size, and location of the tree as well as whether the tree is a Historical Tree[2] or Heritage Tree.[3] Specifically, Section 8107-25.2 of the Ventura County Code defines "Protected Trees" as "any trees from among the species or any heritage or historical tree listed in [Table 1, Section 8107-25.2] with one or more differentiated trunks which meets the dimensional standards therein and which is situated on land with the applicable zoning shown on Table 1."

Applying these regulations, there are four categories of trees that, if present during post-Certification detailed design, would be considered "Protected Trees" in the Project Area of Analysis ("PAA") for the Mission Rock Energy Center: (1) single-trunk Oaks (9.50" in girth) and

[1] Ventura County Code, Division 8, Chapter 1, Article 7, Section 8107-25, "Tree Protection Regulations." Chapter 1 applies to the unincorporated, non-coastal zone of the County. (See, §§ 8101-0 *et seq*.) The "Background" section for Data Requests 157 and 158 incorrectly references, "Division 8, Chapter 1.1, Article 7, Section 8107-25 et seq. of the Ventura County Code"; however, Chapter 1.1 applies to the unincorporated coastal zone of the County. (See, § 8171-2.)

[2] A "Historical Tree" is defined as "Any tree or group of trees identified by the County or a city as a landmark, or identified on the Federal or California Historic Resources Inventory to be of historical or cultural significance, or identified as contributing to a site or structure of historical or cultural significance."

[3] A "Heritage Tree" is defined as "Any species of tree with a single trunk of ninety (90) or more inches in girth or with multiple trunks, two of which collectively measure seventy-two (72) inches in girth or more. In addition, species with naturally thin trunks when full grown (such as Washington Palms), species with naturally large trunks at an early age (such as some date palms), or trees with unnaturally enlarged trunks due to injury or disease (e.g., burls and galls) must be at least sixty (60) feet tall or seventy-five (75) years old to be considered as a heritage tree."

multiple-trunk Oaks (6.25" in girth); (2) Sycamores (9.50" in girth); (3) Historical Trees as designated on the list kept by Ventura County Planning; and (4) Heritage Trees of any species (for single trunk, 90" in girth; for multiple trunk, 72" in girth).[4] No designated historical trees are located in or near the project area.

Natural gas and recycled water pipelines—Vegetation management will not be needed for the gas and water pipelines because the pipelines will run mostly in areas planted in row crops, in orchards between tree rows, and a railroad right-of-way that are un-vegetated or sparsely vegetated. The pipelines will cross the Todd and Ellsworth Barrancas using horizontal directional drilling. Using this technique, entry and exit pits for drilling equipment and piping will be excavated at some distance away from the barranca or tree row being crossed, a space for the pipe will be drilled horizontally, and the piping will be pulled horizontally underground between the entry and exit pits without the need for excavation or removal of trees, brush and other vegetation along a riparian area, such as Todd and Ellsworth Barrancas, or tree rows, such as the row of eucalyptus trees along the project site's southern/western border.

There will not be a need for altering, felling, or removal of trees to facilitate construction of the natural gas and water pipelines as HDD entry and exit pits will be located further than 5 feet from the drip lines or 15 feet from the trunks of Protected Trees per the Ventura County Tree Ordinance, whichever is greater. If deemed necessary, any tree meeting the definition of a "Protected Tree" located within the finalized routes for the gas and water pipelines will be pruned, trimmed, altered, felled, or removed consistent with the Ventura County Tree Ordinance.

Generator Tie-Line—The generator tie-line will require removal of vegetation during construction for installation of conductors and during operation to make certain that safe clearance around the conductors is maintained in accordance with standard utility practice and regulations. Vegetation management will likely be needed in the following places for generator tie-line conductor clearance.

- Eucalyptus tree row at the southern/western boundary of the project site
- Todd Barranca near gen-tie pole #3
- Ellsworth Barranca between gen-tie poles #16 and #17

Vegetation management for construction and maintenance in these areas will follow Rule 35 (Vegetation Management) of California Public Utilities Commission General Order (GO) 95 (Rules for Electric Transmission Line Construction). GO 95 specifies that, for 230 kV lines, foliage and branches must be cleared within 10 feet of the conductor (Appendix E Guidelines to Rule 35) (California Public Utilities Commission 2017). For Fire Threat Zones, this distance is 20 feet. The vegetation clearance areas listed above are not located in a Fire Threat Zone.

To comply with Rule 35, utilities periodically inspect trees, branches, and other vegetation along transmission lines and make a record of the inspection. For the three areas that will require vegetation management listed above, Rule 35 will require trimming of trees and any other vegetation within 10 feet radial distance of the conductors.

The MREC generator tie-line has a vertical phase configuration, meaning that the conductors are arranged vertically along the pole, not horizontally. AFC Figure 3.2-1 shows a typical generator tie-line tower and indicates that the distance from the top of the tower to the lowest conductor at the pole will be 40 feet (12 feet between conductors, 15 feet between the highest conductor and the shield wire, and 1 foot from the shield wire to the top of the pole).

The pole heights and lowest conductor heights for poles near the vegetation crossings are thus as follows:

[4] Ventura County Code, Division 8, Chapter 1, Article 7, Section 8107-25.2, Definitions, Table I, Protected Trees.

- Pole 3 – 106 feet high, lowest conductor attached at 66 feet above ground
- Pole 16 – 131 feet high, lowest conductor attached at 91 above ground
- Pole 17 – 126 feet high, lowest conductor attached at 86 feet above ground

If there were no sag in the conductors, vegetation trimming could begin at 56, 81, or 76 feet, respectively, above the ground near these poles. Actual conductor distance above the ground at any given location will vary with pole height and distance between the poles. In all cases, however, the sag will leave the conductor 30 feet or more above the ground. Tree trimming will thus reach up to about 20 feet above ground surface at a minimum. In most locations, trees will be trimmed to a level higher than this.

Given these pole heights and minimum distance between the conductors and the ground surface, it will not be necessary to completely remove trees or other vegetation in the tree rows that are in the path of the generator tine (at the project site boundary and Todd Barranca) or along the Ellsworth Barranca (Poles 16 to 17), but only to trim existing trees and branches that would be a radial distance of 10 feet or less from the conductors.

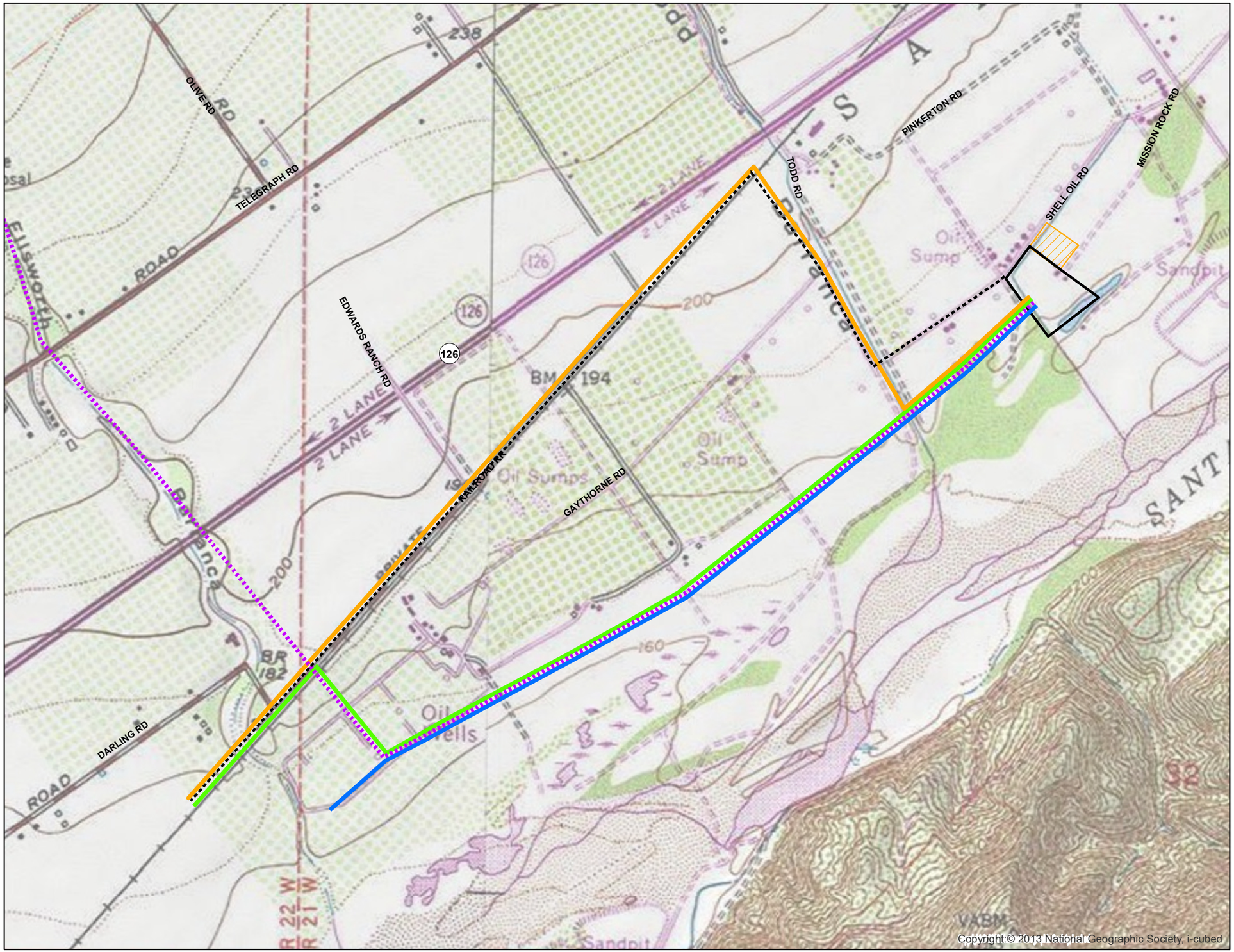
Best management practices will be used during trimming to prevent erosion and sedimentation that could otherwise affect adjacent drainages such as the barrancas. Existing vegetation root systems will remain in place as trimming will only be done above grade. In areas adjacent to Todd Barranca (Pole #3) or the terrace of Ellsworth Barranca (Pole #16 to #17), vegetation management workers will proceed on foot or use machinery (truck-mounted cranes, extension bucket truck) from adjacent roadways only. These would include field roads along Todd Barranca (Pole #3), Telegraph Road (Pole #16), and field roads between pole #16 and #17 on both sides of the barranca. These practices and standard BMPs for sedimentation and erosion control would limit the potential for soil erosion or disturbance that could otherwise cause sedimentation in Todd or Ellsworth Barrancas.

2.4 References

California Public Utilities Commission. 2017. General Order 95, Appendix E. Clearance of Poles, Towers and Structures from Railroad Tracks. Guidelines to Rule 35. Accessed March 15, 2017. http://www.cpuc.ca.gov/gos/GO95/go_95_appendix_e-guidlines.html).

Mission Rock Energy Center, LLC. 2017a. Responses to California Energy Commission Data Requests Set 2, 132 and 133 for the Mission Rock Energy Center. Submitted by Mission Rock Energy Center, LLC, Dublin, CA. Prepared by CH2M, Sacramento, CA. January 3. TN#: 215138.

Mission Rock Energy Center, LLC. 2017b. Responses to California Energy Commission Data Requests Set 3, 154-158 for the Mission Rock Energy Center. Submitted by Mission Rock Energy Center, LLC, Dublin, CA. Prepared by CH2M, Sacramento, CA. February 16. TN#: 216075.



VICINITY MAP

LEGEND

- Project Site
- Laydown Area
- Route Proposed in the AFC
- Route A
- Route B
- Process Water Supply Line
- Generator Tie-Line

N

0 500 1,000
Feet

Figure DR132-1
Natural Gas Pipeline Routes
Mission Rock Energy Center
Ventura County, California

VICINITY MAP

LEGEND

- Tower
- Generator Tie-Line
- Previous generator line-line conductor

N

0 100 200

Feet

Figure DR154-1

Revised Location of Generator Tie-line Tower #18

Mission Rock Energy Center

Ventura County, California

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