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February 10, 2020

Prepared for:

Jason Greminger

Consultants Collaborative, CCI

Technical Memorandum

Project: Abacherli Site - 29875 Newport Road, Menefee, California

Subject: Methane Related Issues and Activities for the Abacherli Site, City of Menefee, Riverside County, California

This Technical Memorandum (TM) has been prepared at the request of Consultants Collaborative (CCI), of San Marcos California, to address activities that have taken place at the subject site since a Methane Investigation Report was published by Carlin Environmental Consulting, Inc. ("Carlin"), dated February 24, 2016. Carlin is the methane consultant record, on behalf of and as a sub-consultant to, GeoTek, Inc. The project is located at 29875 Newport Road, Menefee, California 29875 (Site).

The preparer of the Environmental Impact Report (EIR) has requested that we prepare this memorandum in response to comments provided by the City of Menefee on the Draft Environmental Impact Report (Draft EIR) for the Proposed Rockport Ranch (SCH No.: 2017081069). It is our understanding that this memorandum will accompany the final EIR package.

In general terms, since the publishing of our 2016 methane report, unregulated grading activities have been conducted on the Site. Based on information provided to Carlin these grading activities have included demolition of previously existing structures and depositing the remnants of that demolition in pond areas along with supplemental soil. The underlying purpose of this memorandum is to clarify how this unregulated grading activity alters our original methane recommendations.

PREVIOUS INVESTIGATION AND RECOMMENDATIONS



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Carlin conducted a thorough methane investigation as presented in the Methane Investigation Report dated February 24, 2016. The conclusions and recommendations provided in that report are summarized below.

Refer to **Figure 1** from the 2016 Report that depicts Site conditions described below and vapor probe testing results.

Research of past dairy activity on the Site and subsequent testing indicated three general areas present at the Site:

1. Areas where there was not significant use for domestic animal/dairy related uses. In these areas (highlighted in green on Figure 1) the maximum concentration of methane detected was less than 200 parts per million (ppm). This area will be referred to as **Area 1**
2. Areas where domestic animals were present and kept in pens and/or manure stored and spread in this area where the stock pens were located, the concentrations of methane were generally above 100 ppm and below 1,200 ppm. This area will be referred to as **Area 2**.
3. Areas of stock ponds or desilting basins that collected the urine and other liquid waste from the animals at the Site. In the stock pond areas (highlighted in red on Figure 1) methane concentrations were generally above 200 ppm and were as high as 50,000 ppm. This area will be referred to as **Area 3**.

Figure 2 depicts these areas as they relate to the conclusions and recommendations described below:

- **Area 1 (green area)** - Aerial photographs and methane readings both indicate that these areas were not used for significant domestic animal related uses therefore, these areas are considered exempt from methane mitigation and/or testing after grading has been completed. **Care should be taken not to import fill from other portions of the Site that has significant manure or organic content into this area.** Prior to Site development the proposed grading plan, which indicates the layout of individual lots, should be reviewed to determine specific lots that are exempt from methane investigation and/or mitigation. *As will be discussed below this recommendation will not change.*
- **Area 2 – This area (blue area)** has moderate methane concentrations beneath the surface. Due to the presence of domesticated animals, County regulations indicate that these areas must be tested on a lot-by-lot basis a minimum 30 days after grading has been conducted. In addition, manure remnants were observed in the near surface within these former stock



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pen areas. **Carlin recommends that this near surface highly organic material be skimmed from these areas and removed offsite.** Any former manure stockpiles should also be removed from the Site. *As will be discussed below, concrete structures have been removed from this area and deposited in Area 3, however highly organic material still remains in this area and that portion of this recommendation will not change.*

- **Area 3 – (red area)** The stock pond and desilting basin areas have collected urine and other waste products from the former daily operations and the subsurface soils have significant concentrations of organic material that have resulted in the production of methane. The production of significant methane was measured at depths of up to 12 feet. It is likely that that methane is being produced at depths greater than 12 feet. Remedial removals in former stock pond areas should be carefully observed during grading. Because the organics have been flushed deep into the native soils it may not be economically feasible to remove all the organics that are producing significant methane. The near surface soils may not currently be producing the greatest quantities of methane, however this may be due to increased oxygen content, which is less favorable for methane production. *As will be discussed below, unregulated grading has been conducted in this area. It is unclear if any significant removals were conducted during grading, thus prior to and in conjunctions with future mass grading additional evaluations of this area are recommended.*

GRADING ACTIVITIES

Since the publication of the methane report the following grading activities have been conducted. Carlin's knowledge of these activities is based on the information provided below.

As far as we understand, they stayed within the confines of the specified areas.

Refer to **Figure 2 – Overlay Map**: Areas that are hatched are approximated grading activities:

- **Source Area:** This is the area where existing concrete foundations and slabs from the dairy's cattle storage and processing areas were scraped, collected in a localized stockpile, and pulverized.
- **Deposit Area:** This is the location of the former pond areas where the pulverized concrete was transported to, mixed with imported fill, and compacted within the pond area.



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The following is a provided statement regarding grading activities conducted since our 2016 Report:

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Excel Engineering
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The fill operation consisted of pre-mobilization methane investigation of the pond by the project's methane consultant. The determination from those tests was that the methane content of the ground surface within the pond would need venting and notifications to future property owners, but that the total release of methane would be low. The actual fill operation commenced with the scraping of existing concrete foundations and slabs from the dairy's cattle storage and processing areas, collecting that material in a localized stockpile (on-site) where it was pulverized to 3'-5' maximum-sized pieces, and transporting that material to the pond for placement in the deep depths of the pond (relative to future grades). Survey staking was performed to ensure that the maximum height of the fill operation would be below the maximum elevation allowed for this pulverized concrete material based on the maximum depth of future proposed utility runs. Approximately 1,500-2,500 CY of soil was imported to the Site to mix with the concrete to allow for proper compaction. That soil was mixed with the pulverized concrete and the compounded material was compacted within the pond in an area that turned out to be a smaller footprint than the estimated area it was thought to take. The compacted fill area ended up being completely located away from future residential footprints and entirely beneath future roadways or finish grade slope or open space areas. Methane venting will still be placed as needed based on investigations by geotechnical and environmental consultants prior to grading plan approval and mobilization on the residential rough grading and infrastructure improvements operations.

RECOMMENDATIONS

Although significant grading activities have been conducted on the Site since our 2016 report/recommendations, no grading activity has reportedly transported material from a methane zone into a methane exempt zone. Thus, we would not modify our original recommendation of:



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A minimum of 30 days after grading has been conducted, Area 3 (the red area on Figures 1 & 2) must be tested for methane on a lot by lot basis. A final report shall be prepared and submitted to the City Building and Safety Department for review and approval. Recommendations for methane mitigation/remediation shall be designed by a qualified methane professional and in accordance with the County of Riverside Protocols (most recent).

This area (un-highlighted on Figure 1) has moderate methane concentrations beneath the surface. Due to the presence of domesticated animals, County regulations indicate that these areas must be tested on a lot-by-lot basis a minimum 30 days after grading has been conducted.

In summary and conclusion, 30 days after grading the Areas 2 & 3 should be tested on a lot-by-lot basis.

EXCEPTION

Our 2016 Methane Investigation Report recommended the following regarding Area 3:

To reduce the potential for methane production any highly organic manure stockpiles or the near surface remaining manure should be skimmed from the surface and removed offsite. Remedial removals in the stock pond areas should be based on visual observations to determine if highly organic rich layers are present. The methane testing conducted during this investigation suggests that remedial removals as deep as 10 feet below the former stock ponds would be prudent. However, ultimately the geotechnical consultant must also determine the appropriate remedial removal depths to provide a suitable foundation material.

Since Carlin was not present during removal operations it is unclear if any removals were conducted. It is also unclear if any of the recent grading was conducted in the presence of a geotechnical engineering firm representative. Thus, Carlin recommends that prior to and during future mass grading of the pond areas (Area 3) significant evaluations should be conducted as a joint effort between Carlin, the methane consultant of record, and the geotechnical engineering consultant of record, to be determined.



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INFORMATION BELOW TO BE INCORPORATED ABOVE:

According to the plans provided by Excel Engineering (plans dated 9-14-2017) and communications with Geotek, Inc. Soil, concrete and asphalt was removed from the former dairy operations area and placed as compacted fill in the northern former pond. Figure 2. The plans indicate that the asphalt was placed only within the north pond in a narrow strip. According to the plans these deposits will be below any proposed utilities and a minimum of 8 feet below finish grades (only 3 feet where asphalt is utilized). Limited removals (less than a few feet) were made beneath these two areas. Without further testing it is likely that these materials would be moderately permeable to future gas migration.

As stated above, additional investigations during future site development are recommended. Regardless of results, methane mitigation measures will be required in the foundations of all future dwellings in the former/existing stock pond areas.

Please feel free to contact any of the undersigned with questions or comments regarding this memo by phone or email at julie@carlinenvironmental.com, or gary@carlinenvironmental.com

Sincerely,

Carlin Environmental Consulting, Inc.

A handwritten signature in blue ink, appearing to read "Julie Quillin", positioned above a horizontal line.

Julie Quillin

Staff Environmental Scientist

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A handwritten signature in black ink, appearing to read "Anthony Rinaldi", positioned above a horizontal line.

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Figure 1

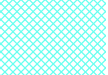
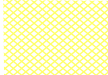


Figure 2

Areas identified in methane investigation

-  - Areas exempt from further methane testing
-  - Former/existing Stock Pond Areas
-  - Areas of moderate methane concentration

Interim grading areas

-  - Source Area
-  - Deposit area

Areas are approximate delineations from provided sources

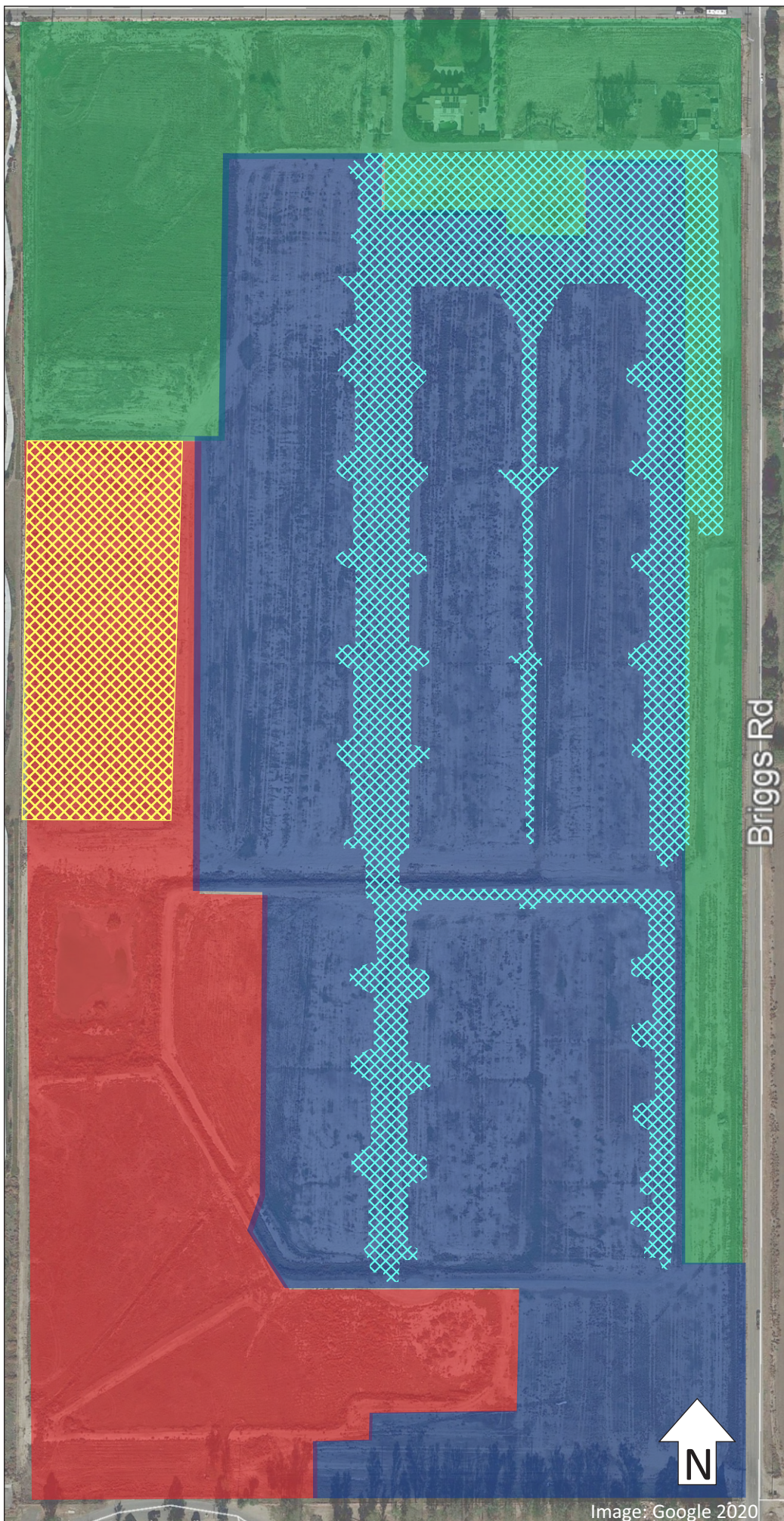


Image: Google 2020

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Prepared by: JQ

Date: 2/10/2020